

**PROJECT MANAGEMENT: THE
EFFECT OF SAUDI NATIONAL
CULTURE ON THE ATTITUDES OF
KEY STAKEHOLDERS TOWARDS
DELAY IN CONSTRUCTION
PROJECTS IN SAUDI ARABIA**

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ABSTRACT

The construction industry plays a vital role in the social and economic development of the Kingdom of Saudi Arabia (KSA). Despite huge investment in the industry, its growth has been slowed by poor performance which often face significant delays. Studies have highlighted that more than 70% of public sector construction projects in KSA go over budget and/or finish late. It is also highlighted that the effect of national culture on the attitude of key project stakeholders should not be overlooked, and that there is a limited understanding of how the Saudi National Culture (SNC) affects the attitude of stakeholders in construction projects in KSA. The aim of this study is therefore “to establish the influence of national culture on the attitude of key stakeholders (clients, contractors, and consultants) and its subsequent impact on delay in construction projects in the KSA”.

An in-depth literature review provided a robust understanding of national culture, attitude and the causes of delay on construction projects. Content analysis was then used to identify twelve (12) factors that most influence the attitude of stakeholders in the Saudi construction industry. These enabled the development of a conceptual framework of how SNC could influence attitude of key stakeholders towards delay in construction projects. Semi-structured interviews were then conducted in the KSA and in the United Kingdom (UK) to help provide a better understanding of the variables in the relationship between culture, attitude and delay in construction projects. These interviews informed the research in developing a questionnaire aimed at “establishing the effect of national culture on the attitude of key stakeholders towards delay” in KSA. The questionnaires were distributed to a selection of clients, contractors and consultants in KSA. The collected data was analysed using the Statistical Package for the Social Sciences (SPSS).

The results enabled the validation of the developed conceptual framework and the production of a list of recommendations for effective project management with the aim of reducing the occurrence of construction delay that originates from the effect of national culture on construction projects in the KSA. The primary research established that there is a correlation between each of the identified twelve factors and at least one of the three components of attitude (feelings, thoughts and actions) towards delay. It also established that except Indulgence vs Restraint (IVR), all other Hofstede’s National Cultural Dimensions have a correlation with the attitudes of key stakeholders towards delay. Interestingly, there is a clear divergence or difference in perception between the three selected key stakeholders (clients, consultants and contractors) on the effect of SNC on their attitudes towards delay.

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ABBREVIATIONS

CPM	Critical Path Method
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
KSA	The Kingdom of Saudi Arabia
LTO	Long Term Orientation Index
IDV	Individualism Index
MAS	Masculinity Index
NC	National Culture
OC	Organisational Culture
PDI	Power Distance Index
PMI	Project Management Institute
SI	Severity Index
SNC	Saudi National Culture
RII	Relative Importance Index
UAI	Uncertainty Avoidance Index
UK	The United Kingdom

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DECLARATION

I declare that the contents of this thesis, unless otherwise formally indicated within the text, is the original work of the author. The thesis has not been previously submitted for a degree to any other university and the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Signed: *Abdullah Alkharmany*

Dated:

Chapter 1. Introduction

1.1. Background to the study

Many studies, such as Coble and Haupt (1999), have confirmed that the construction industry plays a vital role in the social and economic development of all countries. It has been estimated that the Kingdom of Saudi Arabia (KSA) has the largest construction sector in the Middle East. Construction projects cut across all other sectors such as health, housing, education, airports, highways, water and waste. Tinnirello (2009) identified that the construction industry is one of the most significant parts of the economy in the KSA, and Deloitte (2013) stated that the public sector is the largest contributor to the industry's growth. Banawi and Bilec (2014) and Saudi National Commercial Bank report (2011) show that in 2010 the construction industry accounted for 11% of KSA's Gross Domestic Product (GDP) at \$300 billion (compared with just 6.3% in the UK and 4.1% in USA, Al-Adhami (2011)). An examination of country's previous budgets, the government of KSA has been allocating huge funds to construction projects. For example: 500 schools and colleges, 117 hospital projects, construction of 8 Medical Cities, labour offices, sports facilities and other social security infrastructure are included in 2015/16 budget. Although the GDP growth in the construction sector has declined from 8.11 in 2014 to 6.7 percent in 2015 (Alotaibi, 2016), it is projected to rise up within 2017/18 due to change in the government policy to allow Public Private Partnership (PPP) to deliver infrastructure in the kingdom (GCR, 2017).

The success of a construction project can be judged on a number of factors. According to Sweis et al. (2008), a construction project can be successful if it starts in good time, follows the planned schedule, and finishes on time and within the estimated costs. Shash (2012) identified that the construction industry in KSA had improved the quality of its work but still needed to improve delivery discipline and on budget performance. Despite huge internal and

external investments in the KSA construction industry, construction projects often face extensive delays. Several studies have highlighted the fact that more than 70% of public sector infrastructure projects in KSA exceed contract time and cost, they also mentioned that one of the key reasons cited for these delays are cultural issues (Al-Ghafly and Al-Khalil, 1999; Arain and Low, 2003; Assaf and Al-Hejji, 2006; Albogamy et al. 2012). Projects suffering delay often also incur an increase in project costs thus leading to substantial losses by projects stakeholders (Ochieng et al. 2010; Lampel, 2001 and Sweis et al. 2008). Other researchers have linked culture related influences to delays originating mainly during inception and feasibility phases (Bhadury et al. 2000 and Dinsmore, 2005).

Cultural awareness is therefore important to construction stakeholders for a number of reasons. Culture is built up from a complex range of issues, including ethics, religion, politics, geographic factors, economics, legal factors and historical factors and it may have a direct impact on project stakeholders. For a construction project to be successful, stakeholders need to be able to adapt, act and deal with cultural issues as they arise during implementation. Experts argued that the measure of project success also varies depending on national culture (NC) (Cheng et al. 2004).

Schein defines culture as:

'The total of all the shared, taken-for-granted assumptions that a group has learned throughout the history.' (Schein, 1985, p.29)

Hofstede defines NC as

'The collective programming of the mind distinguishing the members of one group or category of people from another.' (Hofstede, 1980)

The term collective programming is used by Hofstede to indicate the experiences, values, beliefs, traditions, religious patterns, family structures, legal systems, and languages of the inhabitants living in any country. This suggests that religion, ethnic groupings and tribes are

subsets of national culture which produces an assumed national cultural homogeneity that may affect attitude and behaviour of the inhabitants.

Awareness about the impacts of NC on project success have been highlighted by Zheng and Chen (2012) where they consider success as if it starts in good time, follows the planned schedule, and finishes on time and within the estimated costs. During the delivery of construction projects, conflicts and misunderstandings can easily arise due to differences in cultural assumptions between clients, contractors and consultants. An understanding of the relevant cultural factors and how these factors influence the attitudes of key stakeholders within construction projects is therefore essential knowledge for construction project managers to improve project delivery.

1.2. Statement of the Problem

Delay in construction projects is defined as *“the situation when a task or activity, process or project is executed over a period ending at a time beyond the planned end time”* (Assaf and Al-Hejji, 2006; Trauner, et al., 2009; Bramble and Callahan 2010; and Ramanathan et al. 2012).

Project delays are extremely common in the KSA construction industry (Albogamy et al. 2012). Project delays often originate from the beginning phase of the project when a construction company is planning and organising resources for the project (Assaf and Al-Hejji, 2006). However, issues which delay the project can occur at all phases of the project. Delays are triggered by a range of factors, some of which are as a result the effect of National Culture (Al-Ghafly and Al-Khalil, 1999; Assaf and Al-Hejji, 2006; Albogamy et al. 2012).

In an increasingly interconnected world, it is not uncommon for multinational corporations or agencies to employ a diverse spectrum of individuals from many countries, and with a variety of national, ethnic and religious backgrounds, an awareness of NC is important to

project managers and stakeholders. Project managers have to be able to adapt to be successful, but it is also important to note that the measure of success varies dependent on culture. This awareness has been heightened as the impacts of culture have become apparent (Cameron and Ettington 1988). During the delivery of construction projects, conflicts and misunderstandings can easily arise due to differences in assumptions about NC between stakeholders. The wrong project member assigned to a task can introduce unnecessary delays and conflict into an otherwise profitable construction project. An understanding of the relevant NC dimensions is essential for efficient project management.

The management of project stakeholders is commonly recognised as an essential part of project management and as a factor contributing to project success (Cleland, 1994; Olander and Landin, 2005). Despite the recognised importance of stakeholder management, project management research still lacks both theoretical knowledge and empirical proof of various project stakeholder related phenomena (Achterkamp and Vos, 2008; Yang et al, 2010). Therefore, knowing the attitudes of the stakeholders toward delay in construction projects is very important to the success of the project. Many studies on the context of construction projects ignore the effects of NC on the attitudes of project stakeholders (Cooper, 2000; Mearns and Yule, 2009; Ali, 2008).

Many studies suggest there is a strong influence of NC on a project's success. There are researches that explains this phenomenon from a theoretical perspective such as: Gallivan and Srite (2005), Javier and Narciso (2008), Karahanna and Evaristo (2005) and Srivannaboon (2006)). Another stream follows dimensional models to explain NC and its impact on project management such as Bredillet and Yatim (2009), Hofstede (1983), Mäkilouku (2004) and Loosemore and Muslmani (1999). Most studies compare two or more cultures and summarize cultural differences being responsible for project related problems

such as project delays or they focus on the causes of delays in construction projects and disregarding the need to understand the attitudes of project's stakeholders. Narrowing down the research to the KSA, only a few studies with related findings exist; these are discussed in chapter 2 and 3.

Some studies investigated working in the Middle East from a general management perspective. Some researchers such as Dadfar et al. (1992) and Mellahi and Demirbag (2011) analysed multiple projects at Multi National Enterprises (MNEs) in the Middle East and provided evidence for the fact that cultural influences on projects can be seen while working on projects on the Arabian Peninsula. These researches describe methods to increase performance by creating one cultural team instead of diverse teams within the project. While Dadfar et al. (1992) focus on the intercultural relations; the research by Mellahi and Demirbag (2011) looks into the social diversity of different countries in the Middle East.

In construction projects, delay is a serious problem because it affects the cost in addition to time and quality. According to AlGhafly and Al-Khalil (1999) delays can adversely impact on project stakeholders, such as clients, contractors and designers. In seeking a decrease in occurrences of delays it is important to determine the main causes of problems which contribute to delays in construction projects and more specifically to projects in KSA. Some sources of delay include incomplete specifications, changes or revisions, lack of resources, inherent technical and non-technical problems, organisational and business factors, natural factors and cultural factors. KSA is no exception and the matter of delay in construction projects in KSA has generated a negative image for the industry (Sweis et al., 2008). This negative image has inspired researchers (Assaf and Al-Hejji., 2006; Sweis et al., 2008; Al-Kharashi and Skitmore, 2009) to investigate the matter in previous studies on KSA. It is argued by a number of researchers that cultural factors significantly contribute to causing

these delays and therefore hinder the completion on time of construction projects (Al-Ghafly and Al-Khalil, 1999; Assaf and Al-Hejji, 2006).

A study by Idris (2007) explored the cultural barriers to improved organisational performance in KSA. Additionally, Al-Gahtani, Hubona and Wang and Liu (2007) explored the impact of cultural differences on Information Technology (IT) acceptance. To date nobody has studied the effect of National Culture (NC) on the attitude of stakeholders towards delay in construction projects. It is anticipated that this research will reveal that NC has a large impact on the stakeholders' attitudes towards delay in construction projects in KSA. For these reasons and to fill this gap of knowledge, this study will explore sources of delay in the delivery of construction projects. The study will reveal the relationships between NC and the key stakeholder's attitude toward delays in the construction projects. This study has therefore identified three knowledge gaps:

1. To establish how the Saudi National Culture (SNC) can affect attitudes of construction stakeholders;
2. To know the effects of attitude of key stakeholders on delay in construction projects;
3. To establish the relationship between NC (the collective programming of the mind distinguishing the members of one group or category of people from another) and delay in construction projects in KSA.

There is also a lack of study in establishing which of the NC dimensions cause delay in construction projects, particularly in respect of KSA. This research also identified which NC dimension(s) cause delay by investigating the relationship between NC and delay in construction projects. In KSA, there is indeed, a more noteworthy requirement for such categorisation due to the distinctive nationalities and multicultural ethnicities of key project

stakeholders. This research study is broadly concerned with delay and its determinants in Saudi's construction industry. More specifically, the study explores stakeholders' attitudes towards delay in construction projects in KSA. It seeks to establish whether statistically significant relationships exist between the attitudes of key stakeholders towards delay and SNC.

1.3. Research Goals

1.3.1. Research Questions

The research question that needs to be answered therefore is: what influence or effect does NC have on the occurrence of delay in construction projects in the KSA?

It is assumed that NC would influence the attitudes of key stakeholders towards delay (negative, neutral or positive), which may result in the likelihood of delay to occur or not to occur in a construction project. Therefore, the research question has been broken down into two sub-questions: -

RQ1- What are the factors that influence the attitudes of key stakeholders towards delay in construction projects?

RQ2- What are the effects of Saudi NC on attitudes of key stakeholders in construction projects in KSA?

1.3.2. Research Aim and Objectives

Aim:

The aim of this study is to establish the influence of national culture on the attitude of key stakeholders (clients, contractors, and consultants) and its subsequent impact on delay in construction projects in the KSA.

Objectives:

1. To identify the main causes of delay in construction projects in KSA.

2. To evaluate the Saudi National Culture in order to understand its component parts and the variables in the relationship between culture, attitude and delay.
3. To establish the key factors that influence the attitude of key stakeholders on delay in construction projects.
4. To identify the influence of key aspects of the Saudi NC on the attitude of key stakeholders towards delay in construction projects.

1.4. Scope of Research

The scope of the study can be summarized through the following points: -

1. The study is limited to the construction projects in the KSA.
2. The supporting cultural framework of this thesis is based on Geert Hofstede's cultural dimensions and characteristics.
3. The projects used to collect data are multipurpose large construction projects in Kingdom of Saudi Arabia KSA in excess of 50 million Saudi Riyals (\$13.3 million).
4. The Selected stakeholders in this study are contractors, consultants and clients in the KSA construction sector. These have been selected because they are the ones that engage and have control on the delivery of the project throughout the developmental stage towards achieving its aims. Construction stakeholders can be considered as primary or secondary. Primary stakeholders include clients, consultants, and contractors that are directly involved to the project. While secondary stakeholders include regulators, investors, suppliers, sub-contractors, banks, governmental authorities, pressure groups, trade associations, and communities. This study is limited to a selection of primary stakeholders in the KSA construction sector; those

who engage with the project throughout its design and construction phase to achieve its aims and are most influential; clients, consultants and contractors.

The research findings are therefore specific to Saudi Arabia, but could potentially be applied more widely when dealing with cultural differences on construction projects.

1.5 Outline Research Methodology

For this type of research, there are various research strategies available. The methods involved in this research would entail use of both qualitative and quantitative data collection and analysis techniques based on the research questions to be processed (Yin, 2009). Research design directs the research strategy by defining an action plan that proceeds from the initial research questions to the conclusion. It is the overall configuration of the research, including specifying what kinds of evidence were gathered and from where and how such evidence will be interpreted, that provides valuable answers to the research questions.

The research design of this study is based largely on the works recently conducted by Assaf and Al-Hejji, (2006); Hofstede et al. (2010) and Values Survey Module manual (VSM) of Hofstede (1980). The adopted research design is based on a representative sample of five (5) large construction organizations clients (three (3) ministries and two (2) private sector), five (5) contractor companies, and five (5) consultant companies in KSA. The method used for the analysis will be the mixed method research design (quantitative & qualitative) as a research approach for this research, while the questionnaire tool has been designed to collect the quantitative data and the semi-interview tool has been selected to collect qualitative data. As illustrated in Figure 1.1, this study was carried out in four (4) main phases: background research; fieldwork; data analysis; and thesis writing. Details of each phase is discussed in Chapter 4.

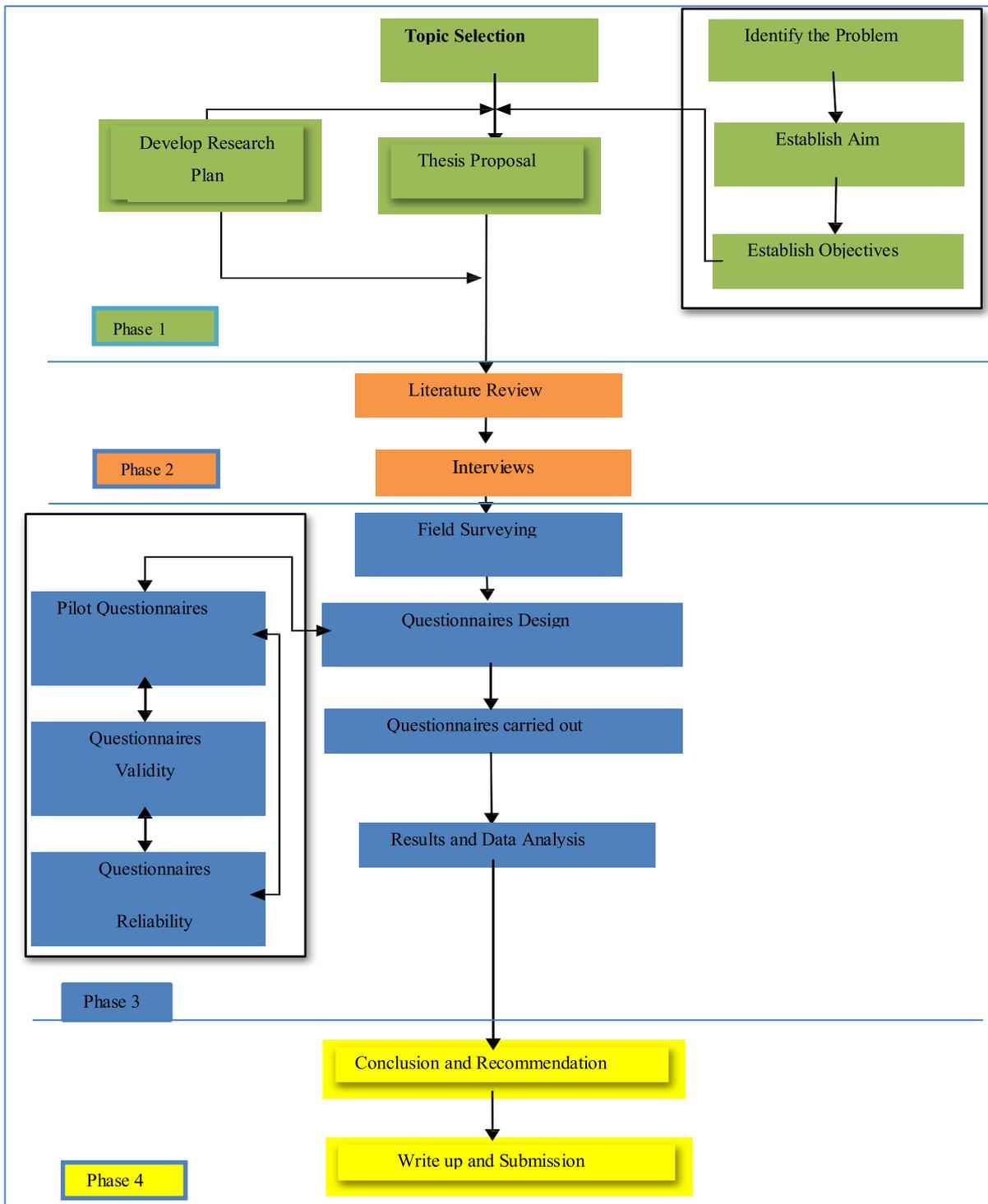


Figure 1.1: Research Design

1.6. Thesis Structure

The study is structured into six chapters as follows: -

Chapter 1 – Introduction: This presents a brief introduction into the underlying concepts of this thesis, the research problem, questions, aim and objectives. Furthermore, this chapter provides an outline of the thesis structure.

Chapter 2 – Delay in Saudi Construction Projects: The aim of this chapter, and Chapter 3, is to clearly establish the context in which the study is undertaken. Chapter 2 seeks to explain the concept of construction delays and the types of delays in construction projects. An argument is made for the role construction project management plays in avoidance of delays. The chapter provides basic and clear evidence on the issue of delays in construction projects and explains the research context of the KSA in more detail. It highlights the importance of NC while working on construction projects in the KSA.

Chapter 3 – National Culture and Attitude: This chapter offers the different perspectives and definitions of national culture and attitude with a focus on cultural models using the Hofstede's dimensionalist approach. The chapter provides arguments to use Hofstede's model as a suitable base for this study. The chapter finally identified the gap in knowledge and/or contribution of knowledge.

Chapter 4 – Research Methodology: This chapter describes the research design, methodology and the various options to conduct the research focussing on NC and delays in construction projects. The arguments for qualitative and quantitative research are discussed to facilitate the selected approach. The chapter provides a detail on the design and development of the semi-structured interviews and questionnaire.

Chapter 5 – Primary Data: Results, Data Analysis and Discussion: This chapter

provides, in detail, the results, data analysis and the key findings of the interviews and questionnaire surveys. The chapter discusses the findings and explores the potential relationships between Saudi NC and the attitudes of key stakeholders to determine whether or not any significant associations exist.

Chapter 6 – Conclusions and Recommendations: This is a summary of the entire thesis. The chapter presents and discusses how the research aim and objectives were achieved and the research contributions to knowledge. The final section of this chapter presents recommendation for future research. In this chapter, the factors identified in Chapter 5 were evaluated in order to provide project's stakeholders with a holistic understanding of the factors in order to inform decision-making processes by providing a conceptual framework. Contributions to the existing body of knowledge and contributions to the Saudi construction industry have been discussed in this chapter. It concludes the research by verifying whether the research aim and objectives were achieved, identifies the significant problems faced and how these were tackled and lists the lessons learnt.

Chapter 2. Construction Delays in Saudi Construction Projects

2.1. Introduction

The aim of this chapter is to deliver an understanding of the causes of delays in construction projects in the Kingdom of Saudi Arabia (KSA).

This chapter (as the first part of the literature review) positions the thesis within its study context and reviews the history of the KSA and project types in the country. Based on the discussion of the background of the study and the research problem, and concerning delay in construction projects in KSA (in Chapter 1), the following key words frame the search process to help identify relevant sources related to the overall research context: Construction Project, National Culture, Saudi Arabia, Project Delay, Attitudes, and Stakeholders. Combinations of these keywords and similar search strings were applied on several scientific search engines such as ProQuest, Science direct, Google scholar and on the University of Brighton library databases. During the literature review, key words were recognised and research results were collected to help structure the literature review development. It starts with the Saudi Arabia as a geographic and cultural region and moves on with a brief discussion of religious influences. This chapter also seeks to explain the concept of construction delay. In this chapter, types of delays in construction projects are described and examples are given. An argument is made on the role construction project management plays in the avoidance of delay. Finally, this chapter discusses the overall research context of construction projects in the Kingdom of Saudi Arabia (KSA) and describes the types of construction projects that are carried out in Saudi Arabia.

2.2. The Kingdom of Saudi Arabia (KSA)

The Kingdom of Saudi Arabia is the largest country within the Arabian Peninsula. With an area of approximately 2,250,000 square kilometres and a population around 32 million,

which includes 8.4 million foreign residents (2016 census). KSA is part of the Arabian Gulf Cooperation Council (GCC). Saudi Arabia consists of 13 provinces with Riyadh as the capital and Jeddah and Dammam being the two other major cities. While agriculture is considered to be a significant sector, the country relies mainly on mineral wealth of which oil is the most important resource with a production of 409.2 million tons and a stock of 36.2 billion tons. Natural gas comes as the second with a production of 75.9 billion cubic metres and 7919 billion cubic meters as a stock.

The following sub-section takes a brief look at the history, religious influences and the ethnic groups of KSA in order to understand some of the cultural characteristics of Islam and of KSA. These characteristics still have a strong influence on daily business life in the KSA and may have an effect on the management of projects.

The KSA traces its history back to the earliest civilizations of the Arabian Peninsula and over the centuries, the peninsula has played an important role in history as an early commerce centre and as the origin of Islam, one of the world’s major monotheistic religions.

At the beginning of the 20th century, the Ottoman Empire continued to have control over most of the Arabic peninsula. Subject to this control, Arabia was ruled by a patchwork of tribal rulers (including the Al Saud) with the Governor of Mecca (Alshareef) having pre-eminence and ruling the Hejaz (Murphy, 2008, p18) as shown in Figure 2.1.



Figure 2.1: The Ottoman Empire as in 1914, during the First War (www.pinterest.co.uk).

In 1916, with the encouragement and support of British Empire, the Governor of Mecca, Hussein bin Ali, started and led an Arabic revolution against the Ottoman Empire with the aim of securing Arab independence and creating a single unified Arab state spanning the Arab territories (Murphy, 2008, p10-22).

The modern Middle East is therefore considered to have started after World War One with the borders of most Middle East countries being established during the 1920s and 1930s (Khoury and Kostiner 1991). In spite of the national borders there are still regions that are dominated by tribal communities living in desert or mountain areas across national borders. Baumann (2013) mentioned that national government and clannish areas were often a cause for local conflicts until the second half of the twentieth century, when regional sovereignty became more accepted and the national governments were able to arrange themselves with the local clans.



Figure 2.2: The Kingdom of Saudi Arabia and neighbouring countries (Centres of Disease and Control Prevention, 2015)

King Abdul-Aziz Al-Saud established the current KSA in 1932. Since when its conversion from a desert country to a modern country has been rapid. As Baumann (2013) stated many Middle Eastern states have experienced revolutionary changes during the past fifty years. The discovery of oil and gas allowed some countries to urbanize and combine improved

infrastructure with improved healthcare and educational systems (Khoury and Kostiner 1991). Nevertheless, most countries on the Arabian Peninsula still face the coexistence of tribal societies and emirs or rulers having autocratic power and veto rights in the legislative processes. As a result, the processes for change in many Middle Eastern countries are often complex and slow. The political spectrum in the Middle East ranges from conservative monarchies like in KSA to societies with democratic structures, parliaments and well-functioning decision processes like Lebanon. During the last few years some countries in the region have faced change initiated by the ‘revolutions’. Still today, there are many unsolved conflicts associated with religious or political worries.

Evidently religion is of great importance in this region. Accordingly, the next sub-section explains the religious streams in the KSA and some characteristics of Islam in more detail. During the management of projects in the KSA, situations may occur when some project stakeholders refuse to work with certain colleagues due to their religion or tribal origin (Khoury and Kostiner 1991).

Saudi National Culture (SNC) is heavily influenced by the various religious streams in the country. The impact of religion and by implication National Culture is critical to this research,

“No matter if religion is considered being a part of national culture, or if it is described as a source for cultural characteristics, it cannot be seen separate from national culture” (Baumann, 2013).

Islam plays a significant role and has a great influence on the working environment, as many religious duties will impact on the daily life of a Muslim. Religious beliefs are a deep part of an individual’s behavior and are often acquired in childhood, as are many aspects of National Culture (Baumann, 2013). While in Western Europe and North America the

cultural customs and the political system mainly have a Christian experience, Islam is the dominant religion in the KSA and many cultural elements of the KSA are strongly associated with the values of Islam and the holy Quran. In addition, the influence of Islam on day-to-day matters is stronger in the KSA than the influence of the Christian religion in Western Europe or North America (Baumann, 2013). As an example, the duty to pray five times a day imposes a pre-defined structure every good Muslim has to respect. Because of this an understanding of the main Islamic values and rules is of importance for project managers and decision makers working in the KSA particularly during the holy month of Ramadan which needs to be taken into account during the project planning process, as it lowers the available working hours significantly.

“Most Muslim countries limit the working hours during Ramadan to less than 8 hours by law.” (Toda and Kanehisa, 2004)

During Ramadan, one of the requirements is fasting (not to eat and drink from dawn to sunset). Muslim workers are therefore tired during the day. Any planned activities need to be significantly reduced in this period as most Muslims will be more active during non-fasting times but wish to rest during a larger percentage of the day. Based on these conclusions, a good rule of thumb may be the reduction of planned time during Ramadan by 50% of the obtainable working hours. For a project running over Ramadan, this has to be reflected in the project program accordingly. As these religious aspects are extremely rooted in SNC, they can be anticipated beforehand. In spite of being a cultural element, Islam cannot be explained by most cultural models, but it is rather a tradition which developed in Middle Eastern culture over centuries. This fact has to be emphasized, as it is clearly a factor that strongly impacts the project delivery in the Middle East but cannot be adequately addressed by the Hofstede framework. The following citation indicates that Islam and the professional

working environment cannot be strictly separated.

'Islam has a deeply rooted concern with the environment from a holistic perspective. There are clear principles to work out in terms of implications for accounting and governance following jihad...' (Kamla and Gallhofer 2006, p.260)

Sometimes it is necessary for non-Saudi project workforces to think differently to manoeuvre around cultural misunderstandings.

'In particular, the fact that political and religious functions are not clearly separated in Middle Eastern societies, this can create high risks for expatriate workers to misunderstand cultural norms, current forms of communication and the way team work can be done, if the individual looks at the Arabic culture with an ethnocentric view from non-Islamic countries.' (Platteau, 2008)

In summary, it is clear that the KSA with a Muslim majority is seriously influenced by Islam, and this should be reflected while working on construction projects in the KSA.

2.3. The Construction Industry in the KSA

Just like in all other successful countries, the construction industry in the KSA plays a vital role in the social and economic development of the nation. In this industry, according to Sweis et al. (2008), a construction project can be termed successful if it starts in good time, follows the planned schedule, and finishes on time and within the estimated costs.

Attarzadeh and Ow (2008) suggest that construction and manufacture are different from each other, the former needs to choose a particular location to build the building and the latter involves mass production of similar items. The major tasks related to the construction process are planning, designing, building and financing. It is seen that any country's construction industry contributes a huge amount to the economy of that country. Druker and

Croucher (2006) stated that almost 6-9% of the (GDP) growth comes from the construction industries especially in the developed countries.

The construction industry contributes towards the development of the employment sector as well; around one million contractor organisations are working in the construction industry of the developed countries (Cappels, 2008). In developing countries, the employment sector is not so evident in the construction industries. Cappels (2008) explained that the private sector in developing countries is smaller compared to developed countries. Along with less investors, developing countries face problems regarding less resources and employability skills.

As a developing economy, the KSA is experiencing rapid change and development in all aspects of life and the construction industry is a significant driver for this change (Halawa, et al. 2012).

'The construction industry in the Middle East represents a significant part of the world's economy. Millions of dollars are spent each year on different construction projects' (Halawa, et al. 2012, p.1)

According to Shash (2012), the construction sector in KSA has improved the quality of its work, and it is regarded as the largest construction sector in the Middle East. Tinnirello (2009) identified that the construction industry is one the most significant parts of the economy in the KSA. The speedy growth of the construction industry in Saudi Arabia is partly due to the increase in the population of the country.

The current expenditure profiles within the construction sector suggest that the Saudi government is putting its focus on education, sanitation, social services roads, sewage systems, security services and the transportation systems (Baumann, 2013). Back in 2008, Cappels (2008) suggested that the focus of the Saudi government should change to health care and the education sector. In 2012, the country observed a sharp increase in the

expenditure on education and the training sector. Under this initiative, the construction of schools, colleges and institutions were included. Similarly, the health and care sectors require the construction of care homes, hospitals, medicare service centres, old person's homes and care homes for children. The construction industry's future is projected to face an even more prosperous development. As indicated in Construct Arabia, (2013) the Saudi construction market is expected to undergo a dramatic revitalisation in the following years. The industry is projected to grow by 35% with the vast majority of projects being sponsored by the public sector. Government expenditure on construction projects is expected to rise to exceed three trillion Saudi Riyal by 2020. The major proportion of the funds is to be spent towards mega projects that are at the moment underway. These projects include the construction of 6 major cities; the most recent of which was the \$86 billion King Abdullah Economic city located 100 km north the city of Jeddah. The city's first construction phase was completed in 2010 and is planned to be fully complete by 2020. Other iconic projects include: -

- \$560 million King Abdullah Sports City that completed in 2014 in Jeddah,
- the Sudair Industrial City with a cost of \$40 billion,
- the \$15 billion University of King Faisal and,
- the \$1.2 billion, 1,007 metres high Jeddah Kingdom Tower that is planned to unseat Dubai's Burj Khalifa tower as the world's tallest building.

40% of the Saudi population is under the age of 14 (Asia today, 2011) which also means that the country needs to construct 1.65 million houses by 2020. This means that investment in the construction sector will increase as never experienced in the Saudi construction market.

In the Middle East, many countries are wealthy but have relatively small population. Saudi Arabia, Kuwait and the United Arab Emirates (UAE) have huge oil and gas reserves (Baumann, 2013) with Saudi Arabia having the largest reserves. Because of this wealth, KSA is able to use these funds to develop infrastructure and a strong social welfare system. It has, however, been identified that, for multiple huge projects that are needed to create a modern infrastructure, the number of local resources are often insufficient.

In addition to having a limited local workforce in the KSA, and in common with many other conservative Middle East countries (e.g. Kuwait, Qatar and Yemen), women are excluded from or have restricted access to not only to business but also to daily life (which includes being part of the workforce). Islamic values see the males as being responsible for work and financial resources whereas women are responsible for children and the well-being of the family. KSA has established many regulations that exclude woman from certain areas of business. The fact that women are still not allowed to drive in the KSA (until after next Ramadan – July 2018) is one example of women being excluded from certain areas of the daily life.

One result of this is that the oil and gas sector has a massive demand for an external (expatriot) workforce. There is also a massive demand for qualified workers and managers in the construction industry.

According to Shash (2012), the construction industry in Saudi Arabia faces a lot of challenges. Some of the main challenges are: -

- Low private capital investment can be the first challenge for the construction industries. The construction sector in Saudi Arabia aggressively needs the investments from the private sector.
- The national contractor base is another challenge for the construction sector. Tinnirello (2009) suggested that the number of contractors in the country is limited.

Due to the limited choice of contractors there is a lack of competition leading to poorer quality and a higher price.

- Political influence is another challenge for the construction sector. Most of the plots allotted for official construction needs to go through the Saudi formalities.
- Project planning and the management of construction projects in KSA are quite weak (Al-Harhi et al. (2015)). The process like market research and employee feedback is discouraged in most developing countries.
- Globalisation is another challenge for the construction industry in KSA. The costs of raw materials, standard of work and the actions taken at the time of risks need to match with the globally accepted attitudes.

In addition, the project teams are normally staffed with resources from countries with low workforce costs and from regions that are close to the KSA. Based on experience many construction projects rely on personnel from Asian countries like India, Pakistan or Bangladesh or North African countries like Sudan, Egypt or Jordan and Yemen in the Middle East. This impression can be confirmed by (Wells, 1996).

'In the early years, construction workers came to the Gulf mainly from other Middle East states - Egypt, Yemen, Syria, Jordan. But from the mid-1970s Arab workers came to be outnumbered by migrants from Asia.' (Wells, 1996, p. 3)

'Most of these huge contracts were let to firms from Europe and the US, and it was these firms who were instrumental in bringing in Asian labour. Originally the main sources of Asian labour were India, Pakistan, Bangladesh and Sri Lanka, the countries of South Asia which were close-by and had long ties with the Gulf countries.' (Wells, 1996, p.3)

In the last few years, KSA has awarded many contracts to international contractors. These overseas contractors are able to raise large project teams and move their staffs out to the country where the project is to be accomplished. In recent years a government concern is to avoid a growth of the population with the workforce from Africa and Asia was one goal of government, as they wanted to avoid cultural influences by this workforce that often outnumbered the own population in the country (Baumann, 2013). To keep control over projects, KSA has laws and regulations that require all joint venture projects to be executed by a company whose local partner holds a majority. There is also a condition to employ a local Saudi manager acting on behalf of the organisation to obtain the required business licenses. As a result of these regulations, the project guarantor, sponsors and leading investors are often Saudi managers belonging to one of the country's influential and wealthy families who are investing in the construction sector; joint ventures with foreign companies. Saudi managers and owners are therefore the main stakeholders in construction projects in KSA. This work suggests that previous researchers indicated a necessity for the KSA to understand the influence of SNC on construction projects; to understand if construction projects face delays caused by dimensions of National Culture.

2.4. Delay in Construction Projects in KSA

This section explains the definition of delay. Categories of delays in construction projects are described and examples are given and using Critical Path Method (CPM) in projects.

2.4.1. Definition of Delay

As this research focuses on the issue of delays and National Culture, it is essential to understand the definition of the term delay (and that of time overrun). From the research reviewed, it can be clearly observed that the terms delay and time overrun are used interchangeably. For the purpose of the accuracy of this research, it is important to

understand the definition of each term and also differentiate between them if there is essentially any variance. Prior to defining the terms used (in the context of the construction sector) these terms should be looked at linguistically. The Oxford Dictionaries, (2013) defines overrun as:

“Continue beyond or above an expected or allowed time or cost”

Additionally, from a review of construction literature Table 2.1 shows some of delay and time overrun definitions in the context of the construction industry (sorted by chronology).

Table 2.1: Sample of Delay and Time Overrun Definitions.

Author	Delay and Time Overrun Definition
O'Brien (1976)	Delay in the construction refers to a time overrun either beyond the date that the parties have approved upon for the project delivery or beyond the date of the contract.
Mansfield, et al. (1994)	Also, delay can be defined as the condition or action, which results in late completion of the project.
Chan and Kumaraswamy (1995)	They define delay as "execute later than intended planned, or particular period or later than specific time that all the concerned parties agreed for construction project".
Bordoli and Baldwin (1998)	A delay is anything that leads to impedance of the contractor's ability for maintaining the project a schedule
Elinwa and Joshua (2001)	They define project time overrun as the laps between the decided planned completion date and the actual completion date of the project.
Zack (2001)	Delay can be defined as an event or act that leads to extension in the required time for performing or completing work of the contract.
Trigunarsyah (2004)	It suggests that a project time overrun if an extension of time beyond the planned completion dates.
(Assaf and Al-Hejji, 2006)	He provides a definition from the owner view, delay refers to the loss of revenue because of non-availability of facilities of production as well as rentable space or a reliance on current facilities.
Trauner, et al. (2009)	They indicate that a delay in construction projects has happened if the task of work is not completed timely in accordance of the scheduled plan and a project is delayed or time overrun if an extension of time to the overall project duration has occurred.
Bramble and Callahan (2010)	They defined delay as " <i>the time during which some part of the construction project has been extended or not performed due to an unanticipated circumstance</i> ".
Ramanathan et al. (2012)	They define delay as " <i>the time overrun either beyond completion date specified in a contract or beyond the date that the parties agreed upon for delivery of a project</i> ".

From Table 2.1 above, O'Brien (1976), Mansfield, et al. (1994), Elinwa and Joshua (2001), Zack (2001) and Trigunarsyah (2004) focused on the delivery time of the project as in contract without addressing the delays that occur during the project, while Chan and Kumaraswamy (1995) define delay as "execute later than intended planned, or particular period or later than specific time that all the concerned parties agreed for construction project" and Ramanathan et al. (2012) define delay as "the time overrun either beyond completion date specified in a contract or beyond the date that the parties agreed upon for

delivery of a project”. Those two definitions mentioned the agreeing of all parties as condition although some tasks do not require the approval of all parties.

Bordoli and Baldwin (1998) describes delay as anything that leads to impedance of the contractor’s ability for maintaining the project a schedule. This definition is limited to the obstacles facing the contractor only without consideration to the other parties or before the delivery of the project to the contractor. While (Assaf and Al-Hejji, 2006) provides a definition from the owner view, delay refers to the loss of revenue because of non-availability of facilities of production as well as rentable space or a reliance on current facilities.

The closer definition to this research aim and objectives is the definition given by Trauner, et al. (2009) where they indicate that a delay in construction projects has happened if the task of work is not completed timely in accordance with the scheduled plan and a project is delayed or time overrun if an extension of time to the overall project duration has occurred. Bramble and Callahan (2010) defined delay as “the time during which some part of the construction project has been extended or not performed due to an unanticipated circumstance”. This definition is limited to unanticipated circumstance.

For this research, delay in construction projects can be defined as ***“the situation when a task or activity, process or project is executed over a period ending at a time beyond the planned end time”***. It can be concluded that delay is one of the key problems (along with over-expenditure and poor design/construction quality) that must be avoided by the construction stakeholders in infrastructure projects. In following subsection, the categories of delays are explained and examples offered.

2.4.2. Categories of Delay in Construction Projects

As this study seeks to explore the influence of Saudi key stakeholders’ attitudes regarding delay in construction projects, it is considered necessary to explain categories of delays that

occur in construction projects. It can be said that delays happen due to either direct or indirect actions of construction stakeholders or because of the external factors that are uncontrollable. Several other studies classify delays into different categories as per their nature or by associating them with the concerned party such as: owner related, consultant related, contractor and sub-contractor related, project manager related, engineering related, and design related etc. (Marzouk and El-Rasa, 2014). According to (Ibironke et al., 2013; Bramble and Callahan, 2010; Trauner, et al., 2009) construction delays are categories as critical or noncritical, excusable or non-excusable, compensable or non-compensable and concurrent.

2.4.2.1. Critical vs. Non-critical delays

Woodward (1997) explains that the concept of critical delays stems from the Critical Path Method of scheduling (CPM), whereby delays that have an effect on the project completion date or milestone date are known as critical delays. On other hand, delays that do not have an effect on the project completion date or milestone are referred to as non-critical delays. Woodward (1997) shows that the determination of critical activities is a primary element of CPM scheduling; all projects whatever type of scheduling used have will have critical activities. If a delay occurs to critical activities, the project or milestone in it will encounter time overrun. Regardless to how a project and its schedule are analysed, there is a one dominant standard to identify a delay by considering the information available when the delay occurred (Trauner, et al. 2009).

Thayer (1996) stated that precursors of what came to be known as Critical Path were developed and put into practice by DuPont between 1940 and 1943 and contributed to the success of the Manhattan Project. CPM is commonly used with all forms of projects, including construction, aerospace and defence, software development, research projects, product development, engineering, and plant maintenance, among others. Any project with

interdependent activities can apply this method of mathematical analysis. The first time CPM was used for major skyscraper development was in 1966 while constructing the former World Trade Center Twin Towers in NYC (Weaver, 2006). The commercial software developers have contributed to the ease of application of the CPM technique in the construction industry such as Primavera, Microsoft and Asta.

2.4.2.2. Excusable vs. non- Excusable delays

According to Walker, et al. (2008) all delays in a project are categorised as either excusable or non- excusable. Generally, excusable delay is the delay that results from unexpected causes that are out of the contractor's control. These delays are usually based on specifications in general common provisions in construction industry such as those resulting from floods, client-directed changes to the scope of work and acts of God. When delays are analysed, it can be decided whether the delay is excusable or not by reference to the construction contract, and any decision regarding delays should be taken within the context of that particular contract. Trauner, et al. (2009) discusses that a well-drafted contract should define the factors that justify granting time extension to the completion date of the project. For example, some contracts may not consider bad weather conditions as valid factor for any time extension.

On other hand, non-excusable delays are the delays that result from expected causes and are within a contractor's control. Low performance by subcontractors, faulty contractor/subcontractor workmanship and late delivery by suppliers are examples of non-excusable delays (Walker, et al. 2008). As mentioned in excusable delays, the project contract is the controlling document that defines a delay being excusable or non-excusable. For example, some contracts may consider late delivery by suppliers excusable where the contractor is able to prove that the order was placed in time but the order was not able to be delivered as a result of situations out the control of the contractor. Such situations may be an

accident happening to the delivery vehicle while on its way to delivering the materials; some contracts may totally not accept these delays transferring their total risk to the contractor. Thus, all stakeholders must make sure that the contract is clear and there are no ambiguities. Similarly, and importantly, before signing the contract, the contract must define excusable or non-excusable delays and must be fully understood by all project stakeholders (Trauner, et al, 2009).

2.4.2.3. Compensable vs. Non-compensable delays

Compensable delays are the ones that allow the contractor extended time in addition to compensation. Regarding to this definition, it can be said that it is just excusable delays that can be compensable. While, non-compensable delays signify that a delay of an excusable nature might have occurred, the contractor does not receive additional compensation as a consequence of the excusable delay. Additionally, a non-excusable delay permits the contractor neither time extension nor additional compensation (Winch, 2004).

According to Walker, et al. (2008) a delay caused by weather is compensable or not, mainly based on the terms of the contract. In many cases, the contract defines the types of delays that are non-compensable whereby the contractor may receive time extension but no additional money. For example, normally in the contracts of the federal government of the USA acts of God, fires, unexpectedly adverse weather cases and floods are defined as excusable but non-compensable delays. But, some delays are defined excusable and compensable, such as client-instructed changes and late delivery of the project site. Some contracts define the compensability in a more restrictive method, whereby the use of no-damage-for-delay clause is used. However, the implementation of this type of clause has often been doubtful in court due to its broadness. For this reason, it is essential that all stakeholders clearly understand the nature of the compensability of delays (Trauner, et al., 2009).

2.4.2.4. Concurrent delays

Concurrent delays are that happen when two independent delays occur at the same time, these can happen to or by one or more stakeholders to a construction project (Trauner et al., 2009). Regardless to the method of scheduling used, authors indicate that all projects will have critical paths. There is a lack of understanding in the construction industry about concurrent delays and there are only few contracts that clarify definition of concurrent delays and the way in which such delays have an effect on contractor's entitlement to receive further compensations, extension of time or responsibility for damages (Trauner et al., 2009).

2.4.3. Role of Construction Project Management in the avoidance of Delay

To achieve greater competence and performance, the application of project management techniques has become an integral activity in all business and industries. The definition of a project is always similar although the management of projects shows significant differences depending on the method or tactic practitioners follow.

'A project is a temporary endeavor to create a unique product, service or result.'

(PMI, 2008, p.5)

This definition shows that compared with repetitive work, which is typically part of organisation processes, the contents of a project are unique to the organisation where the project is carried out. Furthermore, a project always has a definite start and end (PMI, 2008).

Thus a project can be defined as a goal-oriented temporary activity, where limited resources like time and labour are used in a temporary setting. Another definition is:

'A project is a complex, non-routine, one-time effort limited by time, budget and resources, and performance specifications designed to meet customer needs' (Gray and Larson, 2002, p.5)

Project work is an integral part of each organisation or company. New strategies or changes inside the organisation are often performed by working on projects, so project work is a necessary part of an organisation which has to acclimatise to new market needs and changing requirements. During the last decades' new methods and tools for the project management practice have been applied.

'Management by projects has become a powerful way to integrate organizational functions and motivate groups to achieve higher levels of performance and productivity.' (Morris, 1994, p. 18)

One of the founders of modern project management methods was Henry Gantt, who developed a bar-chart-based (Gantt bar chart) project management technique in the 1910s (Richman, 2002). His chart is still used today as a tool to visualise and control complex project plans. More project management techniques and instruments have been developed when the needs of the defence and aerospace industries were the main driving forces of developing ways to manage and handle complex projects. In the 1950s, the Critical Path Method (CPM) and the Program Evaluation and Review Technology (PERT) approach (Newell, 2002) were developed in the United States for comprehensive military projects. These two techniques became part of the standards for project management during the next 20 years. Since then the need for new approaches and methods for working on global or culturally diverse projects increased (Baumann, 2013). (Baumann, 2013) mentioned that "besides clear project management processes the need for room to incorporate easier and softer tools into project management stages, was perceived by project managers".

'Traditional methods capture only hard quantitative data. It has become clear that softer ideas must also be included in project models, if they are to be a useful representation of the real project. Soft system methods and soft operational research

methods have proved useful. Some of this data can be used in some holistic modelling techniques, particularly system dynamics' (Williams, 1999, p.272)

Project management has become skills and qualifications for successful project delivery, irrespective of the specific industrial sector. Nowadays, all sectors cannot survive without being capable of managing complex projects. It becomes more important to establish project management skills within one's own organisation to react to customer needs in a way that leads to successful delivery of huge projects. One part of project management is stakeholder management; the concept of stakeholder management is becoming important in many industries sectors. Stakeholders' management in construction projects is a relatively new concept in the KSA and in the Middle East with a lack of research addressing the subject. This is particularly related to the construction sector as construction projects are handled and conducted by a few major stakeholders. To realise the concept of stakeholder management as a business activity helps establish the backgrounds of stakeholders in construction sector. In this term, a business

'... is about how customers, suppliers, employees, financiers (stockholders, bondholders, banks, and so on), communities, and managers interact and create value'' Freeman al et. (2011)

In construction projects, this means adding value to all stakeholders throughout the Project Life Cycle (PLC) in line with stakeholder's goals, which may include social, economic, environmental, technical and financial benefits. As per Freeman (1984),

'...a stakeholder in an organization is any group or individual who can affect or is affected by achieving the organization's objectives''.

A definition was provided by Phillips (2003); who defined stakeholders as:

'Parties contributing to and/or being affected by a decision-making process'.

However, the quality and accuracy of a stakeholder definition is critical for a suitable analysis process where relevant key stakeholders are identified (Vos and Achterkamp, 2006).

Other definitions went deeper,

“Stakeholders are identified by their interests in the corporation, whether the corporation has any corresponding functional interest in them.” (Donaldson and Preston, 1995).

Here, the functional interest of a corporation is with internal stakeholder as much as the external one. Furthermore, the corresponding functional interests manifest on financial or social objectives of a company or an individual. Managers need to remember that organizations regularly set objectives as part of their strategic planning where stakeholders are identified.

The extent to which the project objectives and the stakeholders’ aims are aligned creates possible uncertainties, such as schedule deviation and conflicting stakeholders’ interests that project managers need not to underestimate. Construction stakeholders can be categorized as primary and secondary. Primary stakeholders include clients, consultants, and contractors who are considered as directly connected to the project while Secondary stakeholders include investors, suppliers, employees, sub-contractors, third party, banks, governmental authorities, pressure groups, trade associations, and communities. Those have indirect connection to the project. This study is limited to key stakeholders in the KSA construction sector; those who engage with the project throughout its life cycle to achieve its aims and are most influential; clients, consultants and contractors.

It is essential before discussing the role of construction project managers in avoiding delays and therefore delivering projects timely, that the definition of Construction Project Management is agreed. The Chartered Institute of Building (CIOB) defines Construction Project Management as:

“The overall planning, coordination and control of a project from inception to completion aimed at meeting a client’s requirements in order to produce a functionally and financially viable project that will be completed on time within authorized cost and to the required quality standards” (CIOB 2011).

From the above definition, it can be highlighted that delivering projects on time is one of the main aims of construction project management and stakeholders, and that construction project managers play a main role in the avoidance of delays. In addition, it is important to understand that time, cost and quality have an interrelationship and they interact with each other. Woodward (1997) advises construction project managers to manage such interaction to achieve an optimum solution in the project. The interaction of time, cost and quality is shown in Figure 2.2, and can be described as follows:

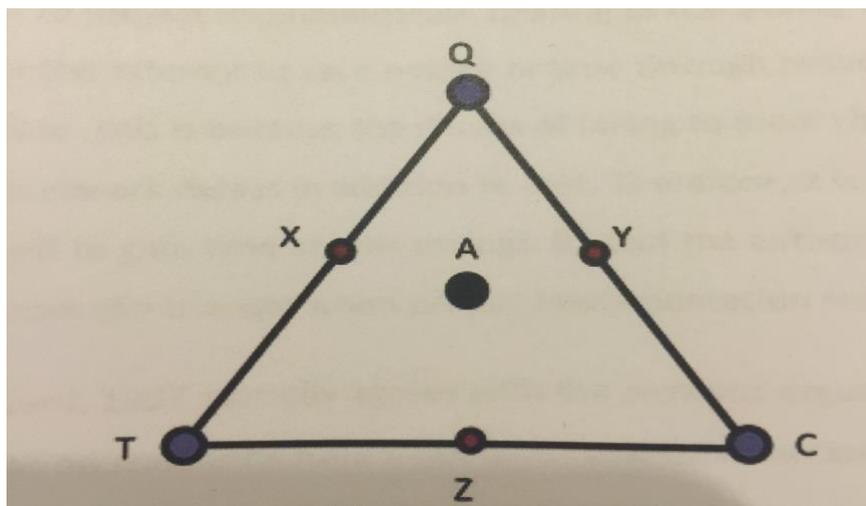


Figure 2.3: The interaction of time, cost and quality in construction project (Woodward, 1997).

- At point Q, there is a total priority to quality
- At point T, there is a total priority to time
- At point C, there is a total priority to cost
- At point A time, cost and quality have the same priority

- At point X time and quality are prioritised
- At point Y cost and quality are prioritised
- At point Z time and cost are prioritised

Realistically, any project will always be somewhere inside the triangle where the proximity to point Q, T or C relies on the project's significance. At the beginning of any project, it is important that project managers assist clients to identify where the project is placed inside the triangle (Winch, 2004). Ritz and Levy, (2013) suggest that the factors of cost, time and quality do not naturally interact. They basically point out that the attempt to save money or time through reducing concern on quality is just unfeasible. This is because the results of failing to meet the specified standards will usually result in rework delays in addition to cost. Therefore, it is argued that quality must not be traded off to gain time or cost savings. By that the authors suggest taking out the quality factor from the triangle when project implementation starts.

Woodward (1997) indicates that to assume that delays can be avoided by merely focusing on construction work planning and scheduling in the operational level, as is the case in many publications where time management is restricted to programming has proved to be wrong. The author says that it has now been realised that programming techniques are useful tools but are not guarantee of success in avoiding delays. Another study by Abisuga et al. (2014) in Nigeria found that time overrun, disputes, cost overrun, litigation, arbitration and project abandonment were the major effects of delay in construction projects.

Systems Thinking

Ritz and Levy (2013) suggests that the key to successful project management is thoroughness where all factors should be given equal importance once they have been set because focusing

less on one would result in the failure of another. In this context, given that thoroughness is the key to successful project management, systems thinking approach is particularly required to deliver projects timely.

According to (Arnold, et al. 2015) systems thinking is an approach to solving problems by looking at them as part of an overall system rather than reacting to particular parts, outcomes or events and potentially contributing to the development of unintended consequences. The systems thinking approach contradicts traditional methods of linear cause and effect relationships by looking at the whole complex of bidirectional interrelationships in a project. So, instead of analysing a problem in relation to an input and output, the whole system of inputs, processes, outputs, feedback and controls are looked upon. In doing that, it is believed that the larger image will provide more useful results than traditional methods and will therefore allow the project to view changes as a continuous process. Putting that in the context of construction project, Aiyentant, et al. (2011) argue that project time can only be managed effectively with a holistic understanding of the construction project's delivery taking the avoidance of delays into account all the way from strategic, tactical to operational planning. Putting that in a project implementation context, in the tactical planning tier, an error in health and safety planning and control can result in delays. Similarly, in the strategic planning tier, an error in the funding strategy can also result in delays. For this reason, a holistic approach to project management dealing with the project as a system where all the parts of the project are considered would be the only solution to avoiding delays occurring within the project.

In summary of discussion of Section 2.4, it is essential to show that delays can occur to certain tasks during a project or to the whole project where the planned and agreed completion date has been extended. Almost, all projects will have critical paths and delays regardless to the scheduling method used. Wherever more than one critical delay occurs at

the same time but on more than one activity those delays are considered concurrent. However, in the situations of excusable, non-excusable, compensable and non-compensable delays construction, the signed contract would be the only reference to determine such type of delay. Well-drafted contracts should always have adequate and sufficient details on defining delays specific to the project. All stakeholders should have carefully read and understand the contracts and they should be without any ambiguities.

2.4.4. Studies about Delay in Construction Industry in KSA

In the study of delay in projects, Saudi Arabia is ranked first among the Gulf Cooperation Council (GCC) countries by total number of publications and number of journal articles as well. Published articles investigated building, general construction, oil and gas, and pipeline projects. General construction was the most frequently studies sector with four articles published.

The first paper was published in 1995 and investigated large building projects in a survey of 56 main causes of delay. It analyzes the results using an importance index, and then tests the correlation factor between two groups on importance ranking (Assaf et al., 1995). The paper outlines the causes of delay in large building projects in KSA and their relative importance. A survey of a randomly selected sample of twenty four contractors, fifteen architectural/engineering firms, and nine clients. The questionnaire included 56 causes of delay. The delay factors were grouped into nine major groups. The level of importance of the causes and the groups were measured and ranked by their importance index for contractors, clients and architectural/engineering firms. It was found that contractors, architectural/engineering firms, and clients agree on the ranking of the individual delay factors. It was also shown that contractors and architectural/engineering firms substantially agree on the ranking of the groups of delay factors, whereas contractors and owners, and architectural/engineering firms and clients do not agree. It was shown that the financing

group of delay factors was ranked the highest by all three parties and that environment was ranked the lowest.

Al-Khalil and Al-Ghafly (1999) studied causes of delay in public utilities projects in Saudi Arabia in a survey of 60 main causes of delay. It was debated that earlier studies did not consider granular analysis such as the degree of severity and probability. The study employed an importance index measured by identifying severity and probability of each delay cause and ranked causes based on calculated factors; then a correlation between groups ranking was measured using Spearman's correlation.

Assaf and Al-Hejji (2006) directed their research efforts toward large construction projects in the eastern province of Saudi Arabia. A survey questionnaire with 73 identified causes was conducted. The reported findings are that 70% of studied projects were delayed with an average overrun of 10% to 30% of the original duration and the significant cause reported by various stakeholders was change orders.

Al-Kharashi and Skitmore (2009) identified 112 causes of delay from existing research literature and used them as the basis of survey questionnaire. The questionnaire was designed on five-point scale ranging from 'No effect' to 'A lot of effect'. Participants were asked to respond with two values for each cause to identify the current situation and what it should be in future.

Albogamy et al. (2012) administered a survey questionnaire of 63 delay factors and used an importance index to rank them. The importance index calculation was based on severity index and probability. The study was conducted on five cities in Saudi Arabia to reduce bias; Riyadh, Jeddah, Dammam, Abha, and Tabuk.

Mahamid (2013) explored building owners' perspectives on causes of delays for public construction projects in Saudi Arabia. Twenty-two public owners participated in a questionnaire with 35 identified causes of delay. Results from the study suggested the top

reasons for public project delays are: award of bid to the lowest price, poor communication and coordination, poor site management, delay in payment processing, and low labour productivity. The remaining articles considered pipeline, oil and gas projects.

Many constructions researchers confirm reoccurring project delays on Saudi projects. Looking at Middle East projects overall a good starting point is a study by Sweis et al., (2008) analysing the construction industry in the Middle East.

'Recent events in the Middle East region coupled with restructuring of economies, emergence of the World Trade organization and the rising price of oil are expected to yield an unprecedented growth in construction activities [...]. One major question of concern however arises: what are the major causes of delays in the Jordanian construction industry and their relative importance?' (Sweis et al., 2008, p.665).

A meta-level analysis of study findings by Sweis (2008) summarizing the main causes for construction project delays in the Middle East. It is interesting that National Culture has not been mentioned, however the findings emphasize that changes orders, slow decision making, financial difficulties of contractors, insignificant supervision and other difficulties cause project delays. Sweis did not discuss the underlying root causes for these characteristics or suggest links to NC, but some of the identified causes may be related to cultural characteristics.

Another analysis of project related problems was carried out by Assaf and Al-Hejji (2006), who investigated 76 projects in Saudi Arabia. Their research found evidence that project delays in the Saudi construction industry were regularly caused by change orders. Abdelsalam et al. (2009) who examined the Dubai construction industry demonstrated that project failures were due to weak project quality management and assessed these as adding 7% to total project costs. Lampel's research (2001) looked into the overall project setup and discussed the frequent involvement of Engineering Procurement Construction (EPC)

corporations in the Middle Eastern and African (MEA) construction industry. These companies have a business model to move into a region with a team of project managers and project resources. Their goal is to deliver quick results in large-scale construction projects. Based on a case study by Stone and Webster (US-based EPC Company), the authors analysed advantage and loss by region and came to the conclusion that during 1999 the company had a huge contract backlog, but operating loss of \$59.3 million. Projects in the (MEA) region, contributed largely to the loss with \$170 million. One of the recognized causes for this finding was the absence of cultural competences among their staff. An additional reason stated by Lampel (2001) was the weak capability to manage various project teams. Lampel (2001) highlights that project related problems are caused by cultural misunderstandings. This finding suggests that ethnocentric attitudes to project management increase the probability of a project delay or project failure.

Although the work of Ren et al. (2008) is not focusing on KSA, it has been identified certain causes of delay that could be applicable to KSA that no other research has identified. These include Islamic culture (Sharia Law), visa application procedures, traditional procurement methods, poor dispute resolution mechanism, over commitment of local contractors, lack of qualified interpreters, no worries to retain long-term business relationships and poor safety tradition.

Similarly, the work of Loughborough University and UMIST (2003) also identified multicultural environment and long working hours among other causes of delay. These could be associated with the KSA construction industry because it is a well-known fact that it employs foreign labour force from various developing economies that take on longer hours to earn more for repatriation.

Based upon all the above literature review, a comprehensive list of the causes of delay in KSA has therefore been generated as shown in Table 2.2.

Table 2.2: Summary of causes delays in KSA.

	Causes of Delay	Authors							
		Assaf et al. 1995	Al-Khalil & Al-Ghafly 1999	Assaf & Al-Hejji 2006	Al-Kharashi & Skitmore 2009	Albogamy et al. 2012	Mahamid 2013	Ren et al. 2008	Loughborough University and UMIST (2003)
1	Shortage of construction material.	X	X	X	X	X			
2	Materials changes in types and specification during construction.	X	X	X	X	X	X		
3	Slow delivery of materials.	X	X	X	X	X			
4	Damage of materials in storage.	X		X	X				
5	Delay in the special manufacture of building materials off KSA or late selection of finishing materials	X		X	X		X		
6	Manipulation of suppliers						X		
7	Changes in materials prices		X		X	X	X		
8	Late procurement of materials			X	X				
9	Material quality problems					X			
10	Shortage of labour.	X	X	X	X				
11	Low skill of labour.	X	X	X	X		X		
12	International workforce with dissimilar religion, tradition, beliefs, values and cultural background	X		X	X			X	
13	Personal conflicts among labour			X	X				
14	Labour cost						X		
15	Equipment failure.	X	X	X	X				
16	Equipment and tools shortage.	X	X	X	X	X			
17	Unskilled Operators.	X		X	X				
18	Low productivity level of labour			X	X	X			
19	Shortage of technical professionals in the contractor's organisation		X		X				
20	Poor qualification, skills and experience of the contractor's technical staff assigned to the project		X		X	X	X		
21	Slow delivery of equipment.	X							
22	Low equipment productivity.	X		X	X		X		
23	Shortage of supporting and shoring installations for excavations		X		X				
24	Inadequate equipment used for the works		X	X	X				
25	Difficulties in financing by contractor during construction.	X	X	X	X		X		
26	Delays in Contractors' progress payment by owner.	X	X		X				
27	Cash problems during construction.	X	X		X	X			
28	Problems between contractor and sub-contractors with regards to payments		X		X				
29	Delays in sub-contractors' work			X	X	X			
30	Frequent change of sub-contractors			X	X				
31	Delay in progress payment by the owner		X	X	X	X	X		
32	Unclear and inadequate details and deficiency in drawings			X		X			
33	Delay in producing design documents			X		X	X		
34	Complexity of project design			X					
35	Level and number of competitors						X		
36	Change design and orders	X	X	X		X	X		
37	Design errors made by designers (due to unfamiliarity with local conditions and environment)	X	X	X		X	X		
38	Slow preparation of change orders by the contractor		X			X			
39	Delay in issuance of change orders by the owner		X		X				
40	Late in revising and approving design documents by owner or consultant			X	X	X			
41	Foundation conditions encountered in the field	X		X					
42	Unavailability of utilities in site (e.g. water, telephone,)			X					
43	Mistakes in soil investigation	X	X	X		X			
44	Water table conditions on site	X		X					
45	Geological problems and differing site conditions	X	X	X		X			
46	Obtaining permits from Municipality	X	X	X	X	X			
47	Issues in obtaining work permits	X	X					X	
48	Excessive bureaucracy in project owner operation	X	X		X				
49	visa application procedures							X	
50	Islamic culture (Sharia Law)							X	
51	Multicultural environment							X	X
52	Local rules, regulations and customs		X					X	
53	Dispute resolution mechanism							X	
54	Traditional procurement methods		X	X				X	
55	over commitment of local contractors							X	
56	Spoken language			X				X	
57	Lack of qualified interpreters							X	
58	Lack of communication or information sharing		X	X				X	
59	Unfamiliar local environment			X					
60	No worries to retain long-term business relationships							X	

	Causes of Delay	Authors							
		Assaf et al. 1995	Al-Khali & Al-Ghaffly 1999	As saf & Al-He jji 20 06	Al-Kharas hi & Skitmore 2009	Albogamy et al. 2012	Mahamid 2013	Ren et al. 2008	Loughborough University and UMIST (2003)
61	Building codes used in the design of the project	X							
62	Late preparation and approval of shop drawings	X		X	X	X			
63	Waiting for sample material approval	X			X	X			
64	Delay in the approval of the contractor submissions by the engineer		X						
65	Preparation of scheduling network and revisions by consultant while construction is in progress	X							
66	Lack of training personnel & management support to model the construction operation	X							
67	Lack of database in estimating activity duration and resources	X							
68	Low judgment and experience of the involved people in estimating time and resources and contractors staff	X		X	X				
69	Project delivery systems used (PCM, Design-Build, general contracting, turnkey .. etc.	X	X	X	X	X			
70	Hot weather effect on construction activities	X	X	X		X	X		
71	Rain weather effect on construction activities	X	X	X		X	X		
72	Insufficient available utilities on site or delay in providing services in site	X	X	X		X			
73	Delay to finish and deliver the site to the contractor by the owner		X	X	X	X	X		
74	The conflicts and relationship between different sub-contractors' schedules in the execution of the project	X		X	X				
75	The conflict between contractor and other parties	X		X	X	X			
76	Uncooperative owners	X	X		X	X			
77	Slowness of the owner decision making process	X	X	X	X	X			
78	Interference by the owner in the construction operation		X		X				
79	Conflict The joint-ownership of the project	X		X	X				
80	Conflict between consultant and design engineer			X	X				
81	Poor organisation of the contractor or consultant and internal problems	X			X				
82	Poor and shortage of qualification of consultant engineer's staff assigned to the project		X	X	X	X			
83	Difficulty of coordination between various parties (contractor, sub-contractor, owner and consultant) working on the project	X	X	X	X	X			
84	Insufficient communication between the owner and designer in design phase	X	X						
85	Poor communication by the contractor with the parties involved in the project		X	X	X	X	X		
86	Owner's poor communication with the construction parties and government authorities		X		X				
87	Owner's failure to coordinate with the government authorities during planning		X		X				
88	Unavailability of professional construction management and administrative personnel	X			X		X		
89	Ineffective contractor head office involvement in the project		X		X				
90	Inadequate early planning of the project	X	X			X			
91	Inspection and testing procedures used in the project	X	X	X	X				
92	Errors committed during field construction at job site	X				X			
93	Application of quality control based on foreign specification	X	X		X				
94	Ineffective control of the project and controlling sub-contractors by general contractors in the execution of work	X	X		X	X			
95	The availability of financial incentives for contractor to finish ahead of schedule	X		X	X				
96	Ineffective delay penalty		X	X	X				
97	Ineffective planning and scheduling of project by contractor			X	X	X			
98	Understanding the culture of staff	X		X		X			
99	Long working hours							X	X

Continued

	Causes of Delay	Authors							
		Assaf et al. 1995	Al-Khalil & Al-Ghafly 1999	Assaf & Al-Hejji 2006	Al-Kharashi & Skitmore 2009	Albogamy et al. 2012	Mahamid 2013	Ren et al. 2008	Loughborough University and UMIST (2003)
100	Negotiations and obtaining of contracts	X			X				
101	Legal disputes between various parties in the construction project.	X		X	X		X		
102	Social and cultural factors	X	X	X		X	X		
103	Traffic control regulation practiced in the site of the project	X	X	X					
104	Accidents during construction	X		X					
105	Delay in mobilization		X	X	X				
106	Loose safety rules and regulations within the contractor's organisation		X		X				
107	Improper technical study by the contractor during the bidding stage		X		X				
108	Insufficient data collection and survey before design			X					
109	Delay of field survey by the contractor		X		X				
110	Delay in the preparation of contractor submission		X		X	X			
111	Suspension of work by the owner		X	X	X				
112	Changes in the scope of the project and delay in approving the changes in the scope by consultant		X	X	X	X			
113	Clarity of scope of change or scope of work and inadequate definition of substantial completion			X	X				
114	Original contracts duration is too short		X	X	X	X	X		
115	Type of construction contract				X				
116	Government tendering system requirement of selecting the lowest bidder		X	X	X	X	X		
117	Changes in Government regulations and laws		X	X		X	X		
118	Work interference between various contractors		X						
119	Slow response from the consultant engineer to contractor inquires		X						
120	Misunderstanding of owner's requirements by design engineer			X					
121	Variations in quantities				X				
122	Stakeholders' personality				X				
123	Rework due to errors during construction			X	X	X	X		
124	Other work in hold by contractor				X				
125	Increase in contractor's overheads				X				
126	Increased number of projects				X	X	X		
127	Poor site management and supervision			X	X	X	X		
128	Poor resources management						X		
129	Replacement of key personal related				X				
130	Inadequate contractor's work			X	X				
131	Frauds				X				
132	Ineffective work-break down structure				X				
133	Inflexibly and trust			X	X	X			
134	Un-use of advanced engineering design software			X					
135	Non-utilization of professional construction contractual management					X	X		
136	Breach of contract by the contractor or owner					X			
137	Delay in giving instructions					X			
138	Problems with neighbours					X			
139	Additional work					X	X		
140	Economic conditions local and global					X	X		
141	Owners' lack of experience in construction								
142	High interest rates by bankers						X		
143	Poor relationship between managers and labours						X		
144	Project location						X		
145	Unreasonable project time frame						X		
146	Cultural clash among parties		X	X					
147	Blame-culture (conflict due to evade responsibility)		X	X					
148	Engaging several small contractors		X	X					
149	Non-corporation from local residents	X	X						
150	No challenge to authorities		X						
151	Centralised decision making		X	X					

Continued

2.5. Summary and Conclusion

This chapter establishes Saudi Arabia as a country where religion and National Culture have a significant influence on business activities including construction projects. From an economic perspective Saudi Arabia has a lack of expertise to manage industrial development taking place but has abundant financial funds. This chapter demonstrated that the construction industry faces many problems such as delays, communication problems and political influence; also this chapter reveals that delay in construction projects is a main challenge in construction sector in Saudi Arabia. Evidence suggests that some of the problems identified are related to environmental factors, but many researchers have clearly shown that cultural factors impact on construction projects in Saudi Arabia. It is clear that National Culture effects attitudes but there is no research that discusses its effect on the attitudes of stakeholders. This chapter has explained how delays occur in Saudi construction projects in Saudi Arabia with evidences that construction projects have been effected by National Culture, but we need to know which dimensions of National Culture effect and how.

Based on what has been discussed in this chapter, the next chapter provides discussions on national culture constructs and attitudes, followed by an analysis of research discussing the impact of National Culture (NC) on a construction project and the attitudes of stakeholders towards delays.

Chapter 3. National Culture and Attitude

3.1. Introduction

The previous chapter (as a part of the literature review) positioned the thesis within its study context and reviewed the history of the KSA and project types in the country. This chapter sets the foundation for the discussion about National Culture (NC) constructs and attitudes, followed by an analysis of research discussing the impact of National Culture (NC) on a construction projects and the attitudes of stakeholders towards delays. As this research is focused on the intersection of National Culture (NC) and construction projects, this rational sequence for the literature review is designed to create a step-by-step understanding of underlying theories regarding National Culture (NC), attitude, delay and construction projects including a summary of the existing study knowledge gaps.

Based on the discussion of research results concerning delay and construction projects in the KSA in Chapter 2, the following keywords framed the search process to help identify relevant sources related to the overall research context:

Construction Project, National Culture, Saudi Arabia, Project Delay, Attitudes, stakeholders.

Several combinations of these keywords and similar search strings were applied on several scientific search engines such as ProQuest, Science direct, Google scholar and on the University of Brighton library databases. Defining appropriate keywords is a key task in finding publications contributing to the study objectives and aim. During the literature review, key words were recognised and research results were collected to structure the review development.

In the conclusion to this chapter there is a summary of the key findings for the related research objectives. And the final research questions have been developed from the review and discussion in the context of this literature.

It is noteworthy that most of the retrieved secondary sources discussing this subject have been published since 2000. This indicates that the impact of NC on construction projects is a recent research stream. Another finding is that no publications were identified which analysed the KSA in the context of stakeholders' attitudes. This clearly shows a knowledge gap, where this research can provide a contribution. Furthermore, there are relatively few publications relating NC dimensions within the discipline of construction projects. There is therefore a potential second gap where this thesis can contribute. Other authors highlighted this need to present more studies in the area (e.g. Shore and Cross, 2005).

'While no study has specifically identified and linked cultural dimensions with project management issues, there have been a few studies that have addressed the cultural issue.' (Shore and Cross, 2005, p.56)

Eriksson et al. (2002) wrote:

'While there have been many studies that address culture's role in management, there is very little literature addressing culture's role in the project management process.' (Eriksson et al., 2002)

3.2. National Culture

To understand National Culture and its impact on construction projects, it is necessary to start with one basic question: *What is culture?*

Culture is an extremely difficult term to define. In 1952, the American anthropologists, Kroeber and Kluckhohn, reviewed concepts and definitions of culture, and collected a list of

164 different definitions Bodley (1994). Apte (1994: 2001), writing in the ten-volume Encyclopaedia of Language and Linguistics, summarized the problem as follows:

'Despite a century of efforts to define culture adequately, there was in the early 1990s no agreement among anthropologists regarding its nature.'

There are numerous perspectives on culture, (including NC and organisational culture), which are reviewed in literature for instant Schein defines culture as:

'The sum total of all the shared, taken-for-granted assumptions that a group has learned throughout the history.' (Schein, 1985, p.29)

Schein's definition is non-materialistic because it includes concepts, values, and norms only.

Raymond Williams introduced the definition;

A 'Set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs.' (Williams, 1958)

Clearly, Williams's definition applies just as much to societies or larger ethnic communities, as it to realms of life such as art and literature. Similarly, NC is described by Clifford Geertz as:

'An historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms by means of which individuals communicate, perpetuate and develop their knowledge about and attitudes toward life' (Geertz, 1973, p.89)

Hofstede defines NC as

'The collective programming of the mind distinguishing the members of one group or category of people from another.' (Hofstede, 1980)

As Baumann (2013) rightly stated that no matter which definition is followed, they all include elements that are not directly observable by the researcher and are difficult to assess

empirically. It is those elements, though, that are of special interest when trying to understand problems while experiencing intercultural project work, as they provide the underlying conceptual system to the visible elements. These elements also occur in smaller groups, such as companies, which embed elements of a society. Even if they are global players, the national branches differ in certain cultural aspects. Organisational culture (OC) takes on a lot of features of NC even in joint venture projects or other cases in which international team members are included.

3.2.1. Layers of Culture

The virtual onion model has been developed by Karahanna and Evaristo (2005) to clarify the different layers of culture and the interrelationship of national culture and organisational culture. Figure 3.1 illustrates that the inner layers of culture such as individual or workgroup culture layers are embedded in extra layers such as organisational, occupational, national and ethnic layers. They concluded that the diverse levels of culture are interacting with each other and shape specific attitudes.

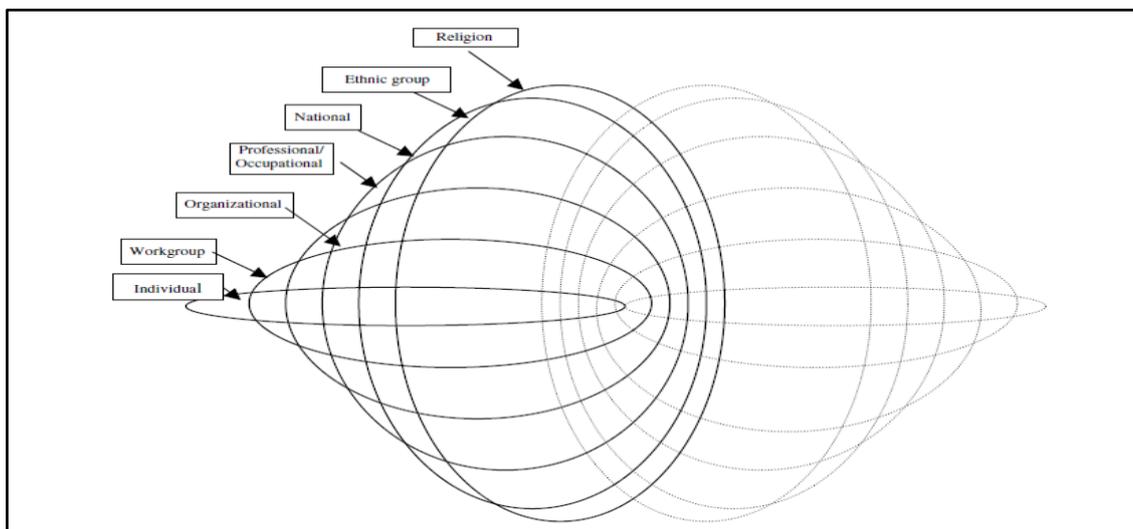


Figure 3.1 Model for the interrelated spheres of culture (Gallivan and Srite, 2005, p.301 adapted from the figure by Karahanna and Evaristo, 2005, p.7)

This diagram suggests that the spheres of culture are interrelated with each other as layers of an onion. Each individual may have different cultural identity and experience. Figure 3.1 shows that people consider themselves as members of groups with regard to several reference issues (workgroup, organisation, ethnicity, religion, occupation and nationality). Figure 3.1 also reveals each person as a product of several identity layers because each person belongs to a certain ethnic, linguistic, and national culture, and may also have an identity corresponding to a certain religious, political, organizational, and occupational association. The cultures that enfold each person interact to form his or her unique culture, including beliefs, values, assumptions, and behavior. As indicated in Figure 3.1, an individual (the innermost ellipse composed of a solid line) is a product of several layers of culture interacting with other individuals and their layers of culture (the dotted ellipses). This research agrees with the model except for the order of the enveloping layers: the model shows that the sphere of national culture is enveloped by the spheres of ethnic group and religion. This research argues that the reverse should be the case: the spheres of ethnic group and religion should be enveloped by the national culture sphere. This is supported by Hofstede's definition of national culture as the collective programming of the mind of a category of people influenced by experiences, values, beliefs, traditions, religious patterns, family structures, legal systems and language.

It is also argued that there are multinational organisations, in which a distinguished organisational culture develops over time and across the world, providing an indication that this does not explain all the features of culture or all varieties of organizational and other smaller cultures. Additionally, it is expected that organisational culture drives certain forms of attitude in association with symbols and rituals that are rather minor parts of daily life, such as the way people greet each other when they meet, which is also a ritual, or unspoken rules about who enters first to places and when or how to dress (Baumann, 2013). Studies

have arisen with many categories to define the complexity of cultural variances, and within these categories numerous differences have been identified which are significant in project management.

The above discussion suggests that separating the layers of culture from each other is difficult leading to a great degree of complexity. There should be other choices to describe, explain and understand the relationship of national culture with stakeholders' attitudes in construction projects.

3.2.2. National Culture and Project Management

Construction projects are often arranged, managed and accomplished without considering national culture as a significant influence, although everyone is aware of these effects and their impact on the project;

'A first stream of research considers that management has nothing to do with national culture: it is governed by objective practices and autonomous actors' (Waterman, 1982).

'Besides other factors, the impact of national culture on project management may lead to negative influences like project delays and project failure, or positive influences such as an increased communication'. (Baumann, 2013)

From here we can see that the delays in the implementation of construction projects may in part be due to attitudes of project's stakeholders and the influence of their NC on these attitudes. Thus, the influence of NC on the attitudes of projects stakeholders has been chosen as the key element of this research bearing in mind that individual attitude may not be derived simply from the professional work environment or the organisation, but can be influenced by the country in which the project takes place. In the KSA, this can only be achieved in an agreeable way if the influence of religious norms as part of that NC is completely understood as these patterns and norms are often unconscious and therefore potentially more influential,

because people cannot easily reflect and overcome them. At the same time, for the results to be beneficial for future expectations on stakeholders' attitude towards delays in construction projects, it is necessary to go beyond the specific organization and identify similarities on a national or even wider level. Therefore, in order to get a good understanding of what fits in with a given NC and what cannot be implemented or will not be accepted, it is essential to go beyond the obvious details and understand the impact of deeper lying norms, values, ideals, and taboos within the country.

In this research, the differences between organizational culture (OC) and national culture (NC) need to be establish. An individual within an OC can obtain knowledge about those norms easily by observation, and as every member should adjust to those norms at some point in their adult life, they tend to be conscious so that a failure can definitely be forgiven if there is a legitimate reason, such as being new to the company. However, values and beliefs of individuals within an organization are nevertheless often influenced by a deeper culture often gained from early childhood. But even in the context of multinational organizations, often it does not become clear which parts of the given culture is NC or OC or maybe both.

Therefore, it is widely assumed that OC is a subset of NC and the usual definitions of OC can be used to support this assertion:

'It is contended that organizational culture acts as a system of social control and can influence employees' attitudes and behaviour through the values and beliefs operating in a company' (Flynn, 2001).

A similar definition of OC is provided by Reiman et al.

'We define organizational culture as a learned way of responding, or a solution, to the demands of the organizational core task' (Reiman et al., 2005)

These definitions evidently limit the characteristics of OC to those that are actually relevant within the organisational framework and cannot necessarily be transferred to other social systems, since what unites and triggers them is their common function to serve an organisational core mission.

Still the question follows these arguments, how should NC be taken into account to support the project success and avoid the delay. Research by Hunt (2000) used the Hofstede approach to understand the influence of a culture on project management. In this theoretical discussion, Hunt suggests that NC influences business culture and that business culture impacts the project work. These findings have limitations, as it is not clear on what data the discussion is based. Hunt clarified that his publication was just an initial assessment based on a limited set of analysed sources. The study however underlines that there is an existing gap in research around project management and the influences described in Hofstede's cultural model. Murray-Webster and Simon (2006) examine the relevance of cultural differences to project success in a study carried out on a Russian/British joint venture company. They found that cultural differences between project's stakeholders had a real influence on project success. Tukiainen et al. (2003) explored the impacts of culture on the process and outcomes of an international engineering project. Based on their results, many of the perceived differences that were related to cultural diversity were found to be a large extent socially constructed.

3.2.3. Approaches to Analysing National Culture

Three approaches to NC are discussed in this subsection. They are the Hofstede's National Cultural Dimensions approach, the Fons Trompenaars' approach and the GLOBE Project approach.

3.2.3.1. Hofstede's National Cultural Dimensions

A Dutch researcher who is mentioned frequently in management literature and research on NC is Geert Hofstede. Hofstede came up with a much referred to definition of NC;

'The collective programming of the mind distinguishing the members of one group or category of people from another.' (Hofstede, 1980)

This research adopted this definition as a base for the research project. Other definitions have been given (see page 38) such as (Williams, 1958, Geertz, 1973, p.89, and Schein, 1985, p.29). However, this research considers Hofstede's definition to be the most appropriate for the KSA context because it particularly takes in to account the subcultural diversity that may originate from the numerous historical tribes and clans in the Arabian Peninsula.

Geert Hofstede has contributed to the present literature with a model of national cultural dimensions. Baumann (2013) mentioned that *"from the 1960s to 1970s, Hofstede had the opportunity to conduct numerous series of surveys with a huge empirical basis comprising more than 100,000 completed questionnaires"*. From his first study, Hofstede generated a model with four independent NC dimensions. Every dimension positions for typical behaviours, which are dependent on the score of this bipolar cultural scale. The Hofstede's NC dimensions are widely used and may provide a potential foundation for the identification of NC dimensions that effect the attitudes of stakeholders. These six dimensions are:

1. Power Distance Index (PDI)

The power distance index is defined as *"the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally"* (Hofstede, 2001). In this dimension, inequality and power is realised from the followers, or the lower level. A higher degree of the Index signifies that hierarchy is clearly established and executed in society, without doubt or reason. A lower degree of the Index indicates that people question authority and endeavour to distribute power.

2. Uncertainty Avoidance Index (UAI)

Uncertainty Avoidance Index (UAI) is defined as “a society's tolerance for uncertainty and ambiguity”. It shows to what extent members of a national culture feel either uncomfortable or comfortable in conditions with a high degree of uncertainty (Baumann, 2013). In this index, societies that score a high degree rely on absolute Truth. A lower degree indicates more acceptance of differing thoughts.

3. Individualism vs. Collectivism (IDV)

Individualism/ collectivism (IDV) is the degree to which individuals are united into groups. On the individualist side, it been noted societies in which the relations between individuals are loose: each one is predicated to look after her/himself and her/his direct family. On the collectivist side, we note societies in which people from birth and later are integrated into strong, solid in-groups, often extended families that continue protecting them in exchange for loyalty.

4. Masculinity vs. Femininity (MAS)

Masculinity versus femininity refers to the distribution of emotional values for any community. Femininity means the main values in community are caring for others and quality of life, while in masculine communities the dominant values are achievement and success (Hofstede, 2001)

5. Long-Term Orientation vs. Short Term orientation (LTO)

In 1991, during a later research project among students from 23 countries led by Michael Bond under the involvement of Hofstede, a fifth dimension named long term orientation (LTO) was identified and added to the Hofstede framework (Hofstede, 1997). It was described as follows:

“Long-term oriented societies foster pragmatic virtues oriented towards future rewards, in particular saving, persistence, and adapting to changing circumstances.

Short-term oriented societies foster virtues related to the past and present such as national pride, respect for tradition, preservation of "face", and fulfilling social obligations” (Hofstede, 2010).

6. *Indulgence vs. Restraint (IVR)*

Indulgence stands for a society that allows relatively free gratification of basic and natural. In 2010, based on a recent research project led by his son Geert Jan Hofstede and Michael Minkov, a sixth dimension was identified. This is the most addition, which has expanded the dimensional framework once more (Hofstede et al., 2010). This new dimension is called ‘indulgence versus restraint’ (IVR). Human drives related to enjoying life and having fun. Restraint stands for a society that suppresses gratification of needs and regulates it by means of strict social norms (Hofstede et al., 2010).

Explanations for the characteristic behaviours of culturally diverse groups may be found by measuring their differences through a national culture’s profile and the stated dimensions. In his book *Culture’s Consequences* (Hofstede, 2001), Hofstede provides lists of typical behaviours according to the score of each respective dimension.

Hofstede defines what these results imply for school, work or home situations. The scores are displayed on a numeric scale that ranges from 0 (low) to 120 (high) as the maximum score. Scores below 50 are considered being low Scores, whereas around 50-60 are considered medium scores, and scores above 60 are perceived as high scores (Hofstede, 2001).

3.2.3.1.1 Hofstede’s National Cultural Dimensions in the KSA

The summary of scores for all dimensions’ results in the national cultural profile for the KSA as shown in figure 3.2.

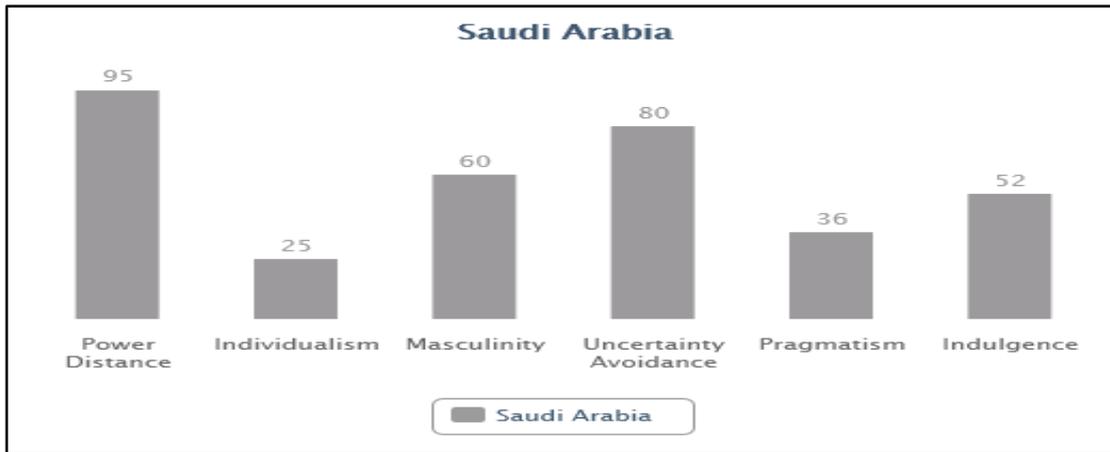


Figure 3.2 Hofstede's cultural dimensions of Saudi Arabia (2014) published by Hofstede's centre

Saudi's score for *Power Distance Index (PDI)* is 95, it is extremely high which demonstrates a hierarchical order system where everyone is placed in their position and requires no further justification. Hierarchy in an organization is observed as subordinates expecting to be told what to do, reflecting inherent inequalities and centralization. In fact, the organisational hierarchy in the KSA often reflects centralisation and intrinsic inequalities. Subordinates are expected to strictly follow the instructions of their managers in a benevolent way (Hofstede Centre, 2013).

Saudi's score for *Uncertainty Avoidance Index (UAI)* is 80 which illustrates a high degree of intolerance in Saudi NC. This shows that in Saudi Arabia, people are rigid in following traditional codes of beliefs, ideas, and unorthodox attitude. In fact, NCs like Saudi Arabia give value to on emotional need for rules and it does not matter if they work or not. Therefore, in such cases: innovation may be resisted, truth and regularity are the norms, security is important, and people like to work on their own rather than working in teams (Hofstede and Hofstede, 2005).

Similarly, the *individualism (IDV)* scores is 25, which indicates that KSA is a collectivist society. This means that individuals give value to extended family, strong relationships, group formation, and long-term commitments. One of the major features of a collective

culture is loyalty, which overrules other cultural aspects and societal rules and regulations (Livermore, 2009).

The *Masculinity/Femininity* (MAS) dimension of Hofstede (with score 60) indicates that KSA embraces masculine culture where men are supposed to work to support their families. From an organizational point of view, managers are usually assertive and decisive and like to take critical decisions without involving other people or subordinates. In a masculine culture, competition is given high importance and conflicts are reduced by finding appropriate solutions (Hofstede, 1991).

The *Long-Term Orientation* (LTO) (also as called pragmatism), Saudi society has low score of 36 which indicates that it has normative nature. In these societies, the people are strongly concerned with the establishment of absolute truth and also they are normative in terms of their thinking. They show enormous respect for the traditions, a focus on attaining rapid results and a comparatively small propensity for saving for the future.

On *Indulgence vs. Restraint* (IVR) dimension, The KSA score is 52; this indicates that people in KSA have balance between indulgent and restrained orientations.

In agreement with Baumann (2013) that based on Hofstede's explanation, it is essential to understand typical characteristics for a specific dimension allocated to a low or high score. For example, the dimension PDI is scoring high, this means that the majority of individuals in this country can be estimated to behave according to certain typical characteristics. All scores are a calculated statistical mean; they may be used for an analysis on larger groups of individuals (samples) which have the same cultural background. Therefore, an analysis of a small group with few individuals and a different background is not probable, as the Hofstede score cannot be used to predict the behavior of individuals. But, it is possible to assess the individuals' cultural profile by applying the questionnaire to the individual person and derive conclusions based on the Hofstede model for a specific project situation. So, it is important

to understand the cultural model before applying it in the construction project context. And when it is understood, it can be used individually;

“But once it is understood, it can be applied individually so that there is no need for assuming that individuals behave according to certain scores of national cultures”
(Baumann, 2013)

Despite all the criticisms, the dimensional approach from Geert Hofstede motivated many other researchers to develop similar approaches. The following section introduces other dimensions and their models to define NC.

3.2.3.2. Fons Trompenaars’ Approach to Define National Culture

Fons Trompenaars, who defined a framework with seven dimensions describing national culture, developed a theory using a similar approach. Trompenaars developed his dimensional model based on his own research and assumptions. The following Table 3.1 shows the seven dimensions resulting from his research.

Table 3.1: Trompenaars seven cultural dimensions to describe national culture (Trompenaars, 1994, adapted from the table by Baumann, 2013)

NO.	Trompenaars cultural dimension	Meaning / Answers the question
1	Universalism vs. particularism	What is more important, rule or relationships?
2	Individualism vs. collectivism	Do we function in a group or as individuals?
3	Neutral vs. emotional	Do we display our emotions?
4	Specific vs. diffuse	Separation of private and working life
5	Achievement vs. ascription	How we prove ourselves to receive status
6	Internal vs. external control	Control our environment or are we controlled by it?
7	Sequential vs. synchronic	Do things one at a time or several things at once?

Dimension two is very similar to Hofstede’s dimension of individualism and collectivism, but the other dimensions reflect other typical characteristics of national culture. Particularly the time perception as one essential element and the capability of people with a certain

national culture to do several things at once differentiate Trompenaars' work from Hofstede's. Hall (1959) had presented this approach before and it was integrated as an independent dimension by Trompenaars. The relationship to the control of our environment (No 6) is another characteristic which distinguishes Trompenaars' work from Hofstede work. Hofstede criticised the model introduced by Trompenaars, which caused (in a published reaction) Fons Trompenaars to defend and distinguish his model from Hofstede's. Trompenaars clarifies the original differences in his reaction as follows:

The differences between our approach and Hofstede's can be summarized under four heads: 1. Are cultural categories linear and exclusive? 2. Can culture be best expressed in mathematical language? 3. Is his approach more empirical than ours? 4. Are there pointers to successful business practice?' (Hampton-Turner and Trompenaars, 1997)

To define some key elements of national culture, their approaches uses a bi-polar dimensional framework and both researchers are classified as dimensionalists. In comparison with Hofstede, the limitation of Trompenaars model is that it was developed during the 1990s (Hamptden-Turner and Trompenaars, 1993) and fewer experimental data was obtainable, whereas Hofstede's research has been used since the 1970s and is based on a greater amount of data for most countries. Hall (1959) defined diverse attributes of mainly national cultures e.g. monochromic and polychromic perception of time to explain whether individuals have the ability to do things simultaneously (polychromic) or if they select to handle tasks sequentially (monochromic). Hall also defined the concept of proxemics or personal spaces, in which people's comfort region in terms of physical distance from others is measured. Further examples are the way group discussion takes place with a superior, or the way a person articulates a problem (Hall, 1959). The model of proxemics does not

influence project work directly, but the perception of time obviously is of importance for project work. A further approach using cultural dimensions is explained in Section 3.2.4.

3.2.3.3. The GLOBE Project

The GLOBE project is another initiative, which combines the work of more than (170) researchers who collected data from 18,000 managers in 62 countries (Deresky, 2011). The GLOBE project team defined nine cultural dimensions, which can have significant managerial effects. These dimensions are (Deresky, 2011, p. 110): (1. Assertiveness, 2. Future orientation, 3. Performance orientation, 4. humane orientation, 5. Gender differentiation, 6. Uncertainty avoidance, 7. Power distance, 8. Institutional collectivism, and 9. In-group collectivism).

The GLOBE project offers cultural clusters, which are based on a huge data set and lots of experimental work (Gupta, et al. 2002). These dimensions will not be discussed in more detail, but it is important to mention that the dimensions 2, 6 and 9 are closely related to the Hofstede framework. It is interesting that the GLOBE project provide a definition for one cluster for the Middle East and North Africa area and there is experimental data and scores obtainable. The MENA cluster comprises the following countries.

‘The Middle-eastern cluster of the GLOBE study consisting of Egypt, Morocco, Turkey, Kuwait and Qatar has some commonalities in societal norms and practices.’

(Kabasakal and Bodur 2012)

Turkey, Egypt and Morocco are of course outside the defined scope for the Middle East. Furthermore, the kingdom of Saudi Arabia (KSA) does not contribute to GLOBE scores. Due to these findings, the GLOBE approach was not considered as a suitable option for this study. The reductionist view on national culture is the main criticism where the research on cultural dimensions and the work of the GLOBE project is criticised for the same reasons as

the work from the other dimensionalists. Other researches such as Peterson and Castro (2006) critically discussed the over aggregation of scores to clusters, which is then defended by scientist like Hanges and Dickenson (2006). By designing cultural groups, which cover countries involving Iran, Israel to Morocco, there is a high risk that the collective score of this group is very imprecise for the analysis of the underlying research objectives. There were many critiques arguing that even scores for large countries may be inappropriate for scientific use.

The three models discussed are samples from the stream of research using dimensional scores to explain cultural features. To date, there are more than 121 dimensional models available to explain national culture as presented by Taras et al. (2010), these models include from 4 to 15 dimensions. Although there are certainly interesting ideas in some models, the Hofstede model provides the longest history and the largest experimental data. The next section describes why many researchers deny working with dimensionalist approach to explain NC.

3.2.4. Critique on the Dimensionalist Approach

This whole subsection is based on the work of Baumann (2013) where he gave the robust critic on the dimensionalist approach. The dimensional structures rely on quantitative methods in which a national culture is defined as the statistical mean using the numeric calculation which derived from a set of questions. For this motivation, various social scientists object to the dimensionalist approach. They differentiate between two main approaches to recognize and understand culture and cultural differences. Social scientists and anthropologists criticise these approaches for reducing culture to simple numbers and causal factors which lead to a specific expected behaviour since the so called dimensionalists reduce the complexity of a national culture to a scale or a numeric score. This approach is explained as an essentialist opinion on culture, as it is not possible to apply a cultural

dimension to an individual person or member of a group. The individual's cultural identity may vary significantly from the cultural profile of the country where the individual grew up. On the other hand, the non-essentialist view on national culture respects the difficulty of its nature (Baumann, 2013).

'Culture is a social force which is evident where it is significant. Society is complex, with characteristics which are difficult to pin down.' (Holliday and Kullman 2004, p.3)

The non-essentialist viewpoint is the basis for effective intercultural communication or group work, as it needs the individual to be open to individual diversity within cultural contexts. This attitude is the initial point to gain intercultural competence and to be open to a wide spectrum of various cultural influences. The risk of a pure 'essentialist' viewpoint is that this viewpoint shrinks the 'others' to all being different in the same way, which is often incompatible with one's own ways, so that a member of 'their' group cannot be able to ever belong to one's own group.

'...essentialism is the 'easy' answer for culture' (Holliday and Kullman 2004, p.2)

Characterizing national culture is definitely of a more complex nature than it appears in these approaches, as some persons are opinion leaders and humanise norms and values of a culture in their attitude more than others who are influenced by different cultures. This can lead to basic conclusions about individuals and limit the view on other essential aspects besides culture, which may explain attitude more correctly. In addition, NCs are very different in themselves; they are closely related to the fight for power between diverse groups with diverse cultural norms and values within the society and to economic and political situations. They are therefore subject to continuous changes. And then, while some characteristics could change, others could prevail. For example, despite that in KSA push to change from traditional Islamic political environments and family systems to a more modern society,

there are also new tendencies towards Islamic fundamentalism and isolation from Western cultural influences in order to protect the Islamic society, traditional family systems and beliefs from unwelcome change (McCabe, 2009). It is also critical to remember that any classifications that are chosen to describe national cultures are always theoretical theories due to the lack of direct access to some cultural components. For these reasons, it must be clear that explanations of certain cultures are never meant to be perfectly adequate explanations of experienced reality, but only theories to deliver orientation and to grasp vaguely what is perceived or to be expected in everyday life. They are required for areas such as project management, and Hofstede's descriptions of national culture are as adequate as possible as far as reliability, validity and objectivity are concerned. Hofstede's approach assists to produce specific categories, which may assist to understand some typical mechanisms. The criticism of the essentialist viewpoint against a positive non-essentialist attitude is significant primarily in the subjects of psychology and sociology, where it is needed to cover all possible qualitative and situational aspects of a relation between individuals and to explain a broad variety of personal and intercultural relationships. Classically the management science and research in the field of project management have to look for simple answers that may assist to understand cultural differences quickly and expected group behaviour and attitudes. When differences can be expected by using a simplified model, approaches can be offered for groups that have certain characteristics. One more advantage of the cultural dimensions is that they do not judge. The categories do not suggest a certain score being good or bad, and they do not state that specific cultural profiles may be problematic for the social group but they rather help to gain an impartial view on different cultures in order to adapt to them. The key to manage a successful construction project is to discover the correct (intercultural) sensitivity to situational needs and the simple practical answers, which may be useful in different cases. McSweeney (2002) is another

critic, who claims that Hofstede's approaches do not reflect variances in national culture or in company or organisational culture. McSweeney shows that the participants of all of Hofstede's empirical studies were from IBM, so most of them were well educated and because of that the results might tend towards a comparison of national culture between the different regional IBM workplaces. Another criticism comes from Erez and Earley (1993), who doubts that employees who are socialised by IBM reflect the national culture of the country where the study was done. This criticism is perhaps correct for the large researches Hofstede has accomplished by using his questionnaire for IBM employees, but since then the results have been confirmed by other researchers that have used the Hofstede Questionnaire with other target groups e.g.: Taras et al. (2010), Merkin and Ramadan (2010), Randall (1993) and Merkin (2006).

3.2.5. The Choice of Hofstede's Dimensions Approach

Despite all this criticism, Hofstede's dimensions, approaches and his research are widely used in cross-cultural management research. Most of the reviewed research and publications conclude that there is a requirement for additional researches to validate Hofstede's dimensional framework. Hofstede's dimensions involve risk reducing NC to a simplistic perspective, but proposals the chance to understand the main cultural fundamentals, which are important while working on construction projects in the KSA. The use of this approach in the construction project and project management context will allow project managers to predict what can be expected for a specific project condition where a culturally diverse team is working on project challenges. Based on the discussion in this chapter and the fact that the results of this research are positioned at the intersection of construction projects and national culture, (focusing on stakeholders' attitudes towards delay in construction projects) the dimensional model presented by Hofstede is an appropriate approach to carry forward.

Furthermore, the following points supported the decision to move on with the Hofstede dimensional framework:

1. The large empirical basis joined with an obtainable dataset for KSA.
2. Many associated research projects are using the Hofstede dimensional framework, so this common basis may be used to extend construction project management theory specifically for the KSA.
3. Management science often uses the Hofstede dimensional framework, because managers need theoretical constructs, which can be simply practical.

Above sections explain and discuss the fundamentals of national culture and organisational culture. Additionally, sections highlighted that cultural definitions can use holistic and descriptive perspective preferred by social scientists and anthropologists, whereas the dimensionalist approach to explain national culture is widely used and accepted in the management science.

In this chapter, three dimensionalist approaches from Geert Hofstede, Fons Trompenaars and the GLOBE project have been discussed in more detail. After exploring these three dimensionalist options and approaches to analyse the influence of national culture on attitudes of stakeholders towards delay in construction projects, the large dataset of Hofstede score including available data for the KSA provided a solid foundation to analyse cultural factors influencing project's stakeholders in the KSA.

As explained throughout Section 3.2.3 to Section 3.2.5, there are numerous approaches to the study of the national cultures. The ones that were observed closely are Hofstede's and Trompenaars's approaches, so-called cultural dimensions. These have several things in common and many differences as well. In comparison with Hofstede, the exclusion of Trompenaars model is that it was developed during the 1990s and fewer experimental data was obtainable, whereas Hofstede's research has been used since the 1970s and is based on

a greater amount of data for most countries including KSA. Hofstede's descriptions of national culture are therefore more valid as far as reliability, validity and objectivity are concerned (Baumann, 2013). This research therefore uses Hofstede's dimensions of NC to study the effect of NC on delay in the KSA.

3.2.6. National Culture within the Construction Industry

After reviewing the differences of national culture including many approaches to define national culture, the dimensionalist model of Geert Hofstede was selected to analyse the influence of national culture on attitudes of key stakeholders towards delay in construction projects in the KSA. The goal of this (Subsection 3.2.5) in light of the previous sections is to gain a good understanding of where NC and construction projects interact in the cultural context of the KSA.

Regarding to Newcombe (2003), the stakeholders within the construction project partnership interact with the project in two main arenas; cultural and political, with the cultural arena represented by the ideology or collective values of the project participants. Cultural issues are therefore always at the front (Ofori, 2010). In trying to give more importance to the cultural arena Abeysekera (2002) defined culture within construction to be

“The characteristics of the industry, approaches to construction, competence of craftsmen and people who work in the industry, and the goals, values and strategies of the organizations they work in”.

In principle, culture within construction is about what is done, how and when it is done, who is involved and why certain items are done the way they are. These perceptions of culture as applied to construction are consistent with the initial basic definitions of culture. The vision derived from Abeysekera (2002) is especially useful as it fulfills the requirement to see culture through the eyes of construction industry members.

As verified from the discussion so far, culture must be an essential consideration for every

organization in every industry. In construction, this becomes more serious because of the nature of contracting, internationalization of procurement, joint venturing, and the transfer and implementation of innovative philosophies and practices such as partnering, Just-In-Time (JIT) management, Supply Chain Management and Total Quality Management TQM from relatively more successful industries such as manufacturing and trade (Riley and Clare-Brown, 2001). As detailed by Hall and Hall (1990), the project-based arrangements that characterize the production of the built environment make the possible effect of culture even more obvious than in any other industry.

Some of key contributions have been found in support of this argument. Maloney and Federle (1990) for example highlighted the fact that the culture of a construction organization was a primary factor of performance within that organization. Hall and Hall (1990); Low and Shi (2001) and Skitmore et al. (2004) also found that it has an impact on participation and openness, approaches to decision-making, the quality of communications and working relationships. They revealed that any organization that wanted to accomplish or manage a construction project successfully had to understand the culture of the country clearly. Regarding to Ofori (2010) culture had an influence on the selecting of foreign parties in joint ventures. Ngowi (2000) also demonstrated the difficulties related with the implementation of such foreign philosophies as TQM in developing countries, with their positive implementation normally requiring changes to the collective assumptions, frames of reference and understandings that most organizations have developed. The reason is because these philosophies and practices are invariably embedded with their own form of cultural beliefs, norms, values and assumptions (Riley and Clare-Brown, 2001). Similar results were also told in Pant et al. (1996), although in this case the highlighting was on the incompatibility of imported project organizational structures with local attitudes in Nepal.

Jefferies et al. (2002) conducted a survey of Australian contractors working internationally; they found cultural awareness to be an element of competitive advantage, this means culture has a potential source of competitive advantage with some researchers, especially in the face of increasing globalization. The cases of the Bangkok Expressway extension project (Handley, 1997; Masaoka, 2003) and the rebuilding of the Croatian motorway from Zagreb to Split following years of war (Eaton Consulting Group Inc., 2002), also provide further evidence that besides institutional gaps, cultural gaps hamper the efficient execution of projects. In the first case for instance, cultural differences between the Japanese contractor Kumagai Gumi, their local partners, and the client influenced project delivery time and final outcomes. In the second case, which involved nine different nation-state cultures and two starkly different corporate cultures, the human interaction elements tended to detract focus from either schedule or budget.

Soetanto et al. (1999) also reported that quality of interrelationships between project stakeholders eventually determines overall project performance and individual stakeholder performance. While these interrelationships were not examined within the context of research into culture, it is reasonable to infer that culture must be an important factor. It also has an influence on the propensity for litigation (Fenn et al., 1997; Phua and Rowlinson, 2003), and the attitudes towards such aspects as delays, quality, and safety (Cooper, 2000).

These influences can produce positive or negative outcomes including project delay (Hampden-Turner, 1994; Handy, 1995), and to this degree culture merits critical consideration. However, research into these topics within the construction research sector has been very limited and disparate (Ankrah and Proverbs, 2004). Whilst some industries have had the advantage of research drawing from the general principles and models espoused by cultural researchers for industry-specific research, for example food retail (Ogbonna and

Harris, 2002) and manufacturing and services (Guest et al., 2003), quite a significant body of the existing literature on culture in construction industry tends to be anecdotal. Barthorpe et al. (2000) for example introduced a profile of the UK construction industry, mentioning the hierarchical structure, wage structure and confrontational nature of contracting as factors setting the tone for the culture of the industry, but cannot produce any systematic research to justify these assertions or to show the extent to which these factors impact the culture and output of the construction industry.

These researches and many other literature including renowned construction industry studies such as Latham (1994) and Egan (1998) have shown the more negative sides of culture within the construction industry, in particular traits such as being litigious, antagonistic, dangerous and dirty, late delivery of projects, sexist and discriminatory (cf. Latham, 1994; Egan, 1998; Duncan, 2002; Loosemore and Lee, 2002; Rooke et al., 2004). This has driven the negative stereotyping of the culture in the construction industry. Whilst culture has a wider range than suggested by these stereotypes (Abeysekera, 2002), there is a lack of systematic research into culture to show what the full influence of the national culture on the stakeholders in the construction industry is. As Barthorpe et al. (2000) suggested this provides a fascinating field of study of the industry within the context of culture.

In addition, the flowing research studies have looked at the effect of national culture on project management in KSA and Middle East, but they did not address the specific subject of the effect of national culture on delay and/or attitude of stakeholders towards delay in construction projects:

A study by Alyousif et al. (2010) titled “National culture influence on management practices in the construction industry of United Arab Emirates” found that Construction companies in the UAE are generally adopting a mixed approach that combines Western and Eastern

management practices. Results of an analysis based on three groups of management dimensions yielded a detailed profile of the type of management applications used. This study focused on the type of management applications and ignored the reasons of choosing the management application and how this application effects on the attitudes stakeholders towards projects issues.

- a. Another study by Obeidat et al. (2012) titled “Toward Better Understanding for Arabian Culture: Implications Based on Hofstede's Cultural Model” found that attempted to shed light on the managerial problems existing in Arabian organizations and explained that significant aspects of these problems are related to cultural aspects addressed in the earlier literature. They suggested that managers of organizations in the Arabian world be aware of these problems and use their awareness to handle such cultural issues to enhance the success of their organizations. This study did not address the cultural issues in construction projects and organisations.
- b. Mitra and Tan (2012) highlights the interaction outcomes of humans, project tools and methods, supply chain and finance affecting overall project execution and it goes beyond identifying critical linkages in these interactions, including those that will need identification of skill sets required for the project manager’s role, options, approach and standardization of the product and processes together with early involvement of diverse stakeholders in the project for their better execution through identification of project parameters requiring minimum changes. The purpose of this Mitra and Tan (2012) is to identify project management issues in a specific construction project in Saudi Arabia.
- c. Baumann (2013) aimed to analyse the cultural factors and other factors such as environmental conditions which influence the applicability of the PMBoK in the cultural context of the Middle East. The study found that today’s project managers

should receive training on cultural issues and should gain more cultural competence before entering the Middle East or other global markets. This study used by this research to develop some of interviews questions and design the questionnaires.

- d. Alkharmany et al. (2014) found that Saudi Arabia is a highly power distance economy (where most decisions are centralized) with a high uncertainty avoidance culture. The origins of delays in building projects have been identified from numerous publications and are categorized into eight types using the Hofstede's national cultural factors. This provides a basis for further research to evaluate the effects of national culture on the delivery of mechanical services-type projects in Saudi Arabia. This paper was the initial study for this research but it focused on mechanical projects and it did not address the attitude of key stakeholders towards delay in construction projects.
- e. Finally, in a recent study Alshahrani et al. (2015) found the finding highlights the need for managers to acknowledge the diversity among their employees and to understand how different attributes of national culture may have an impact on employees' safety behaviour. It also recommended that the future work is however required to further examine the nature of influence national culture has on safety behaviour.

The studied described above are summarised and shown in Table 3.2 below:

Table 3.2: Research studies about effect of national culture on project management in the KSA

Authors/ Year	Title	Research aims	Methods	Findings
Alshahrani, et al. 2015	Relationship between National Culture and Safety Behaviour: Evidence from Petrochemical Employees in KSA	To examine the relationship between national culture and safety behaviour within the context of petrochemical industry	Quantitative	The finding highlights the need for managers to acknowledge the diversity among their employees and to understand how different attributes of national culture may have an impact on employees' safety behaviour. Future work is however required to further examine the nature of influence national culture has on safety behaviour
Alkharmany et al. 2014	Delays to Mechanical Services-Type Projects Associated with National Culture in Saudi Arabia	To identify the origin of delays in building projects that are associated with the national and cultural factors of Saudi Arabia.	Qualitative - literature-based	Saudi Arabia is a highly power distance economy (where most decisions are centralized) with a high uncertainty avoidance culture. The origins of delays in building projects have been identified from numerous publications and are categorized into eight types using the Hofstede's national cultural factors. This provides a basis for further research to evaluate the effects of national culture on the delivery of mechanical services-type projects in KSA.
Lars Baumann, 2013	The impact of national culture on project management in the Middle East	To analyse the cultural factors and other factors such as environmental conditions which influence the applicability of the PMBoK in the cultural context of the Middle East.	Qualitative – case study, structured interview	Today's project managers should receive training on cultural issues and should gain more cultural competence before entering the Middle East or other global markets.
Mitra, S. and Tan, A.W.K., 2012	Lessons learned from large construction project in Saudi Arabia	The aim of paper is to identify project management issues in a specific construction project in Saudi Arabia, highlighting its unique context.	Qualitative-structured interview	This research highlights the interaction outcomes of humans, project tools and methods, supply chain and finance affecting overall project execution and it goes beyond identifying critical linkages in these interactions, including those that will need identification of skill sets required for the project manager's role, options, approach and standardization of the product and processes together with early involvement of diverse stakeholders in the project for their better execution through identification of project parameters requiring minimum changes.
Obeidat, et al. 2012	Toward Better Understanding for Arabian Culture: Implications Based on Hofstede's Cultural Model	To investigate the meaning of 'culture' and the various implications of this concept in the context of Arabian culture	Hofstede's cultural model,	Attempted to shed light on the managerial problems existing in Arabian organizations and explained that significant aspects of these problems are related to cultural aspects addressed in the earlier literature. they suggested that managers of organizations in the Arabian world be aware of these problems and use their awareness to handle such cultural issues to enhance the success of their organizations
Alyousif, et al. 2010	National culture influence on management practices in the construction industry of United Arab Emirates (UAE)	The aim is to establish and develop a model for management practices and organizational culture in the construction industry of the (UAE), and to determine the extent to which the National and Islamic culture and the local environment influence management practices.	Quantitative-questionnaire	Construction companies in the UAE are generally adopting a mixed approach that combines Western and Eastern management practices. Results of an analysis based on three groups of management dimensions yielded a detailed profile of the type of management applications used.

3.2.7. Literature Relating to National Culture in the Construction Industry

Baumann (2013) undertook details review of literature relating to the National culture in the construction industry, so the work in this subsection is update of his earlier review. The following literature looks on construction projects which were carried in various worldwide regions. These may be useful to learn from solutions for other worldwide regions and move them to the KSA.

Despite the recognised need for research in this field, research on culture in the construction industry is generally at the pioneering stage (Serpell and Rodriguez, 2002). The main focus of research into the role and impact of culture in construction is reported by Fellows and Seymour (2002) as being two-fold, namely:

- National differences as they affect efforts to change industry practice in the country concerned or as they affect international collaboration; and
- Occupational and organizational differences, how they affect receptivity to new practices and technologies, and inter-firm collaboration.”

Other subjects being discussed in research, though to a lesser degree, include the linking of culture with power and the exploration of negative effects of cultural homogenization, and methodologies related with research into culture (Fellows and Seymour, 2002).

A study by Chen and Partington (2004) investigated the cultural differences between Chinese and Western conceptions in the project management context. New management theories and the possibility to move management styles from one culture to another are part of their analysis. They looked at the Western style to direct projects being applied by British managers working on construction projects in China. They used Hofstede’s’, Trompenaars’ and Schwarz’ cultural models as theoretical foundations during their analysis. The aim of

Chen's study was to look specially at cultural differences in relation to the above three models trying to understand probable factors influencing the project management processes in multinational teams. Also, a study by Pheng and Leong (2000) deals with cross-cultural challenges related to hotel construction projects in China. It discusses the significance of mutual respect as one important value for project control and conflict resolution while working with Chinese stakeholders. This study highlights the importance of the human resource management in construction project in addition to cost, time and quality.

“Construction project management is not only about time, cost and quality control; it is also about human resource management”. (Pheng and Leong 2000).

Some results from Chen and Partington (2004) study demonstrate fundamental differences in the perception of the intra-team relation which is for the Chinese a more family and mutual care form versus the British concept of having a team where the team members are ‘just friends’ at work but have their own isolated life. According the Hofstede dimensions, the findings show an influence towards project management based on the individualism / collectivism (IDV) dimension. Chinese team members selected to talk as ‘we’ whereas the UK nationals used the ‘I’ form. This behavior is a typical characteristic for low (China) vs. high (United Kingdom) IDV score.

‘When negotiating and managing joint venture projects both Chinese and Western organizations need to pay attention to cultural differences between managers’ conceptions of their work, particularly those relevant to relationships, in order to adapt practices and foster successful collaboration. Training in cross-cultural issues should be based on conceptual frameworks that are both up-to-date and relevant.’
(Chen and Partington (2004), p. 405)

One concluding remark of this research shows that it is important to study cultural factors for a successful construction project management in multicultural teams. Discussing the statements and findings in the context of the research aims, there is again the recommendation to apply cultural trainings. This can be a solution to improve project work, but it seems that the first step is the identification of cultural factors influencing project work such as collectivistic behavior and attitudes of stakeholders. Chen and Partington (2004) study recommended further researchers to practice the Hofstede framework to describe the influence of national culture on project management and a prediction how Western vs. Eastern management styles influence the project teamwork.

The study by Xiao and Boyd (2007) investigated construction projects in the China versus United Kingdom cross-cultural context. This study discusses cultural differences of Chinese and British construction stakeholders. Although various researches are using the Hofstede dimensional model, this study uses the national cultural model from Fons Trompenaars (1994). Xiao and Boyd use the multiple case study approach with two cases with a construction experience. One conclusion is that the cultural dimensions can be used to describe potential areas of conflict between project's stakeholders. They could identify areas of conflict and used clarifications where the national cultural dimensions point in an opposite direction. They also noted other external influences for the decision-making process and behavior that could not be explained by using the dimensional model. The study by Xiao and Boyd supports the fact that there is a gap in current research and that more research has to be carried out.

'It has long been believed that culture causes differences in construction practice in different countries. Few practical cross cultural studies have been conducted in construction due to the complexity, richness, abstractness and subtlety of national differences.' (Xiao and Boyd, 2007)

Chevrier (2003) and Ochieng et al. (2010) researched management strategies in multinational project teams. Particularly team dynamics and the search for root causes based on the Hofstede framework are of interest in the analysis. Chevrier explained another strategy to deal with cultural differences next to ignoring differences - the trial and error strategy- while working with diverse groups. It is seemed to be a pragmatic approach to gain intercultural competence and knowledge on successful management strategies by just trial and error. The Pragmatic approach may be practicable if the project manager is culturally skilled and has experienced a number of projects with international team members. On the other hand, it involves the risk that the project may fail or be delayed if the project manager has no intercultural competence capabilities and is not willing or qualified to deal with arising cultural challenges. In similar direction, Ochieng et al. (2010) presented a qualitative analysis of semi-structured interviews with 20 project managers with European or African cultural backgrounds. They asked the project managers of a number of projects if the project could be accomplished as planned, and if the project's stakeholders had seen an impact of national culture to their project work. In this paper, the interviewees were 10 (European) and 10 (Kenya/Africa). Some of their study questions looked exactly into the direction of cultural impacts.

The third approach defined by Chevrier (2003) was to establish a transnational organizational culture as a part of the project culture. This could provide a chance to deliver an organizational culture where people with a different NC backgrounds may find the chance to fit in. The weakness of this strategy is that the amount of common values may become very small as this compromise forces each group to ignore part of his or her own cultural identity.

‘Lastly, a transnational corporate culture that is compatible with the basic conceptions of all involved cultures can be founded only on a very small common

denominator, which considerably reduces the space for action. Such a strategy eventually denies cultural differences rather than makes the most of them. (Chevrier, 2003, p. 147)

Regarding the direction of the study question, no exact contribution regarding the study question or research objectives can be gained from this research, but it demonstrates that the option to look for a joint project culture seems to be very difficult to reach under project conditions. Chevriers' first two approaches may often be used in real life construction projects, but they contain a large quantity of 'hope' for a good project outcome. The findings show obviously that there is an influence of national culture on project work. The following Table 4.2 illustrates that most of the projects had a successful outcome but also that impacts based on the cultural complexity have been experienced. This finding is of special notice regarding the key assumption of this research that the national culture has an influence on project work. From the 20 interviews, only 2 project managers did not find any impact of culture on the project delivery while the massive majority had seen cultural challenges

Another success factor is linking to Hofstede's national cultural characteristics regarding the IDV dimension, as the researchers raise the question how the project can reach collectivism to shape one project team. The study concludes that more research is needed to analyze the area of multi-cultural project teams in the construction industry. The following Table 3.3 outlines the countries where such research projects have been delivered. Some of the analyzed projects even had Saudi Arabia that makes the results an even more valuable basis for this research and it indicate an impact as well. It is important to note that where the project outcome indicates "successful", it simply means that it achieved its primary objectives which may not necessarily be completed within supposed delivery date.

Table 3.3: Construction projects and the impact of culture on the project work (Ochieng 2010, p. 450 adapted from the table by Baumann, 2013)

Cultural complexity projects managed by participants.

Year managed	Participant	Project	Country of Implementation	Impacts of cultural complexity	Project outcome	Participant country of origin
2004	A	Refinery plant	Dubai	Impacts were seen	Successful	England
2005	B	Power plant	Kenya	Impacts were seen	Successful	Kenya
2002	C	Pharmaceutical plants	UK	Impacts were seen	Successful	England
2005	D	Refinery plant	Azerbaijan	Impacts were seen	Unsuccessful	England
2005	E	Refinery plant	Azerbaijan	Impacts were seen	Successful	England
2005	F	Refinery plant	Azerbaijan	Impacts were seen	Successful	England
2004	G	Power plant	Kenya	No impact in project	Successful	Kenya
2004	H	Dam	Kenya	Impacts were seen	Successful	Kenya
2003	I	Food plant	UK	No impact in project	Successful better than expected	England
2001	J	Refinery plant	Saudi Arabia	Impacts were seen	Successful	England
2003	K	Refinery plant	Azerbaijan	Impacts were seen	Successful	England
2003	L	Power plant	Kenya	Impacts were seen	Successful	Kenya
2003	M	Power plant	Kenya	Impacts were seen	Successful	Kenya
2004	N	Dam	Kenya	Impacts were seen	Successful	Kenya
2004	O	Dam	Ethiopia	Impacts were seen	Successful	Kenya
2004	P	Dam	Ethiopia	Impacts were seen	Successful	Kenya
2005	Q	Power plant	Kenya	Impacts were seen	Successful	Kenya
2003	R	Manufacturing plant	Hong Kong	Impacts were seen	Successful	England
2004	S	Refinery plant	Azerbaijan	Impacts were seen	Successful	England
2002	T	Dam	Kenya	Impacts were seen	Successful	Kenya

Ochieng offers promising insights by summarizing data from a sample of 20 projects. Especially the fact that mostly Western companies and local companies ran the projects underpins that there is an influence of national culture in the majority of multinational projects.

A study by Raiden et al. (2004) suggests a solution for the team formation process, which is part of the PMI project initiating process group. The results from Raiden's study provide some relating points with this research focus, but it shows that the team formation is clearly influenced by national culture.

To conclude, this section showed the influences of national cultural on project teams and stakeholders in the construction sector. The findings validate the need of practitioners and researchers to seek for solutions which are aiming towards the development of intercultural competence, training approaches and project's stakeholders' development activities. In general, the assumptions which have led to the direction of this research, confirm the need

to carry out more research by specifically looking into construction projects and the mechanisms of how the national culture of the KSA can be taken into account.

3.3. Attitude

The term attitude can be defined as an evaluative reaction which explains beliefs and negative, natural or positive feelings of a person about events, persons and objects (Sabates and Capdevila, 2010; Erwin, 2014). Allport (1935) defined an attitude as a mental or neural state of readiness, organized through experience, exerting a directive or dynamic influence on the individual's response to all objects and situations to which it is related. A simpler definition of attitude is a mind-set or a tendency to act in a particular way due to both an individual's experience and temperament.

A person's attitude toward something encompasses his or her point of view about the topic (thought), how he or she feels about this topic (feelings), as well as the actions (behaviors) he or she engages in as a result of attitude to preventing problems. This is the tri-component model of attitude: an affect (a feeling), cognition (a thought or belief), and behavior (an action).

"Affective component" explains feelings and emotions of an individual towards an event, person and object; "Behaviour" explains response of a person towards a stimulus object and "Cognition" creates knowledge and thoughts about an object. In terms of visibility, this model can further be categorised into two categories: behavioural component and affective and cognitive components because these two components are not visible, whereas behaviour can be directly visible and analysable (Erwin, 2014; Robertson, 2012).

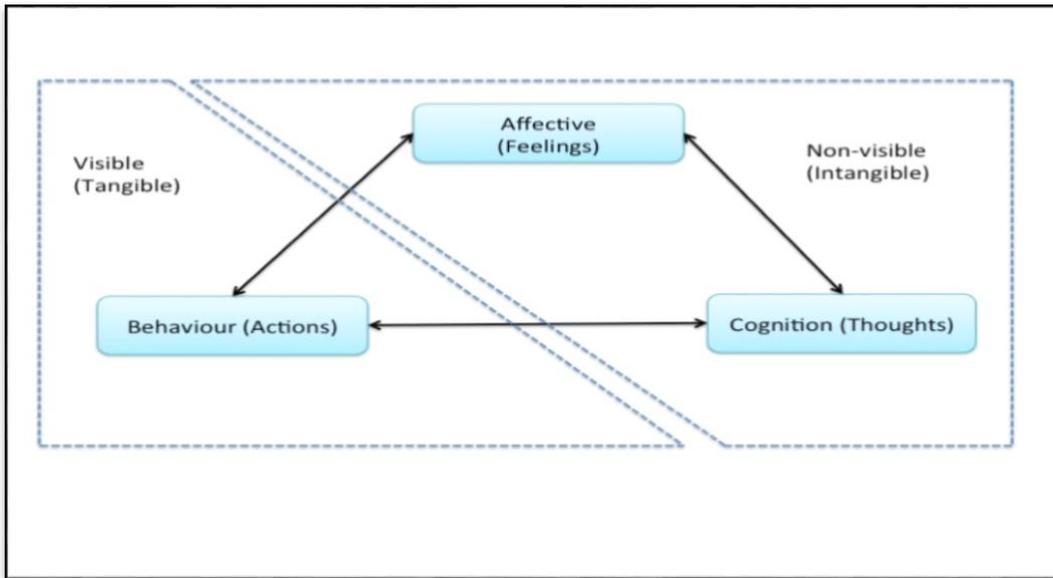


Figure 3.3 Main components of the structure of attitude adapted from (Robertson, 2012, p. 153)

Attitudes help us define how we see situations, as well as define how we behave toward the situation or object. As illustrated in the tri-component model, attitudes include feelings, thoughts, and actions. Attitudes may simply be an enduring evaluation of a person or object, or other emotional reactions to objects and to people. Attitudes also provide us with internal cognitions or beliefs and thoughts about people and objects. Attitudes cause us to behave in a particular way toward an object or person. Although the feeling and belief components of attitudes are internal to a person, we can view a person's attitude from his or her resulting behavior. Attitude can be judged through behaviour, though it is not actually visible (Ajzen, 2005).

According to Solomon et al. (2010, p.275), an attitude is a lasting, general evaluation of people, objects or issues. And anything towards which one has an attitude is called an attitude object, so attitude reflects the relationship between a person and an object (Robertson 1973). However, it is difficult to explain the object; to assess everything that can impact the attitude towards something as the object of attitude (Bamosy and Askegaard 2002).

Attitude formation is a result of learning, modelling others, and our direct experiences with people and situations. Attitudes influence our decisions, guide our behavior, and impact what we selectively remember (not always the same as what we hear) (Robertson, 2012).

3.3.1. The Measurement of Attitude

Attitudes come in different strengths, and like most things that are learned or influenced through experience, they can be measured and they can be changed. These can be characterised in four approaches:

- 1. *The Likert scale*:** This technique was developed by Rensis Likert in order to measure the psychological attitude of an individual in a scientific way. Likert scale is a psychometric response scale that is commonly used in questionnaires in order to determine the degree of agreement and preferences of the respondents about a statement or a set of statements. In this technique, the user is given five options, such as strongly agree, agree, strongly disagree, disagree and neutral and the respondent has to choose one option which indicates his level of agreement with the given statement (Boone and Boone, 2012).
- 2. *The Semantic differential*:** Osgood, (1964) introduced this technique in order to measure the attitude of a person towards the given events, objects and concepts. Two bipolar adjectives are given with 5 positions in between and the participant has to choose the position where he/she lies on the scale. This technique is useful to measure the attitudes, opinions and values of a person on a psychometric scale. Because of its versatility, it is one of the most adopted techniques in measuring attitudes. But the problem with this technique is that very often a dispute is found between level of measurements and psychometric properties (Osgood, 1964). Therefore, this approach has been excluded.

3. ***Projective techniques***: there are various projective techniques such as Sentence Completion in which a person is asked to complete an incomplete sentence. Another is the Cartoon Completion in which the subject has to write in the bubble of a cartoon and then explain his/her words. Stereotyping is another projective technique in which a respondent has to describe the people either by asking questions about the topics of their interest or by using images or words. Projective techniques are expensive to administer because highly skilled research staff have to be employed (Webb, 1992). Moreover, it is difficult to perform projective tests with statistically significant samples, and this restricts generalisation of the results to the population as a whole (Webb, 1992, p 129). Therefore, this approach has been excluded.
4. ***Brand Personification***: in this technique, the participant is asked to imagine if brands are people and are alive, what they will think? In the next step, the participants are asked to explain their answers (Rabin, 2013).

Positive attitude

A person with a positive attitude focuses on good, even in bad conditions, and always considers failures as opportunities rather than hurdles and keeps moving forward in life (Mason, 2010; FitzMaurice, 2011).

Positive attitude towards delay: In case of occurrences of delay, the stakeholder focuses on completing the project on time within the budget and to the quality even if he or she face the specific obstacles during the project and considers delay as a chance to learn and to avoid the same problems in future projects.

Neutral attitude

A person with neutral attitude ignores the problems and hurdles and leaves it for others to find a solution (Ajzen, 2005; Mason, 2010; FitzMaurice, 2011).

Neutral attitude towards delay: In case of occurrences of delay, the stakeholder ignores the delay and why it happens and lets other stakeholders or managers to deal with problems.

Negative attitude

A person having a negative attitude, likes to ignore the positive aspects and, focuses on bad aspects of events, situations and persons, has a blaming attitude and always remains busy in complaining about others and changes (Ajzen, 2005; FitzMaurice, 2011).

Negative attitude towards delay: In case of occurrences of delay, the stakeholder blames other and tries to ignore the occurrence of delay, spends the time in complaining about situations instead of looking for solutions and does little to reduce delay and does nothing to avoid problems likely to cause delay.

In this study, we need to know the attitude towards an occurrence of delay in construction projects. Once we establish that we have negative or positive attitude, the next step that have to know is find out what are the factors particularly focusing on cultural factors that make the person's attitude negative or positive. Is there any relation with the cultural factors that makes person to behave in that direction, because the behavior is one component of attitude? Feelings and thoughts are intangible; behaviour is an action and a tangible. The combination of the three components gives the measure of attitude (Erwin, 2014; Robertson, 2012). In this study, the Likert scale has been used, this technique is one of the most commonly used techniques and therefore, it can easily be used in construction projects in order to measure the attitudes of the employees, employers and owners. Many studies used it such as (Hellair (2001), Ali (2006), Osmani et al. (2006), Kulatunga, et al. (2006), Arabiat et al. (2007), Wang and Liu (2007), Begum et al. (2009), Fazli et al. (2012), and Rahman and Chileshe (2012)).

The questionnaire targets the attitude of key stakeholders towards delay in construction projects in KSA. Questions are included to establish respondents' feelings, thoughts and behaviour, to establish whether they have a negative attitude, positive attitude or natural attitude. Once this is established responses can be analysed to measure how national culture influence their attitude.

Attitude is demonstrated by three components (feelings (F), thoughts (T) and actions (A)) and its outcome can be positive, neutral or negative. These components interact, influence and exhibit some form of relationship that enables the system to function as a whole, so an attitude system can be created as a generic dynamic system diagram as shown in Figure 3.4 below.

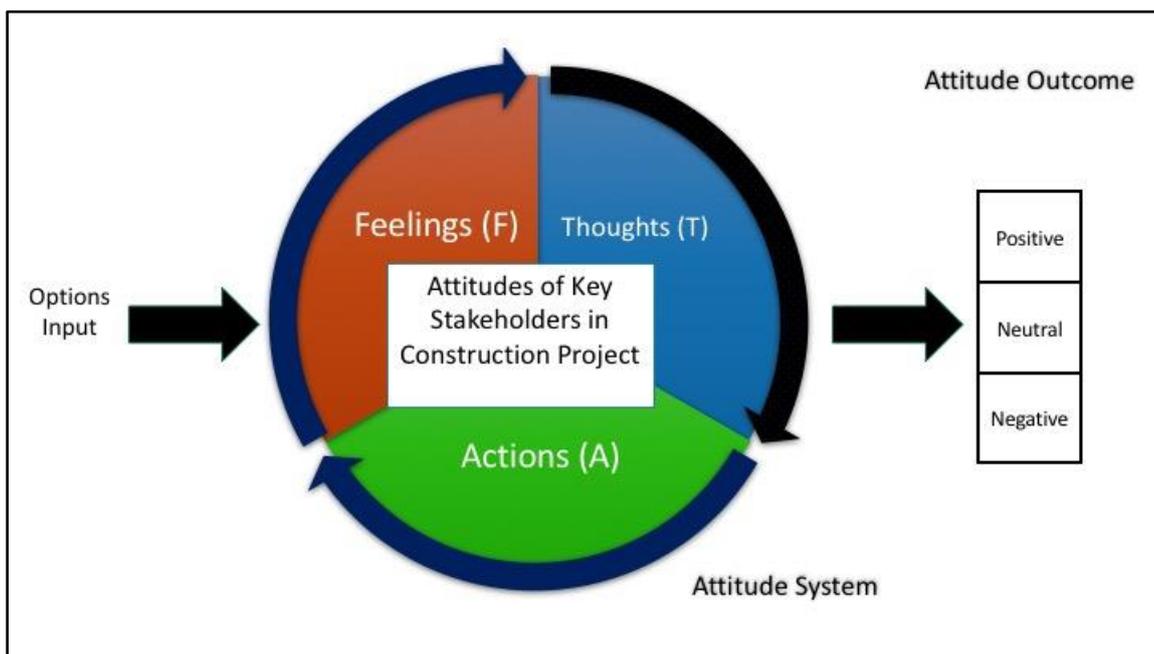


Figure 3.4: The Attitude System

The significance of the attitude system is that to thoroughly understand an attitude, one must assess all three components. Suppose, for example, one wants to evaluate one's employees' attitudes towards delay. One would want to determine how they feel about occurrence of

delay (feelings), they would behave in case of occurrence of delay (actions), and what they think about the occurrence of delay (thoughts).

As discussed in Section 3.2, the national culture plays a role in people attitude and their reaction towards the life events and issues. Attitude towards delay in construction projects can be affected by national culture and how national culture can impact upon attitude is shown in Figure 3.5 below. The figure shows that when the dynamic attitude system spins clockwise the six national culture dimensions can effect each of the three components of attitude system.

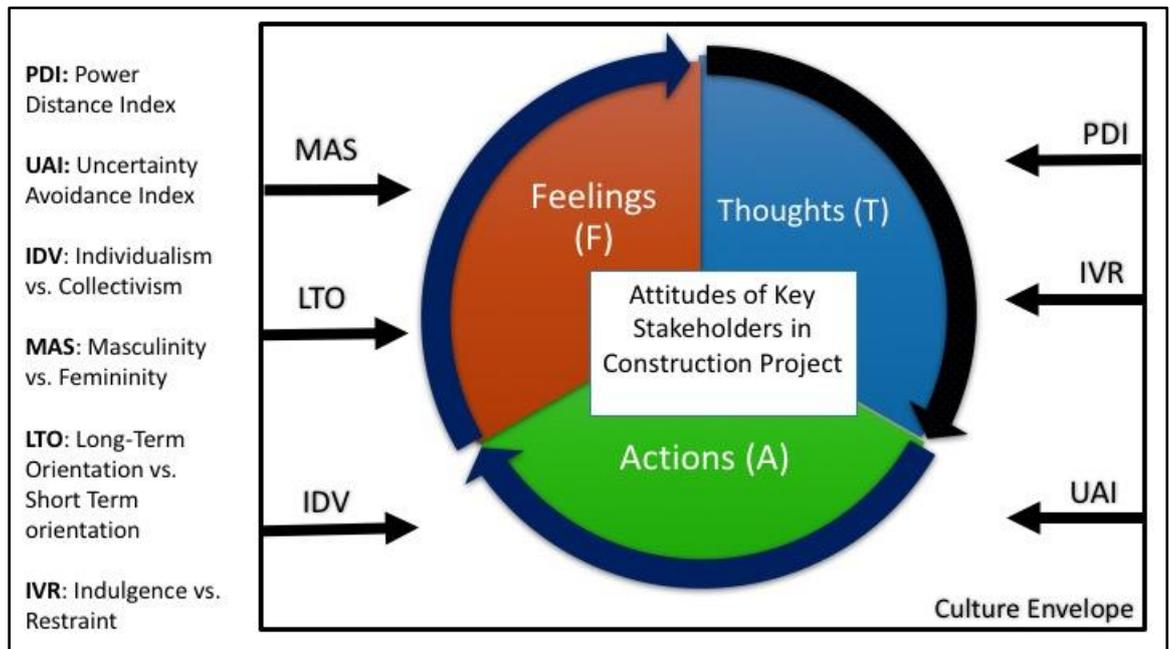


Figure 3.5: The Attitude System and National Culture

The next step will be finding factors that influence attitudes towards delay in construction projects.

3.3.2. Factors that Influence Attitude in Construction Projects in General

In this subsection, the factors that make the person's attitude positive, neutral or negative are explored.

Most previous studies in the construction fields (risk management, waste management, planning, cost, etc.) have focused on the factors that influence attitudes towards project management, but no attention was given to those factors that influence the stakeholders' attitudes towards delay in construction projects, and this is what this study trying to achieve.

The attitudes and practices of individuals allow the realisation of project processes to meet the organisation's strategy which requires that organisational effectiveness resulting in reduced project time, a saving of resources and/or greater quality. In large projects, usually the project delays mainly due to the attitudes of the people involved in the execution of the project (Bhadury et al. 2000 and Dinsmore, 2005). This highlights the importance of supervision. In many cases the performance supervision has a strong influence on all stages of the project, and may lead to higher costs and inefficient use of the resources. In order to control the attitudes of people involved to managing progress on construction projects, it is important to understand attitudes and to encourage positive attitudes. Conflicts and differences of attitudes of project stakeholders are often one of the sources of delay in construction projects (Assaf and Al-Hejji, 2006 and Zheng and Chen, 2012). Therefore, it is necessary to know the factors that are contributing to the attitudes of stakeholders in construction projects and to know which of these factors could affect their attitude towards the occurrence of delay; then applying the findings for Saudi Arabia in order to find the relationship, correlations between attitudes and national culture in construction projects in Saudi Arabia.

Egan (1998), Latham (1994), Wolstenholme (2009) and numerous other researchers have established the significance of collaboration or partnering to successful construction projects

management. Collaboration is readily achieved when key stakeholders or participants have a concurrence of attitude that is considered positive. Establishing the attitude of the key stakeholders and knowing how to influence or change it to the desired model are therefore very important knowledge for effective project management particularly when culture is (at least in part) the culprit.

A thorough literature review was carried out on issues connected with attitudes in construction projects (Hellair (2001), Ali (2006), Osmani et al. (2006), Kulatunga, et al. (2006), Arabiat et al. (2007), Wang and Liu (2007), Begum et al. (2009), Fazli et al. (2012), and Rahman and Chileshe (2012)). This literature-based research identified more than 45 factors contributing to attitudes in construction projects.

Therefore, in an attempt to collect the factors that contribute to delay in projects and to find out the factors that may contribute to the attitude toward the delay in the project, the project has used the methodologies of Critical Success Factors (CSFs), then the questionnaire is used to apply those factors in the Kingdom of Saudi Arabia to establish the relationship between the factors and Saudi national culture.

Critical Success Factors (CSFs) have been identified to find the attitude factors towards delay in construction projects. The definition Critical Success Factors method (CSFs) according to Rockart (1982) these few key areas of activity in which favourable results are absolutely necessary for researcher to reach his/her goals.

CSFs methodology attempts to identify the key areas that are essential for management success (Boynton and Zmud, 1984). According to Boynton and Zmud, (1984) from 1970s the method has been used in financial services as a management measure, in information systems (Rokkart, 1982) and in the manufacturing industry (Mohr and Spekman 1994). Tiong (1996) investigated the use of CSFs in competitive tendering and negotiation for private contractors in build operate transfer contracts and Jefferies et al. (2002) researched

how public clients successfully manage Build Own Operative Transfer (BOOT) project procurement using it.

The following is a summary of key research about attitude in constructions industry:

- a) Fazli et al. (2012): This paper defines the critical factors which can affect the decision maker's risk attitudes in multinational construction projects in Iran and prioritizes them based on weightings. As decision maker's risk attitudes would influence their behavior, factors affecting the risk attitudes can help predicting their behavior and make various risk attitudes well understood. In this paper, 26 probable effective factors on risk attitudes of contractors in multinational construction projects in Iran are discussed. These include: -

- Education background,
- Engineering experience,
- Social experience,
- Professional knowledge,
- Range of knowledge,
- Physical health,
- Social level,
- Character traits,
- Boldness,
- Values,
- Moral values,
- Decision motivation,
- Engineering interest,
- judgment ability,
- Intuition,

- Sensitivity to external information,
- Psychological endurance,
- Willpower,
- Desire for decision objectives,
- Consequences of decision making,
- Time constraints for decision making,
- Completeness of project information,
- Company's economic strength,
- External economic environment,
- Policy environment and
- Regulations related to engineering.

Using interviews to have accurate calculation, these factors have been ranked. Seventeen factors were determined to have the most influence on risk attitudes of decision makers in Iran. Unimportant factors were omitted (Range of knowledge, Physical health. Social level, Values, Moral values, Psychological endurance, Time constraints for decision making and Regulations related to engineering). The “completeness of project information” and “engineering experience” were been identified as the most important factors.

- b) Ali (2006): This thesis is concerned with national culture and its influence on safety climate in the construction industry in Pakistan. It investigates the safety perceptions, attitudes, and behaviour of Pakistani construction workers and managers. It presents the empirical results of a number of questionnaire surveys administrated in Pakistan targeting construction workers, and managers with safety management responsibilities. Based upon the survey analysis results, this study demonstrates that

the majority of Pakistani construction workers have a good degree of risk awareness and self-rated competence, and a relatively high degree of safety awareness. Further it was found, empirically, that overall workers' intentional behaviour seems to be best explained by workers' attitudes towards their own and managements' safety responsibilities, as well as their perception of the risk they are generally exposed to in their workplace environment. The survey analysis showed that managers' safety management preferences are influenced by their cultural trends. Their safety related decisions, whether being developed in head office or on site, are influenced by their high collectivistic, feministic, power distance and uncertainty avoidance attitude. This study thus establishes a statistically significant positive relationship between the factors of workers' perceptions, attitudes and safe work behaviour, and management practices (Awareness and Beliefs, Physical Work Environment, Supportive Environment).

- c) Begum et al. (2009): This paper provides insights on how contractor's attitudes and behaviours affect waste management in the construction industry of Malaysia. A structured questionnaire survey was implemented in order to interview local contractors. The results show that contractor attitudes regarding waste management tend to differ based on the size of the contractor. The important and significant factors that affect contractor attitudes toward waste management include contractor size, source reduction, reuse and recycling measures, frequency of waste collection, staff participation in training programs and waste disposal method. Factors such as construction-related education among employees, contractor experience in construction works, source reduction measures, reuse of materials, waste disposal behaviours and attitudes toward waste management are the most significant factors

affecting contractor behaviour on waste management. These factors influence contractor attitudes and behaviours and are necessary to effectively improve waste management, growth and performance, as well as to reduce the environmental degradation of the construction industry.

- d) Wang and Yuan (2011): Investigated the critical factors affecting contractors' risk attitudes in construction projects in China. A literature review, interviews and questionnaires are used for the identification of factors affecting contractors' risk attitudes. Results from factor analysis on the identified critical factors revealed that they can be grouped into four categories, namely: (1) knowledge and experience; (2) contractors' character; (3) personal perception; and (4) economic environment. The results show that the most important three factors are Consequences of decision-making, Engineering experience and Completeness of project information. A list of 26 factors was derived, which formed the main basis for the questionnaire design. Those 26 factors are Education background, engineering experience, Social experience, Professional knowledge, Scope of knowledge, Physical health, Social status, Character traits, Boldness, Values, Moral values, Decision motivation, Interest in the engineering, Judgment ability, Intuition, Sensitivity to external information, Psychological endurance, Willpower, Desire for decision objectives, Consequences of decision making, Time constraints for decision making, Completeness of project information, Company's economic strength, External economic environment, Policy environment and Engineering related regulations. Different kinds of character traits were previously studied by Wang and Liu (2007) who found that different character traits result in different behaviour. For example, independent decision makers like to solve the problems individually. They

sometimes tend to impose their opinions while submissive decision makers tend to agree with other's ideas. All these different traits result in different risk attitudes.

e) Arabiat et al, (2007): presents initial thoughts on a study into how the role and behaviour of the client induces or mitigates risk in projects. The study approaches the client role from an organisational behaviour perspective. The study aims to demonstrate whether the characteristics of certain behaviours create a risk management style for the client, and whether these characteristics affect the project risk positively or negatively. This study defined some factors, which effects the client's involvement in the construction management process: The structure of the client's organisation, the client's knowledge and experience of the construction process, the authority vested in the various levels of the client's organisation, the personal characteristics of the client's people who have responsibility for the project and changes in technological and financial tactics in construction.

f) Work of Osmani et al, (2006) was reviewed by Baumann (2013) and represented as follows: This research used a questionnaire survey of the UK's top 100 architects and contractors to investigate the root causes of construction waste, roles and responsibilities, waste reduction strategies in design and construction, their attitude towards waste management and barriers affecting waste minimisation practices. The results showed that most architects were aware of and have positive feelings towards the importance of waste minimisation, but few serious attempts were made to reduce waste during the design process. Indeed, most architects acknowledged that waste minimisation is not considered during design. In addition, architects believed waste was produced primarily during site operations and rarely generated during the design

stages. On the other hand, contractors were pursuing a proactive approach to managing on-site waste through well-defined waste management policies. Contractors strongly believed, however, that waste could be substantially reduced through three focused activities: (a) the design process (b) better waste management practices by sub-contractors (c) a change of culture to improve company and individual attitudes. Both groups appeared, however, to be restrained by internal and external factors, namely, clients' requirements, lack of training, and uncertainty regarding organisational waste minimisation responsibilities and perceptions of waste. Architects considered waste reduction measures to be the responsibility of contractors, who themselves acknowledged that waste arises from construction and logistical processes. Participants suggested that better-defined organisational and individual responsibilities would help the implementation of measures to reduce waste, perhaps implemented through changes to contractual arrangements or adoption of agreed waste minimisation performance indicators. It is evident that the construction industry is showing a growing interest in environmental accreditation that could potentially help towards a better waste minimisation performance.

- g) Kulatunga et al. (2006): The majority of the causes underlying material waste are directly or indirectly affected by the behaviour of the construction workforce. Waste occurs on site for a number of reasons, most of which can be prevented, particularly by changing the attitudes of the construction workforce. Therefore, the attitudes and perceptions of the construction workforce can influence the generation and implementation of waste management strategies. The research reported in this paper is based on a study aimed at evaluating the attitudes and perceptions of the construction workforce involved during the pre- and post-contract stages towards

minimising waste. A structured questionnaire survey was carried out to understand and evaluate the attitudes and perceptions of the workforce. The questionnaire was prepared for project managers, site managers, supervisors, labourers, and estimators. The findings indicate the positive perceptions and attitudes of the construction workforce towards minimising waste and conserving natural resources however, a lack of effort in practising these positive attitudes and perceptions towards waste minimisation was identified. The paper further concludes that negative attitudes towards subordinates, attitudinal differences between different working groups, and a lack of training to reinforce the importance of waste minimisation practices have obstructed proper waste management practices in the industry. The paper reveals the effect of the attitudes and perceptions of the construction workforce towards waste management applications, which would be of benefit to construction managers in designing and implementing better waste management practices.

- h) Rahman and Chileshe (2012): The aim of this study is to ascertain the attitudes, perceptions and identify the general practices of contractors in pricing risks and secondly to find out their practices towards quality related risks during the tendering stage. The data was elicited using a survey sample of a cross-section of 23 construction contractors registered with the Master Builders Association of South Australian (MBASA), and the results were analysed using frequency distribution. The results show that the majority of the contractors do not use any risk management processes. Usage was dependent on experience and judgement of the decision makers. Three prominent practices established were consideration for adding only high ranked risks with the base cost, additional of a percentage in the overall cost, and pricing high ranked risks independently and then adding an additional lump sum

for the residual risk. The identification of these practices could benefit contractors in pricing risks more effectively and negate the conflicts arising through the dissatisfaction from the non-performance and quality related issues.

From above studies, as shown in Table 3.4, there are forty eight different cited items identified that influence the attitudes of stakeholders in construction projects. By using Disaggregate System Methodology and subjective judgment, the research has categorised these 48 items into twelve factors (numbered F1 to F12) as shown in Table 3.4., each factor is explained in column five of Table 3.4. In summary, Table 3.5 outlines the established twelve factors (F1-F12), the frequency of referenced citation of each factor, and the system's component it belongs (i.e. input, conversion, output, feedback and/or environment). As shown in column six of Table 3.5, there are seven factors originating from Input, three factors originate from Environment, two factors originate from the Output, and one each from the Conversion and the Feedback components.

Table 3.4: The Categorisation of the Identified 48 Cited Items that Influence Attitude of construction Project Stakeholders into 12 Factors

Items No.	Factors in Others Studies	Authors	Category	Name of Factor	Explanation	System components
1	Education background,	Fazli et al. (2012), Begum et al. (2009), Wang and Yuan (2011), Kulatunga, et al. (2006), Arabiat et al. (2007)	F01	Education	Begum et al. (2009), shows that contractor attitudes toward waste management are more positive if a contractor's employees have a higher level of construction-related education. Tam et al. (2005) noticed that proper training and education are needed to change attitudes within the construction industry regarding the adoption of prefabrication. Attitudes toward risks within the decision making process may vary greatly, depending on contractors' education background. Generally speaking, contractors with higher education tend to be more rational and cautious, while those who received little education tend to be more fearless and impulsive Wang and Yuan (2011); Chen (2000)	Input (personal)
2	Education and training programs					
3	Awareness	Ali (2006), Begum et al. (2009), Rahman and Chileshe (2012)	F02	Awareness	Awareness is the ability to perceive, to feel, or to be conscious of events, objects, thoughts, emotions, or sensory patterns. In this level of consciousness, sense data can be confirmed by an observer without necessarily implying understanding. More broadly, it is the state or quality of being aware of something. In psychology, awareness is defined as a human's perception and cognitive reaction to a condition or event. Ali (2006) demonstrates that workers have a good degree of risk awareness and self-rated competence, and a relatively high degree of safety awareness. Their safety related decisions are influenced by their high Individualism vs. Collectivism (IND), Masculinity vs. Femininity (MAS), Power Distance Index (PDI) and Uncertainty Avoidance Index (UAI); and not influenced by Long Term Orientation (LTO) and Indulgence versus Restraint (IVR). - Contractor attitudes toward waste management are more positive for contractors that did not perceive construction waste as harmful to human health (Begum et al. 2009).	Input (personal)
4	Believes					
5	Employee awareness					
6	Group influence,	Ali (2006), Kulatunga, et al. (2006), Hellair (2001)	F03	Group influence	Perceived differences in safety climate dimensions between and within groups of organizations have been examined in previous studies (Budworth, 1997; Glendon and Litherland, 2001).	Input (group)
7	Team and group influence					
8	Working groups					
9	Physical Work Environment	Ali (2006)	F04	Work Environment	Ali (2006) demonstrates that "Physical Work Environment" is influenced positively by two cultural dimensions (IND) and (UAI).	
10	Supportive environment	Fazli et al. (2012), Ali (2006) Begum et al. (2009), Wang and Yuan (2011), Kulatunga, et al. (2006), Rahman and Chileshe (2012), Hellair (2001), Arabiat et al. (2007)	F05	Experience	By strong experience, stakeholders become familiar with potential delays in project. So experience plays an important role in attitude procedure towards delay. Therefore, risk attitude can be influenced by experience. This factor has been identified as the most important factors, by Fazli et al. (2012). Judgment ability. This is the ability of stakeholders to analyse and judge the problems based on experience and personal knowledge. This ability plays an important role in project process. Ali (2006) showed an interesting finding related to the positive relationship between work experience and the perception of risk. Contractor attitudes toward waste management are more positive if contractors have more experience in construction works (Begum et al. 2009). Various knowledge background and range of knowledge influence stakeholders directly when they work on professional parts of project and result in different attitudes. Range of knowledge has been omitted by Fazli et al. (2012). The knowledge about construction projects and delays comes from stakeholders' experience and sharing information during actual practices this relation will be in experience factor.	Input (personal)
11	Engineering experience					
12	Social experience					
13	Judgment ability					
14	Professional knowledge					
15	Range of knowledge					
16	Experience in construction works	Fazli et al. (2012), Wang and Yuan, (2011), Li And Liu (2003), Liu (1998), Wang and Yuan (2011), Kulatunga, et al. (2006), Rahman and Chileshe (2012), Arabiat et al. (2007)	F06	Human factors	-Human factors are defined by Thevendran (2002) as "a person, project team and organizational factors that can affect people's behavior and work environment in a way that causes reduction or improvement of the project's procedure". Physical health of decision makers affects the rate of bearable pressure by them, their tendency to short-time profit and their abilities to encounter the risks. This factor is omitted by Fazli et al. (2012) Social level: Decision makers with different social levels have different risk attitudes facing the same situation. - Character trait is a feature of someone or something that separates it from others. People sometimes tend to impose their opinions while submissive decision makers tend to agree with other's ideas. All these different traits result in different risk attitudes. - Boldness is referred to those who desire to experience the risks. Courageous decision makers always have the ability to make decision undoubtedly - Value means people's opinions about what is right or wrong or important in life (Li And Liu, 2003). - Moral value is the quality of being encountered with standards or a system of beliefs that is consisted of common sets. Each set as a member of society has similar moral values that may influence the attitude (Liu, 1998). This factor is omitted by Fazli et al. (2012) Engineering interest. The stakeholders' interest in projects influences the development and creation in construction duration which affect the attitudes. This factor is omitted by Fazli et al. (2012) Intuition is the ability, which becomes important when facing complicated issues. The solution based on intuition is usually desirable. Sensitivity to external information, this refers to decision makers who can response to engineering deviations through different information assessment very fast. Psychological endurance: Li and Liu (2003) have believed that Psychological endurance is an ability which causes stakeholders to tolerate the pressures out of several sources. - Willpower is the ability to control the mind and body to reach the target.	Input (personal)
17	Physical health					
18	Social level					
19	Character trait					
20	Boldness					
21	Values					
22	Moral value					
23	Engineering interest					
24	Intuition					
25	Sensitivity to external information					
26	Psychological endurance	Fazli et al. (2012), Wang and Yuan, (2011), Li And Liu (2003), Liu (1998), Wang and Yuan (2011), Kulatunga, et al. (2006), Rahman and Chileshe (2012), Arabiat et al. (2007)	F06	Human factors	-Human factors are defined by Thevendran (2002) as "a person, project team and organizational factors that can affect people's behavior and work environment in a way that causes reduction or improvement of the project's procedure". Physical health of decision makers affects the rate of bearable pressure by them, their tendency to short-time profit and their abilities to encounter the risks. This factor is omitted by Fazli et al. (2012) Social level: Decision makers with different social levels have different risk attitudes facing the same situation. - Character trait is a feature of someone or something that separates it from others. People sometimes tend to impose their opinions while submissive decision makers tend to agree with other's ideas. All these different traits result in different risk attitudes. - Boldness is referred to those who desire to experience the risks. Courageous decision makers always have the ability to make decision undoubtedly - Value means people's opinions about what is right or wrong or important in life (Li And Liu, 2003). - Moral value is the quality of being encountered with standards or a system of beliefs that is consisted of common sets. Each set as a member of society has similar moral values that may influence the attitude (Liu, 1998). This factor is omitted by Fazli et al. (2012) Engineering interest. The stakeholders' interest in projects influences the development and creation in construction duration which affect the attitudes. This factor is omitted by Fazli et al. (2012) Intuition is the ability, which becomes important when facing complicated issues. The solution based on intuition is usually desirable. Sensitivity to external information, this refers to decision makers who can response to engineering deviations through different information assessment very fast. Psychological endurance: Li and Liu (2003) have believed that Psychological endurance is an ability which causes stakeholders to tolerate the pressures out of several sources. - Willpower is the ability to control the mind and body to reach the target.	Input (personal)
27	Willpower					

Table 3.4: The Categorisation of the Identified 48 Cited Items that Influence Attitude of construction Project Stakeholders into 12 Factors (continued)

Items No.	Factors in Others Studies	Authors	Category	Name of Factor	Explanation	System components
28	Decision motivation,	Fazli et al. (2012), Wang and Yuan (2011), Hellair (2001)	F07	Motivation	With a motivation, the decision is of significant directivity, which causes the action to move towards a specified and determined direction. Desire for decision objectives: Origins can usually lead stakeholder's activities to certain aims. As a result stakeholders' attitude can be influenced enormously by their demands when facing delay. Consequences of decision-making. Stakeholders may consider the consequence of their decisions. As a result, it can affect their attitudes. Time constraints for decision-making. In an unpredicted situation, a quick response and fast decision-making are needed. Therefore there is a little time to make decision. In such a case stakeholders' attitude based on specified time for decision making will be different. This factor is omitted by Fazli et al. (2012)	Input (personal)
29	Desire for decision objectives,					
30	Consequences of decision-making,					
31	Time constraints for decision-making					
32	Company's economic strength,	Fazli et al. (2012), Wang and Yuan (2011), Begum et al. (2009), Kulatunga, et al. (2006), Osmani et al. (2006),	F08	Organization Influence	Economic, poor preparation and planning for projects and sites, procurement methods in organization, poor define responsibility, developing policies, management commitment, Organization size Company's economic strength has always been important and effective on attitude. According to an empirical study conducted by Slovic and Fishhoff (1982) there is a reduction of risk aversion with increasing the company's economic strength. In delay, there is a reduction of aversion from occurrence of delay with decreasing the company's economic strength. Contractor type and size: Begum et al. (2009) shows a positive relation between contractor category and attitudes, which indicates that large contractors have more positive attitudes regarding waste management practices as compared to medium and small contractors. Contractors that follow source reduction measures or practices tend to have more positive attitudes toward waste management (Begum et al. 2009). Contractors that follow clear policy and practices have more positive attitudes toward waste management as compared to those that do not.	Environmental (internal) and Input (organization)
33	Contractor type and size,					
34	Organization strength,					
35	Procurement methods in organization					
36	Completeness of project information,	Fazli et al. (2012), Wang and Yuan (2011), Begum et al. (2009), Kulatunga, et al. (2006), Osmani et al. (2006), Arabiat et al. (2007)	F09	The updated changes in project	Completeness of project information is vital to have complete engineering information to make proper decision because it can enhance the confidence of decision makers in making important decisions. This factor has been identified as the most important factors, by Fazli et al. (2012). Communication Completeness regarding feedback on outcome and the subsequent reaction.	Output and Feedback
37	Changing in (orders, design, time,					
38	technology,					
39	Financial tactic in construction,					
40	External economic environment,	Fazli et al. (2012), Wang and Yuan, (2011), Kulatunga, et al. (2006)	F10	External environment	External economic environment: a good external economic behaviour causes active attitude of stakeholders when they accost projects. However, bad economic environment can make their attitude inactive. Policy environment: a national or regional policy environment is the base of implementation the project. Different policies applied during conducting a project, influence the attitude directly. Regulations related to engineering is related to some rules of project's regulations introduced by the government. This factor is omitted by Fazli et al. (2012)	Environmental (external)
41	Policy environment,					
42	Changes in pricing conditions,					
43	Regulations related to engineering,					
44	Inflation,					
45	Statutory factors,					
46	Market trends, weather					
47	Complexity of project	Arabiat et al. (2007)	F11	Work Flow	Workflow is the definition, execution and automation of project processes where tasks, information or documents are passed from one participant to another for action, according to a set of procedural rules. The nature of the programme, the nature of process, the planned workflow such as complexity.	Conversion
48	NL	None	F12	Outcome	The success or failure of projects regarding completion in time.	Output

Table 3.5: Citation of F1 to F12 in various publications

No.	Factors	No.	1	2	3	4	5	6	7	8	9
		Author/ year	Fazli (2012)	Ali (2006)	Begum et al. (2009)	Wang and Yuan (2011)	Arabiati et al. (2007)	Osmani (2006)	Hellair et al. (2001)	Kulatunga et al. (2006)	Rahman and Chileshe (2012)
		Location of study	Iran	Pakistan	Malaysia	China	UK	UK	UK	Sri Lanka	South Australia
		Field of study	Risk	Safety	Waste management	Risk	Risk	Waste management	Risk	Waste management	Quality
		Sample	Decision maker	Contractors (workers and managers)	Contractors	Contractors	Clients	Architect and Contractors	UK business	Project managers, site managers, supervisors, labours and estimators	Contractors
F01	Education	X		X	X	X			X		
F02	Awareness		X	X						X	
F03	Group Influence		X					X	X		
F04	Work Environment		X								
F05	Experience	X	X	X	X	X		X	X	X	
F06	Human Factors	X			X	X			X	X	
F07	Motivation	X			X						
F08	Organization Influence	X			X		X	X	X		
F09	The Updated Changes in Project	X				X	X		X		
F10	External environment	X			X				X		
F11	Workflow					X					
F12	Outcome										

The twelve factors are summarized below in no particular order in the context in which they were considered:

- 1. Education:** Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Education frequently takes place under the guidance of educators, but learners may also educate themselves. In case of delay it is difficult to provide training about delay, but the level of education can help in avoiding delay by knowing the project process and fundamentals of construction projects. Attitudes toward delay may vary greatly, depending on stakeholders' education. Generally, stakeholders with high educational level tend to be more logical while those with lower educational level tend to be more fearless and instinctive in dealing with delay.
- 2. Awareness:** Awareness is the ability to perceive, to feel, or to be conscious of events, objects, thoughts, emotions, or sensory patterns. Sense can be confirmed by an observer without necessarily implying understanding. More broadly, it is the state or quality of being aware of something. In biological psychology, awareness is defined as a human's perception and cognitive reaction to a condition or event.
- 3. Group influence:** Group influence has the power in persuasion and makes people blindness to it (Cohen, 2003). Solomon et al. (2010) also stated that group influence could shape people attitudes, their desire to please or be accepted by others, even by the actions of famous people whom they've never met. Group influence impacts on stakeholders through three types, reference groups, Word-of-Mouth and opinion leaders.
- 4. Work Environment:** Location where a task is carried out. When pertaining to a place of employment, the work environment involves the physical geographical location as well as the immediate surroundings of the workplace, such as a

construction site or office building. Typically involves other factors relating to the place of employment, such as the quality of the air, noise level, and additional perks and benefits of employment such as coffee, or adequate parking. It also includes the supportive work environment such as offices of managers and consultants.

5. **Experience:** By strong experience, stakeholders become familiar with potential delays in project. So, experience plays an important role in attitude towards delay. Judgment ability is the ability of stakeholders to analyse and judge the problems based on experience and personal knowledge. Stakeholders' attitudes toward delay assume to be more positive if they have more experience in construction works. The knowledge about construction projects and delays comes from stakeholders' experience and sharing information during actual practices.
6. **Human factors:** Human factors are defined as “a person factors that can affect his/her behavior and work environment in a way that causes reduction or improvement of the project's procedure”. Human factors play important role and influence on attitudes towards delay
7. **Motivation:** With a motivation, the decision is of significant directivity, which causes the action to move towards a specified and determined direction. Company can usually lead stakeholders' activities to certain aims. As a result, stakeholders' attitude can be influenced enormously by their demands when facing the delay. Stakeholders may consider the consequence of delay; as a result, it can affect their attitudes.
8. **Organization Influence:** Economic, poor preparation and planning for projects and sites, procurement methods in organization, poor define responsibility, developing policies, management commitment, Organization size Company strength has always been important and effective on attitude. According to a study conducted by

Haimlevy Slovic and Fishhoff (1982) there is a reduction of risk aversion with increasing the company strength. In delay, there is a reduction of aversion from occurrence of delay with decreasing the company's economic strength. Begum et al. (2009) shows a positive relation between contractor category and attitudes, which indicates that large contractors have more positive attitudes as compared to medium and small contractors. Contractors that follow clear policy and practices have more positive attitudes toward delay as compared to those that do not.

- 9. The updated changes in project:** Completeness of project information is vital to have complete engineering information to make proper decision because it can enhance the confidence of decision makers in making important decisions.
- 10. External environment:** External economic environment: a good external economic behavior causes active attitude of stakeholders when they accost projects. However, bad economic environment can make their attitude inactive. A national or regional policy environment is the base of implementation the project. Different policies applied during conducting a project, influence the attitude directly.
- 11. Work Flow:** Workflow is the definition, execution and automation of project processes where tasks, information or documents are passed from one participant to another for action, according to a set of procedural rules. When the workflow is very complex it may affect attitude towards delay.
- 12. Outcome:** The success or failure of projects regarding completion in time. This factor did not mention in any study as a factor can affect the attitudes of project stakeholders.

3.3.3. Factors that influence Attitude towards Delay in Construction Projects

An occurrence of delay in construction project is often caused by a complex interaction of a combination of attitude coming from different stakeholders (Ndekugri et al., 2008).

After the factors that influence attitudes in construction projects have been identified (Tables 3.4 and 3.5) and categorized in 12 factors, the factors that influence attitudes towards delay have to be identified.

The research used subjective judgment to decide whether ('yes' or 'no') the factor could affect the attitude of a construction stakeholder towards delay (i.e. affecting it in negative or positive manner). The proposed interpretation is shown in Table 3.6 where the factors have been allocated into the three components of attitude (feelings, thoughts and actions). Table 3.6 also provides clearer definitions of the main factors (F1-F12). Also, Figure 3.6 depicts the generic dynamic attitude system diagram with incorporation of the identified 12 factors, shown as dynamic anti-clockwise wheel.

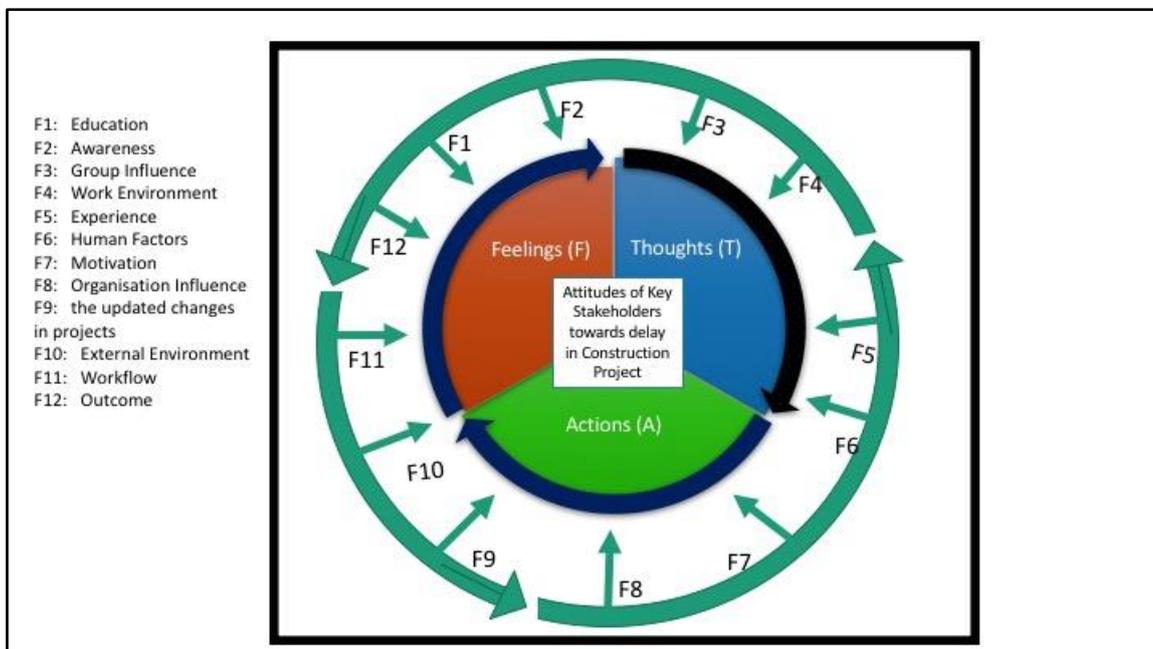


Figure 3.6: The Attitude System and the 12 Factors that may Influence the Attitude in Construction Projects.

Table 3.6: Allocation factors into the three components attitude (feelings, thoughts and actions).

No.	Factors	Definition	Effects of stakeholders' feeling towards delay	Effects of stakeholders' thoughts towards delay	Effects of stakeholders' behavior towards delay
F01	Education	Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Education frequently takes place under the guidance of educators, but learners may also educate themselves. In case of delay it is difficult to provide training about delay, but the level of education can help avoiding delay by knowing the project process and fundamentals of construction projects. Attitudes toward delay may vary greatly, depending on stakeholders' education. Generally, stakeholders with high educational level tend to be more logical while those with lower educational level tend to be more fearless and instinctive in dealing with delay.	Yes	Yes	Yes
F02	Awareness	Awareness is the ability to perceive, to feel, or to be conscious of events, objects, thoughts, emotions, or sensory patterns. Sense can be confirmed by an observer without necessarily implying understanding. More broadly, it is the state or quality of being aware of something. In biological psychology, awareness is defined as a human's perception and cognitive reaction to a condition or event.	Yes	Yes	Yes
F03	Group influence	Group influence has the power in persuasion and makes peoples blindness to it (Cohen, 2003). Solomon et al. (2010) also stated that group influence could shape people attitudes, their desire to please or be accepted by others, even by the actions of famous people whom they've never met. Group influence impacts on stakeholders through three types, reference groups, Word-of-Mouth and opinion leaders.	Yes	Yes	Yes
F04	Work Environment	Location where a task is carried out. When pertaining to a place of employment, the work environment involves the physical geographical location as well as the immediate surroundings of the workplace, such as a construction site or office building. Typically involves other factors relating to the place of employment, such as the quality of the air, noise level, and additional perks and benefits of employment such as coffee, or adequate parking. It also includes the supportive work environment such as offices of mangers and consultants	Yes	No	Yes
F05	Experience	By strong experience, stakeholders become familiar with potential delays in project. So, experience plays an important role in attitude towards delay. Judgment ability is the ability of stakeholders to analyse and judge the problems based on experience and personal knowledge. Stakeholders' attitudes toward delay assume to be more positive if they have more experience in construction works. The knowledge about construction projects and delays comes from stakeholders' experience and sharing information during actual practices.	Yes	Yes	Yes
F06	Human factors	Human factors are defined as "a person factors that can affect his/her behavior and work environment in a way that causes reduction or improvement of the project's procedure". Human factors play important role and influence on attitudes towards delay	Yes	Yes	Yes
F07	Motivation	With a motivation, the decision is of significant directivity, which causes the action to move towards a specified and determined direction. Organization can usually lead stakeholders' activities to certain aims. As a result, stakeholders' attitude can be influenced enormously by their demands when facing the delay. Stakeholders may consider the consequence of delay; as a result, it can affect their attitudes.	Yes	Yes	Yes
F08	Organization Influence	Economic, poor preparation and planning for projects and sites, procurement methods in organization, poor define responsibility, developing policies, management commitment, Organization size and strength has always been important and effective on attitude. According to a study conducted by Slovic and Fishhoff (1982) there is a reduction of risk aversion with increasing the Organization strength. In delay, there is a reduction of aversion from occurrence of delay with decreasing the Organization economic strength. Begum et al. (2009) shows a positive relation between contractor category and attitudes, which indicates that large contractors have more positive attitudes as compared to medium and small contractors. Contractors that follow clear policy and practices have more positive attitudes toward delay as compared to those that do not.	Yes	Yes	Yes
F09	The updated changes in project	Completeness of project information is vital to have complete engineering information to make proper decision because it can enhance the confidence of decision makers in making important decisions.	No	No	Yes
F10	External environment	External economic environment: a good external economic behavior causes active attitude of stakeholders when they accost projects. However, bad economic environment can make their attitude inactive. A national or regional policy environment is the base of implementation the project. Different policies applied during conducting a project, influence the attitude directly.	Yes	Yes	Yes
F11	Work Flow	Workflow is the definition, execution and automation of project processes where tasks, information or documents are passed from one participant to another for action, according to a set of procedural rules. When the workflow is very complex it may affect attitude towards delay.	Yes	Yes	Yes
F12	Outcome	The success or failure of projects regarding completion in time.	Yes	Yes	Yes

3.4. How Saudi National Culture Affects Delay in Construction Projects

The term collective programming is used by Hofstede to indicate the experiences, values, beliefs, traditions, religious patterns, family structures, legal systems, and languages of the inhabitants and expatriates living in any country.

The first aspect to consider is the language, which is one of the major influencing cultural factors in Saudi Arabia. The language of most of the contracts is Arabic which is often translated into English for foreign employees, consultants and contractors. The dilemma is that engineers and other related professionals wish to communicate in their mother language and they do not employ any qualified translators. This has an impact on the quality and progress of the construction projects (Ren et al. 2008).

In addition, some Islamic traditional words like “In Sha Allah” are quite familiar and most of the local construction participants and site engineers use this word as a promise of finishing work. In English “In Sha Allah” means ‘When God Wants’ and foreign engineers often do not understand such words and take different meanings from it. This develops an uncertain of the situation which causes disputes during different stages of construction projects (Ren et al. 2008). As evidenced when speaking to a number of contractors in Saudi Arabia compared to those of foreign decent. In addition to that many foreign professionals are not aware of Sharia Law which is the backbone of Islamic rules and regulations in Saudi Arabia and Saudis like other Muslims do not compromise on these regulations. The lack of awareness of these domestic and customary laws in terms of 'do's and don'ts' cause delays in construction projects.

Experience refers to familiarity or unfamiliarity of the environmental envelope, for example: clients in KSA regularly visit sites and instruct contractors to make amendments in design. The construction participants must obey the orders even if the orders are given outside the contractual terms and conditions (Al-Khalil and Al-Ghafly, 1999). Furthermore, the weather

of GCC, especially in summer, is extremely hot and more than 95% of the international workforce is not used to living and working in this environment. Foreign engineers and other contractors require some time to understand the local procedures and systems of any project in a foreign country and struggle to deal with local culture and the conditions they face. This results in a reduction in productivity which consequently affects the project's progress (Al-Momani, 2000). The contractors in Saudi Arabia often employ an international workforce to provide construction and engineering services. People from different countries, religion, and traditions bring their own beliefs, habits, and working methods and are often exposed to conflict during complex building projects (Ren et al. 2008). Similarly, the holidays and festivals of the different nationals delay the process. The consequence of a multinational workforce is a key cultural factor which hinders engineers to provide timely delivery. According to Toor and Ogunlana (2008), the multicultural environment causes several problems where ineffective communication, multiple foreign contractors with mixed nationalities, and the involvement of many foreign professionals in different project phases are rated the highest problematic factor.

The centralised decision making system and red tape culture of the Saudi government delay the processes of obtaining site work permits. For example, working in a free economic zone requires special permits from the government officials; it takes a long time and significant resources to get full access and control of these zones (Ren et al. 2008). Likewise, the visa application processes for foreign nationals and other similar regulations may generate crucial issues which may have critical impacts on the progress of the project. The tradition of working beyond capacity on more than one project at a time is a critical issue. The construction and engineering sector has a shortage of local contractors and this is why existing local engineering firms are over-loaded by working on multiple projects.

The serial sequence nature of traditional procurement method affects speed in projects. Many construction projects in Saudi Arabia adopt traditional procurement methods that are exposed to several shortcomings (Alhazmi and McCaffer, 2000). Procurement is one of the most important business processes for many organizations, whether large enterprises or small and medium size companies. Many decisions taken by departments have a procurement implication that can impact on the overall cost of carrying out the decision. Companies are reluctant to adopt newer and emerging methods such as integrated systems (design and build), management systems and partnership frameworks that could improve the procurement of construction and engineering services.

Furthermore, engaging small contracting firms in Saudi Arabia is common, which often bring delays due to contractors having insufficient capital and little or no experience of working on large projects with complex construction services. Their limited resources and abilities hinder them in delivering quality output or to embrace the time schedules.

Construction parties in the KSA do not retain long-term business relationships and this allows construction parties not to follow terms and conditions of the contract with any sense of responsibility (Ali, 2008). Furthermore, because there is no proper multitier dispute resolution mechanism there tend to be delays to the construction process if any dispute occurs during the delivery of the project. The blame-culture also causes disputes between the constructions participants. This means that an attempt to evade responsibility is frequent which can adversely affect the project progress.

Table 3.7: The literature source and final categorisation of the origins using the cultural factors.

Cultural Factors using Hofstede's Collective Programming	Origins of Delay in construction Projects in KSA	Alhazmi & McCaffer (2000)	Al-Khalil & Al-Ghafly (1999)	Al-Momani (2000)	Alyousif et al. (2010)	Assaf & Al-Hejji (2006)	Chan & Tse (2003)	Kivrak et al. (2009)	Ren et al. (2008)	Loughborough University & UMIST (2003)	Toor & Ogunlana (2008)
Religion Patterns	Islamic culture (Sharia Law)								✓		
	International workforce with dissimilar religion			✓	✓	✓	✓	✓	✓		
	Local rules, regulations, customs				✓		✓		✓	✓	
Legal Systems	Issues in obtaining work permits		✓						✓		
	Visa application procedures								✓		
	Long working hours							✓		✓	
	Change design & orders		✓	✓		✓		✓			
	Dispute resolution mechanism						✓		✓		
	Local rules, regulations, customs				✓		✓		✓	✓	
	Traditional procurement methods	✓	✓			✓			✓		✓
Traditions	Over commitment of local contractors								✓		
	International workforce with dissimilar tradition.			✓	✓	✓	✓	✓	✓		
	Cultural clash among parties						✓				
	Blame-culture (conflicts due to evade responsibility)		✓	✓		✓				✓	
	Inflexibility and Trust			✓	✓	✓	✓	✓	✓		
	Engaging several small contractors										✓
Languages	Spoken Language					✓		✓	✓		
	Lack of qualified interpreters								✓		
	Lack of communication or information sharing		✓		✓	✓		✓	✓		
Beliefs	Multicultural environment						✓		✓	✓	✓
	Unfamiliar local environment	✓		✓		✓	✓				
	International workforce with dissimilar beliefs.			✓	✓	✓	✓	✓	✓		
Values	No worry to retain long-term business relationships						✓		✓		
	Poor safety tradition	✓			✓			✓		✓	
	Local rules, regulations, customs				✓		✓		✓	✓	
	International workforce with dissimilar values			✓	✓	✓	✓	✓	✓		
	Non-cooperation from local residents						✓				
Family Structures	International workforce with dissimilar cultural backgrounds			✓	✓	✓	✓	✓	✓		
	No challenge to authorities		✓								
Experience	Centralised decision making		✓			✓			✓		
	Weather effects		✓	✓		✓					
	Understanding the culture of staff						✓	✓			

The aim of this section is to identify and categorise the origins of delays in construction projects that are associated with the national cultural factors of Saudi Arabia. A thorough literature reviews revealed research on issues to do with delays in construction projects in several countries such as Russia, USA, Kuwait, Nigeria, Egypt, Malaysia, Tanzania, UAE, Hong Kong, Libya, Jordan, Iran and Saudi Arabia. This literature based research identified 151 origins of delay from the various literature (as shown in Table 2.2) and then categorised them into five major groupings established using system thinking methodology: Input (resources); Conversion (technical, managerial, external stakeholders, internal stakeholders); Output (cost, quality, sustainability); Environmental envelope (natural, economic, social, cultural, political, business); and Other (feedback, unknowable's). Guided by the Hofstede's cultural dimensions, further analysis of the identified origins was conducted in order to create a shortlist of those origins that are specifically associated with the Saudi Arabian national culture. 33 origins have been shortlisted and then categorised into the eight groups using disaggregates system methodology (Gidado, 2004) and used subjective judgment to decide on the appropriate category to place the origin of delay based upon the Hofstede's collective programming factors (Hofstede and Hofstede, 2005). This makes an attempt to create a linkage between the origins of delay with the eight Hofstede's national cultural factors. This is illustrated in Table 3.7 indicating the literature source and final categorisation of the origins using the cultural factors. It is important to state that some of the origins of delay may intersect between the categories such as international workforce with dissimilar cultural backgrounds categorised under Family structures may also intersect with the Traditions, Languages, and Beliefs categorised.

It is clearly evident that there are a number of factors generating from national culture influencing delays in construction in KSA. This research has identified the origins of such delays that are influenced by the effect of national culture. Using the six cultural dimensions

as a framework, it has shown that culturally, Saudi Arabia is a highly power distance economy (where most of the decisions are centralised) and has a high uncertainty avoidance culture (people are rigid in beliefs and religious codes, innovation may be resisted, truth and regularity are the norms, security is important, and people like to work on their own rather than working in teams).

The Hofstede's eight cultural factors, established using collective programming concept, has been used as a framework to categorise the identified origins of cultural delays in construction projects. This categorisation will be used in this research project as a basis for the evaluation of the effect of national cultural factors in the delivery of construction projects in Saudi Arabia.

3.5. Gap in Knowledge

From the critical review discussed in previous sections, the key theoretical constructs in the field of national culture and its influence on attitudes of project's stakeholders towards delay in construction projects have been revealed. The following Table 3.8 contains the most relevant publications which assisted to outline the research objectives and provided evidence for the existing research gaps.

Table 3.8: Summary of the most relevant research results by reviewed source (adapted from table by Baumann, 2013)

Author(s) / (Year) / Title / Journal	Brief synopsis of the findings
Avison, D. E. and M. D. Myers (1995). "Information systems and anthropology: and anthropological perspective on IT and organizational culture." <i>Information Technology and People</i>	The authors confirm that national culture has an influence on project management while working in diverse teams
Chen, P. and D. Partington (2004). "An interpretive comparison of Chinese and Western conceptions of relationships in construction project management work." <i>International Journal of Project Management</i> 22(5): 397- 406	The study confirms that national culture has a strong influence on project teams. The authors recommend developing a high-performance culture to improve the teamwork in a diverse team; otherwise there is the risk for project delay. The paper provides evidence that the Hofstede dimension IDV influences project work and can lead to project related problems.
Raiden, A.B., Dainty A.R.J. (2004). "Current barriers and possible solutions to effective project team formation and deployment within a large construction organization." <i>International Journal of Project Management</i> 22(4): 309-316	The study confirms that the team formation process and planning phase is strongly affected by national culture.
Chevrier, S. (2003). "Cross-cultural management in multinational project groups." <i>Journal of World Business</i> 38(2): 141-149.	The development of a joint transnational culture may facilitate projects being carried-out more efficiently.
Ochieng, E. G. and A. D. F. Price (2010). "Managing cross-cultural communication in multicultural construction project teams: The case of Kenya and UK." <i>International Journal of Project Management</i> 28(5): 449- 460	National culture has a strong influence in multi- cultural teams. This multiple case study indicates that many projects were impacted by national culture. Some of the analysed projects some of them were delivered in the Middle East
Lampel, J. (2001). "The core competencies of effective project execution: the challenge of diversity." <i>International Journal of Project Management</i>	The author confirms that national culture is influencing project management and may cause project delay. The paper especially assessed the Middle East as a cultural region
Sweis, G., R. Sweis, <i>et al.</i> (2008). "Delays in construction projects: The case of Jordan." <i>International Journal of Project Management</i> 26(6): 665-674	Change orders, poor supervision, approval processes are the main cause for project delay in the Middle East. Some of these characteristics seem to be culture related
Walsham, G. (2002). "Cross-cultural software production and use: A structural analysis." <i>MIS Quarterly</i>	The author describes that national culture influences teamwork and can lead to project delay. Training for cultural competence is recommended to reduce the risk for project delay.
Ozorhon, B., D. Arditi, <i>et al.</i> (2007). "Effect of host country and project conditions in international construction joint ventures." <i>International Journal of Project Management</i>	This paper analyses the Host country effect as a cause for delay. Regarding the research objectives this paper shows that the Middle East as a difficult working environment influences project management processes
Mäkilouku, M. (2004). "Coping with multicultural projects: the leadership styles of Finnish project managers." <i>International Journal of Project Management</i>	The Hofstede dimension IDV influences the project work and can lead to project delay. The role of a cultural interpreter was introduced to reduce the risk of project delay or failure.
Muriithi, N. and Crawford, L. (2003). Approaches to project management in Africa: implications for international development projects. <i>International Journal of Project Management</i>	Current project management standards should be changed to take the requirements of Africa into account. This paper highlights that PM processes should adjust to the cultural context.
Bredillet, C. and Yatim, F. (2009). "Project management deployment. The role of cultural factors." <i>International journal of project management</i>	This publication provides evidence for the dimensions PDI, IDV and UAI having an influence on project management. For the MAS dimension no effect for project work was identified.
Hofstede, G.H. (1983). "Cultural dimensions for project management" <i>Project Management Vol 1</i>	PDI, UAI, IDV have strong influence on project management processes. MAS has only a limited effect on project work as it may influence the team formation process during the initiation process group
Lee-Kelley, L. and Sankey, T. (2008). "Global virtual teams for value creation and project success: A case study." <i>International Journal of Project Management</i>	The characteristics of Hofstede dimension IDV influence the project work and the in-group behavior and attitudes.
Loosemore, M., Muslmani, S.A. (1999). "Construction project management in the Persian Gulf: inter-cultural communication." <i>International Journal of Project Management</i>	The dimensions UAI and IDV have an impact on project management processes.
Rees-Caldwell, et al., (2012). "National culture differences in project management: Comparing British and Arab project managers' perception of different planning areas." <i>International Journal of Project Management</i>	The dimensions PDI and UAI have an influence on the project management elements Innovation, Risk and communication. The dimension LTO impacts integration and quality management.
Steel, P. and V. Taras (2010). "Culture as a consequence: A multi-level multivariate meta-analysis of the effects of individual and country characteristics on work-related cultural values." <i>Journal of International Management</i> 16(3): 211-233	The authors conclude that analysing cultural dimensions in the field project management is only possible if the differences between individual cultural values and national culture have been understood.
Tan, W. and E. Chong (2003). "Power distance in Singapore construction organizations: implications for project managers." <i>International Journal of Project Management</i>	The dimension PDI has an effect on projects, but the degree of influence depends on the organizational culture of the organization where the project is carried-out
Zwikael, O. and Shimizu, K. (2005). "Cultural differences in project management capabilities: A field study." <i>International Journal of Project Management</i>	The authors confirm that the Hofstede dimension UAI impacts project work. The authors highlight the need for more explanatory frameworks for project management with cross-cultural teams
Faridi, A.S. and El-Sayegh, S.M. (2006). Significant factors causing delay in the UAE construction industry. <i>Construction Management Economics</i> , 24(11): pp.1167-1176	The study found that the owners' decision-making processes are the top causes of delay in the UAE construction industry. This lead to ask if NC is a reason for this cause?
Assaf, S. A. and Al-Hejji, S (2006). "Causes of delay in large construction projects". <i>International Journal of Project Management</i> 24 (2006): 349–357	The authors recommend that detail studies can be done to evaluate the involvement and effect of a specific party or resource of construction project to the time overrun in construction projects.

The literature review have shown that a considerable amount of researches to understand national culture in a project management and construction projects that follow the Hofstede dimensional approach have been published, such as: Chen and Partington (2004), Mäkilouku (2004), Bredillet and Yatim (2009), Gallivan and Srite (2005), Hill et al. (1994), Hofstede (1983), Lee-Kelley and Sankey (2008), Loosemore and Muslmani (1999), Steel et al. (2010), Tan et al. (2003), Zwickael and Shimizu (2005). Additional explanations and other influencing factors on project management were presented by Mäkilouku (2004), Bredillet and Yatim (2009), Hill et al. (1998), Lee- Kelly and Sankey (2008), Loosemore and Muslmani (1999), Rees-Caldwell et al. (2012), Tan et al. (2003) and Zwickael and Shimizu (2005). Most of these researches highlighting the necessity to do more research concerning the impact of national culture in construction sector and project management. Interestingly, it is found that only few studies exactly addressed the impact of individual Hofstede dimensions on projects examples are Bredillet and Yatim (2009), Loosemore and Muslmani (1999), Hofstede (1983) and Rees-Caldwell et al. (2012). Those four researchers provided evidence that the cultural dimensions PDI, IDV, UAI and LTO can be used to describe an influence on projects. However, there are no researches introduced to explain the effect of national culture on attitudes of stakeholders towards delay despite the fact that it has been highlighted to be critical to establish the influence of project stakeholders on the occurrence of delay.

3.6. Development of Conceptual Model

A conceptual framework is an analytical tool with several variations and contexts. It is used to make conceptual distinctions and organize ideas. Strong conceptual frameworks capture something real and do this in a way that is easy to remember and apply (Gregory, 1992).

The term conceptual model would be used to refer to models which are formed after a conceptualization or generalization process of research context (Gregory, 1992). To use the

achievements of research in the construction projects a Conceptual Model has been developed. Project exhibits the characteristics of an open system and operates within an environment within which changes to that environment can affect the functioning of the project delivery. For example, new legislation or a change in technology will have an effect on the functioning of project and delivery time. Based on these interactions that occur between the components of a project and its environment, a project can thus be analysed as an open system. The project manager is expected to manage the various components and their interactions with one another and the environment, and also the inputs and outputs, in order to mitigate the delay. The initial conceptual framework has been developed by integrating the generic systems dynamic diagrams in Figure 3.4, 3.5 and Figure 3.6. This is shown in Figure 3.7, where each project stakeholder is input into the dynamic system, the various cultural dimensions would affect the factors that could influence his/her attitude through thoughts, feelings and/or actions to produce an output-attitude that could either be positive, neutral or negative towards delay in the construction projects. It is expected that different stakeholders would be affected differently as they as passed through the system. This initial conceptual framework will be validated in Chapter 6 of this study based on primary data collected.

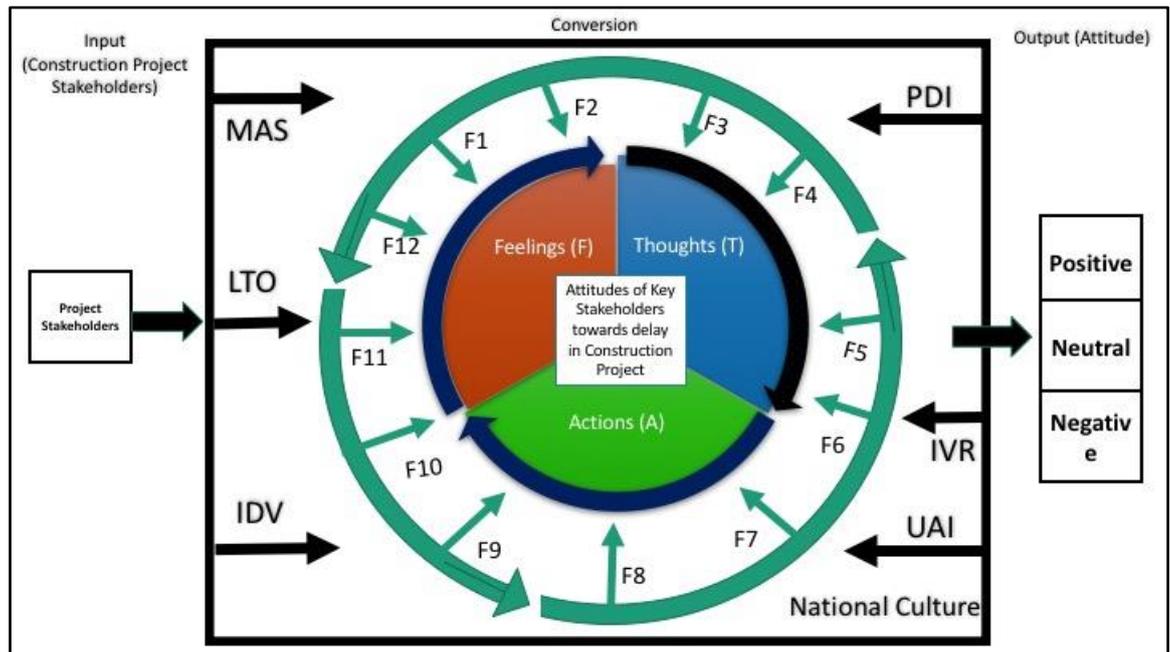


Figure 3.7: The Initial Conceptual Framework

The developed conceptual framework is designed to support project managers working in the KSA to improve the delivery of projects and mitigate the occurrence of delay. Besides that, applying the conceptual framework may be a good strategy to understand the underlying causes for influences on project management, especially because the national cultural dimension's impact cannot be ignored.

This study sought to explore the effect of national culture on attitude of key stakeholders towards delay in construction projects as well as examine the factors that influence attitudes towards delay. At the beginning the study the nature and types of attitudes (as in Figure 3.3 and 3.4) were explored and it was identified that attitude consists of three components; feelings, thoughts and actions.

3.7. Summary and Conclusion

This chapter has provided a background to the concept and scope of National Culture adopting a conceptual framework to assist in defining the scope of National Culture. The conceptual framework was adopted because it simplifies and clarifies the role of National

Culture. This conceptual framework demonstrates that the project manager must have an in-depth understanding of the effects of National Culture on the project stakeholders in order to be efficient in the delivery of projects.

Many publications provided findings that demonstrate the influence of the National Culture on construction projects and project management processes. For the dimensions Power Distance Index (PDI), Individualism vs. Collectivism (IDV) and Uncertainty Avoidance Index (UAI) evidence for an influence is available independent from a geographical region. The Hofstede's dimensions Long-Term Orientation (LTO), Masculinity vs. Femininity (MAS) and Indulgence vs. Restraint (IVR) have not been evaluated in depths, or the results provided no or only limited findings for an influence on projects.

For the Long-Term Orientation (LTO) dimension, only one study was found which addressed the research aim or research question by empirical evidence. Nevertheless, some suggestions were found in the literature showing that time perception may play a significant role for project managers in the Middle East. A review of the associated literature underpinned the importance of the Hofstede dimensional approach in the other research on construction projects. This reinforces the decision to select the Hofstede dimensional model as a main element for the research on National Culture within the construction sector. Many completed studies discuss National Culture having a strong influence on project work. They generally focus on projects processes such as planning and communication, but the influence of National Culture on the attitudes of stakeholders is largely missing.

Research results from academic journals were identified; most of which were published after 2000. This shows that the area of research concerning the effect of National Culture on construction projects has a recent research stream. Another finding was that no publications were identified which analysed the Kingdom of Saudi Arabia in the context of stakeholders' attitudes. This clearly shows a research gap, where this research is considered to provide a

contribution. The review of the literature also showed that there has been little research regarding national cultural dimensions with the discipline of construction projects in general. This is the second gap where this thesis can contribute. Other authors highlighted this need to present more studies in this area (e.g. Shore and Cross, 2005; Eriksson et al. (2002)).

This chapter also includes a conceptual framework of the effect of National Culture on the attitude of stakeholders towards delay in construction projects developed from existing definitions.

The following Chapter (4) includes the results and assumptions from Chapter 3 and provides an appropriate instrumentation and methodological approach for the empirical research and data collection planned to be carried out in the Kingdom of Saudi Arabia.

Chapter 4. Research Methodology

4.1. Introduction

This chapter sets out the research methodology used to establish the influence of NC on the attitude of key stakeholders towards delay within the KSA construction industry. Following on from the discussion in Chapters 2 and 3, this chapter identifies a suitable research strategy for the primary data collection. A tabulated outline of research activities and their expected output are set out in Figure 4.1 below. The chapter includes philosophical considerations and explains how fundamental decisions about the research strategy, were decided upon (including an epistemological debate, discussion of qualitative and quantitative including tests for validity, reliability and the transferability of the research results). The required research strategy and the refinement of the interviews and questionnaire collection have been discussed in the context of the research aim and the research questions. Furthermore, the ethical considerations and the possible risks while collecting data in the KSA have been explained.

4.2. Research Approach

4.2.1. Philosophical Considerations

There are many research approaches available that are bound to ontological, epistemological, methodological and axiological positions (Fitzgerald et al. 1998). Generally, there are two different positions available and currently being discussed in the scientific research community. They are the relativist-realist versus, positivist-interpretivist, the qualitative-quantitative and other categorized into the so-called ‘hard’ versus ‘soft’ research dichotomies. The discussion about philosophical considerations is a critical element because

decisions about the research strategy have an influence on the instruments for the data collection and analysis procedure.

4.2.2. The Ontological Level

At this level, there are two approaches:

1. The realist approaches with the underlying assumption that reality consists of hard tangible structures and that the understanding of this reality are independent from the individuals' awareness (Baumann, 2013).
2. The relativist approach, which is based on the existence of multiple realities that differ by the individuals' cognition and description. This description of the multiple realities may differ depending on the cultural environment in which study is being conducted.

It is interesting that in reviewing the Hofstede model, the dimension "Long-Term Orientation" is clarified by a characteristic in which high Long-Term Oriented (LTO) scoring cultures live with several truths, whereas low LTO cultures typically seek one truth. So besides the study focusing on the NC environment, the methodological discussion is also blended with elements that depend on the cultural context of where study is executed.

With a realist approach, other persons can observe and describe the same results while working on a research project with the described setup. Since this study is looking into the effects of NC on attitudes of construction project stakeholders, the approach will be on the relativist side, accepting that there may be a difference in the attitude of each stakeholder's reality. These different attitudes linked with national cultural context must be taken into account during the data collection and analysis, as the different descriptions of the construction projects stakeholders may lead to multiple explanations and multiple underlying origin causes.

4.2.3. The epistemological level

Similar with the work of Baumann (2013), at the epistemological level, this study is assumed to take a position as interpretivist objectivist research. The study results should describe a specific phenomenon and other researchers can be able to observe the phenomenon in some similar situations, although the individual conclusions and descriptions may differ as the national cultural context and the individual attitude is never repeatable as it would be in a 'hard' positivist research design. Although this approach will apply a reductionist viewpoint regarding the cultural context by using the Hofstede cultural dimensions in the project management context, the causal explanations as one important element for this research should allow developing a causal chain that does not require one universal truth. By using the national cultural dimensions of Hofstede, the characteristics of national culture are reduced to a six-dimensional model, where typical characteristics are defined by using a bipolar scale. One objective of this study is to expand this reductionist point of view by explaining in what way national cultural dimensions scoring high or low may affect the attitudes of a project's stakeholders. To preserve the degree of objectivity, the researcher has not been involved in the research situation (McNiff et al., 2002), but will take an external viewpoint thus avoiding any bias when taking part in the study.

4.3. Ethical Considerations

Conducting research in an academic setting always requires an understanding of research ethics. Protocols followed are described by the Ethical Code of Conduct regulated by the Ethics Committee at the University of Brighton (see Appendix E). For instance, the participants have been informed about the aim and objectives of this research with the expected outcome, period, and processes. This research is not binding on any participants who can withdraw at any time without giving any reason. Participation will be voluntary and participants can opt out at any stage.

Prior permission has been sought from the participant and their employers, details of the venue and time duration required for the questionnaire were discussed before distributing the questionnaires. The duration of answering the questionnaires took maximum of 21 minutes.

A register of all the events, times and venues for questionnaire distribution have been kept secured in a locked cupboard in the researcher's office at the university (also used for the safe storage of any other form of data). Online details/response have been stored on a university password protected computer which cannot be accessed other than by the researcher or his supervisors. Participant's details have not been released to any third parties without their prior consent and no one other than researcher and supervisors have access to this data. Images of participants and their organisations are not required for this research. The confidentiality and identity protection of the participant's organisations and the individuals have been observed throughout research process.

4.4. The Research Design

There are two forms of research approach that can be used to execute a research task: Quantitative and qualitative.

Quantitative research is 'objective' in nature and is defined as an enquiry into a social or human problem based on testing a hypothesis or a theory composed of variables, measured with numbers, and analysed with statistical procedures, to determine whether the hypothesis or the theory hold true (Creswell, 2007). Quantitative data is, therefore, not abstract, but is hard and reliable, with measurements of tangible, countable, sensible features of the world (Bouma and Athinson, 1995).

Qualitative research is 'subjective' in nature. It emphasises meanings, experiences (often verbally described), and descriptions and so on. The information gathered in qualitative research can be classified under two categories of research, namely, exploratory and

attitudinal. Questions under a Qualitative research method seek to find results based on people's experiences and opinions of a subject area, the questions will not usually ask for numerical answers and tend to relate to understanding and human relations.

Other experts have argued some researches may require both distinct approaches to be used. This is called mixed research approach.

This research adopts a Mixed Methods approach that combines or integrates qualitative research with quantitative research as explained in Creswell (2007). The mixed method approach is chosen as a method for data collection in this research to enable the research to initially establish a better understanding of the problem situation before developing a vehicle that can be used to collect robust primary data required for achieving the main research aim. As Dane (1990) stated, where a combination of facts and opinions is needed to inform the research, a mixed method approach is the most appropriate. Bryman (2006) developed a scheme that outlines five justifications for combining quantitative and qualitative research as follows:

1. Triangulation: to get convergence, corroboration, correspondence of results from different methods;
2. Complementarity: seeks elaboration, enhancement, illustration, clarification of the results from one method with another;
3. Development: seeks to use the results from one method to help develop or inform the other, where development is broadly construed to include sampling and implementation;
4. Initiation: seeks the discovery of paradox and contradiction, new perspectives of frameworks, the recasting of questions or results from one method with questions or results from another;

5. Expansion: seeks to extend the breadth and range of enquiry by using different methods for different inquiry components.

Based upon the above list by Bryman (2006), this research used the development option that seeks to use the results obtained from the qualitative approach to help develop or inform the quantitative approach.

The research started with data collected through a qualitative approach that helps to develop a comprehensive questionnaire in which different common and uncommon national culture dimensions have been included to measure their latent impact on attitude of key stakeholders in construction projects. The facts and opinions from the interviews helped in developing the questions used in the questionnaire. For example, the responses to question No. 10 in interviews was used to develop the questions in Part B and Part C of the questionnaire. Similarly, the responses to questions No.11 and 12 of the interviews helped in the development of the questions used in Part C of the questionnaire.

As shown in Figure 4.1, this research was divided into four phases: background research; literature review and interviews; questionnaires and data analysis; and conclusion and write-up.

Phase 1: background research

This phase started with topic selection, identified the research problem, established the aim and objectives, developed the research plan and discussed with supervisors to provide the research proposal to approve the research.

Phase 2: literature review and semi-structured interviews

In this phase, the literature review was undertaken on delay and attitude in construction projects and covered in Chapters 2 and 3.

Also, the semi-structured interviews were done in this stage to understand the research

context.

Phase 3: questionnaires and data analysis

This phase includes three stages:

Stage One: Selection of 15 organisations made up of: three (3) ministries as public clients, two (2) private clients, five (5) contractors, and five (5) consultant companies in KSA.

Stage Two: Data has been collected by:

1. Visiting all the fifteen (15) organizations in KSA;
2. Meeting with key staff from each of the organisations to help completion of the questionnaire by appropriate clients, contractors and consultants;
3. Retrieving the completed questionnaires from key stakeholders either by hand to hand or postage.

Stage three:

1. All responses were checked to ensure completeness and readability, before proceeding with the statistical analysis of the data using SPSS (version 11.5).
2. Secondly, by applying various statistical techniques, the research objectives of this study were realised.
 - Step 1: Establishing factors influencing stakeholders' attitudes.
 - Step 2: Finding the outcome of factors influencing stakeholders' attitudes.
 - Step 3: Finding the relationship between attitudes towards delay and NC.

Phase Four: Conclusion and Thesis writing

This phase includes two stages

Stage one: Recommendations and conclusion

Stage two: Thesis write-up and submission.

The next subsections explain more about the phases of the research and how they were accomplished.

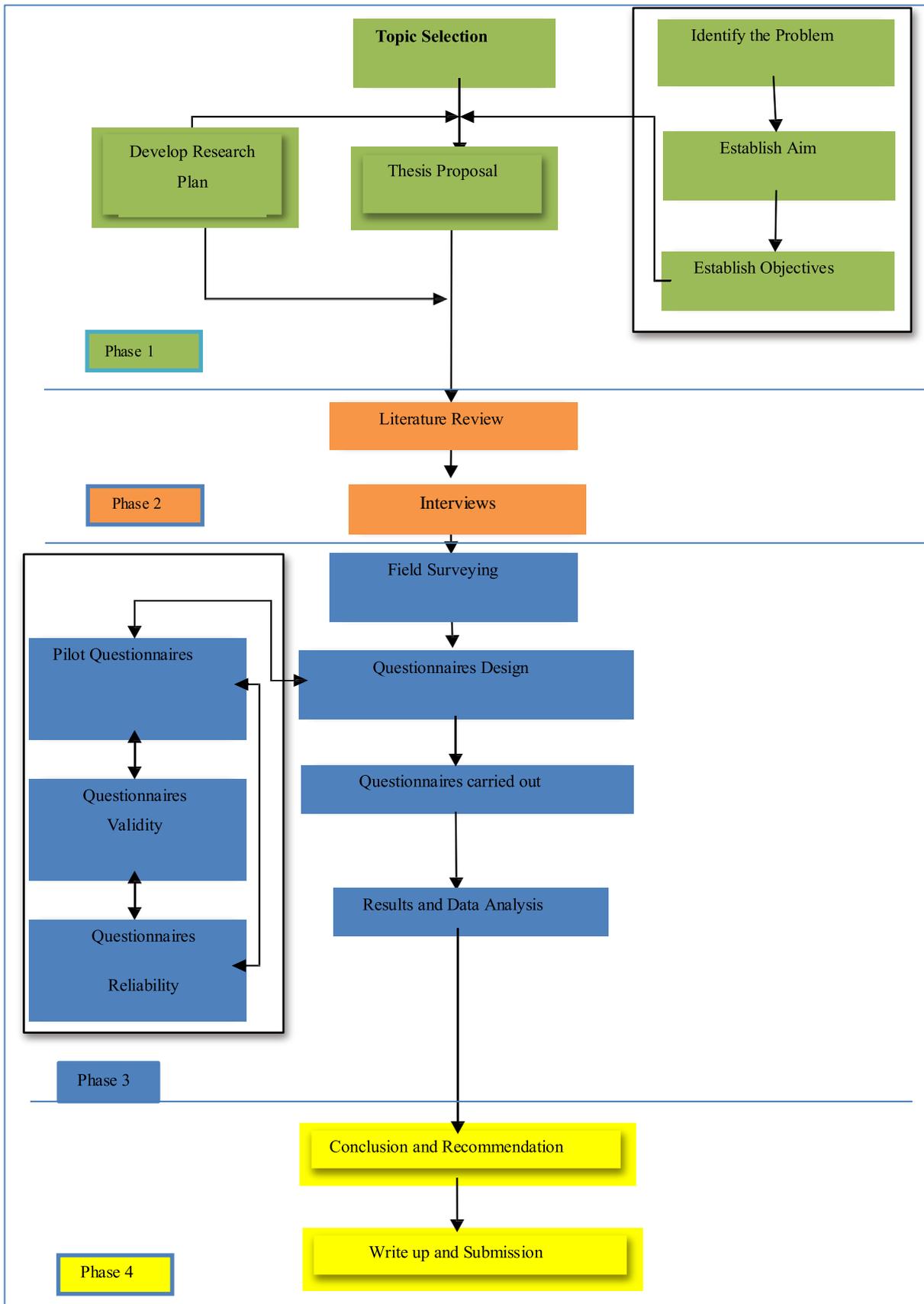


Figure 4.1: Research Design

4.4.1. Establish Relevant Secondary Data on Construction Delay

A literature review was undertaken on delay in construction projects and covered in chapters 2 and 3. Additionally, a detailed literature review was conducted on NC, its different existing approaches and related dimensions. The literature review also was undertaken on attitudes.

4.4.2. Selection and Development of Data Collection Tools

Most research within the social sciences and associated management fields includes asking questions and getting answers through conducting surveys of people; using interviews and questionnaires (Fellows and Liu, 2008). There can be a limited supply of resources available for carrying out fieldwork, therefore, the appropriate decision on the selecting of a research method is essential. The selection is affected by the scope and depth required. According to Fellows and Liu (2008), the choice is between a wide, but shallow, study at one extreme and a narrow in-depth study at the other, or a study intermediate of these extremes.

Mixed methods is chosen as a method for data collection in this research. Where a combination of facts and opinions is to be gained, Dane (1990) detailed that mixed methods is the most appropriate. In addition, mixed methods are most suitable for description and prediction.

4.4.3. Interviews

The interview is the primary research method which is often used by the researchers to address certain objectives by keeping in mind the nature of the research. It is a logical method to gather first-hand information from interviewees. Steiner (1983) defined interview as “an interview whose purpose is to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomena” (p.174). The key reason of choosing face-to-face interviews is to probe into the interview environment to cover all possible aspects of the topic (Frechtling and Sharp, 1997).

The purpose of conducting the face to face semi-structured interviews in this research is to understand the research context such as delay and the causes of delay and how the NC could affect and to help when the questionnaire has been designed. The data collected through interviews helps to develop a comprehensive questionnaire in which different common and uncommon national culture dimensions have been included to measure their latent impact on attitude of key stakeholders in construction projects.

The main advantage of face-to-face interviews is that the researcher can familiarize the interviews with the questions as necessary, explain doubts, and confirm that the responses are correctly understood by repeating and rephrasing the question. The main disadvantages of face-to-face interviews are the geographical limitations they may enforce on the surveys, and the massive resources required if such surveys need to be conducted nationally or internationally. The basic notion behind these interviews is the development of the framework and thus these interviews will follow a model-oriented approach (Basit, 2010). The need is developed to explore, analyse, evaluate, and finally address a range of problematic national cultural having an influence on delay. Furthermore, the interviewees can be able to share their views, knowledge, practical experience, and perception about the factors and sub-factors related to the national culture. Semi-structured interview type is also selected because it gives liberty to include questions related to both qualitative and quantitative studies (Tracy, 2012).

In the UK, the interviewees were selected by using the membership lists of the Chartered Institution of Building Services Engineer (CIBSE) and the Royal Institute of British Architects (RIBA), which provide data for suitable professionals in the building field. The interviewees from Saudi Arabia were obtained from the list of the Saudi Council of Engineers. The criteria for the selection of interviewees are as follows:

- 10 years or plus construction experience;

- experience in planning/risk issues;

The identified potential interviewees were then contacted by phone to explain the purpose of the research and to set the appointment for the interview if they accept to participate.

Twenty one construction stakeholders were interviewed face-to-face to capture their thoughts and suggestions on delay issues and national culture in the KSA and in the UK 10 interviews were conducted in KSA, while 11 were carried out in the UK. The KSA questions were written down (in both English and Arabic in KSA, whilst in English only for the UK) and given to the interviewee (10 in the KSA in English and Arabic language and 11 in the UK in English language) before the interview commences. Some of the interviews were recorded with agreement of the interviewee while others were simply written down by the interviewer (where there was no agreement to record). The recorded ones were later transcribed. The generated data was then analysed using ATLAS/ti software to help focus more on quality material not quantity of material (Bryman, 2003). The semi-structured interviews were divided into three parts: Part (A) includes five questions to provide personal and organisational details about the participants; Part (B) includes three questions to investigate the perspective of participants about delays in construction projects; and Part (C) includes three questions about National Culture and its influence on the occurrence of delay in construction projects and how the participants mitigate and manage delay in their project.

4.4.4. Questionnaire

The questionnaire method is a technique employed by many researchers from different domains for the purpose of generating primary data (Creswell, 2007). It is a pre-structured set of questions to which respondents record their answers and it is an efficient data collection instrument when the researcher recognizes exactly what is required, and how to measure the variables of the study (Sekaran, 1992). Questionnaires can be managed personally or mailed to the participants. When the survey is narrowed to a local area and to

certain respondents, and an organization is helpful and able to gather groups of employees to respond to the questionnaires at their work places, administering the questionnaires is the best way to collect the data (Creswell, 2007). Any inquiries about the survey questions can be explained immediately when personally administering questionnaires. It is also a chance to present the research topic and to motivate participants to provide honest answers and it is necessary to be able how to design an effective questionnaire. As identified by Sekaran (1992) and during designing the questionnaire for this study, the following three areas, were kept in mind:

1. The language and wording of the questionnaire;
2. How the items are to be classified, scaled and coded after the questionnaire responses are received; and
3. The general form of the questionnaire.

For this research, the questionnaire survey was developed in four parts (see Appendix A):

1. Personal information of the respondents (part A);
2. Establishes the Factors influencing Attitude towards Delay in Construction Projects (part B);
3. Establishes the effect of attitudinal factors on the key project stakeholders regarding delay in construction projects (Part C);
4. Establishes effects of National Culture on the Attitude of Stakeholders towards Delay (Part D).

Questionnaire surveys were developed targeting three key groups of construction industry stakeholders in the KSA (clients, contractors, and consultants) who are considered to be the main agents for reporting on delays in the project.

The items to be included in parts B and C were taken from a robust literature review particularly in recent studies conducted by Baumann (2013), Assaf and Al-Hijji (2006), and Kaming et al. (1997). These studies helped in identifying the themes of delays, which assisted in establishing the factors that influence the attitudes of key stakeholders and aided the development of the themes in the questionnaire. In part (B), Thirty-six (36) statements dealing with factors were established and linked to the three components of attitudes of stakeholders toward delay, types of delay, and relationships in projects. For each statement, stakeholders were required to express the level of their agreement on a five-point Likert-type scale (where 1= strong disagreement, and 5= strong agreement). In part (C), twelve (12) statements dealing with attitude's three components (feelings (F), thoughts (T) and actions (A)) to identify how the attitude's component is affected by each factor.

In order to evaluate the Saudi national culture and establish how it could affect attitudes of construction stakeholders, a part (D) was designed for the three key stakeholder groups (clients, contractors and consultant). It contains fifteen (15) statements dealing with the six identified Hofstede's dimensions of national culture. The majority of the statements within this part of the questionnaire were developed mainly from the values survey module (VSM) of Hofstede (2013). Some other items referred to the themes of power-distance and uncertainty avoidance were adopted from the study by Van Oudenhoven (2001). All these statements were developed to reflect the context of construction delay, and in order to investigate how SNC could affect perceptions and attitudes of Saudi stakeholders in construction projects. For each statement, stakeholders required to express the level of their agreement on a five point Likert-type scale, where 1= strong agreement, and 5= strong disagreement.

The questionnaire was provided with a covering letter explaining the purpose of the study, the aim of the research and the security of the information in order to encourage a high

response. It is aiming to meet the research objectives, and to collect all the necessary data that can support the discussion, results and recommendations in the research.

4.5. Data Collection Protocol

The data collection protocol is two parts, the first is about the data collection protocol of semi-structured interviews and the second is about the data collection protocol of questionnaire.

4.5.1. Data Collection Protocol of Semi-Structured Interviews

In the beginning, a clear agenda of the interview has been told to the interviewees so that they can stick to the purpose and topic of the interview (Marshall and Rossman, 1999).

According to Barnard (2011), the interviewer must be well-trained, present-minded, proactive, and skilled in probing into the situation during the semi-structured interviews. This is why the interviewer needs an adequate practice before performing the actual interviews. The following procedure was followed for conducting interviews.

Five mock interviews were conducted before undertaking the real interviews. The mock interviews were conducted with university colleagues and academic professors and doctors having an adequate level of engineering knowledge and experience in order to improve the quality of the final interviews.

At the next level, the actual interviews have been performed and each took about 25 minutes. Finally, the data gathering from semi-structured interviews has been analysed by using ATLAS/ti (see Appendix F for brief summary of the package).

4.5.2. Data Collection Protocol of Questionnaire

4.5.2.1. Selection of Samples

One of the main objectives of this research is to explore the attitudes of the construction projects stakeholders towards delay. Therefore, it was considered desirable to select those

companies which have a wide range of big construction projects in KSA. Another aspect, which made this selection task potentially more problematic, was the perceived deficiency of cooperation between industry professionals and researchers. To overcome this difficult, the contact with construction industry professionals early has been made to facilitate access to a number of people who are currently working on large scale construction projects.

Keeping this limitation in mind, fifteen organisations were selected on the following basis:

- Different large construction projects in progress, involving high-rise buildings, stadiums and hospitals and economic cities.
- Sufficient numbers, sizes and different trades included in construction activities.

The fifteen organisations who participated were five large construction companies, three ministries (public sector clients), two (private sector) clients, and five consulting companies (all based in the KSA). These organisations were selected as each gave assurances of cooperation by the management of the companies and was done in co-operation with the Saudi Engineers Council, Ministry of Finance and Ministry of Housing. In the KSA construction industry, it can be a challenge to contact and take appointments from professionals. Also, the contact numbers and associated organization details are normally not quickly updated in the directory of Saudi Chamber of Commerce. Cooperation of the organisations was therefore critical to ensure that the individuals in each organisation would cooperate during a research visit in Saudi Arabia.

The key step in the survey study is to identify the target population and then determine the sampling procedure. The research has used the following formula to determine the sample size (Dattalo, 2008) where:

- ‘S’ is the estimated sample size,
- ‘L’ represents the level of confidence which is considered as 95% in this study and the value against this confidence level is 1.96 in the p-value table,

- ‘P’ means the approximate prevalence which is 0.05 calculated as 1 minus 95 percent confidence interval, and
- ‘M’ points out the margin of error, which is estimated 0.05 (5% margin of error).

$$S = \frac{L^2 * P^2 * (1 - P)}{M^2} \times 100 \quad (\text{Equation 1})$$

$$S = \frac{1.96^2 * 0.05^2 * (1 - 0.05)}{0.05^2} \times 100 = \mathbf{300}$$

The (Equation 1) present the sample size at confidence level of a 94.5% and 5.5% margin of error. As with most other studies, a confidence level of 95% was used (Munn and Drever, 1990; Ali 2006).The population of the study was therefore determined as at least 300 stakeholders all working in Saudi Arabia.

According to Bryman (2012), in the construction sector a 50% response rate is considered to be ‘good’ and when the response rate is low such as 10% to 20%, the worth of findings may be questionable. In order to ensure a good response rate, the researcher made an effort to follow-up the questionnaires by directly contacting the survey participants.

4.5.2.2. Data Collection Process

At the beginning of survey, each organizations’ management were contacted for permission to undertake the surveys. Additionally, management staff were requested to introduce the survey administrator to managers, or their respective supervisors, to facilitate the process of data collection. Each survey respondent was briefed about the objectives and the aim of the study. A total of 330 questionnaires were distributed across three cities in the KSA. Two hundred and eighty eight questionnaires were returned achieving a response rate in excess of 87%.

To avoid ambiguity, the questionnaire provided the definitions of ‘thoughts’, ‘feelings’, ‘actions’, ‘negative attitude’, ‘neutral attitude’ and ‘positive attitude’ at the top of the questionnaire. The attention of the respondents was drawn to these definitions.

4.6. Data Analysis

This research collected a combination of qualitative and quantitative data. This section discussed the various approaches adopted to analyse the collected data from questionnaire.

4.6.1. Pearson correlation analysis

The *Pearson correlation analysis* has been performed to find how each attitude towards delay within a group is positively or negatively correlated with each other. Karl Pearson's correlation of coefficient 'r' was used to construct correlation matrices. The formula (Equation 2) is used to find 'r' where the resulting figure must remain between -1 and +1. The value closer to +1 shows stronger correlation, while figure nearer to -1 means a weaker relationship between variables.

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 - \sum (y - \bar{y})^2}} \quad (\text{Equation 2})$$

Before conducting any type of analysis, it is good practice to determine if the data collected through the survey is reliable. To conduct *validity* and *reliability analysis*, the SPSS software used to find Cronbach's alpha (C α) to test the reliability of data. The value of C α between 0 and 1 indicates the standardisation of data with lower internal consistency. However, the C α value less than 0.5 is 'unacceptable' and considered improper. On the other hand, a value between 0.5 and 0.6 is considered 'poor', and between 0.6 and 0.7 is questionable. The value more than 0.7 and nearer to 1 shows excellent results (Doloi, 2009). In a parametric test, the resulting p-value below 0.05 indicates the significance and tenability of regression analysis (Freund et al. 2006).

4.6.2. Relative Importance Index (RII)

Relative Importance Index (RII) has been used frequently in built environment and construction industry researches. The RII was used because it best fits the purpose of this study. The RII is beneficial method to establish the effect or relative importance of a factor

relative to others within a set or model. According to Johnson and LeBreton (2004), RII aids in finding the contribution a particular variable makes to the prediction of a criterion variable both by itself and in combination with other predictor variables. Sambasivan and Soon (2007), Fugar and Agyakwah-Baah (2010) and Gunduz et al. (2013) have used the RII to find the relative importance of the deferent factors relating to delay in construction industry in Malaysia, Ghana and Turkey.

In the calculation of the RII, the formula below was used (Badu et al., 2013):

$$\text{Relative Importance Index (RII)} = \frac{\sum W}{A * N} \quad (\text{Equation 3})$$

Where:

‘W’ is the weighting given to each factor by the respondent

‘A’ is the highest weight (i.e. 5 in this study),

‘N’ is the total number of respondents.

For this study, the RII was used to establish the relative importance of the factors that could influence the attitudes of key stakeholders towards delay in construction projects obtained from quantitative data. The RII ranges from 0 to 1. (Olomolaiye et al., 1987; Shash, 1993) divided the RII three groups:

RII= 1.00 to RII= 0.800 is high importance

RII= 0.7999 to RII= 0.600 is moderate importance

RII= 0.59 99 to RII= 0.00 is low importance

The categories of importance of influence of Saudi national culture on attitudes of key stakeholders were divided into same gropes of (Olomolaiye et al., 1987; Shash, 1993).

4.6.3. Severity Index (SI)

Severity Index (SI) has been used in built environment research and construction industry researches in order to define the effect of a specific factor in a system (Chidambaram et al.

2012; Sindhu and Gidado, 2014). In this research, the SI was adopted to rate the effects of the factors on the attitudes of key stakeholders. The mathematical expression and the scale on the rating of the issues in interpreting the degree of the severity as adapted from Chidambaram et al. (2012) is as follows:

$$\text{Severity Index (SI)} = \Sigma a (n/N) * 100/5 \quad (\text{Equation 4})$$

Where:

‘a’ is Weight or points assigned

‘n’ is Number of respondents

‘N’ is Total number of responses obtained for that variable

Where:

$87.5 \leq SI \leq 100$ indicates extremely severe.

$62.5 \leq SI \leq 87.5$ indicates very severe.

$37.5 \leq SI \leq 62.5$ indicates moderately severe.

$12.5 \leq SI \leq 37.5$ indicates not severe.

$00.0 \leq SI \leq 12.5$ indicates not at all severe.

The data analysis and the results for the whole set of stakeholders’ surveys have been detailed in Chapter 5.

4.7. Pilot Survey

A pilot study for the questionnaire was conducted before distributing the questionnaire to main body of respondents. This helped identify weakness in the wordings of questions, enabled identification of ambiguous questions. Fifty questionnaires were distributed in this pilot of which forty-eight questionnaires were returned.

The pilot study constituted the fundamental stage of the research process, and it examines the feasibility of an approach and identifies the modifications needed in designing the larger study. In this document, the focus is placed on pilot studies that are used to observe attitude, delays and national culture in construction projects. This section highlighted the discussions and analysis of the pilot data. This section also explored the relationship between the attitude and delay, national culture and delay, as well as national culture and attitude of stakeholders towards delay. The importance of pilot data testing and correction required in the questions are also discussed in this section.

4.8. Summary

Chapter 4 introduced the methodology adopted to address the set aim and objectives. Within this chapter the philosophical approaches for qualitative and quantitative research have been discussed.

For this type of research, there are various research strategies available. The methods involved in this research entailed use of both qualitative and quantitative data collection and analysis techniques based on the research questions to be processed (Yin, 2009). Research design directs the research strategy by defining an action plan that proceeds from the initial research questions to the conclusion. It is the overall configuration of the research, including specifying what kinds of evidence were gathered and from where and how such evidence has been interpreted, that provides valuable answers to the research questions.

The research uses a mixed method approach (quantitative and qualitative). The interview tool has been selected to collect qualitative data and the questionnaire tool has been designed to collect the quantitative data. The study has been carried out in four main phases: background research; literature review and interviews, questionnaires and data analysis; and thesis writing and submission.

The research design of this study is based largely on the works recently conducted by Assaf and Al-Hejji, (2006); Hofstede et al. (2010) and the Values Survey Module manual (VSM) of Hofstede (2013). The adopted research design is cross-sectional, based on a representative sample of five large construction organizations, three ministries (public sector organisations), two private sector clients, five contractor companies, and five consultant companies in KSA. To collect pilot data, a field-based survey (50 questionnaires) was used to target the designated sample of clients, consultants and contractors in construction projects in KSA. The main questionnaire survey was distributed to 330 targeted professionals in the KSA construction industry.

Chapter 5. Primary Data: Results, Data Analysis and Discussion

5.1. Introduction

The purpose of this chapter is to achieve the set objectives 2, 3 and 4 by presenting the results, data analysis and the key findings of the semi-structured interviews and questionnaire conducted. It discusses the findings and explores the interrelationships between Saudi National Culture (SNC) and the attitudes of key stakeholders (contractors, consultants and clients) in the Saudi Construction Industry. The chapter concludes by establishing the contributions to the existing body of knowledge and making recommendations to the Saudi construction industry.

The chapter includes two main sections: the first main section is 5.2 that provides the results, data analysis and the key findings of the semi-structured interviews; and the second section is 5.3 that provides the results, data analysis and the key findings of the questionnaire.

5.2. Understanding the Research Context (Semi-Structured Interviews)

The primary goal of generating the qualitative data is to provide a better understanding of the research context by exploring the issues of delays and national culture as they are viewed

by practitioners in the construction industry. The data was collected by conducting semi-structured interviews of two groups: one in the UK and the other in the KSA. Some evidence of using the same research approach and research method by other researchers are found in literature such as Al-Kharashi and Skitmore (2009) and Muhwezi et al. (2014).

The developed semi-structured interview was divided into three parts:

Part A: Personal and organisational details

Part B: Delays in construction projects

Part C: National Culture

Twenty one interviews were carried (10 in the UK and 11 in KSA) with experienced professionals in construction projects.

This section is divided into three subsections: the first subsection presents, interprets and analyses the perspective of UK practitioners; the second subsection provides the perspective of KSA practitioners is interpreted and analysed; and the third subsection outlines a comparative analysis of the two perspectives (i.e. comparing the perspectives of UK and KSA professionals). The identity of the interviewees have been masked by using K1 to K11 as a coding for the UK and U1 to U10 as a coding for KSA participants. (Palys and Lowman, 2014).

5.2.1. Semi-Structured Interviews in the UK

Part A: Personal and Organisational Details

In this part of semi-structured interviews, five questions were asked to gather the personal and organisational detail of the respondents in the UK.

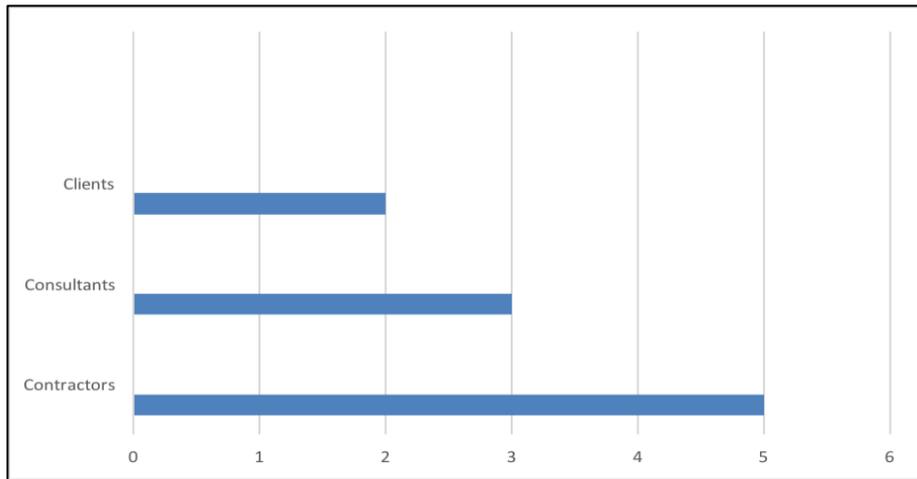


Figure 5.1: Organisation Type

Figure 5.1 which shows that five out of ten interviewees were contractors, three interviewees were consultants and two interviewees were clients.

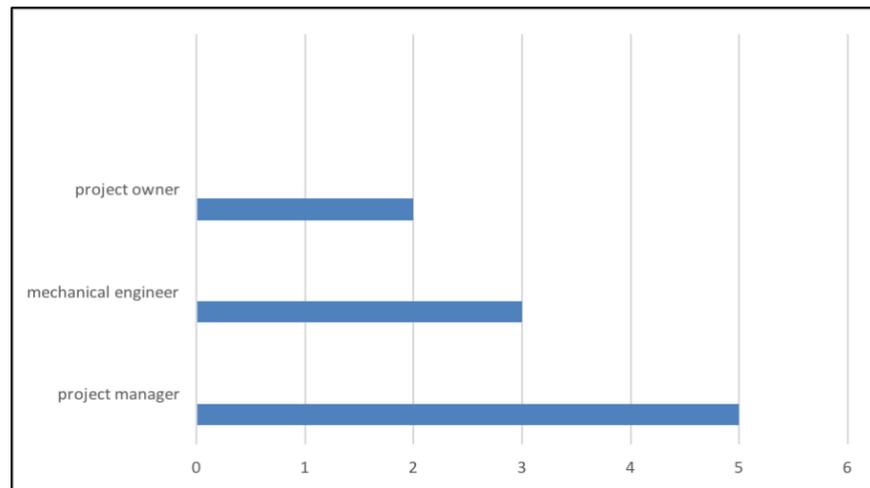


Figure 5.2: Job Title

Figure 5.2 indicates that five out of ten interviews were project managers, three were mechanical engineers and two interviewees were managers working for client organisations. Another question was about experience of interviewees. Overall, it has noticed that all interviewees were experienced as they had more than fifteen years' experience in their related fields.

Other questions were about the type of services performed by the organisation in which an interviewee was working. The answers of interviewees were mixed, having their varied

organisations involved in air-conditioning, refrigeration, escalators and lifts, water drainage, plumbing, fire safety, security alarm-systems, Renewal-Tech, ventilation and project management.

Part B: Delays in Construction Projects

This part included four questions in order to collect views of each interviewee in the UK about delays in construction projects.

1. Delays at different stages of the project

The sixth question was about which types of delays normally occur during different stages of the projects and what the reasons behind these delays are. The interviewees gave mixed answers for each stage as described in the following sub-sections.

Concept design stage:

All the interviewees revealed the same reason of delays at the conceptual stage. It has observed that mostly delays are due to government or third party delaying approving designs or/and concepts of the projects. It has noticed that sometimes the government changes its rules for approving concepts and organisations do not always have all the information about the rules change when an organisation has already sent its concept for approval. As an interviewee stated that:

“A company may face delays again and again in their concept design stage due to third party approval because each and every concept of design has to be approved by third party before started the work on that concept.” (U1)

Outline design stage:

At outline design stage of the project, interviewees revealed same types of delays. Lack of sufficient experts and/or consultants involved at this stage was a major issue. In other words, lack of supervision leads the project towards delays. Additionally, when the government or

third party approve the concept, the company starts working on it and if it does not have the right talent for a project then it can cause delays in the projects. For instance, a candidate replied:

“Two types of delays happen in the outline design stage (1) lack of expertise and knowledge (2) lack of supervision.” (U2)

Detailed design and manufacturing stage

It has observed that the delays occur at the detailed design and manufacturing stage because of lack of technology. Today, technology has advanced and if companies do not adopt technology at the manufacturing stage, delays can occur. Additionally, if owners and consultants took right decisions at right time about use of technology then delays can be minimised. An interviewee reported that:

“At this stage, the projects can be delayed due to lack of technology and expert supervision.” (U5)

Installation stage

At this stage the most prominent and repeated reason of delays was failing to secure suitable resources and workers. At installation stage, workers and resources are the two main factors that can cause delays in the delivery of projects if they are not handled efficiently. It can be said that expert and skilled human resources are necessary for installation stage that performed their tasks well. Moreover, delays can be reduced by using available resources efficiently and effectively. As a candidate mentioned that:

“At installation stage, the delays occur due to lack of resources or unavailability of resources at the right time.” (U2)

Commissioning stage

At the commissioning stage, the interviewer observed “blame culture” among the UK candidates. All interviewees revealed that delays at this stage are mostly occurring either due to ignorance of contractors/sub-contractor or payment issues between owners and constructors. Occasionally, inefficient owners of a company do not set rate of commission with the contractors and when contractors accomplish their work and demand payment before delivery, the owners argue or delay payment which cause delays in the projects. For instance, an interviewee identified that:

“The rate of commission between contractor and company may result in delay of projects.” (U10)

2. Steps to handle delays

A question was asked about how to handle delays in the projects. The interviewer received some interesting answers. All the interviewees stated that to resolve issues and delays it is crucial to handover time consuming and important tasks to an expert team member who efficiently handle such delays. Appropriate use of CPM scheduling technique (is a technique which properly scheduled each activity of the project) was the most suggested technique to handle these delays. As an interviewee exposed that:

“Delays are handled by the project managers by appointing experts for the project and by using CPM scheduling technique.” (U7)

3. Strategies to handle delays

A question was asked from interviewees about which strategies they frequently use to manage delays. The interviewer has noticed the diversity in answers of candidates. They replied they monitor the works of the contractors/workers and inform their team about possible delays and how to avoid/report delay when it occurred. Additionally, another technique they use was to divide the whole project’s work among different contractors, sub-

contractors and workers and gave them a strict deadline to accomplish their tasks. For example, a candidate responded that:

“By dividing one project into small units and give these units to different contractors with strict deadlines.” (U9)

Part C: National Culture

In this part, the interviewer asked four questions.

1. National culture

A question was asked about whether national culture influence projects or not. For this question, half interviewees said ‘Yes’ and the other half replied ‘No’. The interviewees who said ‘Yes’ gave the same reason. They think that communication among employees can be affected due to different nationalities, languages and cultures. An interviewee believed that:

“Yes, National Culture has an influence in construction projects because of lack of communication.” (U6)

2. Origin of delays

In this question, the interviewer asked each interviewee to rank each statement. The ranking of each statement is shown in the Table 5.1.

Table 5.1 indicates that “effects of weather” was ranked as the number one origin of delays. Additionally, ‘Engagement of too many small sub-contractors’ and ‘local rules and regulations’ were ranked at number two while ‘flexibility to accept long working hours’ and ‘procurement methods of the projects’ were ranked at number three. ‘Capacity of projects that cause over commitment of local contractors’, ‘inflexibility and lack of trust’, ‘spoken language difficulties and lack of qualified interpreters’ and ‘poor cooperation from local residents’ were at the same rank. Moreover, ‘favouritism in appointment of contractors/employees’ and ‘centralised decision making’ were considered as the least origin of delays.

3. Use innovations to manage delays

Another question was asked about how interviewees manage delays in their projects. The candidates replied that all workers, supervisors, owners, directors, managing heads, partners,

contractor and consultant manage delays by recognising the realities and requirements of the projects. In other words, hindsight method is an innovative method to manage delays. As an interviewee revealed that:

“I use the Hindsight Method to manage delays.” (U2)

4. Manage the effects on national culture

The last question was about how the effects of the National Culture on successful delivery of the projects can be minimised. For this question, all those candidates who agreed that National Culture affects project delivery suggested that by making communication and interpersonal relationships between employees more and more effective, by setting some codes of ethics, by avoiding discrimination and arranging culture based seminar, delays can be managed. An interviewee replied:

“I try to improve the interpersonal relationship of worker in the work environment during the project.” (U5)

Table 5.1: Ranking of Origin of Delay in the UK

ORIGIN OF DELAY	Never		Rarely		Sometimes		Very often		Always		R.I = $\Sigma a(n/N) * 100/5$
	0	a(n/N)	1	a(n/N)	2	a(n/N)	3	a(n/N)	4	a(n/N)	
Effects of weather	1	0.00	0	0.00	5	1.00	3	0.90	1	0.40	46.00
Local rules, regulations, customs	0	0.00	3	0.30	5	1.00	1	0.30	1	0.40	40.00
Engagement of too many small sub-contractors	1	0.00	3	0.30	2	0.40	3	0.90	1	0.40	40.00
Flexibility to accept long working hours	0	0.00	6	0.60	4	0.80	0	0.00	0	0.00	28.00
Procurement methods used in projects	3	0.00	2	0.20	3	0.60	2	0.60	0	0.00	28.00
Blame-culture (conflict due to evading responsibility)	4	0.00	2	0.20	2	0.40	1	0.30	1	0.40	26.00
Lack of long-term business relationships between key stakeholders	3	0.00	4	0.40	2	0.40	0	0.00	1	0.40	24.00
International workforce with dissimilar religions, customs, believes, values, traditions	1	0.00	6	0.60	3	0.60	0	0.00	0	0.00	24.00
Lack of understanding the culture of staff	4	0.00	1	0.10	4	0.80	1	0.30	0	0.00	24.00
Changes in design and variation orders	2	0.00	5	0.50	3	0.60	0	0.00	0	0.00	22.00
Cultural clash among various stakeholders in project	4	0.00	1	0.10	5	1.00	0	0.00	0	0.00	22.00
Capacity of projects that cause over commitment of local contractors	2	0.00	6	0.60	2	0.40	0	0.00	0	0.00	20.00
Inflexibility and lack of trust	3	0.00	5	0.50	1	0.20	1	0.30	0	0.00	20.00
Spoken Language difficulties and Lack of qualified interpreters	4	0.00	3	0.30	2	0.40	1	0.30	0	0.00	20.00
Poor cooperation from local residents	4	0.00	3	0.30	2	0.40	1	0.30	0	0.00	20.00
Dispute resolution mechanism	4	0.00	4	0.40	1	0.20	1	0.30	0	0.00	18.00
Poor safety tradition	5	0.00	2	0.20	2	0.40	1	0.30	0	0.00	18.00
The culture of 'no challenge' to authorities	6	0.00	1	0.10	1	0.20	2	0.60	0	0.00	18.00
Issues in obtaining work permits	4	0.00	4	0.40	2	0.40	0	0.00	0	0.00	16.00
Visa application procedures	6	0.00	1	0.10	2	0.40	1	0.30	0	0.00	16.00
Unfamiliarity of the project local environment	3	0.00	6	0.60	1	0.20	0	0.00	0	0.00	16.00
Poor information sharing or weak communication systems	5	0.00	4	0.40	1	0.20	0	0.00	0	0.00	12.00
Favouritism in appointment of contractors / employees	5	0.00	5	0.50	0	0.00	0	0.00	0	0.00	10.00
Centralised decision making	6	0.00	3	0.30	1	0.20	0	0.00	0	0.00	10.00

5.2.2. Semi-Structured Interviews in KSA

Part A: Personal and Organisational Details

In this part of semi-structured interviews, five questions were asked to gather the personal and organisational detail of the interviewees in the KSA.

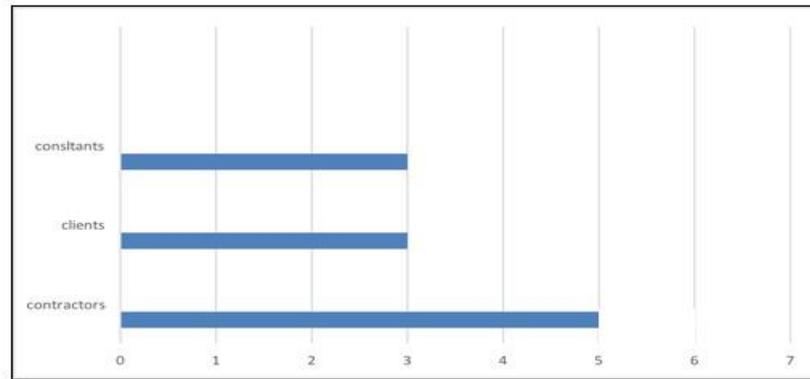


Figure 5.3: The Status of the stakeholders in construction projects

Figure 5.3 shows that five out of eleven interviewees were contractors, three were consultants and three interviewees were clients.

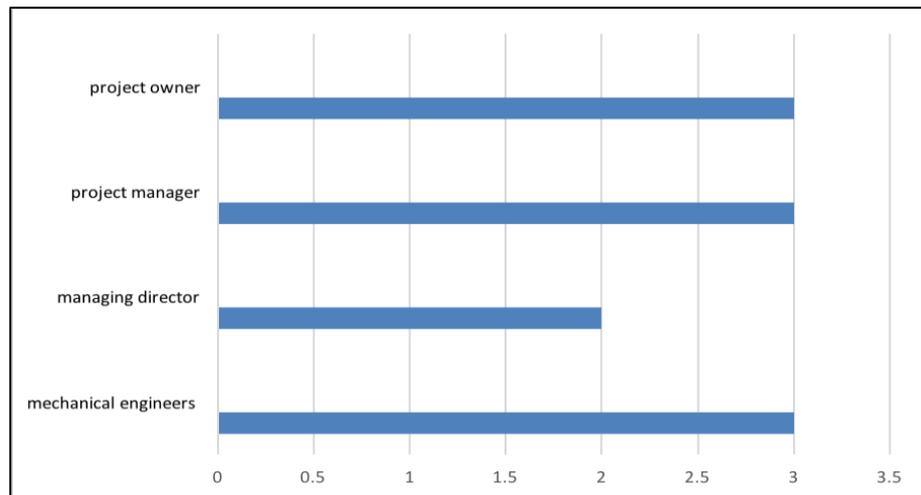


Figure 5.4: Role of Interviewees

The second question was about the role of interviewees or job title. Figure 5.4 indicates that three out of eleven interviewees see themselves as project owners, three interviewees were project managers, three interviewees were mechanical engineers and two interviewees were the managing directors of their respective organisations.

Another question was about the experience of interviewees in working in the construction industry. Overall, it was noted that all interviewees were experienced in excess of ten years working experience in the industry, with some having more than thirty-years of experience in their related fields.

The fifth question was about what types of construction service they do in their organisations. It was observed that most of the interviewees' organisations were involved in building houses, water drainage systems, plumbing, fire safety, alarm systems, heating, electrical services, and project management.

Part B: Delays in Construction Projects

In this part of the semi-structured interview, four questions were asked to get the interviewee's views about delays in construction projects.

1. Delays at different stages of the project

This is to identify which types of delays occur during different stages of projects and what they considered the reasons behind these delays. The interviewees gave mixed answers for each project stage as explained in the following: -

Concept design stage:

The candidates in KSA revealed various reasons of delays but three were repeated by all the interviewees. It was observed that the origin of delays at conceptual stage was often disagreements between supply-side stakeholders regarding the actual design of the project.

For example, two interviewees mentioned that:

“At conceptual stage, the only real delays would come from disagreement regarding the actual designs and what is actually practical in terms of build-ability and construction logistics.” (K2, K5)

Additionally, it has observed that the lack of involvement of expert engineers at initial stages was another reason of delays. An interviewee revealed that:

“I think the only delay which can be occurred at this stage is the lack of expert engineers is also a problem.” (K11)

Furthermore, delays at concept design stage were usually occurring either because of delays from government in approving ideas of the organisations or because of insufficient and inexperienced clients. An interviewee replied:

“Delay in approval of concept from government or clients and because of inefficient authority.” (K10)

Outline design stage:

Interviewees revealed different origins of delays at the outline design stage of the project. One of the biggest causes of delays at this stage was lack of experts and consultants and design change by clients. In other words, if the owners can take the right decisions on changing designs of the project at right time (early) and consider the suggestions of consultants, the delays can be avoided. Sometimes the inefficiency, carelessness and poor behaviours of owners and consultants cause delays in the projects. An interview revealed such reason by stating that:

“Possible delays I suppose could be in finding out the exact specifications of planning permission and how large the construction can be as well as what is likely to be involved with the project. This could be delayed by changes in funding, change of permission or restriction.” (K1)

The interviewees revealed another reason of delays at this stage as the lack of co-operation between contractors and sub-contractors. Commonly, it is considered important that all the workers, consultants, contractors and sub-contractors work as a team and co-operate with each other, fulfil their individual tasks at right time and are punctual in their operations to avoid delays. An interviewee highlighted such reason:

“Making sure all contractors and subcontractors are able to co-operate and fit in their schedules according to the designs and plans may sometimes result in projects being delayed. But usually with organisation this doesn’t become an issue.” (K8)

Detailed design and manufacturing stage

It is perceived that at detailed design and manufacturing stage, delays occur for many reasons. One of the most important reasons was change in designs of the project. It has been seen that the whole project can be delayed when clients, consultants or contractors change the design of the project at this late stage. The project can be delayed because change in design indirectly or directly affect funding and resource planning. For instance, an interviewee said that:

“This may occur if designs are changed later due to whatever factor and then the resources originally planned may also require altering too.” (K5)

Another major cause of delays was unavailability of resources and materials not being delivered at the right time. It has seen that such type of delays rarely occur and the foremost reason behind such delays is again late changes in designs. When a project design changes, available resources can be wasted and the availability of further resources can prove difficult. Late changes in designs may come about due to lack of technology and lack of awareness of the client. As two interviewees stated that:

“Occasionally we face delays as a result of unavailable resources and materials and also because of lack of technology and expertise.” (K8, K10)

Additionally, “blame culture” was noticed as well. It is seen that interviewees blamed outside contractors for delays at the manufacturing stage. An interviewee replied:

“This is more of an issue with our connections with outside contractors and their failure to deliver on their promises.” (K4)

Installation stage

At this stage, one of the most reported causes was ‘weather’ especially during the summer season. It directly affects performance and regularity of the labours. The environment or weather is a factor that cannot be controlled by project managers but they can plan how to mitigate weather effects. For example, an interviewee answered that:

“Usually the only factor to delay would be environmental and are usually out of our hands. We pride ourselves on being sufficient to complete all jobs.” (K6)

Another most prominent reason was failing to secure suitable resources and workers. At installation stage workers and resources are two main factors that can cause delays, if they are not handled effectively. In other words, professional and experienced personnel are necessary for installation stage that performed their tasks well and use available resources efficiently and effectively. One interview candidate mentioned that:

“This type of delays happens if we have issues regarding workers and resources during operations to accomplish tasks; however, due to our expertise we do not find such issues.” (K3)

Moreover, at this stage delays mostly occurred either due to inefficiency or delays from the contractors or sub-contractors. Additionally, “Blame-culture” has also been noticed at this stage. The candidates blamed outside contractors/sub-contractors for delays. Contractors/builders delay the project because of their personal problems or extra burden of work. The owner must extend the delivery date of the project in these circumstances. As an interview exposed that:

“I have only ever encountered an issue when one of our builders or contractors is away for any reason and therefore we may have to push back the completion date by a day or so.” (K7)

Commissioning stage

At commissioning stage two major origins of delay were reported by nearly all interviewees. The first reason is poor experiences of clients and their potentially changing needs. Sometimes, customers are unclear about their requirements and allowances and therefore they change their plans or want variations in their projects. It is noticed that customers are sometimes influenced by bankruptcy and cannot fulfil the requirements payments. Alternatively, they may cause delay in signing important. For example, an interviewee reported that:

“I feel at this stage the problems only arise when a customer is either unclear about their exact wants and allowances or experienced bankruptcy. Therefore, in such situations, it becomes harder for us to prepare orders according to the plan if they are making variations repeatedly.” (K1)

The second reason was improper planning and wrong designs of the project team which cause delays at the commissioning stage. Interview candidates revealed that planning is an essential element to avoid delays. It is crucial to concentrate on maintenance, safety, rate of commission for contractors, security, costs and quality of the projects while making plans for the projects because when an owner ignore such factors, the delays in the project can be occurred. Additionally, it is recognized that an efficient and expert surveyor plays an important role at this stage to reduce delays. As an interviewee replied:

“When the commissioning stage is performed in a planned and effective way, it will fulfil the schedules, costs, payments of the contractors, safety and requirements of

quality of the project. Sometimes delays occur because of external contractors”
(K5)

2. Steps to handle delays

The seventh question was about how to handle delays in the projects. All candidates agreed that to reduce delays it is necessary to take steps as soon as possible and make different strategies to handle such situations because the wait in managing delays can directly affects the whole project. To control delays, it is crucial to identify why delays are occurring. Once the reason of delays is identified, all stakeholders should make some plans and actions to resolve it. For example, an interviewee stated that:

“If we ever experience any form of problem we first look at what the delay is caused by and then work out the best strategy to overcome it. We look at who is impacted and make sure we notify all those affected by the problem so that everyone is on the same page and knows what is going on”. (K11)

3. Strategies to handle delays

Question eight asked interviewees what strategies they use to manage delays in construction projects. For this question, majority of interviewees were agreed that they have a plan B and how project managers must remain one step ahead in identifying and managing delays. As an interviewee candidate mentioned that:

“I always have a Plan B to handle such problems and always concentrate on providing enough manpower, tools and qualified people to avoid delays and issues.” (K6)

Part C: National Culture

This part of the interview contains four questions.

1. National Culture

Question nine asked whether national culture influences projects or not. For this question, half of the interviewees replied ‘Yes’ and the other half said ‘No’. The interviewees who answered ‘Yes’ gave the same explanation. They think that different nationalities, languages, cultures and ways of communication among employees affect the project delivery. One interviewee explained:

“Yes, I think it has an effect on the project. For example, the delays occur when one cannot understand the commonly used language at the workplace the project”.
(K11)

On the other hand, almost six interviewees thought that national culture does not cause delay in their projects because all workers are doing the same job, at the same place and slight differences cannot delay the projects. For example, a candidate replied that:

“We have worked with some sub-contractors in the past who have been from other nations and sometimes they work differently. But I think as long as we are all doing the same job and striving for the same results, different representatives when working together cannot cause delays in a project”. (K7)

2. Origin of delays

Question ten is used to rank each statement on the origin of delay. Table 5.2 below shows the rank of each statement and shows that ‘effects of weather’ were ranked as the number one origin of delays. Additionally, ‘variations in designs’ were ranked at number two while ‘rules or regulations’, ‘poor information sharing’ and ‘procurement methods of the projects’ were ranked at number three. ‘Unfamiliarity of the project local environment’, ‘Lack of long-term business relationships between key stakeholders’, ‘Poor cooperation from local

residents' and 'lack of understanding the culture of staff' were at the same rank. Moreover, 'inflexibility and lack of trust' were considered the least origin of delays.

3. Use innovations to manage delays

The eleventh question is about how interviewees manage delays in their projects. All candidates were agreed on a point that if all workers, supervisors, owners, directors, managing heads, partners, contractor and consultant communicate with each other effectively then they can identify and control delays. They further illustrated that they adapt innovative ideas to handle delays. By this they can reduce delays and find the best solution. For instance, an interviewee exposed that:

“When we see that delays have occurred due to lack of technology and directly affect the project, we try hard to reduce delays as much as possible and find solutions quickly.” (K11)

4. Manage the effects on national culture

The last question is about how they respondents minimise the effects of National Culture on successful delivery of the projects. To this question all those candidates who replied that the National Culture affects project delivery suggested by having better communication and more effective communication, by setting some ethics and by avoiding discrimination, delays can be reduced. An interviewee revealed that:

“Ensure good communication amongst all workers and avoiding discrimination can make the delivery of project successful.” (K8)

Table 5.2: Ranking of Origin of delays in the KSA

ORIGIN OF DELAY	Never		Rarely		Sometimes		Very often		Always		R.I = $\Sigma a(n/N) * 100/5$
	0	a(n/N)	1	a(n/N)	2	a(n/N)	3	a(n/N)	4	a(n/N)	
Effects of weather	1	0.00	0	0.00	6	1.09	3	0.82	1	0.36	45.45
Changes in design variation orders	0	0.00	2	0.18	6	1.09	2	0.55	1	0.36	43.64
Local rules, regulations, customs	2	0.00	4	0.36	4	0.73	0	0.00	1	0.36	29.09
Poor information sharing or weak communication systems	3	0.00	3	0.27	3	0.55	1	0.27	1	0.36	29.09
Procurement methods used in projects	2	0.00	3	0.27	5	0.91	1	0.27	0	0.00	29.09
Capacity of projects that cause over commitment of local contractors	1	0.00	6	0.55	3	0.55	1	0.27	0	0.00	27.27
Engagement of too many small sub-contractors	4	0.00	1	0.09	5	0.91	1	0.27	0	0.00	25.45
Favouritism in appointment of contractors / employees	2	0.00	4	0.36	5	0.91	0	0.00	0	0.00	25.45
International workforce with dissimilar religions, customs, believes, values, traditions	2	0.00	5	0.45	4	0.73	0	0.00	0	0.00	23.64
Flexibility to accept long working hours	1	0.00	7	0.64	3	0.55	0	0.00	0	0.00	23.64
Unfamiliarity of the project local environment	3	0.00	6	0.55	1	0.18	0	0.00	1	0.36	21.82
Lack of long-term business relationships between key stakeholders	4	0.00	4	0.36	2	0.36	0	0.00	1	0.36	21.82
Poor cooperation from local residents	4	0.00	3	0.27	3	0.55	1	0.27	0	0.00	21.82
Lack of understanding the culture of staff	5	0.00	1	0.09	4	0.73	1	0.27	0	0.00	21.82
Issues in obtaining work permits	5	0.00	3	0.27	2	0.36	0	0.00	1	0.36	20.00
Dispute resolution mechanism	3	0.00	5	0.45	3	0.55	0	0.00	0	0.00	20.00
Visa application procedures	8	0.00	1	0.09	0	0.00	0	0.00	2	0.73	16.36
Blame-culture (conflict due to evading responsibility)	6	0.00	3	0.27	0	0.00	2	0.55	0	0.00	16.36
Spoken Language difficulties and Lack of qualified interpreters	5	0.00	3	0.27	3	0.55	0	0.00	0	0.00	16.36
Poor safety tradition	6	0.00	2	0.18	2	0.36	1	0.27	0	0.00	16.36
The culture of 'no challenge' to authorities	7	0.00	2	0.18	0	0.00	2	0.55	0	0.00	14.55
Cultural clash among various stakeholders in project	6	0.00	3	0.27	2	0.36	0	0.00	0	0.00	12.73
Centralised decision making	9	0.00	0	0.00	1	0.18	0	0.00	1	0.36	10.91
Inflexibility and lack of trust	6	0.00	5	0.45	0	0.00	0	0.00	0	0.00	9.09

5.2.3. Summary and Conclusion of the Semi-Structured Interviews

In Section 5.2 answers of the semi-structured interviews were discussed, interpreted and analysed. Two groups (UK candidates and KSA candidates) were interviewed and analysed. Data of part A gives the personal and organisational information of the interviewee. Results of part B exposed some origins of delays and strategies which interviewees adopted to handle or manage delays, and part C gives detailed information how and why National Culture affects the delivery of the project. After analysing both groups, comparative analysis has been done. In comparative analysis, the answers of both groups have been compared and it has been found that there were many similarities and dissimilarities as well in their ways of identifying, managing and reducing delays.

The group of interviewees who belonged to KSA were chosen “contractors” as a type of their organisation; they were well experienced as all interviewees had more than ten years of experience in their related field. Most of the interviewees were working as project owner, project manager and mechanical engineers and were specialised in construction projects. On the other hand, the group of interviewees who belonged to the UK were also chosen contractors as a type of their organisation; they were also experienced, but it has been noticed that the UK interviewees were more experienced than the KSA as they had more than fifteen years of experience in their related field. Additionally, six out of ten UK interviewees were serving as a project managers while others were offering their services as project director and project managers. Furthermore, much of interviewees were specialists in civil engineering.

The comparative analysis of both groups (UK and KSA) further has been done as shown in Table 5.3 below. There were some similarities in the answers of both groups. For example, both groups were agreed on that lack of supervision, expertise, knowledge, technology and resources were the main causes of delays at different stages of the project (e.g. concept

design, outline design, detail and manufacturing, installation and commissioning stage). On the other hand, there were some dissimilarities as well such as interviewees of both groups reported that lack of planning, active decision maker, expert engineers also were the major reasons of delays at different stages.

Table 5.3: Comparison of response between UK and KSA practitioners

Project Stages	Similarities	Differences
Concept design stage	-Late approval from third party or government -When government launches new policies for approvals	-Lack of expert engineers or contractors. KSA -Disagreements regarding designs of the projects. KSA
Outline design stage	-Lack of supervision -Lack of expertise and knowledge	-Lack of co-operation between workers. UK -Constant changes in design or plan. KSA
Detail and manufacturing stage	-Lack of experts and technology -Unavailability of resources	-Outside contractors' delays work. UK -Late decisions regarding changes in design or concept. KSA
Installation stage	Lack of resources or unavailability of resources	-Lack of professional decision makers. KSA
Commissioning stage	Contractors or sub-contractors are responsible for delays	-Lack of planning. KSA -Bad experiences of the customers. UK
Steps to handle delays	Take steps as soon as possible to handle delays	-Use CPM scheduling techniques. UK and Appoint expert project managers. UK
Strategies to handle delays	Make a plan B for such situation and start working on it if plan A is not properly working.	Divide the whole project into small units and then give these units to different contractors with strict deadline. KSA
National culture	Half interviewees said 'yes' to this question and mentioned that different nationalities, culture, languages are the factors that cause delays in the project while other half said 'no' national culture did not influence the delivery of project because all workers are doing same job although with different ways but gave almost same output and resolve their language issue gradually.	
Origin of delays	Both the UK's and KSA's interviewees give same rank as 1, 5 and 16 respectively to these statements Effect of weather, Procurement methods used in project, Dispute resolution mechanism	
Use innovative methods to manage delays	Use technology in manufacturing stage	-Use hindsight method in KSA -Expand human resources in UK
Manage the effects of National Culture	-Make communication among worker more effective -Set some codes of ethics -Avoid discriminations	-Improve interpersonal relationships. KSA -Arrange culture based seminars. UK

Moreover, it has noticed that both groups focused on different strategies to handle and avoid delays. Some responded that they used a B plan while other highlighted that they either used Critical Path Methods (CPM) scheduling techniques or divide the whole projects in small units and give each unit to a contractor with strict deadlines. The Table 5.3 also shows some differences between KSA and UK, for example: the KSA is affected by a lack of expert engineers/contractors, lack of professional decision makers, late decisions regarding changes in design or concept and so on. Whilst the UK is affected by a lack of co-operation between workers, outside contractors' delays work in UK.

In addition to this, the study asked about whether national culture affects project delivery? The similarity has been seen in the answers of interviewees of both groups. Half the interviewees of both groups responded that national culture can affect the occurrence of delay because of different cultures, languages and nationalities and these factors can be controlled by avoiding discrimination at the workplace, improve interpersonal relationships and make communication among employees more effective. While according to the other half of interviewees of both groups, national culture did not affect delivery of the projects. Furthermore, when the study asked to rank each origin of delays, both UK and KSA interviewees responded differently, but both groups gave the same ranking to three origins of delays such as they gave same rank 1 to "Effects of weather", 5 to "Procurement methods used in project" and 16 to "dispute resolution mechanism". A further comparison of ranking between both groups is given in Table 5.4 below. Those highlighted (UK's numbers 4, 6, 10, 11, 12, 13, 21, 22 and 23) are the ones that are distinctly different, and closer look revealed that most of them may differ as a result of the difference in national cultural dimensions between UK and KSA.

These findings have been used in designing the questionnaire, for example: by dividing the questionnaire into different categories (contractors, consultants, clients) and causes of delays

were formed for each factor that effect the attitude of key stakeholders in construction projects.

Table 5.4: Comparison of ranking of origins of delays between UK and KSA interviewees

UK Ranking	Origin of Delays	KSA Ranking
1	Effects of weather	1
2	Local rules, regulations, customs	3
3	Engagement of too many small sub-contractors	7
4	Flexibility to accept long working hours	10
5	Procurement methods used in projects	5
6	Blame-culture (conflict due to evading responsibility)	18
7	Lack of long-term business relationships between key stakeholders	12
8	International workforce with dissimilar religions, customs, believes, values, traditions	9
9	Lack of understanding the culture of staff	14
10	Changes in design and variation orders	2
11	Cultural clash among stakeholders in project	22
12	Capacity of projects that cause over commitment of local contractors	6
13	Inflexibility and lack of trust	24
14	Spoken Language difficulties and Lack of qualified interpreters	19
15	Poor cooperation from local residents	13
16	Dispute resolution mechanism	16
17	Poor safety tradition	20
18	The culture of 'no challenge' to authorities	21
19	Issues in obtaining work permits	15
20	Visa application procedures	17
21	Unfamiliarity of the project local environment	11
22	Poor information sharing or week communication systems	4
23	Favouritism in appointment of contractors / employees	8
24	Centralised decision making	23

These findings have been used in designing the questionnaire, for example: by dividing the questionnaire into different categories (contractors, consultants, clients) and causes of delays were formed for each factor that effect the attitude of key stakeholders in construction projects.

5.3. Achieving the Research Aim (Questionnaire)

In order for the research to achieve its aim, quantitative method has been chosen. Questionnaire has been developed based on robust literature review and semi-structured interviews conducted.

As outlined in Sections 4.5 and 4.6, an early step in the data analysis has been carried out on all questionnaire responses to check to ensure completeness and readability before the data were processed using the Statistical Package for Social Sciences (SPSS). The checks carried included adequacy of sample size, validating in terms of internal consistency and structure, and reliability involving split-half method and Cronbach's Alpha. These have been discussed in the following subsections:

The Adequacy of the Sample Size

Prior to performing the analysis, the suitability of data for the analysis was assessed. In order to do that, the first check was to measure the adequacy of the sample size. The preferable sample size should be 115 or larger. As a general rule, the minimum should have at least five times as many observations as there are variables to be analysed (Hair et al., 1998; Ali, 2006).

This result has just over 20 variables, therefore the minimum observation should be at least 100. The sample size of the stakeholders was 276, which gave ratio of 12 cases to 1 variable. It therefore satisfies the specified limit.

The Validity

To ensure the validity of the questionnaire, two statistical tests were being applied. The first test is the criterion-related validity test which measures the correlation coefficient between each question in the part and the whole part. The second test is structure validity test that was used to test the validity of the questionnaire structure by testing the validity of each part and the validity of the whole questionnaire. It measures the correlation coefficient between

one part and all the parts of the questionnaire that have the same level of similar scale. Both these tests are discussed as follows:

1. Criterion Related Validity:

Internal Consistency:

Internal consistency of the questionnaire is measured by a scouting sample, through measuring the correlation coefficients between each question in one part and the whole part. For typical analysis, using the standard $\alpha = 0.05$ cut-off, implying that the question is rejected when $p > 0.05$. Tables 5.5, Table 5.6 and Table 5.7 below show the p-value for Part B, Part C, and Part D of the Questionnaire respectively. Where the p-value is a function of the observed sample results (a test statistic) relative to a statistical model, which measures how extreme the observation is. Statistical hypothesis testing making use of p-values are commonly used in many fields of science and social sciences (Bhattacharya et al., 2002). As shown in the tables, all the p-values are less than 0.05, so it can be concluded that the questions of those parts are consistent and valid to measure what they were designed for and this would be indicative of good internal consistency of the questionnaire.

Table 5.5: Correlation coefficient between each question in Part B and the whole Part B

No.	Questions	P-value
1	My educational status has an influence on my feelings towards occurrence of delay in construction projects.	0.005
2	My educational background has an effect on my point of view about occurrence of delay in construction projects.	0.011
3	My educational background could affect how I act in dealing with delay.	0.014
4	My awareness of delay helps me to feel confident in dealing with delay.	0.013
5	My awareness of delay affects my point of view when I deal with delay.	0.006
6	My actions and instructions are based on my awareness about project environments and situations.	0.000
7	When I work in teams, my actions are often influenced by the feelings of others.	0.000
8	My thoughts about delay can be affected by my interaction with others in my team.	0.017
9	My reactions to dealing with delay are influenced by other people working on projects.	0.043
10	The dynamics of the environment in which I carry out the task affects the way I feel towards delay.	0.007
11	The nature of organization Influence can influence my point of view about delay.	0.000
12	The Organization Influence would affect the way I respond to delay.	0.001
13	More experience in the construction industry makes me more confident when I handle delay.	0.002
14	My thoughts process is influenced by my years of experience in construction industry. Thought	0.005
15	The actions I take regards delays are influenced by my experience in construction industry.	0.000
16	My feeling about delay is influenced by the organization I work for.	0.004
17	The organization culture I work in has effect on my thoughts process towards delay.	0.001
18	When I work for big organization the actions that I take towards delay is different compared to when I work for smaller organization.	0.000
19	My physical and psychological conditions affect my feelings towards delay.	0.001
20	My thought processes towards delay are influenced by my health.	0.014
21	The action that I take in response to occurrence of delay is influenced by my physical or psychological or physiological condition.	0.006
22	More incentives providing project in avoiding delay can affect the way that I feel about delay.	0.000
23	The manner in which I view the effect of delay is influenced by the incentives that are provided in the project.	0.000
24	The incentives provided to avoid delay could influence how much effort I put in to avoid delay.	0.000
25	A project that undergoes numerous changes in client's requirements can affect my feelings towards delay.	0.020
26	The way I think about the consequences of delay is influenced by the completeness of project information.	0.022
27	My response to occurrence of delay is dictated by the completeness of project information.	0.000
28	My feelings towards delay are influenced by the effect of legislation.	0.000
29	The way I think about delay is influenced by the laws of the land.	0.000
30	My actions regarding delay are effected by the general economic situation in the country.	0.001
31	I feel that the complexity of a project may lead to delay.	0.032
32	My thoughts regarding the occurrence of delay are affected by project processes and what happens during the implementation of the construction project.	0.000
33	My action towards the occurrence of delay depends on project processes and what happens during the implementation of the construction project.	0.000
34	I feel good if the outcome of projects is as planned.	0.000
35	The outcome of construction projects influences my thoughts towards delay.	0.014
36	The action that I take towards delay is influenced by the previous response that I made in similar situation.	0.000

Table 5.6: Correlation coefficient between each question in Part C and the whole Part C

No.	Questions	p-value
1	How does your educational background effect on your attitude towards occurrence of delay in construction projects?	0.000
2	If you have full awareness of a delay situation how would you instinctively respond in handling the delay?	0.005
3	When a delay affects my team, I often respond is often respond in one of the following ways ..	0.011
4	In the organization that provides a good Organization Influence, my attitude to respond to delay is often	0.014
5	The more experience I have in construction industry it affect my attitude towards delay in	0.013
6	The organization I work for affects my attitude towards delay in	0.022
7	My physical or psychological or physiological condition can influence my attitude towards occurrence of delay in.....	0.032
8	When there are incentives provided, it affects my attitude towards delay in	0.000
9	When I'm working on projects that have a lot of changes, my attitude towards delay is	0.002
10	The general economic situation in the country affects my attitude towards delay in	0.017
11	When there is a clear project processes, my attitude towards delay is	0.043
12	Working with a project team that often deliver successful project outcomes, my attitude towards delay is	0.000

Table 5.7: Correlation coefficient between each question in Part D and the whole Part D

No.	Questions	p-value
1	Over centralization of decision making and display of intrinsic inequalities in management affects my feelings in dealing with any delay in construction projects.	0.007
2	I think that subordinates are expected to strictly follow the instructions of their bosses when trying to mitigate the occurrence of delay in construction projects.	0.005
3	Centralization and intrinsic inequalities affect my reaction when I deal with delays.	0.000
4	My feelings towards delay depend upon whether the delay affects my close associate.	0.001
5	My thought process in dealing with delay is different when the client or contractor is my family relation.	0.014
6	The action I take in dealing with a delay situation would certainly be different when the project is for someone I personally know.	0.000
7	Feelings of a project participant towards delay are influenced by the gender of the participant.	0.001
8	The distinct separation of roles between men and women affects my thought process in handling delay in construction projects.	0.001
9	My response to delay is affected by the society expecting men to be tough and assertive and women to be modest and tender.	0.038
10	My feelings towards delay in projects are affected by the need to follow traditional codes of beliefs and ideas.	0.000
11	My thoughts in dealing with delay give great importance to rules, and it does not matter if these rules work or not.	0.000
12	My action depends on truth, regularity, and security when I act to deal with the effect of delay.	0.000
13	When a delay occurs, I have a strong feeling that I need to provide detail information about its cause and effect.	0.000
14	I often think that I can save time now to gain time for future occurrence of delay.	0.024
15	My reactions to delay are often hinged on the concern of the future effect on the project.	0.005

2. Structure Validity of the Questionnaire

Structure validity is the second statistical test that tests the validity of the questionnaire structure by testing the validity of each part and the validity of the whole questionnaire.

As shown in Table 5.8, the p-values are less than 0.05, so the correlation coefficients of all the parts are significant at $\alpha = 0.05$, and all Pearson correlation coefficient values are more than 0.60, so it can be said that the parts are valid to measure what it was set to achieve.

Table 5.8: Structure Validity of the Questionnaire

Part	Title of the Prats	Pearson correlation coefficient	p-value
B	Establishing the Factors Influencing Attitude Towards Delay in Construction Projects.	0.792	0.000
C	Establishes the effect of attitudinal factors on the project stakeholders regarding delay in construction projects.	0.863	0.000
D	Establishes the effect of attitudinal factors on the project stakeholders regarding delay in construction projects.	0.748	0.000

Reliability

Reliability is the degree of consistency with which it measures the attribute it is supposed to be measuring. For most purposes a reliability coefficient above (0.7) are considered satisfactory. To measure reliability, Split-Half Method and Cronbach's Alpha have been used through the SPSS.

1. Split-Half Method

The Split-Half method assesses the internal consistency of the questionnaires. It measures the extent to which all parts of the test contribute equally to what is being measured. This is done by comparing the results of one half of a test with the results from the other half. This method depends on finding the Pearson correlation coefficient between the means of odd rank questions and even rank questions of each field of the questionnaire. Correcting the

Pearson correlation coefficients can be done by using the Spearman Brown correlation coefficient of correction. The corrected correlation coefficient (consistency coefficient) is computed according to the following equation:

$$\text{Consistency coefficient} = 2r/(r+1)$$

Where ‘r’ is the Pearson correlation. The normal range of corrected correlation coefficient $2r/(r+1)$ is between 0.0 and + 1.0. As shown in Table 5.9, the corrected correlation coefficients values are (0.834, 0.898 and 0.859) and the total reliability for all items is 0.884. It can be concluded that according to the Split-Half method, the questionnaire parts are reliable.

Table 5.9: Split-Half Coefficient method

Part	Title of the Part	Consistency coefficient
B	Establishing the Factors Influencing Attitude Towards Delay in Construction Projects.	0.834
C	Establishes the effect of attitudinal factors on the project stakeholders regarding delay in construction projects.	0.898
D	Establishes the effect of attitudinal factors on the project stakeholders regarding delay in construction projects.	0.859

2. Cronbach’s Alpha

This method is used to measure the reliability of the questionnaire between each part and the mean of the whole parts of the questionnaire. The normal range of Cronbach’s Alpha value is between 0.0 and + 1.0, and the higher values reflects a higher degree of internal consistency. As shown in Table 5.10, the Cronbach’s Alpha was calculated for each of the parts. The results are 0.843, 0.901 and 0.883 for parts B, C and D respectively. These values are considered high and therefore confirms the reliability of the questionnaire.

Table 5.10: Cronbach's Alpha for Reliability

Part	Title of the Part	Cronbach's Alpha
B	Establishing the Factors Influencing Attitude Towards Delay in Construction Projects.	0.843
C	Establishes the effect of attitudinal factors on the project stakeholders regarding delay in construction projects.	0.901
D	Establishes the effect of attitudinal factors on the project stakeholders regarding delay in construction projects.	0.883

5.3.1. General Background of the Analysis of the Questionnaire

As mentioned in Chapter Four, 276 stakeholders representing the three key stakeholders related to construction projects have responded using the following parts of questionnaire:

Part A: Personal Information of the Respondents.

This part is made up of four parts as follows:

1. Classification of Respondents' Role in the Saudi Construction Industry

A total 330 questionnaires were distributed across 15 organizations, and in three (3) large cities in KSA (Riyadh, Jeddah and Dammam). A total of 300 survey responses were completed, the response rate is 90.9%. After checking and screening the questionnaires, 24 returns have been excluded due to incomplete or not meeting the criteria: where 16 from consultants due to not meeting the criteria or incomplete; 2 from clients due to incompetence and 6 from contractors also due to incompetence. It implies that a total of 276 questionnaires were analysed.

Out of the 276 stakeholders, 26.8% were "Consultants", 34.4 % were "Contractors", and 38.8% were "Clients". The details are shown in Table 5.11 which demonstrates fair balance of classification of the origin of data.

Table 5.11: Classification of respondents' role in the Saudi construction industry

Classification of respondents' role	Number of distributed	Number of respondents	Rate of response	Removed	Final number of respondents	Percentages of total
Consultants	110	90	81.8	16	74	26.8
Contractors	110	101	91.8	6	95	34.4
Clients	110	109	99.1	2	107	38.8
Total	330	300	90.9	24	276	100.0

2. Nationality

196 of the respondents were Saudi nationals and 80 were non-Saudi nationals giving 71% and 29 % respectively. This gives sufficient data sets to test the assumption that the effect of SNC on the attitudes of stakeholders towards delay is influenced by whether the person is a Saudi or non-Saudi.

Many of Saudis that responded are clients (92) respondents and majority of non-Saudis are contractors (36) respondents where they work as project managers or engineers on sites as shown in Table 5.12.

Table 5.12: Stakeholders' Nationality

Nationality	Number of respondents	Percentages of total	Classification of Respondents' Role	Number of respondents	Percentages of total
Saudi	196	71.0	Consultants	45	16.3
			Contractors	59	21.4
			Clients	92	33.3
Non-Saudi	80	29.0	Consultants	29	10.5
			Contractors	36	13.0
			Clients	15	5.4
Total	276	100		276	100

3. Experience in the Saudi Construction Industry

It was observed from the replies of the questionnaires, that most of the respondents (54.4%) had more than five years working experience in the Saudi construction industry. This gives confidence that their views based on previous experiences they have experienced while working on construction projects. The results are shown in Table 5.13 having some respondents with more than 20 years experience. Only 14 respondents have less than one year experience, these respondents were excluded from the analysis.

Table 5.13: Experience

Experience	Number of respondents	Percentages of total
1-5 years	126	45.6
6-10 years	66	23.9
11-15 years	30	10.9
16-20 years	30	10.9
More than 20 years	24	8.7
Total	276	100.0

4. Level of Qualification

It was interesting to observe from the results shown in Table 5.14 that 54.3% of the respondents have a bachelor degree (BSc), 15.3% had a master degree, and 13.1% have a PhD. Only 4.7% have achieved “High school”, 5.4% have a “Vocational qualification”, 7.3% have a “Higher National Certificate/ Higher National Diploma (HNC/HND)”. It noted that the majority of participants have a bachelor degree or more (82.6%), which gives a good indication that the response would be of high quality added to the years of good experience.

Table 5.14: Level of Qualification

Level of Qualification	Number of respondents	Percentages of total	Consultants	Contractors	Clients
None	0	0.0	0	0	0
High school	13	4.7	0	6	7
Vocational qualification	15	5.4	0	6	9
Higher National Certificate/ Higher National Diploma (HNC/HND)	20	7.3	0	3	17
Bachelor (BSc)	150	54.3	20	7	60
Master degree (MSc)	42	15.2	23	9	10
Doctorate degree (PhD)	36	13.1	31	1	4
Total	276	100.0	74	95	107

Part B: Establishes the factors influencing attitude towards delay in construction projects.

The main purpose of Part B is to establish and validate which of the twelve factors affect attitude of key stakeholders towards delay in construction projects. This achieved objective 3 of the research. The twelve factors have been identified from literature review and discussed in Chapter 3. In this part of questionnaire, the respondents were asked 36 questions to provide their opinions about the effect of the identified factors on their feelings, thoughts and actions by using a score from 1 to 5, where 1 represent “strongly disagree” and 5 represent “strongly agree”. Each question was “What is your degree of agreement with the following questions (from 1 to 5) towards the occurrence of delay in construction project. The Pearson correlation coefficient has been used to give an understanding as to the extent to which each factor contributes to the stakeholders' attitude, both by itself and in combination of the other factors, and to determine the correlation of attitudinal factors with occurrences of delay in construction projects. This has been widely used in the sciences to measure the linear dependence between two variables X (the attitude of stakeholders) and Y (the factor that may affect the attitude of stakeholders), giving a value between +1 and -1 inclusive, where 1 is total positive linear correlation, 0 is no linear correlation, and -1 is total negative linear correlation. (Hair et al., 1998; Ali 2006) accept the correlation between two variables if it is 0.50 or above when they studied factors influence attitude towards safety climate in construction projects. This study adopted the same condition, i.e.: there is a correlation between the factors and stakeholders' attitudes if the Pearson correlation coefficient is above/less than +/- 0.50 respectfully. The Pearson correlation coefficient was calculated for each question and the results are shown in Table 5.15. After the exclusion of the items that are not correlated to attitude, and by using the component of attitude model (feelings, thoughts and action), the relationships between the component of attitude and

delay in construction projects were found. On other hand, the Relative Importance Index (RII) also was employed, it was calculated for each factor and the results are shown in Table 5.17. The table shows the ranks of the Factors Influencing Attitude towards Delay in Construction.

Part C: Establishes the effect of attitudinal factors on the project stakeholders regarding delay in construction projects.

The main purpose of Part C is to determine the outcome (or the type) of effect of each attitudinal factor on the attitude of key stakeholders towards delay in construction projects. As discussed in Section 3.3, there are three outcomes for attitudes of stakeholders towards delay (Positive, Neutral or Negative). The question should be answered, does the attitudinal factor effect on the attitude of key stakeholders towards delay in construction projects in positive, neutral or negative effects. In Part C, the respondents were asked twelve questions to provide their opinions about the outcome of effects of those factors on their attitude by choosing one of three choices (Positive, Neutral or Negative). The question was “Please tick the situations on the right against each question that best indicates your attitude”. The score (1= Negative, 2= Neutral and 3=Positive) was used when using SPSS for analysis. The percentages of weight for each outcome were calculated, the results are shown in Table 5.18.

Part D: Establishes effects of national culture on the attitude of stakeholders towards delay.

The main purpose of part D is to identify the correlation between the SNC and the attitude of key stakeholders towards delay in construction projects. This is aimed to achieve objective 4 of this research. The respondents were asked fifteen questions to provides their opinions about the effect of five NC dimensions on their feelings, thoughts and actions by using a

score from 1 to 5, where 1 represent “strongly disagree” and 5 represent “strongly agree”. The question was “To what extent do you agree or disagree with the following statements affecting your attitude towards occurrence of delay in construction projects?”.

5.3.2. The effect of the twelve factors on feelings, thoughts and actions (attitude) of key stakeholders towards delay in construction

For each factor, three questions have been asked having one each for feeling, thought and action respectively. The results of the questionnaire have been analysed and the Pearson Coefficient value for each question has been calculated as shown in Table 5.15, where those with a value less than 0.5 are bolded indicating insignificance. After deleting the insignificant items (i.e. the bolded), Table 5.15b has been formed. This table has been reorganised to establish which factors directly affect feelings or thoughts or actions respectively. The reorganised content is shown in Table 5.16a where the respective factors associated with either feeling or thought or action have been identified.

The respondents were also asked to rate the effect of each factor on their attitude towards delay. By using the Relative Importance Index (RII), the twelve factors influencing attitude towards delay in construction projects are ranked and shown in Table 5.17.

Similarly, the respondents were asked to indicate whether the effect of the each factor is positive, negative or neutral (these are defined in the questionnaire to help in interpretation). The results are shown in Table 5.18 where the values have been used to judge the outcome as indicated in the third column.

Table 5.15: Pearson Coefficient values for factors influencing attitude towards delay in construction projects (Part B)

	Questions	Pearson coefficient
F1	1. My educational status has an influence on my feelings towards occurrence of delay in construction projects.	0.502
	2. My educational background has an effect on my point of view about occurrence of delay in construction projects.	0.457
	3. My educational background could affect how I act in dealing with delay.	0.442
F2	4. My awareness of delay helps me to feel confident in dealing with delay.	0.446
	5. My awareness of delay effects my point of view when I deal with delay.	0.493
	6. My actions and instructions are based on my awareness about project environments and situations.	0.597
F3	7. When I work in teams, my feelings are often influenced by the others.	0.681
	8. My thoughts about delay can be affected by my interaction with others in my team.	0.433
	9. My reactions to dealing with delay are influenced by other people working on projects.	0.372
F4	10. Dynamics of the environment in which I carry out the task affects the way I feel towards delay.	0.482
	11. The nature of work environment can influence my point of view about delay.	0.619
	12. The work environment would affect the way I respond to delay.	0.588
F5	13. More experience in the construction industry makes me more confident when I handle delay.	0.532
	14. My thoughts process is influenced by my years of experience in construction industry.	0.496
	15. The actions I take regards delays are influenced by my experience in construction industry.	0.756
F6	16. My feeling about delay is influenced by the organization I work for.	0.516
	17. The organization culture I work in has effect on my thoughts process towards delay.	0.557
	18. When I work for big organization the actions that I take towards delay is different compared to when I work for smaller organization.	0.628
F7	19. My physical and psychological conditions affect my feelings towards delay.	0.570
	20. My thought processes towards delay are influenced by my health.	0.446
	21. The action that I take in response to occurrence of delay is influenced by my physical or psychological or physiological condition.	0.493
F8	22. More incentives providing project in avoiding delay can affect the way that I feel about delay.	0.667
	23. The manner in which I view the effect of delay is influenced by the incentives that are provided in the project.	0.618
	24. The incentives provided to avoid delay could influence how much effort I put in to avoid delay.	0.618
F9	25. A project that undergoes numerous changes in client's requirements can affect my feelings towards delay.	0.424
	26. The way I think about the consequences of delay is influenced by the completeness of project information.	0.417
	27. My response to occurrence of delay is dictated by the completeness of project information.	0.714
F10	28. My feelings towards delay are influenced by the effect of legislation.	0.712
	29. The way I think about delay is influenced by the laws of the land.	0.765
	30. My actions regarding delay are effected by the general economic situation in the country.	0.568
F11	31. I feel that the complexity of a project may lead to delay.	0.394
	32. My thoughts regarding the occurrence of delay are affected by project processes and what happens during the implementation of the construction project.	0.778
	33. My action towards the occurrence of delay depends on project processes and what happens during the implementation of the construction project.	0.852
F12	34. I feel good if the outcome of projects is as planned.	0.706
	35. The outcome of construction projects influences my thoughts towards delay.	0.448
	36. The action that I take towards delay is influenced by the previous response that I made in similar situation.	0.714

Table 5.15b: Significant Items influencing Attitude towards Delay in Construction Projects

No	Questions	Pearson coefficient
1	My educational status has an influence on my feelings towards occurrence of delay in construction projects.	0.502
6	My actions and instructions are based on my awareness about project environments and situations.	0.597
7	When I work in teams, my actions are often influenced by the feelings of others.	0.681
11	The nature of Company Influence can influence my point of view about delay.	0.619
12	The Company Influence would affect the way I respond to delay.	0.588
13	More experience in the construction industry makes me more confident when I handle delay.	0.532
15	The actions I take regards delays are influenced by my experience in construction industry.	0.756
16	My feeling about delay is influenced by the organization I work for.	0.516
17	The organization culture I work in has effect on my thoughts process towards delay.	0.557
18	When I work for big organization the actions that I take towards delay is different compared to when I work for smaller organization.	0.628
19	My physical and psychological conditions affect my feelings towards delay.	0.570
22	More incentives providing project in avoiding delay can affect the way that I feel about delay.	0.667
23	The manner in which I view the effect of delay is influenced by the incentives that are provided in the project.	0.618
24	The incentives provided to avoid delay could influence how much effort I put in to avoid delay.	0.618
27	My response to occurrence of delay is dictated by the completeness of project information.	0.714
28	My feelings towards delay are influenced by the effect of legislation.	0.712
29	The way I think about delay is influenced by the laws of the land.	0.765
30	My actions regarding delay are effected by the general economic situation in the country.	0.568
32	My thoughts regarding the occurrence of delay are affected by project processes and what happens during the implementation of the construction project.	0.778
33	My action towards the occurrence of delay depends on project processes and what happens during the implementation of the construction project.	0.852
34	I feel good if the outcome of projects is as planned.	0.706
36	The action that I take towards delay is influenced by the previous response that I made in similar situation.	0.714

Table 5.16a: The categorisation of items influencing Attitude towards Delay in Construction Projects

The Components of Attitude	No	Questions	Factors
Feelings (F)	1	My educational status has an influence on my feelings towards occurrence of delay in construction projects.	Education
	7	When I work in teams, my actions are often influenced by the feelings of others.	Group Influence
	13	More experience in the construction industry makes me more confident when I handle delay.	Experience
	16	My feeling about delay is influenced by the organization I work for	Organisation Influence
	19	My physical and psychological conditions affect my feelings towards delay.	Human Factors
	22	More incentives providing project in avoiding delay can affect the way that I feel about delay.	Motivation
	28	My feelings towards delay are influenced by the effect of legislation.	External Environment
	34	I feel good if the outcome of projects is as planned.	Outcome
Thoughts (T)	11	The nature of work environment can influence my point of view about delay.	Work Environment
	17	The organization culture I work in has effect on my thoughts process towards delay.	Organisation Influence
	23	The manner in which I view the effect of delay is influenced by the incentives that are provided in the project.	Motivation
	29	The way I think about delay is influenced by the laws of the land.	External Environment
	32	My thoughts regarding the occurrence of delay are affected by project processes and what happens during the implementation of the construction project.	Workflow
Actions (A)	6	My actions and instructions are based on my awareness about project environments and situations.	Awareness
	12	The work environment would affect the way I respond to delay.	Work Environment
	15	The actions I take regards delays are influenced by my experience in construction industry.	Experience
	18	When I work for big organization the actions that I take towards delay is different compared to when I work for smaller organization.	Organisation Influence
	24	The incentives provided to avoid delay could influence how much effort I put in to avoid delay.	Motivation
	27	My response to occurrence of delay is dictated by the completeness of project information.	The updated changes in project
	30	My actions regarding delay are effected by the general economic situation in the country.	External Environment
	33	My action towards the occurrence of delay depends on project processes and what happens during the implementation of the construction project.	Workflow
	36	The action that I take towards delay is influenced by the previous response that I made in similar situation.	Outcome

Table 5.17: The ranking of the Factors Influencing Attitude towards Delay in Construction Projects

Rank	Factors	RII
1	Experience	0.7145
2	Awareness	0.6971
3	Outcome	0.6812
4	Motivation	0.6710
4	Workflow	0.6710
6	Education	0.6681
7	The updated changes in project	0.6522
8	Organisation Influence	0.6319
9	Group Influence	0.6203
10	Human factors	0.6130
11	External Environment	0.5942
12	Work Environment	0.5348

Table 5.18: The outcome of the effect of Attitudinal Factors on the project stakeholders regarding delay in construction projects

No.	Factor	Positive Attitude %	Neutral Attitude %	Negative Attitude %	The Outcome
1	Education	43.5	50.0	6.5	Neutral Attitude, tends towards positive
2	Awareness	52.2	41.3	6.5	Positive Attitude
3	Group influence	28.3	60.9	10.9	Neutral Attitude, with slight skew towards positive
4	Work Environment	43.5	45.7	10.9	Neutral Attitude, tends towards positive
5	Experience	47.8	43.5	8.7	Positive Attitude
6	Human factors	26.1	58.7	15.2	Neutral Attitude, with slight skew towards positive
7	Motivation	13.0	71.7	15.2	Neutral Attitude
8	Organisation Influence	45.7	45.7	8.7	Positive Attitude
9	The updated changes in project	15.2	54.3	30.4	Neutral Attitude, tends towards negative
10	External Environment	15.2	65.2	19.6	Neutral Attitude
11	Workflow	45.7	45.7	8.7	Positive Attitude
12	Outcome	41.3	52.2	6.5	Neutral Attitude, tends towards positive

In summary, the results showed that there are only two factors that have influence on all components of attitude (Motivation and External Environment). There are eight factors that influence on “feelings” towards delay (Education, Group Influence, Experience, Organisation Influence, Human Factors, Motivation, External Environment and Outcome). There are five factors that influence on “thoughts” towards delay (Work Environment, Organisation Influence, Motivation, External Environment and Workflow). There are nine factors that influence on “actions” towards delay (Awareness, Experience, Work Environment, Organisation Influence, Motivation, The updated changes in project, External Environment, Workflow and Outcome). Out of the twelve factors, three factors have a neutral attitude tends to negative effect, they are “Human Factors”, “The Updated Changes in Project” and “External Environment”, and the rest of factors have positive effects or neutral effect trend to be positive effects.

5.3.3. Effects of Saudi National Cultural Dimensions on Attitude towards Delay

As mentioned in Section 5.3.1, the Pearson Correlation Coefficient was employed, and the values of 0.5 and above were accepted. The Pearson Correlation Coefficient was calculated for each question to test the opinion of the respondent, and the results are shown in Table 5.19 where values bolded (i.e. < 0.5) are excluded.

Table 5.19: Establishing effects of national culture on the attitude of stakeholders towards delay in KSA

Dimensions	No	Questions	Pearson coefficient
Power Distance Index (PDI)	1	Over centralization of decision making and display of intrinsic inequalities in management affects my feelings in dealing with any delay in construction projects.	0.482
	2	I think that subordinates are expected to strictly follow the instructions of their bosses when trying to mitigate the occurrence of delay in construction projects.	0.496
	3	Centralization and intrinsic inequalities affect my reaction when I deal with delays.	0.628
Individualism Index (IDV)	4	My feelings towards delay depend upon whether the delay affects my close associate.	0.588
	5	My thought process in dealing with delay is different when the client or contractor is my family relation.	0.446
	6	The action I take in dealing with a delay situation would certainly be different when the project is for someone I personally know.	0.756
Masculinity Index (MAS)	7	Feelings of a project participant towards delay are influenced by the gender of the participant.	0.570
	8	The distinct separation of roles between men and women affects my thought process in handling delay in construction projects.	0.557
	9	My response to delay is affected by the society expecting men to be tough and assertive and women to be modest and tender.	0.350
Uncertainty Avoidance Index (UAI)	10	My feelings towards delay in projects are affected by the need to follow traditional codes of beliefs and ideas.	0.598
	11	My thoughts in dealing with delay give great importance to rules, and it does not matter if these rules work or not.	0.669
	12	My action depends on truth, regularity, and security when I act to deal with the effect of delay.	0.717
Long Term Orientation Index (LTO)	13	When a delay occurs, I have a strong feeling that I need to provide detail information about its cause and effect.	0.662
	14	I often think that I can save time now to gain time for future occurrence of delay.	0.412
	15	My reactions to delay are often hinged on the concern of the future effect on the project.	0.498

After the exclusion of the questions that are not correlated to attitude towards delay, and by using the component of attitude model (feelings, thoughts and action), the relationships

between the component of attitude and SNC dimensions were found. As summarised and shown in Table 5.20, the Power Distance Index (PDI) influences just on actions of key stakeholders, the Individualism Index (IDV) influences on feelings and actions of key stakeholders, the Masculinity Index (MAS) influences on feelings and thoughts of key stakeholders, the Uncertainty Avoidance Index (UAI) influences on all components of attitude of key stakeholders, and finally, the Long Term Orientation Index (LTO) influences on just feelings of key stakeholders.

Table 5.20: Relationships between SNC Dimensions and the Components of Attitudes

Saudi National Culture Dimensions	No	Questions	The Components of Attitude
Power Distance Index (PDI)	3	Centralization and intrinsic inequalities affect my reaction when I deal with delays.	Actions
Individualism Index (IDV)	4	My feelings towards delay depend upon whether the delay affects my close associate.	Feelings
	6	The action I take in dealing with a delay situation would certainly be different when the project is for someone I personally know.	Actions
Masculinity Index (MAS)	7	Feelings of a project participant towards delay are influenced by the gender of the participant.	Feelings
	8	The distinct separation of roles between men and women affects my thought process in handling delay in construction projects.	Thoughts
Uncertainty Avoidance Index (UAI)	10	My feelings towards delay in projects are affected by the need to follow traditional codes of beliefs and ideas.	Feelings
	11	My thoughts in dealing with delay give great importance to rules, and it does not matter if these rules work or not.	Thoughts
	12	My action depends on truth, regularity, and security when I act to deal with the effect of delay.	Actions
Long Term Orientation Index (LTO)	13	When a delay occurs, I have a strong feeling that I need to provide detail information about its cause and effect.	Feelings

The Relative Importance Index (RII) also was employed, it was calculated for each NC dimension and the results are shown in Table 5.21.

Table 5.21: Ranking of the Saudi National Culture Dimensions

Rank	Saudi National Culture Dimensions	RII
1	Power Distance Index (PDI)	0.6986
2	Long Term Orientation Index (LTO)	0.6913
3	Individualism Index (IDV)	0.6319
4	Masculinity Index (MAS)	0.5942
5	Uncertainty Avoidance Index (UAI)	0.5928

5.3.4. The established factors that influence attitudes of key stakeholders in the SNC environment

From the literature review outlined in the previous Chapters and the results shown in Sub-sections 5.3.2 and 5.3.3, each of the twelve factors that influence attitude of key stakeholders towards delay in construction projects has been discussed as follows: -

- **Education Factor:**

It is established that the educational status has an influence on the feelings of key stakeholders towards occurrence of delay in construction projects in KSA but has no effect on their thoughts and actions towards delay. Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Education frequently takes place under the guidance of educators, but learners may also educate themselves. In case of delay it is difficult to provide training about delay, but the level of education can help avoiding delay by knowing the project process and fundamentals of construction projects. Attitudes toward delay may vary greatly, depending on stakeholders' education. Generally, stakeholders with high educational level tend to be more logical while those with lower educational level tend to be more fearless and instinctive in dealing with delay.

As shown in Tables 5.15 and 5.16, this study has found a significant positive relationship between education and feelings of stakeholders towards delay in construction projects (Pearson correlation=0.502), but there are no relationships with their thoughts and actions. As shown in Tables 5.17 and 5.18 education factor comes in sixth rank in terms of the importance of its impact on the key stakeholders' attitudes towards delay (RII=0.6681). Also, this study found that the outcome of the effect of education factor on the attitude of stakeholders towards delay in construction projects is Neutral Attitude, tends to be positive.

According to Chen (2000), decision makers with high educational level tend to be more logical while those with lower educational level tend to be more fearless and instinctive in making decision. Yasin et al. (1997) argue that delays may occur in contexts where “managers from different countries did not always share the same preferences for management structure, geographic distribution of work, budgetary commitment, family and education, and pay equity issues”. Overall project performance has been found to be influenced by choice of a training strategy (Plaza and Rohlf, 2008), learning and knowledge sharing (Hong et al., 2011), training in international methodology (McHugh and Hogan, 2011). Czuchry and Yasin (2003) assert that technical knowhow exerts influence on the 3 modes (decisional, critical skills and technical) of a project life cycle. So, the more educational insight is integrated into culture through knowledge sharing, the less likely projects will be delayed due to increased expertise on the ground passed on from the higher hierarchy. Begum et al. (2009) shows that contractors’ attitudes toward waste management are more positive if a contractor’s employees have a higher level of construction-related education. This study also could suggest the same for the contractors’ attitudes toward delay. Tam et al. (2005) noticed that proper training and education are needed to change attitudes within the construction industry regarding the adoption of prefabrication. Attitudes toward risks within the decision making process may vary greatly, depending on contractors’ education background. Generally, contractors with higher education tend to be more rational and cautious, while those who received little education tend to be more fearless and impulsive Wang and Yuan (2011); Chen (2000).

On other hand and for more understanding of “education factor”, this research has calculated the correlation between this factor and SNC dimensions. It is found that

there is a strong positive correlation between education factors and Individualism Index (IDV) where Pearson Correlation value is 0.715, and there are no correlations with the rest of SNC dimensions. Wang and Liu (2007) point out that qualification such as a PMP certification helps one overcome cultural barriers. In fact, many NCs tend to be more supportive of project management when there were high numbers of qualified project managers or other key stakeholders.

- **Awareness Factor:**

Awareness is the ability to perceive, to feel, or to be conscious of events, objects, thoughts, emotions, or sensory patterns. Sense can be confirmed by an observer without necessarily implying understanding. More broadly, it is the state or quality of being aware of something. In biological psychology, awareness is defined as a human's perception and cognitive reaction to a condition or event. Awareness is the ability to perceive, to feel, or to be conscious of events, objects, thoughts, emotions, or sensory patterns. In this level of consciousness, sense data can be confirmed by an observer without necessarily implying understanding. More broadly, it is the state or quality of being aware of something. In biological psychology, awareness is defined as a human's perception and cognitive reaction to a condition or event.

As shown in Tables 5.15, 5.16, this study has found a significant positive relationship between awareness factor and actions of stakeholders towards delay in construction projects (Pearson correlation=0.597), but there are no relationships with their feelings and thoughts. This means that the actions and instructions of key stakeholders towards delay are based on their awareness about project environments and situations and has no influence on their feelings and thoughts towards delay.

Awareness factor comes in second rank in terms of the importance of its impact on the key stakeholders' attitudes towards delay (RII=0.6971).

Tables 5.17 and 5.18 established that the effect of awareness factor on the attitude of stakeholders towards delay in construction projects is Positive Attitude. This shows that the key stakeholders have a degree of delay awareness and self-rated competence makes their actions towards delay to be positive reaction and they showed a good level of awareness of the delays and how it affects their functioning and response.

Ali (2006) found that attitudes towards safety are influenced by high Individualism vs. Collectivism (IND), Masculinity vs. Femininity (MAS), Power Distance Index (PDI) and Uncertainty Avoidance Index (UAI); and not influenced by Long Term Orientation (LTO) and Indulgence versus Restraint (IVR). Contractors' attitudes toward waste management are more positive for contractors that did not perceive construction waste as harmful to human health (Begum et al. 2009). In this study, the analysis revealed there were no relationships between SNC dimensions and awareness factor.

Taking into consideration that the SNC dimensions' indices were not correlated with awareness factor, Yasin et al. (1997) suggested in their study that levels of awareness of project delays may be interpreted differently. They observe that within the Arab community, there is the belief that "one's fate is in the hands of Allah" (Yasin and Zimmerer, 1995) and therefore they have limited control over outcomes. These beliefs transferred into the construction industry would translate into delays being as a result of fate. In other words, this kind of belief system removes accountability from the hands of manager into the realm where it is understood that one has no control over time in the first place (Gray and Larson, 2002), "deadlines are seen more as a guide" (Hurn, 2007) and there are different criteria for project success. Further

the absence of a relationship between awareness and Uncertainty Avoidance Index (UAI) may be due to participants being comfortable with uncertainty and ambiguity, seeing it as being the nature of fate. According to Keil et al. (2000), individuals who are more comfortable with ambiguity (low UAI) may have a lower level of risk awareness; consequently, low awareness is associated with higher risk-seeking actions.

- **Group Influence Factor:**

When the key stakeholders work in teams, their feelings are often influenced by others but their thoughts and actions towards delay cannot be affected by their interaction with others in the team. Group influence has the power of persuasion and even makes people blind to it (Cohen, 2003). Solomon et al. (2010) also stated that group influence could shape people attitudes, their desire to please or be accepted by others, even by the actions of famous people whom they've never met. Group influence impacts on stakeholders through three types, reference groups, Word-of-Mouth and opinion leaders. Perceived differences in safety climate dimensions between and within groups of organizations have been examined in previous studies (Budworth, 1997; Glendon and Litherland, 2001). This study has examined influence of Group influence factor on stakeholders' attitudes towards delay.

As shown in Tables 5.15, 5.16, 5.17 and 5.18, this study has found a significant positive relationship between Group influence factor and feelings of stakeholders towards delay in construction projects (Pearson correlation=0.681), but there are no relationships with their thoughts and actions; Group influence factor comes in rank (9) in terms of the importance of its impact on the key stakeholders' attitudes towards delay (RII=0.6203). This study also found that the outcome of the effect of Group

influence factor on the attitude of stakeholders towards delay in construction projects is neutral attitude tends toward positive. The results showed that the SNC dimensions were not correlated with Group influence factor. Rees-Caldwell and Pinnington (2010) found that where Power distance is low, there is likely to be closer teamwork and leadership-subordinate interactions. This closeness may be further influenced by the tendency the likelihood that team members are related. Weisfeld (1990) and Ali and Al-Owaihyan (2008) point out that “families are very close in the Arab world”. Since family loyalty is an important feature of the culture (Hesselgrave and Rommen, 2003; Nydell, 2006; Hurn, 2007), it is not unusual for staff to hire based on family or friendship connections (Kabasakal and Bodur, 2012; Nydell, 2006; Hurn, 2007; El-Said and Harrigan, 2009) and this practice will likely influence members holding the other accountable.

- **Work Environment Factor:**

The dynamics of the environment in which the key stakeholders carry out the task affects the way they feel towards delay. On the other hand, the nature of work environment can influence their point of view about delay and the work environment affects the way they respond to delay. Location where a task is carried out. When pertaining to a place of employment, the work environment involves the physical geographical location as well as the immediate surroundings of the workplace, such as a construction site or office building. Typically involves other factors relating to the place of employment, such as the quality of the air, noise level, and additional perks and benefits of employment such as coffee, or adequate parking. It also includes the supportive work environment such as offices of managers and

consultants. Ali (2006) demonstrates that “Physical Work Environment” is influenced positively by two cultural dimensions (IND) and (UAI).

As shown in Tables 5.15, 5.16, 5.17 and 5.18, this study has found a significant positive relationship between Work Environment factor and the feelings of stakeholders towards delay in construction projects (Pearson correlations =0.570) but there are no relationships with their thoughts and actions; experience factor comes in rank (12) in terms of the importance of its impact on the key stakeholders’ attitudes towards delay (RII=0.5348). Also this study found that the outcome of the effect of Work Environment factor on the attitude of stakeholders towards delay in construction projects is neutral attitude, tends to negative. A significant positive relationship was found between Masculinity/ Femininity Index (MAS) and human factors (Pearson correlations =0.524). This indicates that participants felt that the presence of physical, mental and psychological conditions did affect the delays but they were able to manage and the conditions may have been out of their control.

- **Experience Factor:**

More experience in the construction industry improves key stakeholder sentiment when they handle delay because their thought process is influenced by their years of experience in construction industry. The actions they take regarding delays are influenced by their experience in construction projects.

By strong experience, stakeholders become familiar with potential delays in the project. So, experience plays an important role in attitude towards delay. Judgment ability is the ability of stakeholders to analyse and judge the problems based on experience and personal knowledge. This ability plays an important role in project process. Stakeholders’ attitudes toward delay assume to be more positive if they have

more experience in construction works. The knowledge about construction projects and delays comes from stakeholders' experience and sharing information during actual practices. Therefore, attitude can be influenced by experience. This factor has been identified as one of the most important factors, by Fazli et al. (2012). Ali (2006) showed an interesting finding related to the positive relationship between work experience and the perception of risk. Contractor attitudes toward waste management are more positive if contractors have more experience in construction works (Begum et al. 2009).

Various knowledge background and range of knowledge influence stakeholders directly when they work on professional parts of project and result in different attitudes. Range of knowledge has been omitted by Fazli et al. (2012). The knowledge about construction projects and delays comes from stakeholders' experience and sharing information during actual practices.

As shown in Tables 5.15, 5.16, 5.17 and 5.18, this study has found a significant positive relationship between experience factor and feelings and actions of stakeholders towards delay in construction projects (Pearson correlations =0.532 and 0.756) but there is no relationship with their thoughts. Experience factor comes in rank (1) in terms of the importance of its impact on the key stakeholders' attitudes towards delay (RII=0.7145). Also this study found that the outcome of the effect of experience factor on the attitude of stakeholders towards delay in construction projects is high positive attitude. A significant positive relationship was found between Long Term Orientation (LOT) (Pearson correlations =0.683). The more experience in the construction industry is associated with more confidence in handling delays. Based on experience, delays may not be seen as critical as the participant feels that is required to achieve the desired outcome in spite of the delay.

According to Ali (2006) the work experience an individual has positively influenced their perception of risk.

- **Organisation Influence Factor:**

This factors effects on all three attitude components where the organizational culture in which the key stakeholder work has an effect on their feelings and thoughts process towards delay and when they work for big organization the actions that they take towards delay is different compared to smaller organization.

Organisation Influence includes its economic, poor preparation and planning for projects and sites, procurement methods in organization, poor define responsibility, developing policies, management commitment, and its size. Organisation's economic strength has always been important and effective on attitude. According to an empirical study conducted by Slovic and Fishhoff (1982) there is a reduction of risk aversion with increasing the organisation's economic strength. In case of occurrence of delay, there is a reduction of aversion from occurrence of delay with decreasing the organisation's economic strength. Begum et al. (2009) shows a positive relation between contractor category and attitudes, which indicates that large contractors have more positive attitudes regarding waste management practices as compared to medium and small contractors. Contractors that follow source reduction measures or practices tend to have more positive attitudes toward waste management (Begum et al. 2009). According to a study conducted by Slovic and Fishhoff (1982) there is a reduction of risk aversion with increasing the organisation strength.

As shown in Tables 5.15, 5.16, 5.17 and 5.18, this study has found a significant positive relationship between Organisation influence factor and all components of

attitudes of stakeholders towards delay in construction projects (Pearson correlations =0.516, 0.557 and 0.628). Organisation Influence factor comes in rank (8) in terms of the importance of its impact on the key stakeholders' attitudes towards delay (RII=0.6319). Also, this study found that the outcome of the effect of Organisation Influence factor on the attitude of stakeholders towards delay in construction projects is neutral attitude, tends to be positive. These findings are consistent with Suliman (2006) who found that organization influence in the context of Uncertainty Avoidance has a low effect on individual behaviour. According to Shore (2008), this is because national culture actually influences organization culture. He declares that the culture within an organisation is created based on the national culture's structure and that project cultures are formed by project leaders".

Hofstede (1983) originally found that a strong organization culture can reconcile national culture differences in Individualism, Masculinity/ Femininity and Long Term Orientation, which were significantly correlated with organisation influence. Rodney (1993) contends that if the culture is proving to be unhelpful to the achieving project goals, then it is important to change it, for the better (Haalien, 1994) however difficult that may be (Cooke-Davies, 1990). Whether culture helps or hinders, "the effects of culture must be considered throughout the project" (Rodney, 1993).

- **Human Factors:**

The stakeholders' physical and psychological conditions affect their feelings towards delay, but their thought processes towards delay are not influenced by it. In other hand, the action that they take in response to occurrence of delay is not influenced by their physical or psychological or physiological condition. Human factors are

defined by Thevendran (2002) as “a person, project team and organizational factors that can affect people’s behavior and work environment in a way that causes reduction or improvement of the project’s procedure”. Human factors play important role and influence on attitudes towards delay. Physical health of decision makers affects the rate of bearable pressure by them, their tendency to short-time profit and their abilities to encounter the risks. Decision makers with different social levels have different attitudes facing the same situation (Fazli et al. 2012). Character trait is a feature of someone or something that separates it from others. People sometimes tend to impose their opinions while submissive decision makers tend to agree with other’s ideas. All these different traits result in different attitudes. Boldness is referred to those who desire to experience. Courageous decision makers always have the ability to make decision undoubtedly. Value means people’s opinions about what is right or wrong or important in life (Li and Liu, 2003). Moral value is the quality of being encountered with standards or a system of beliefs that is consisted of common sets. Each set as a member of society has similar moral values that may influence the attitude (Liu, 1998). The stakeholders’ interest in projects influences the development and creation in construction duration which affect the attitudes. Intuition is the ability, which becomes important when facing complicated issues. The solution based on intuition is usually desirable. Sensitivity to external information refers to decision makers who can response to engineering deviations through different information assessment very fast. Psychological endurance: Li and Liu (2003) have believed that Psychological endurance is an ability which causes stakeholders to tolerate the pressures out of several sources. Willpower is the ability to control the mind and body to reach the target.

As shown in Tables 5.15, 5.16, 5.17 and 5.18, this study has found a significant positive relationship between human factors and the feelings of stakeholders towards delay in construction projects (Pearson correlations =0.570) but there are no relationships with their thoughts and actions; experience factor comes in rank (10) in terms of the importance of its impact on the key stakeholders' attitudes towards delay (RII=0.6130). Also, this study found that the outcome of the effect of human factors on the attitude of stakeholders towards delay in construction projects is neutral attitude, tends to negative. A significant positive relationship was found between Masculinity/ Femininity Index (MAS) and human factors (Pearson correlations =0.524). This indicates that participants felt that the presence of physical, mental and psychological conditions did affect the delays but they were able to manage and the conditions may have been out of their control.

(Fazli et al. 2012) point out that the physical health of decision makers affects the rate of bearable pressure by them. Pressure can exacerbate health issues and result in delays due to absence of the person who gives the orders that everyone follows and who understands the plans and the outcomes to the directives. Bubshait and Farooq (1999) emphasize the value of the person who is in charge of the project, the consultant/ contractor as the one holding the project together by engendering a quality conscious culture.

- **Motivation Factor:**

Motivation is one of the factors that affect all three components of attitude of key stakeholders towards delay in construction projects in Saudi Arabia, where the more incentives are provided in a project in avoiding delay can affect the way that they

feel about delay. Also, the manner in which they view, the effect of delay is influenced by the incentives that are provided in the project. In other hand, the incentives provided to avoid delay influence how much effort they put in to avoid delay. With a motivation, the decision is of significant directivity, which causes the action to move towards a specified and determined direction. As a result, stakeholders' attitude can be influenced enormously by their demands when facing the delay and it can affect their attitudes.

As shown in Tables 5.15, 5.16, 5.17 and 5.18, this study has found a significant positive relationship between motivation factor and all components of attitudes of stakeholders towards delay in construction projects (Pearson correlations =0.667 for feelings and 0.618 for thoughts and actions); motivation factor comes in rank (4) in terms of the importance of its impact on the key stakeholders' attitudes towards delay (RII=0.6710). Also this study found that the outcome of the effect of motivation factor on the attitude of stakeholders towards delay in construction projects is positive attitude.

A significant relationship was found between motivation and LTO, which suggests that the motivation of stakeholder's construction projects is influenced by their attitudes towards delay. In making a distinction between long term and short term oriented cultures, Anbari, et al. (2010) explain:

“Business people in long-term oriented cultures are accustomed to working toward building strong positions in their markets and do not expect immediate results. Managers (often family members) are allowed time and resources to make their own contributions. In short-term oriented cultures the “bottom line” (the results of the past month, quarter, or year) is a major

concern; control systems are focused on it and managers are constantly judged by it”.

Eskildsen, et al. (2008) point out that “there are no managerial actions that can be taken to eliminate the influence that NC has on a job satisfaction study” (pp.375). This means that project managers cannot ignore the influence of NC on the project success. In fact, it appears that time differences based on NC can prove to be barrier to productivity, and seems to require training in motivational strategies to project managers as a way of helping to handle the issues associated with LTO. They assert that this is necessary as multicultural project management is becoming the norm and in order to ensure that project goals are attained and delays reduced or eliminated, project managers will need to be oriented to be culturally sensitive and motivate their team members using creative and flexible leadership (Anbari, et al. 2010; Frame, 1995,1996).

- **Updated Changes in Project Factor:**

A project that undergoes numerous changes in client’s requirements cannot affect the key stakeholders’ feelings towards delay. Also, the way they think about the consequences of delay is not influenced by the completeness of project information, but their response to occurrence of delay is dictated by the completeness of project information. Completeness of project information is vital to have complete engineering information to make proper decision because it can enhance the confidence of decision makers in making important decisions. This factor has been identified as one of the most important factors, by Fazli et al. (2012). According to Osmani et al. (2006), there is a general consensus that design changes during the construction phases are one of the key origins of delays.

As shown in Tables 5.15, 5.16, 5.17 and 5.18, this study has found a significant positive relationship between the updated changes in project factor and the actions of stakeholders towards delay in construction projects (Pearson correlations =0.714) but there are no relationships with their feelings and thoughts; updated changes in project factor comes in rank (7) in terms of the importance of its impact on the key stakeholders' attitudes towards delay (RII=0.6522). Also this study found that the outcome of the effect of the updated changes in project factor on the attitude of stakeholders towards delay in construction projects is neutral attitude, tends to negative. The results showed that the SNC dimensions were not correlated with the updated changes in project factor.

These findings suggest that as it related to updated changes in a project, participants seem to understand that often the delays were due to changes in client requirements and completeness of project information. These changes are often recommended by those in charge of the project and based on the need to honour by compromise the desires of clients. Boyd and Chinyio (2006) in their analysis of client behaviours in the building industry, highlight that changes in the plans reflect “deviations between formal plans and reality and between aspirations and reality”. These changes result satisfaction gaps – “a plan gap and an aspirational gap in relation to the client; and a specification gap and an aspirational gap in relation to the building end. They point out that:

“these gaps create negative emotions because of the ‘negative power of expectations’ which means that people feel a loss of both prediction and a loss of facility that is difficult to overcome merely by the successful gains”.

A successful project is achieved when contractors/consultants can negotiate the meaning of these gaps for the client and with minimal delays, achieve the aspirational goals of the client, while filling the specification and plan gaps.

- **External Environment Factor:**

External Environment Factor is one of the factors that affect all three components of attitude of key stakeholders towards delay in construction projects in Saudi Arabia. For example, the key stakeholders' feelings towards delay are influenced by the effect of legislation. The way they think about delay is influenced by the laws of the country and their actions regarding delay are effected by the general economic situation in the country. A good external economic cause active attitude of stakeholders when they accost projects. However, bad economic environment can make their attitude inactive. A national or regional policy environment is the base of implementing the project. Different policies applied during conducting a project, influence the attitude directly. Regulations related to engineering is related to some rules of project's regulations introduced by the government.

As shown in Tables 5.15, 5.16, 5.17 and 5.18, this study has found a significant positive relationship between external environment factors and all components of attitudes of stakeholders towards delay in construction projects (Pearson correlations =0.712, 0.765 and 0.568 for feelings, thoughts and actions respectfully); external environment factor comes in rank (11) in terms of the importance of its impact on the key stakeholders' attitudes towards delay (RII=0.5942). Also this study found that the outcome of the effect of external environment factor on the attitude of stakeholders towards delay in construction projects is neutral attitude, tends to negative. The results showed that the SNC dimensions were not correlated with

external environment factor. These results suggest that stakeholders felt that delays were influenced by authority outside of themselves, particularly, legislation, laws of the country or general economic situations in the country. In light of these factors the delays were out of their control and possibly out of anyone's control.

- **Workflow Factor:**

The key stakeholders do not feel that the complexity of a project may lead to delay. In other hand their thoughts and feelings regarding the occurrence of delay are affected by project processes and what happens during the implementation of the construction project. Workflow is the definition, execution and automation of project processes where tasks, information or documents are passed from one participant to another for action, according to a set of procedural rules such as the nature of the programme, the nature of process, the planned workflow and complexity. When the workflow is very complex it may affect attitude towards delay.

As shown in Tables 5.15, 5.16, 5.17 and 5.18, this study has found a significant positive relationship between workflow factor and two components of attitudes (the thoughts and actions) of stakeholders towards delay in construction projects (Pearson correlations =0.778 and 0.852) but there is no relationship with their feelings; workflow factor comes in rank (4) in terms of the importance of its impact on the key stakeholders' attitudes towards delay (RII=0.6710). Also this study found that the outcome of the effect of workflow factor on the attitude of stakeholders towards delay in construction projects is positive attitude. A significant positive relationship was found between workflow factor and Uncertainty Avoidance Index (UAI) (Pearson correlations =0.502). (UAI) score in KSA is high, it is 80. Van der Sted (2003) emphasizes that especially for countries with high (UAI):

“Individuals may generally prefer a budgetary control and incentive system that adheres to clearly specified, quantitative performance targets and provides a strong, unambiguous link between effort, performance evaluation and incentive compensation (Harrison, 1993). As such, individuals in cultures characterized by high uncertainty avoidance may not react favourably to performance-dependent compensation since it causes them to bear more risk, especially when bonuses are highly discretionary, as opposed to being formula-based” (pp266).

Such an outlook can slow/delay the workflow as participants are suspicious of returns on effort.

- **Outcome Factor:**

The key stakeholders feel good if the outcome of a project is as planned, but the outcome of construction projects does not influence their thoughts towards delay. The action that the key stakeholders take towards delay is influenced by the previous response that they made in similar situation. The success or failure of projects regarding completion in time. This study assumed this factor influence the attitudes of key stakeholders towards delay, but it found a lack of literature that could support the assumption. As shown in Tables 5.15, 5.16, 5.17 and 5.18, this study has found a significant positive relationship between outcome factor and the feelings of stakeholders towards delay in construction projects (Pearson correlations =0.706) but there are no relationships with their thoughts and actions. Outcome factor comes in rank (3) in terms of the importance of its impact on the key stakeholders’ attitudes towards delay (RII=0.6812). Also, this study also found that the type of the effect of outcome factor on the attitude of stakeholders towards delay in construction projects is neutral attitude, tends to negative. A significant positive relationship was found

between Individualism Index (IDV) and human factors (Pearson correlations =0.575).

5.3.5. Analysis of the Attitude of Stakeholders towards Delay

As part of the aim and objectives, this study is to explore whether there is any perceived statistically significant differences between the attitudes of key stakeholders towards delay and whether there are any differences in the effects of the SNC on their attitudes. This subsection aims to discuss these differences between clients, contractors and consultants as key stakeholders in the Saudi construction industry. Due to the nature of the Saudi construction industry, the study also considered how these outcomes differ between nationality, experience and level of education of the stakeholders.

1. Analysis of Variance of Attitude between the Type of Stakeholders (Clients, Contractors and Consultants) in the Saudi Construction Industry

Typically, the one-way analysis of variance (abbreviated one-way ANOVA) is a technique that (using the F Value) is used to test for differences among at least three groups (Casella, 2008). To explore if there are differences between stakeholders' groups (Clients, Contractors and Consultants) in the effects of SNC on their attitudes refer to their role in the Saudi construction industry, this study has therefore used the one-way ANOVA. The results illustrated in Table 5.22 show that there are some statistically significant differences at the level of $\alpha \leq 0.05$ in the effects of SNC on the attitudes of key stakeholders in the Saudi construction industry.

To know which stakeholders group is effected more than others, Scheffe's test has been used and it shows that the difference between "Contractors", and "Consultants" in favour of "Consultants", and the difference between "Contractors", and "Clients" in favour of "Clients" (Table 5.23).

Table 5.22: One-way ANOVA test for differences in the attitudes of stakeholders refer to role in the Saudi construction industry

Parts	Source	Sum of Squares	Mean Square	F value	p-value
Part D: Establishing National Culture.	Between Groups	2.980	1.490	7.931	0.000
	Within Groups	51.292	0.188		

Table 5.23: Scheffe's test for multiple comparison due to role in the Saudi construction industry

Stakeholder's Role in Saudi Construction Industry	Consultant	Contractor	Client
Consultant		0.23648	-0.003
Contractor	-0.23648		-0.23959
Client	0.003	0.23959	

Significant difference was found between national cultural dimensions and role in the Saudi construction industry. Consultants had higher agreement with the cultural dimensions than contractors, and clients had higher agreement with the cultural dimensions than contractors. Typically, consultants are involved in the process to verify standards and approaches and are expected to be familiar not just with the technical aspects of the job, but also to process and place in context the clients' needs.

Based on this, it is important for them to understand the clients and to effectively manage the interaction between the client and industry (Boyd and Chinyio, 2006). This therefore requires familiarity with the culture of the clients that have commissioned the project. Boyd and Chinyio (2006), highlight the fact that clients see and experience projects differently from the industry and changes such as delays trigger anxiety. They also indicate that there are several unknowns, which only come into existence as the project unfolds. This therefore forces clients to their level of Uncertainty Avoidance and increase Power distance by depending on the expertise of the consultants over the contractors. Significant difference was

found in the effects of NC dimensions on attitude and the role of key stakeholders in the Saudi construction industry.

Boyd and Chinyio (2006) explain how the national culture plays out through the client, stating:

“As a client comes to build they are exposing their values about building, to their organisation and of their people. These values alongside the industry norms and values determine the means and ends of an engagement around change. The client’s change and building’s change are set within an external environment which provides purpose for the change but also constrains it” (pp 2).

Considering the nature of clients, Boyd and Chinyio (2006) developed a toolkit for handling culture with clients in the industry. They specify that contractors should first seek to understand the clients, how they perceive the project and their experience with the building process and learn to work with the client to manage their change process so that they can handle delays appropriately.

2. Analysis of Variance of Attitude between Saudi and Non-Saudi Stakeholders

The research assumed there is a statistically significant difference between stakeholders of Saudi or non-Saudi nationalities in the effects of SNC on their attitudes towards delay in construction projects in KSA. To test this assumption, the t-test is used where a t-test can be used to determine if two sets of data are significantly different from each other. Table 5.24 provides t- value for the two groups (Saudi and non-Saudi), it shows that there is a statistically significant difference between stakeholders’ groups (Clients, Contractors and Consultants) in the effects of SNC on their attitudes towards delay refer to their nationality in favour of Saudi nationality.

Significant difference was found between the effects of national cultural on attitudes of stakeholders towards delay in construction projects in KSA with reference to stakeholder’s

nationality, such that Saudi stakeholders had a higher agreement to the effects of SNC than non-Saudi stakeholders. These results are consistent with the findings of Pizam, Pine, and Mok, (1997), who found that nationality had a stronger effect on management behaviour than organizational culture on the same group. Hofstede (1983) in his work, note that nationality is an important consideration in industry due to its connections with political (laws), societal (identity) and psychological (family and educational) spheres. Therefore, an appreciation of the differences that can exist in working in a native setting and overseas is crucial for successful implementation of a project (Shaw, 1990; Tayeb, 2005; Hurn, 2007).

Table 5.24: Independent Samples Test for differences about the effects of NC on the attitudes of construction project stakeholders in KSA refer to nationality (Saudi, Non-Saudi)

Parts	Nationality	N	t-test
Part D: Establishes effects of national culture on the attitude of stakeholders towards delay.	Saudi	196	4.010
	Non-Saudi	80	

Critical value of t at df "276" and significance level 0.05 equal 1.97

3. Analysis of Variance of Attitude between Various Level of Qualification

Also, the research assumed there is a statistically significant difference between stakeholders in the effects of the SNC on their attitudes towards delay in construction projects in KSA with reference to their qualification. The one-way ANOVA was also used, and the results as illustrated in Table 5.25 show that the F-value indicate there is no significant difference in the effects of the SNC on their attitudes towards delay in construction projects in KSA with reference to their qualification. This may have been the case because irrespective of the national culture, changes towards modernization in the interest of efficiency will likely result in work becoming more complex and therefore creating a demand for qualified staff with specialized skills and higher levels of education. Though Bialas (2013) would argue supported by Sims (2007) and Schneider (1998):

“Culture is a particular factor of human resources management. First, it often determines the factors (for example, it can affect national law regulations or educational system” (pp. 1150).

Table 5.25: One-way ANOVA test for differences about the effects of National Culture on the attitudes of construction project stakeholders in the KSA and their qualifications

Part	Source	Sum of Squares	Mean Square	F value
Part D: Establishes effects of national culture on the attitude of stakeholders towards delay.	Between Groups	1.050	0.210	1.065
	Within Groups	53.222	0.197	

4. Analysis of Variance of Attitude between Various Level of Experience

The research also assumed that there is a statistically significant difference between stakeholders’ attitudes in the effects of the SNC on their attitudes towards delay in construction projects in KSA with reference to their experience in Saudi construction industry. To test this assumption, the one-way ANOVA was again used and the results illustrated in Table 5.26 show that there is a statistically significant difference between stakeholders’ attitudes in the effects of SNC on their attitudes towards delay as it refers to their experience in Saudi construction industry. Significant difference was found between national cultural dimensions and years of experience. There was a significant difference between those with “16-20 years”, and those with “6-10 years”, with those with “16-20 years” experience having higher agreement with cultural dimensions. These results are consistent with the findings of Elena (2010) who maintain that the development of the skills that make for effective cross-cultural project management, “*can only be achieved after some years of experience in multicultural teams*”. Of importance in this statement is not just experience in the field itself, but in multi-cultural teams in particular.

Applying the principle of Crossvergence, stakeholders can engage in “fusing together management practices of two or more cultures, so that a practice relevant to a heterogeneous culture can be assembled” in order to prevent delays. Binder (2007) indicate that the outcome of Crossvergence is *“people from various country and company cultures, enriched by different experiences and management theories, implemented by a team in different countries, with a wealthy mix of skills and beliefs”* (p. 40-42). There is also the application of the principle of Hybridization in which stakeholders can *“use of a common body of knowledge, enhanced with selective parts of successful practices from the countries where the project is being implemented, or from the team members' original culture”* (p.658).

It acknowledges that it can take some time for stakeholders to develop the skill sets needed to manage projects in a way that delays can be minimized. Stakeholders such as contractors and consultants should attend training sessions to enhance their soft skills and get coaching from experienced global project managers. Fisher and Fisher (2001) for example, suggest that stakeholders undergo training that includes

“Language lessons (for people in frequent contact with a foreign language), technical training (when there are different levels of understanding on technical disciplines that can create conflicts or risks to the collaboration) and cross-cultural training (when team members and key stakeholders come from different cultural backgrounds and there are many differences in the cultural dimensions)” (p. 658).

Table 5.26: One-way ANOVA test for differences between the attitudes of stakeholders refer to experience

Part	Source	Sum of Squares	Mean Square	F value
Part D: Establishes effects of national culture on the attitude of stakeholders towards delay	Between Groups	3.245	0.811	4.308
	Within Groups	51.028	0.188	

5.3.6. Correlations between Saudi National Cultural Dimensions and Attitudes of Key Stakeholders

The sixth dimension, i.e. the Indulgence versus Restraint Index (IVR), was ignored because KSA has a score of 52; which indicates that the people have a balance between indulgent and restrained orientations, it means there would be no consequential effect of the Indulgence/Restraint dimension on the attitude of stakeholders towards delay.

The respondents were asked 15 questions to provide their opinions about the effect of five NC dimensions on their feelings, thoughts and actions. The question was “To what extent do you agree or disagree with the following statements affecting your attitude towards occurrence of delay in construction projects?”. As mentioned in section 5.3.1, the Pearson correlation coefficient was employed, and the values of 0.5 and above was accepted.

After the exclusion of the questions that are not correlated to attitude towards delay, and by using the components of attitude (feelings, thoughts and action), the relationships between the component of attitude and the SNC dimensions were found. The results suggest that the main dimensions that influenced attitudes towards delay in construction projects based on NC were Power Distance Index (PDI) (RII=0.6986), Long Term Orientation Index (LTO) (0.6913), Individualism Index (IDV) (RII= 0.6319), Masculinity Index (MAS) (RII=0.5942) and Uncertainty Avoidance Index (UAI) (RII=0.5928) (see Table 5.21). The next subsections discussed each dimension in details.

1. Power Distance Index (PDI) and Stakeholders' Attitudes

As shown in Table 5.22, the Power Distance Index (PDI) influences just on actions of key stakeholders, the first national cultural dimension (PDI) showed a weak positive correlation with the attitudinal factor of (Awareness, Experience and Outcome) with significance p-value of 0.000 and Pearson correlation value as (0.308, 0.377 and 0.32 respectively); Also

Power Distance Index (PDI) showed a no correlation with the rest of attitudinal factors. The weak correlation between Power Distance and Awareness, Experience and Outcome can be interpreted as the key influence of National Culture on attitude towards delay in KSA, there is more power distance between project managers and management in regarding delay issues. As found by Hofstede, it is due to an extremely high PDI in KSA that reaches a staggering 92%. Individuals in KSA tend to believe that authority and power are facts of life. Both consciously and unconsciously, they are convinced that people are not equal and that everybody has a place. Social hierarchy is predominant and establishes that inequality. Managers are therefore expected to find solutions as well as make all the difficult decisions. Junior staff seldom challenge their manager's power; they will simply obey their managers rather than challenge them.

2. Individualism/Collectivism Index (IDV) and Stakeholders' Attitudes

The second national cultural dimension of Individualism/Collectivism Index (IDV) showed a strong correlation with the attitudinal factor of "Education" with significance p-value of 0.000 and Pearson correlation value as (0.711) and a moderate correlation with the attitudinal factor of (Group Influence, and Outcome). The direction of these relationships was positive, thus, depicting that, if stakeholders are more educated and have a strong group influence, and outcome influence in delay issues, the higher would be their individuality. Also there is a weak positive correlation with the attitudinal factor of Awareness, Experience, organisation Influence, Human Factors, Motivation, the Updated Change in Project, External Environment and Workflow and no correlation with the attitudinal factor of Work Environment. The results of the descriptive analysis of the stakeholders' national cultural questionnaire relating to the measurement of collectivism have revealed that stakeholders' attitudes tend towards collectivism rather than individualism and this is match with the

individualism (IDV) scores 25, which indicates that Saudi Arabia is a collectivist society. The effect of IDV on "group influence" factor is moderate and this agrees with Hofstede rate for KSA.

3. Masculinity / Femininity Index (MAS) and Stakeholders' Attitudes

The third national cultural dimension of Masculinity / Femininity Index (MAS) showed a moderate positive correlation with the attitudinal factor of "human Factor" with significance p-value of 0.000 and Pearson correlation value as (0.571) and a weak positive correlation with the attitudinal factor of (Education, Group Influence, Organisation Influence, Motivation, the Updated Change in Project, External Environment, Workflow and Outcome). Also, there is no correlation with the attitudinal factor of (Awareness and Experience). The results of the descriptive analysis of the stakeholders' national cultural questionnaire relating to the measurement of masculinity have revealed that stakeholders' attitudes tend towards masculinity rather than femininity. On masculinity/femininity (MAS) dimension of Hofstede (with score 60) indicates that Saudi Arabia embraces masculine culture where men are supposed to work to support their families.

4. Uncertainty Avoidance Index (UAI) and Stakeholders' Attitudes

The fourth national cultural dimension of Uncertainty Avoidance Index (UAI), showed a weak positive correlation with the attitudinal factor of (human Factor, External Environment, and Workflow) with significance p-value of 0.000 and Pearson correlation value as (0.363, 0.407 and 0.407 respectively) and no correlation with the rest of the attitudinal factors.

5. Long Term Orientation Index (LTO) and Stakeholders' Attitudes

Finally, the fifth national cultural dimension of Long Term Orientation Index (LTO) showed a moderate positive correlation with the attitudinal factor of (Experience and motivation),

also it showed a weak positive correlation with the attitudinal factor of (Education, Awareness, Group Influence, Organisation Influence, the Updated Change in Project, External Environment, Workflow and Outcome) and no correlation with the rest of the attitudinal factors.

Having a long term orientation indicates that participants in the study did not take a pragmatic approach to their work or engages in thrifty and modern strategies to achieve their goals. Based on Hofstede (2001) theory, this is driven by a preference for maintaining “time-honoured traditions and norms while viewing societal change with suspicion.

In terms of the Power distance index ranking, this indicates that the participants lean towards accepting a hierarchical order, without justification. Therefore, they do not see themselves as necessarily having the authority to influence the speed of projects, mitigate against delays or to justify its delay due their place in the project hierarchy. This explains the individualism index ranking as individuals in the sample are focused on their individual roles and connections with the stakeholders rather than the collective outcome of project completion. The low placement of the masculinity/femininity index shows that feeling that the delay in projects is due to low levels of assertiveness which impact project milestone enforcement and monitoring. Low MAS is also associated with cooperation at work and a good relationship with the boss, belief in group decisions, promotion by merit, lower job stress, and preference for smaller companies (Anbari, et al., 2010). Also if rewards are low for completion or if rewards are the same if the project is delayed, then there will be no impetus taking steps on an individual basis in order to meet project completion goals.

Participants’ leaning towards a hierarchy is similar to the findings of Wang and Liu (2007), who found that in the Chinese culture, there is a large power distance influence in the culture, which steers the people to emphasize “making the boss happy” and family relationships, and

they prefer hierarchies. Rees-Caldwell and Pinnington (2010) in making a distinction between Arab and British project managers observe that:

“Arab project managers may not assume such close relationships with subordinates. They are also likely to expect people to go along with what they say. The emphasis placed on being on-time may also frustrate the Arab project manager or conversely a British project manager may get frustrated with a more relaxed approach to time management. Moreover, the individualistic nature of the British environment can be insensitive to Arab project stakeholders. There again, the high UA of the Arab culture may restrict innovation, while the British risk-taking might alarm the Arab project team” (pp 61).

This way of thinking would affect the project management process as individuals are less likely to try to keep those in the higher hierarchy accountable to deadlines or question delays. Milosevic (2002; 1999) caution project managers to pay close attention to the impact that beliefs, value systems and practices of the project stakeholders can have on productivity and team performance. In fact, according to Kruglianskas and Thamhain (2000) and Henrie and Souza-Poza (2005), ignoring these factors risks project failure and project short fall (Johnson, et al. 1996)

Lester (2007) points out that even the use of terminology within a multicultural team can cause significant challenges as those who do not understanding the terminologies may not indicate their need for clarity and this can also result in delays. Eriksson et al. (2002) supported by Johnson et al. (1996), asserts that “projects often succeed when people are culturally sensitive and are able to “appreciate the foreign partner’s culture and behave accordingly”.

5.3.7. Summary and Conclusion of the Questionnaire

Through questionnaire analysis, this study has proved that there are twelve factors that affect to varying degrees the key stakeholders' attitudes. The results showed that there are only two factors that influence all three components of attitude (Motivation and External Environment), there are eight factors influencing 'feelings' towards delay (Education, Group Influence, Experience, Organisation Influence, Human Factors, Motivation, External Environment and Outcome), five factors affect 'thoughts' towards delay (Work Environment, Organisation Influence, Motivation, External Environment and Workflow), and nine factors influence 'actions' towards delay (Awareness, Experience, Work Environment, Organisation Influence, Motivation, The updated changes in project, External Environment, Workflow and Outcome).

There is a growing general recognition that construction stakeholders' attitudes towards delay are influenced by national culture dimensions. However, the literature review showed that little work had been carried out to explore such correlations in a developing country's setting.

In this research, the different attitude of key stakeholders' groups was tested to evaluate the statistically significant differences of national culture within those groups. The test of one-way analysis of variance (ANOVA) and t-test confirmed that the Saudi nationals to be in higher agreement with the effects of NC on their attitudes towards delay in construction projects.

The Pearson correlation analysis of the correlation between stakeholders' attitude and NC revealed that stakeholders, who working in a more power distance, Long Term Orientation, Individualism, masculinity, and higher uncertainty avoidance environment, are more likely to have effected attitudes towards delay.

5.4. Summary and Conclusion of Findings from Primary Data

The results, data analysis and discussion presented in Chapter 5 have provided an understanding of the peculiar nature of the attitudinal factors that influence attitude of key stakeholders towards delay in KSA. The findings in this chapter reveal the relationships between the three components of attitudes and the twelve factors assumed to influence the components. This provided answers to the research questions and objectives of the study (Chapter 1: Sections 1.5.1 and 1.5.2).

In Section 5.2, answers of the semi-structured interviews were discussed, interpreted and analysed. Results exposed some origins of delays and strategies which interviewees adopted to handle or manage delays. The answers of both groups have been compared and it has been found that there were many similarities and dissimilarities as well in their ways of identifying, managing and reducing delays. The KSA's group was well experienced. The group of interviewees who belonged to the UK were also experienced, but it was noticed that the UK interviewees were more experienced than the KSA as they had more than fifteen years of experience in their related field. Additionally, six out of ten UK interviewees were serving as a project managers while others were offering their services as project director and project managers. Furthermore, much of interviewees were specialised in civil engineering. Both groups were agreed on that lack of supervision, expertise, knowledge, technology and resources were the main causes of delays at different stages of the project (e.g. concept design, outline design, detail and manufacturing, installation and commissioning stage). On the other hand, there were some agreement as in the perceptions of interviewees of both groups were they reported that lack of planning, active decision maker, expert engineers also were the major reasons of delays at different stages.

Moreover, it has noticed that both groups focused on different strategies to handle and avoid delays. Some responded that they used a B plan while other highlighted that they either used

Critical Path Methods (CPM) scheduling techniques or divide the whole projects in small units and give each unit to a contractor with strict deadlines. In addition to this, the study asked about whether national culture affects project delivery? The similarity has been seen in the answers of interviewees of both groups. Half interviewees of both groups responded that national culture can affect occurrence of delays because of different cultures, languages and nationalities and these factors can be controlled by avoiding discrimination at the workplace, improve interpersonal relationships and make communication among employees more effective. While according to other half interviewees of both groups, national culture did not affect delivery of the projects. These findings help in designing questionnaire.

Through questionnaire analysis, this study has proved that there are twelve factors that affect to varying degrees the key stakeholders' attitudes towards delay in construction projects. This gives answer to the first research question "What are the factors that influence the attitudes of key stakeholders towards delay in construction projects?" and the second research question "What are the effects of Saudi NC on attitudes of key stakeholders in construction projects in KSA?"

The results showed that there are only two factors that influence all three components of attitude (Motivation and External Environment) , there are eight factors influencing 'feelings' towards delay (Education, Group Influence, Experience, Organisation Influence, Human Factors, Motivation, External Environment and Outcome), five factors affect 'thoughts' towards delay (Work Environment, Organisation Influence, Motivation, External Environment and Workflow), and nine factors influence 'actions' towards delay (Awareness, Experience, Work Environment, Organisation Influence, Motivation, The updated changes in project, External Environment, Workflow and Outcome).

There is a growing general recognition that construction stakeholders' attitudes towards delay are influenced by national cultural dimensions. However, the literature review showed

that little work has been carried out to explore such correlations in a developing country's setting.

In this research, the different attitude of key stakeholders' groups was evaluated to establish whether there is statistically significant differences of national culture within the key stakeholders' groups. The test of one-way analysis of variance (ANOVA) and t-test confirmed that the Saudi nationals to be in higher agreement with the effects of NC on their attitudes towards delay in construction projects.

By doing a stakeholder analysis, project managers can gain enough information on which to build strong relationships to avoid occurrences of delay. For example, the needs of a clients will be different from contractors or consultants. Therefore, the project manager's engagement with each will need to be different as well. Some stakeholders will need to know the potential return of the project's outcomes. Others will support projects if there is sound evidence of their value to improving operations, boosting market share, increasing production, or meeting other organisations objectives.

Building strong, trusting relationships with key stakeholders from the start can make the difference between project success and failure and avoid the occurrences of delay. The successful project managers should keep each stakeholder's expectations and needs in mind throughout each conversation or meeting, no matter how formal or informal the communication may be.

Chapter 6. Conclusion and Recommendations

6.1. Introduction

The aim of this study is to establish the effect of National Culture (NC) on the attitude of key stakeholders (clients, contractors, and consultants) towards delay in construction projects in KSA. The research has established that five out of the six Hofstede's cultural dimensions (Power Distance Index (PDI), Individualism vs. Collectivism (IDV), Uncertainty Avoidance Index (UAI), Long-Term Orientation (LTO), Masculinity vs. Femininity (MAS)) have influence on the effect of 12 identified factors (F1 = Education, F2 = Awareness, F3 = Group Influence, F4 = Work Environment, F5 = Experience, F6 = Human Factors, F7 = Motivation, F8 = Organisational Influence, F9 = Updated Changes, F10 = External Environment, F11 = Workflow, and F12 = Outcome) on the attitude of stakeholders towards delay in KSA. A conceptual framework of this has been developed, as shown in Figures 3.4 through to Figure 3.7 in Chapter 3, depicting the relationship between NC and attitude towards delay in construction projects. Primary data has been collected to enable the research project to achieve its aim. The dimension Indulgence/Restraint (IVR) was removed simply because KSA has a score of 52 indicating that the people have a balance between indulgent and restrained orientations. This means there would be no consequential effect of the Indulgence/Restraint dimension on the attitude of stakeholders towards delay.

This chapter therefore, provides a summary of work accomplished by discussing how the research aim and objectives were achieved and stating the research contributions to knowledge. The chapter commences with the collation of the primary research findings and mapping them into the developed Conceptual Framework to represent how Saudi National Culture (SNC) affects the attitude of key stakeholders involved in construction projects (clients, consultants and contractors). The final section of the chapter provides a list of

recommendations for future research.

6.2. The Finalised Conceptual Framework

This Section 6.2 proposes the finalised conceptual framework that can be used by construction project managers to mitigate the effect of national culture on the attitude of contractors, consultants and clients in construction projects in KSA. The main advantage of this conceptual framework is that it clarifies the underpinnings of attitude of key stakeholders in construction projects and allows project managers and other beneficiaries to understand the NC effects on a structured basis. The specific needs for the finalised conceptual framework are:

1. To relate (in a simple way for beneficiaries) the factors that influence the attitude of contractors, consultants and clients towards delay using the appropriate Hofstede national cultural dimension to provide better understanding of the relationships between the national culture and attitude of those key stakeholders.
2. To link and display the factors influencing attitude together with the NC dimensions in one coherent framework;
3. To support project practitioners and project teams while working in the KSA by facilitating a better understanding of the Saudi national culture effects on their partners.

The Relative Importance Index (RII) of the factors for the consultants, clients and contractors were analysed separately. The indices for each factor was then adopted in order to determine their overall rank. This enabled evaluation of data sets as perceived by separate stakeholder groups, thus revealing the importance of each factor within each group. The mean of the combined indices (consultants, contractors and clients) was derived for each of the 12 factors. This enabled the overall ranking of each factor to be established.

Table 6.1: RII of Factors that Influence Attitude of key Stakeholders towards Delay

Factors	Consultants	Rank	Contractors	Rank	Clients	Rank	Mean	Overall Rank	Level of Importance for all
F1	0.8063	4	0.7509	2	0.8131	4	0.7901	4	moderate importance
F2	0.8829	1	0.7228	5	0.8598	1	0.8218	1	high importance
F3	0.7613	9	0.7053	6	0.7165	8	0.7277	8	moderate importance
F4	0.8333	3	0.6982	8	0.8037	5	0.7784	7	high importance
F5	0.7928	6	0.7544	1	0.8380	2	0.7951	3	high importance
F6	0.7883	7	0.6842	9	0.6604	10	0.7110	9	moderate importance
F7	0.6847	10	0.6702	11	0.6324	11	0.6624	10	moderate importance
F8	0.8828	2	0.7018	7	0.8030	6	0.7959	2	high importance
F9	0.5991	12	0.6840	10	0.5670	12	0.6167	12	moderate importance
F10	0.6486	11	0.6246	12	0.6791	9	0.6508	11	moderate importance
F11	0.7873	8	0.7474	3	0.8287	3	0.7878	5	high importance
F12	0.8060	5	0.7439	4	0.8006	7	0.7835	6	high importance

These results are shown in Table 6.1 where the RII and relative ranking for each factor is shown for consultants, contractors, clients, and combined.

As discussed in Section 4.6.2, the categories of importance of influence of Saudi national culture on attitudes of key stakeholders were divided into three groups: -

RII= 1.00 to RII= 0.800 is high importance

RII= 0.7999 to RII= 0.600 is moderate importance

RII= 0.59 99 to RII= 0.00 is low importance

The information in Table 6.1 reveals the most important factor influencing the attitude of all key stakeholders is F2 (Awareness (RII=0.8218)).

By considering those factors with RII scores over 0.8 for each group of stakeholders, the following lists could be arrived at:

For consultants: -

- 1- F2: Awareness (RII=0.8829)
- 2- F8: Organisation Influence (RII=0.8828)
- 3- F4: Work Environment (RII=0.8333)
- 4- F1: Education (RII=0.8063)
- 5- F12: Outcome (RII=0.8060)

For clients:

- 1- F2: Awareness (RII=0.8598)
- 2- F5: Experience (RII=0.8380)
- 3- F11: Workflow (RII=0.8287)
- 4- F1: Education (RII=0.8131)
- 5- F4: Work Environment (RII=0.8037)
- 6- F8: Organisation Influence (RII=0.8030)
- 7- F12: Outcome (RII=0.8006)

For contractors, there is none scoring more than 0.8.

For both the clients and consultants, F2 (Awareness factor) is the top most important factor, while the contractors consider F5 (Experience factor) to be the most important. Using the mean value for the combined RII values, the Awareness factor (i.e. the ability to perceive, to feel, or to be conscious of occurrence of delay) is the most important factor. Interestingly, the contractors consider all 12 factors to be important, while both the clients and the consultants regard F9 (Updated factor) to be low importance.

The calculated Severity Index (SI) of each of the 12 factors are shown in Table 6.2, where the factors are listed in a ranking order.

Table 6.2: The Severity Index (SI) of the factors that Influence the attitude of key stakeholders

Rank	Factors		SI	Degree of Severity
1	F11	Workflow	71.45	very severe
2	F2	Awareness	69.71	very severe
3	F6	Human factors	68.12	very severe
4	F3	Group influence	67.10	very severe
4	F8	Organisation Influence	67.10	very severe
6	F5	Experience	66.81	very severe
7	F4	Work Environment	65.22	very severe
8	F1	Education	63.19	very severe
9	F7	Motivation	62.03	moderately severe
10	F10	External Environment	61.30	moderately severe
11	F12	Outcome	59.42	moderately severe
12	F9	The updated changes in project	53.48	moderately severe

In this research, the Severity Index (SI) classification used by Chidambaram et al. (2012) has been adopted as follows:

$87.5 \leq SI \leq 100$ indicates extremely severe

$62.5 \leq SI \leq 87.5$ indicates very severe

$37.5 \leq SI \leq 62.5$ indicates moderately severe

$12.5 \leq SI \leq 37.5$ indicates not severe

$00.0 \leq SI \leq 12.5$ indicates extremely not at all severe

Based on the above classification, all 12 factors can be classified as moderately to very severe effect. The F1, F2, F3, F4, F5, F6, F8 and F11 can therefore be considered as ‘very severe’, while the F7, F9, F10, and F12 are ‘moderately severe’ in effecting the attitude of key stakeholders towards delay in construction.

By using the results in Chapter 5 and the values of RII and SI above, a Finalised Conceptual Framework has been developed and shown in Figure 6.1. From the results in Table 5.16a, the effect of each factor on the components of attitude (Feelings (F), Thought (T) and Actions

(A)) is as shown in the finalised conceptual framework (e.g. F4, F7, F8, F10 and F11 affect attitude through the Thought (T) component). Similarly, from Table 5.20, only MAS and UAI cultural dimensions influence attitude through the Thought (T) component. Again, the severity of effect is colour coded using RED arrows for 'very severe' and GREEN for 'moderately severe'. Similarly, the cultural dimensions are also colour coded to indicate each RII using BROWN to depict 'very important' and BLUE to indicate 'moderately important'. This may suggest to project managers that LTO and PDI are highly relevant when they consider the collective attitude of all stakeholders towards delay. Where high level of detail is not required (e.g. at the very early stage of the project), the project manager could disregard the Thought (T) component because only MAS and UAI affects it and both are not considered 'very important'. Similarly, at the very early stages of the project, the project manager could also disregard the effect of all factors (F1-F12) on the attitude towards delay when he/she is assessing the effect of NC on the attitude of contractors towards delay.

As defined in Chapter 3, Negative attitude is that which the stakeholder blames other and tries to ignore the occurrence of delay, spends the time in complaining about situations instead of looking for solutions and does little to reduce delay and does nothing to avoid problems likely to cause delay; Neutral attitude is that which the stakeholder ignores the delay and why it happens and lets other stakeholders or managers to deal with problems; and Positive attitude is that which the stakeholder focuses on completing the project on time within the budget and to the quality even if he or she face the specific obstacles during the project and considers delay as a chance to learn and to avoid the same problems in future projects. The results shown in Table 5.18 indicates that the factors F7, F9 and F10 are the only factors that tends to be towards Negative attitude. Among these three factors, only F9 has the potentiality of very severe effect, and that F9 affects attitude only through Actions. This may suggest the importance of project managers focusing on preventing the occurrence

of F9 (Updated changes) to prevent the action by stakeholders which may produce a negative attitude that is detrimental to the successful delivery of the project.

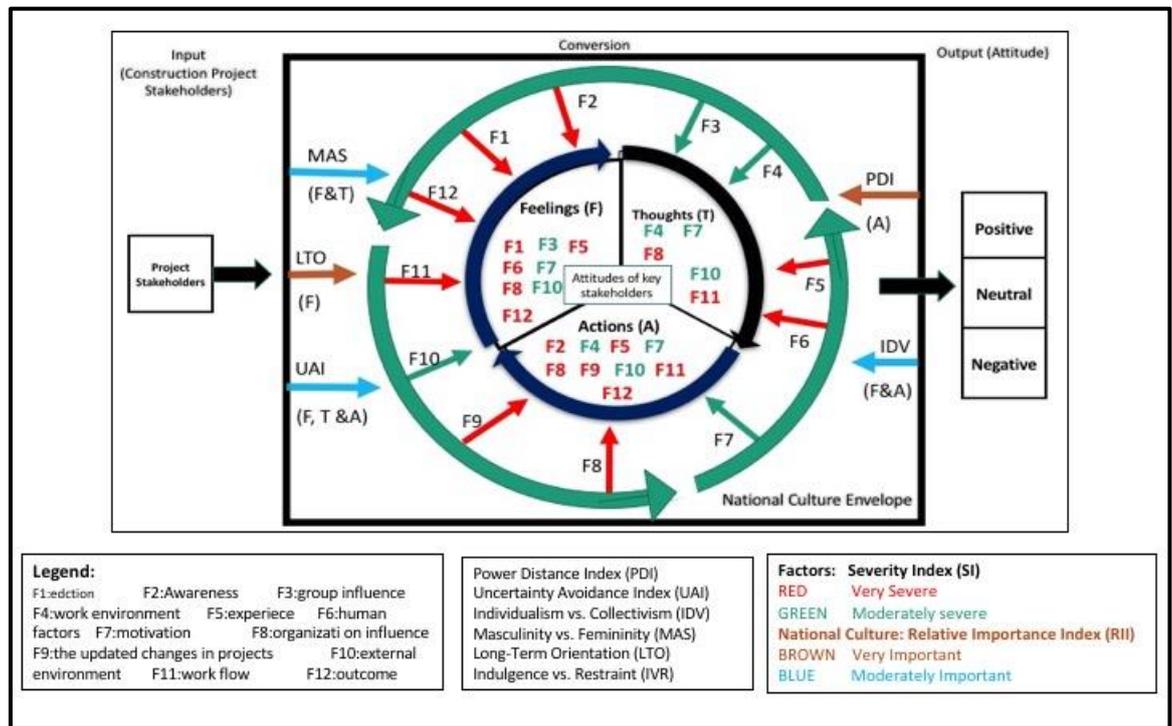


Figure 6.1: The conceptual framework of attitude of key stakeholders

By the application of the Conceptual Framework, beneficiaries may be able to remedy any weakness in the current approaches adopted in dealing with causes of delay. The advantage of the framework is that unlike other studies that have provided the causes of delay in construction projects without mentioning the effects of National Cultural (and without knowing the factors that could influence the attitudes of key stakeholders towards delay in construction projects) the application of this Conceptual Framework provides the interrelationship and a valuable insight as to how the factors being studied interact with one another. The framework also confirms that Indulgence vs Restraint (IVR) cultural dimension does not in any way affect the attitude of stakeholders towards delay in the KSA.

The framework provides the project manager with knowledge of potential actions to be taken to achieve the objectives of stakeholders and for the stakeholders themselves the potential to positively influence the project outcomes or execution approach.

6.3. Work Accomplished

The aim of this study was to establish the effect of national culture on the attitude of key stakeholders (clients, contractors, and consultants) towards delay in construction projects in KSA. To achieve this aim, the study had four key objectives:

1. To identify the main causes of delay in construction projects in KSA;
2. To evaluate the Saudi National Culture in order to understand its component parts and the variables in the relationship between culture, attitude and delay.
3. To establish the factors that affect attitude of key stakeholders towards delay in construction projects;
4. To identify the influence of the SNC on the attitude of key stakeholders towards delay in construction projects.

An in-depth literature review provided a robust understanding of attitude, national culture and the causes of delay on construction projects. Content analysis was used to identify the twelve factors that most influence the attitude of stakeholders in construction. Using the findings of the secondary data analysis, a conceptual model of the effect of Saudi National Culture on the attitude of key stakeholders was developed.

Semi-structured interviews were conducted with practitioners in the United Kingdom and the Kingdom of Saudi Arabia (KSA) as exploratory research to help the researcher to better understand the problem situation. Further primary data generation and collection was then undertaken in KSA using a quantitative research methodology. Questionnaires were distributed to a selection of clients, contractors and consultants in KSA and the data analysed using the Statistical Package for the Social Sciences (SPSS).

The results facilitated the validation of the developed conceptual model and the production of a list of recommendations for effective project management with regard to reducing the occurrence of construction delay that originates from the effect of national culture in Saudi Arabia. In researching attitudes towards delay in construction projects the primary research established that there is a correlation between the twelve identified key factors that influence the attitude of the selected key stakeholders and the three components of attitude (feelings, thoughts and actions) towards delay. It also established that there are correlations between five out of the six Hofstede's National Cultural Dimensions and the attitudes of the key stakeholders towards delay. Interestingly, there is a clear divergence or difference in perception between the three selected key stakeholders regarding the effect of SNC on their attitudes towards delay.

6.3.1. Achieved Research Objectives

Through the review of literature (Chapter 3: Section 3.4), the study established the main causes of delay in the construction projects in the KSA. The purpose of Objective One is to understand the causes of delay in construction projects in the KSA and then exclude those not related to National Culture and hence to help create a questionnaire with focus on the factors associated with National Culture as they link with attitudes. This part of the study identified and categorised the origins of delay in construction projects that are associated with the Saudi National Culture. A literature review of issues to do with delays in construction projects in several countries was initially carried out. This literature based research identified 175 origins of delay in construction projects and then categorised them into five major groupings using system thinking methodology: Input (resources); Conversion (technical, managerial, external stakeholders, internal stakeholders); Output (cost, quality, sustainability); Environmental envelope (natural, economic, social, cultural, political, business); and Other (feedback, unknowable). Thirty Three origins were shortlisted and then

categorised into the eight National Culture groups using Hofstede's collective programming factors (Hofstede and Hofstede, 2005). This created a linkage between the origins of delay with the eight Hofstede's national cultural factors. It is important to state that some of the origins of delay may intersect between the categories such as "International workforce with dissimilar cultural backgrounds" categorised under Family structures may also intersect with the Traditions, Languages, and Beliefs categorises. In such cases, the research applied Disaggregate System Methodology (Gidado, 2004) and used subjective judgment to decide on the appropriate category to place the origin of delay.

The purpose of Objective Two is to understand its component parts and the variables in the relationship between culture, attitude and delay. From the outcome of objective one, semi-structured interviews were carried out with practitioners in the UK and KSA to verify the origins of delays in construction projects and to find out whether practitioners appreciate the effect of national culture on the occurrence of delay. The combination of the secondary data and the findings of the interviews enabled the research to establish the component parts of NC (six dimensions), KSA Hofstede's NC score, components of attitude (feelings, thoughts, actions), types of attitude (negative, neutral, positive) and delay (types, origins, effects of delay).

The purpose of Objective Three is to establish the factors that affect attitude of stakeholders towards delay. The study initially identified, through literature review, twelve factors that could affect attitude of key stakeholders towards delay in construction projects. The factors were further validated by utilizing questionnaires. The questionnaire also helped to establish the Relative Importance Index (RII) for each of the twelve factors. The five most important factors that could affect the attitude of key stakeholders were: -

1. Experience (RII= 0.7145)
2. Awareness (RII= 0.6971)

3. Outcome (RII= 0.6812)
4. Motivation (RII= 0.6710)
5. Workflow (RII= 0.6710)

After evaluating the Saudi Arabian national culture, the literature review revealed that there are five dimensions out of the six Hofstede National Cultural dimensions that could directly affect the Saudi construction sector. The purpose of Objective Four is to understand the relationships between the NC dimensions and attitudes of key stakeholders in construction projects towards delays. Based on the questionnaires, SPSS provided the values of Pearson Correlation Coefficient and the RII that were used to investigate the correlation between the five Hofstede's National Culture (NC) dimensions and attitudes of key stakeholders towards delay in construction projects. By using the components of attitude (feelings, thoughts and action), the relationships between each component of attitude and the NC dimensions were found. The results suggested that the five main dimensions that influenced attitudes towards delays in construction projects in KSA are:

- Power Distance Index (PDI) (RII=0.6986),
- Long Term Orientation Index (LTO) (0.6913),
- Individualism Index (IDV) (RII= 0.6319),
- Masculinity Index (MAS) (RII=0.5942) and
- Uncertainty Avoidance Index (UAI) (RII=0.5928) (see Table 5.21).

The key stakeholders surveyed in the KSA were asked fifteen questions on their opinions about the effect of the five NC dimensions on their feelings, thoughts and actions.

After the exclusion of the questions that did not correlate to any of the components of attitude (feelings, thoughts and action), the relationships between the stakeholders' attitude and the SNC dimensions were found.

The research also investigated the effect of NC on the attitude towards delay for clients and for consultants and for contractors separately. It was established that there are statistically significant differences of the effect of NC on the attitude of three desperate groups. The research investigated the degree of agreement between respondents that are Saudi nationals compared to non-Saudis. The one-way analysis of variance (ANOVA) and t-test confirmed that the Saudi nationals to be in stronger agreement with the effects of NC on their attitudes towards delay in construction projects than non-Saudi nationals.

The Pearson Correlation analysis between stakeholders' attitude and NC revealed that there are correlations between Power Distance, Long Term Orientation, Individualism, Masculinity, and Uncertainty Avoidance with attitudes of stakeholders towards delay.

6.3.2. Limitations of the Study

This study set out with an overall aim to provide an in-depth understanding of the dynamics of the occurrence of delay in order to identify the key underlying factors that influence the attitudes of stakeholders towards delay in construction projects. Although the methodological strategy adopted for this study is appropriate in achieving the overall aim of the study there are limitations of the study which also mirror the recommendations for future work. The limitations of this study are:

- the research strategy adopted for the study focuses primarily on three big cities in KSA (Riyadh, Jeddah and Dammam), for primary data generation and collection. This limits the number of organisations covered however, the conceptual framework of this study allows for theoretical generalisation only with reference to construction sectors with similar structure, and the critical factors investigated in this study.
- the size of construction projects may have an influence on the type of respondents (e.g. knowledge, experience, awareness) and this research is limited in scope. The

impact of Saudi National Culture on smaller projects or in smaller communities has not been considered.

- the 12 factors are assumed to be disaggregated i.e. the interrelationships between the 12 factors are not studied in this thesis.
- religion is not studied as a factor effecting “attitude” study because religion is involved in all day to day business and life activities in KSA and effects all things.
- the section on KSA history suggested a history of tribes and clans. This is obviously a limitation for this study because the legacy of any tribal effect is not considered.

6.4. Conclusion

Despite the large number of studies on the concept of delay in construction projects, very few have attempted to study:

- (1) the stakeholders’ attitudes towards delay in the construction industry;
- (2) the factors that influence the attitudes towards delay; and
- (3) the impact of National Culture on delay in construction projects in Saudi Arabia.

In the majority of available studies, researchers have either developed a new model or replicated an already tested model with a view to improving its adequacy. More importantly, none of the available research has explored the effects of Saudi NC on delay. This study could therefore claim to be the first to address the issue surrounding the occurrence of delay and its relationship with National Culture. The research has explored in detail the influence of SNC on stakeholders’ attitudes. This adds to a small but growing body of empirical research concerning construction delays in developing countries and its relationship to

national culture values. Possibly the most notable contribution of this thesis is in examining the cultural issues of key stakeholders and the difference in opinions about the effects of national culture between contractors, consultants and clients. This data not only adds to the understanding of the implications of Saudi cultural values on the construction projects, but also provides new knowledge and understanding for construction project managers who will be better able to understand the culture within which they operate and therefore to improve outcomes. The results of this study will be of use to a cross-sectional range of stakeholders. Based on the findings of this study, this research has thus made the following contributions to project management in construction projects:

- improved knowledge of the perception of key stakeholders towards delay originating from NC factors in KSA construction projects;
- improved awareness of the interrelationships between Saudi National Culture and the attitudes of key stakeholders towards occurrence of delay in construction projects.
- provided an approach to use Hofstede's National cultural dimensions to predict difficulties such as delay within a project (note that Hofstede provides cultural forms for various countries, but the challenge remains about how researchers can use profiles to predict the difficulties within a project team).

It can therefore be concluded that the factors that influence the attitudes of key stakeholders towards delay in construction projects in KSA are as shown in Table 6.3 below:

Table 6.3: Factors affecting attitudes of stakeholders towards delay in the KSA

	Factors	SI	RII	SI x RII	Degree of effect
1	<i>F2 - Awareness</i>	69.71	0.8218	57.288	HIGH
2	<i>F11 - Workflow</i>	71.45	0.7878	56.288	
3	<i>F8 - Organisation Influence</i>	67.10	0.7959	53.405	
4	<i>F5 – Experience</i>	66.81	0.7951	53.121	
5	<i>F4 – Work Environment</i>	65.22	0.7784	50.767	MEDIUM
6	<i>F1 – Education</i>	63.19	0.7901	49.926	
7	<i>F3 – Group Influence</i>	67.10	0.7277	48.829	
8	<i>F6 – Human Factors</i>	68.12	0.7110	48.433	
9	<i>F12 – Outcome</i>	59.42	0.7835	46.556	
10	<i>F7 – Motivation</i>	62.03	0.6624	41.089	LOW
11	<i>F10 – External Environment</i>	61.30	0.6508	39.894	
12	<i>F9 – Updated Changes</i>	53.48	0.6167	32.981	

Table 6.4: The effect of Saudi National Culture (SNC) on attitude of key stakeholders towards delay

National Culture Dimension	Hofstede's Score for Saudi Arabia	Relative Importance Index (RII)	The affected Component of Attitude			Correlation with the Factors affecting Attitude (+++ = strong correlation; ++ = moderate correlation; + = weak correlation; o = no correlation)												
			Thoughts	Feelings	Actions	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	
Power Distance Index (PDI)	92	0.6986			Yes	o	+	o	o	+	o	o	o	o	o	o	o	+
Long Term Orientation (LTO)	36	0.6913		Yes		+	+	+	o	++	o	++	+	+	+	+	+	+
Individualism vs Collectivism (IDV)	25	0.6319		Yes	Yes	+++	o	++	o	+	+	+	+	+	+	+	+	++
Masculinity vs Femininity (MAS)	60	0.5942	Yes	Yes		+	o	+	o	o	++	+	+	+	+	+	+	+
Uncertainty Avoidance Index (UAI)	80	0.5928	Yes	Yes	Yes	o	o	o	o	o	+	o	o	o	+	+	+	o

Finally, it can also be concluded that the Saudi National Culture (SNC) affects the attitudes of key stakeholders towards delay in the manner as shown in Table 6.4. From these results, the research can conclude that National Culture has an effect on the attitude of stakeholders towards delay in construction projects. It confirms that SNC has no correlation with work environment (F4); and that the key cultural dimensions that have strong correlation with the factors affecting attitude of stakeholders are IDV, LTO and MAS. For example, the score for Individualism Index (IDV) for the KSA is 25, meaning the relationship between individuals is solid in-groups that leads to extended families that continue protecting each other in exchange for loyalty (i.e. collectivism). As shown in Table 6.4, IDV dimension affects attitude through Feelings (F) and Actions (A) and has a strong correlation with the factors affecting attitude. It means stakeholders may tend to be bias towards their in-groups in selection and appointment of contractors and suppliers, which may result into the project leadership to be tolerant to poor performance and delays in exchange for loyalty. This implies that in the KSA, Project Managers would therefore need to put in place appropriate strategies to counter the potential effect of Individualism Index (IDV) in their projects.

6.4.1. Recommendations for Project Management in KSA

Following the findings of this study, the research recommends the following actions be undertaken to address and improve efficiency to mitigate delays in construction projects in KSA:

1. There is a need to improve project management practises within construction projects to better structure the current informal nature and customary practices of key stakeholders. It is necessary for project managers to be exposed to tailor-made training programs on responsibilities, culture differences, risk management, stakeholder management and project management processes. This

will promote the processes of knowledge transfer to mitigate the situation of occurrences of delay in construction projects.

2. It is recommended that an awareness for the provision of a clear and extensive understanding of national culture should be submitted to everyone involved in the management of construction projects.
3. It is recommended that experience should be one of the key criteria for selection of consultants and contractors especially those with Saudi national expertise and with high experience and know-how in the field of construction projects. This would contribute towards dealing with F5 (Experience Factor).
4. The study recommends the employment of new graduates to be qualified in the future to deal with the problems originating from the NC, introducing the subject of NC within the curriculum in universities and colleges, thereby increasing awareness of NC. With this recommendation, F1 (Education Factor) and F2 (Awareness Factor) can be achieved.
5. It is recommended that projects should develop the spirit of one team in decision-making and avoid the “oneness” to the decisions of the higher authorities. This would give more responsibility to project managers and supervisors to conduct their duties, by holding workshops and training courses that contribute to raising the rate of independence and confidence in the individual's ability to make decisions.
6. There is a high score for the Uncertainty Avoidance Index (UAI) (80) in KSA, which influences all the attitude components (feelings, thoughts and actions). It is therefore recommended that project managers should take into account that innovation may be resisted, that security job is important, and that people like to work on their own rather than working in teams. To help resolve this, the study

recommends more attention should be given to motivation of project stakeholders to enhance the project outcome.

7. A very complex workflow may affect attitude towards delay. This study recommends that project managers and planners standardize the project processes according to a set of procedural rules.
8. “The changing in design and variation orders” have got the second-highest rank of origins of delays in KSA. It is recommended to create better integration amongst the stakeholders including clients, contractors and consultants in order to agree and approve the final design to avoid the changing in terms of design and variation orders during the project.
9. Using Building Information Modelling (BIM) or similar technology will enable the stakeholders to share the data and information openly, strengthen their communication and to collaborate better across teams, departments and even with external stakeholders.
10. “Favouritism in appointment of contractors/employees” is one of the highest rank of origin of delays in KSA. To overcome this, it is recommended that the clients or owners of construction projects should create effective criteria for selecting suitable contractors and consultants to assist in mitigating favouritism.

6.5. Significance of the Study

Project managers need to be attuned to the effect of National Culture and organisational environments surrounding the project. Understanding these environments includes identifying the project stakeholders; the influence of these stakeholders and how they influence these environments in a positive or negative way.

This research, examines the occurrence of delays in construction projects by finding the perceived current gap in the knowledge thereby providing a better understanding of the effect of Saudi NC on attitudes of project stakeholders towards delay.

A greater understanding of the effect of National Culture will assist project provides in designing robust service delivery mechanisms that suit the National Culture in which the organisation operates. It is reasonable to suggest that the reduction in the causes of delay will result in a reduction of costs thereby having a positive impact on the country's ability to take on other goals and future projects. There were therefore five main drivers for this research project:

1. Limited existing research showing how National Cultural dimensions influence the attitudes of stakeholders in the KSA.
2. The causes of delays or failures of projects in the KSA have been identified by other researchers, but information was still needed to know how Saudi National Culture affects the occurrence of these delays in construction projects.
3. The need to improve the delivery of construction projects on time in the KSA.
4. Since the Saudi construction industry is a promising and a good investment market, knowing how the Saudi stakeholders behave and act is important for global companies that want to invest in this market to avoid losses.

6.6. Recommendations for Future Research

Recommendations for future research as a result of this study are listed below:

- This study focuses on the occurrence of delay in the Saudi construction industry and to what extent Saudi National Culture can influence the stakeholders' attitudes towards delay. No attempt has been made to do any comparative study between KSA

and other economies within the Middle Eastern region or specifically within the GCC countries. Further research is therefore recommended in this area.

- This research did not attempt to develop a ‘causal and effect model’ of the relationships between national cultural dimensions and stakeholders’ attitudes. This could be undertaken by using Structural Equation Modelling (SEM). This study would help develop an in-depth understanding of each variable and its direct/indirect link with other variables.
- One of the key limitations of this research is the assumption that the factors effecting attitudes towards delay as independent variables. Further research could be carried out to study the interrelationships between the 12 factors by using methodology such as Structural Equation Modelling.
- With the recent lifting of ban of women to drive, it may useful to begin to investigate the potential participation of women in construction sector particularly on the effect on attitudes of stakeholders towards delay.

References

- Abeyssekera, V. (2002). Understanding “Culture” in an International Construction Context, in Fellows, R. & Seymour, D. E. (eds.), Perspectives on culture in construction, CIB report, Vol. 275, 39-51.
- Abisuga, A. O., Amusu O.R.O. and Salvador K. A. (2014). Construction Delay in Nigeria: A Perception of Indigenous and Multinational Construction Firms. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)* 5(3):371-378
- Abdelsalam, H. M. E. and M. M. Gad (2009). "Cost of quality in Dubai: An analytical case study of residential construction projects." *International Journal of Project Management* 27(5): 501-511.
- Achterkamp, M.C., Vos, J.F.J., (2008). Investigating the use of the stakeholder notion in project management literature, a meta-analysis. *Int. J. Proj. Manag.* 26, 749–757.
- Ajzen, I. (2005). *Attitudes, Personality, and Behavior*. McGraw-Hill Education (UK)
- Aiyetan, A. Olatunji, Smallwood J. John, and Winston Shakantu. (2014). Influence of Client Understanding on Quality of Design. International conference on engineering, project, and production management conference proceedings, Port Elizabeth, South Africa.
- Al-Adhami, S. (2011). Saudi Arabia Construction Market. UK Trade and Investment. Retrieved from: http://www.cimcig.org/files/library/Winning_Business_in__1235017764.pdf
- Al-Ghafly, M.A., and Al-Khalil, M. (1999). Delay in public utility projects in Saudi Arabia. *International Journal of Project Management*, 17(2), pp. 101-106.
- Al-Harathi, Alaa A., Abdulrahman S. Bageis, Bingunath Ingirige (2015). Preparation of Papers - Key External Causes of Poor Performance of Engineering and Technical

Departments within Governmental Construction Projects in Saudi Arabia. Jeddah
Saudi Arabia Jan 26-27, 2015, 13 (01) Part XIII

Alhazmi, T. and McCaffer, R. (2000) Project Procurement System Selection Model. *Journal of Construction Engineering and Management*, 126, 176-184.
[http://dx.doi.org/10.1061/\(ASCE\)0733-9364\(2000\)126:3\(176\)](http://dx.doi.org/10.1061/(ASCE)0733-9364(2000)126:3(176))

Al-Khalil, M.I. and Al-Ghafly, M.A. (1999). Important Causes of Delay in Public Utility Projects in Saudi Arabia. *Journal of Construction Management and Economics*, 17, 647-655.

Al-Kharashi, A. and Skitmore, M. (2009). Causes of delays in Saudi Arabian public sector construction projects. *Construction Management and Economics*, 27(1). 3-23

Albogamy, A., Scott, D. and Dawood, N. (2012). Addressing construction delays in the Kingdom of Saudi Arabia. *International Proceedings of Economics Development and Research*, 45, p. 148

Ali, A. (2008). *Business and Management Environment in Saudi Arabia: Challenges and Opportunities for Multinational Corporations*. Routledge.

Ali, A.J. and Al-Owaihan, A., (2008). Islamic Work Ethic: a critical review. *Cross Cultural Management: An International Journal*, 15 (1), 5-19.

Ali, T.H. (2006). *Influence of National Culture on Construction Safety Climate in Pakistan*. Griffith University.

Alkharmany, A., Gidado, K. and Painting, N. (2014). Delays to construction projects associated with national culture in Saudi Arabia. *International conference on engineering, project, and production management conference proceedings*, Port Elizabeth, South Africa.

Allport, G. W. (1935). Attitudes. In Murchison C. (Ed.), *Handbook of social psychology* (pp. 798–844). Worcester, MA: Clark University Press.

- Al-Momani, A.H. (2000) "Construction Delay: A Quantitative Analysis". International Journal of Project Management, Vol. 18, 51-59.
- Alotaibi, N. O, Monty Sutrisna, and Heap-Yih Chong (2016). Guidelines of Using Project Management Tools and Techniques to Mitigate Factors Causing Delays in Public Construction Projects in Kingdom of Saudi Arabia. Journal of Engineering, Project, and Production Management, 6(2), 90-103
- Alshahrani, A., Panuwatwanich, K. and Sherif, M. (2014). Relationship between National Culture and Safety Behaviour: Evidence from Petrochemical Employees in Saudi Arabia. International conference on engineering, project, and production management conference proceedings, Port Elizabeth, South Africa.
- Alyousif, A, Naoum, S, Atkinson, A and Robinson, H (2010). National culture influence on management practices in the construction industry of United Arab Emirates. In Egbu, C. (Ed) Proceedings of 26th Annual ARCOM Conference, 6-8 September 2010, Leeds, UK, Association of Researchers in Construction Management, 511-520
- Anbari, F., Khilkhanova, E., Romanova, M., Ruggia, M., Tsay, H.H. and Umpleby, S. (2010). Cross cultural differences and their implications for managing international projects. Retrieved from: https://www2.gwu.edu/~umpleby/recent_papers/2003_cross_cultural_differences_managin_international_projects_anbari_khilkhanova_romanova_umpleby.htm
- Ankrah, N. A. & Proverbs, D. (2004). Treading the softer areas of construction management: A critical review of culture. in Khosrowshahi, F. (ed.), Proceedings of the 20th Annual ARCOM Conference, Edinburgh, 1, 551-558.
- Arabiat, A, Edum-Fotwe, F T and McCaffer, R (2007). Does client behaviour actively induce risk in construction projects?. In: Boyd, D (Ed) Procs 23rd Annual ARCOM

Conference, 3-5 September 2007, Belfast, NI, Association of Researchers in Construction Management, 745-754

Arain, F.M. and Low, S.P. (2003). Measures for minimizing adverse impact of variations to institutional buildings in Singapore, *Journal of Housing, Building and Planning*, 10(1), pp. 97-116.

Arnold, Ross D. Jon, and P. Wade, (2015). *A Definition of Systems Thinking: A Systems Approach* Stevens Institute, Castle Point on Hudson, Hoboken, NJ 07030, USA

Assaf, S.A., Al-Khalil, M. and Al-Hazmi, M. (1995). Causes of delay in large building construction projects, *Journal of Management and Engineering*, 11(2), pp. 45-50.

Assaf, S.A., and Al-Haejji, S. (2006). Causes of delay in large construction projects. *International Journal of Project Management*, 24(4), 349-357

Attarzadeh, I. and Ow, S. (2008). *Project Management Practices: Success vs. Failure*. SSRN Journal.

Avison, D.E. and Myers, M.D. (1995). Information systems and anthropology: and anthropological perspective on IT and organizational culture. *Information Technology and People*.

Badu, E., Owusu-Manu, D., Edwards, J.D., Adesi, M. and Lichtenstein, S. (2013). Rural Infrastructure Development in the Volta Region of Ghana: Barriers and Interventions. *Journal of Financial Management of Property and Construction*, 18, 142-159. <http://dx.doi.org/10.1108/JFMPC-11-2012-0040>

Banawi, A. and Bilec M. (2014). Applying Lean, Green, and Six-Sigma Framework to Improve Exterior Construction Process in Saudi Arabia. *KICEM Journal of Construction Engineering and Project Management*.

Basit, T. N. (2010). *Conducting research in educational contexts*. Bloomsbury Publishing.

- Barthorpe, S., Duncan, R. and Miller, C. (2000). The pluralistic facets of culture and its impact on construction. *Property Management*, 18 (5), 335-351.
- Baumann, L. (2013). The impact of national culture on project management in the Middle East. Publisher: Lars Baumann, Loughborough University
- Begum, Rawshan Ara, Chamhuri, Siwar, Joy Jacqueline Pereira, Abdul Hamid Jaafar. (2009). Attitude and behavioral factors in waste management in the construction industry of Malaysia. *Resources, Conservation and Recycling* 53, 321-328.
- Bhadury, J., E. J. Mighty, et al. (2000). Maximizing workforce diversity in project teams: a network flow approach. *Omega* 28(2): 143-153.
- Bhattacharya, Bhaskar, Habtzghi, and DeSale (2002). Median of the p value under the alternative hypothesis". *The American Statistician*. American Statistical Association. 56 (3): 202–6. doi:10.1198/000313002146. Retrieved 19 February 2016.
- Binder, J.C. (2007). *Global project management: communication, collaboration and management across borders*, Gower Publishing, Hampshire, England, p. 40-42.
- Bodley, J. H. (1994) *An Anthropological Perspective, Cultural Anthropology: Tribes, States, and the Global System*.
- Boone, H.N. and Boone, D.A. (2012). Analysing Likert Data. *Journal of Extension*. 50, pp.30-30
- Bordoli, D.W. and Baldwin, A.A. (1998). A methodology for assessing construction project delays. *Journal of Construction Management and Economics*, 16, pp. 327–337
- Bouma, D. and G. B. J. Atkinson, (1995). *Handbook of Social Science Research*, Oxford University Press, 2nd edition
- Boyd, D. and Chinyio, E. (2006). *Understanding the Construction Client*. John Wiley and Sons Inc.

- Boynton, A. C., and Zmud, R. W. (1984). An assessment of critical success factors. *Sloan management review*, 25(4), 17-27.
- Bramble, B.B. and Callahan, M.T. (2010). *Construction delay claims*. 4th Edition, NY: John Wiley and Sons.
- Bredillet, C. and Yatim, F. (2009). Project management deployment: The role of cultural factors. *International journal of project management*
- Bryman, A. (2003). *Quantity and Quality in Social Research*. Routledge
- Bryman, A. (2006). *Integrating quantitative and qualitative research: how is it done?*. Qualitative Research Copyright © 2006 SAGE Publications (London, Thousand Oaks, CA and New Delhi) vol. 6(1) 97–113.
- Bryman, A. (2012). *Social research methods*. Oxford University Press
- Bubshait, A.A. and Farooq, G. (1999). Team building and project success. *Cost Engineering*, 41 (7), 34-38
- Cameron, K. S., in D. R. Ettington. 1988. The Conceptual Foundations of Organizational Culture. V Higher education: Handbook of theory and research, ur. J. C. Smart, 356–96. New York, Agathon.
- Cappels, T. (2008). *Financially focused project management*. Boca Raton, FL: J. Ross Pub.
- Casella, G. (2008). *Statistical Design*. Springer, ISBN 978-0-387-75965-4,
- Chan, D.W.M. and Kumaraswamy. M.M. (1995). ‘A study of causes of the factors affecting construction durations in Hong Kong’. *Construction management and economics*, 13, pp. 319-333.
- Chartered Institute of Building (CIOB). *Guide to Good Practice in the Management of Time in Complex*; CIOB, Wiley-Blackwell Publishing: Oxford, UK, 2011.
- Chen, J.Q. (2000). *Investing Psychology*. Dongbei University of Finance and Economics Press, Dalian.

- Chen, P. and Partington, D. (2004). An interpretive comparison of Chinese and Western conceptions of relationships in construction project management work. *International Journal of Project Management* 22(5): 397- 406
- Cheng, E.W.L., Heng, L., Love, P. and Irani, Z. (2004). A learning culture for strategic partnering in construction. *Construction Innovation*, 4(1), pp. 53-65.
- Chevrier, S. (2003). Cross-cultural management in multinational project groups. *Journal of World Business* 38(2): 141-149.
- Cleland D.I. (1994). *Project Management: Strategic Design and Implementation*. 2nd Edition. McGraw Hill, New York.
- Coble, R.J. and Haupt, T.C. (1999). *Construction Safety in Developing Countries: Implementation of Safety and Health on Construction Sites*. Proceedings of the 2nd International Conference of International Council for Research and Innovation in Building and Construction (CIB) Working Commission W99. Honolulu, pp. 903-908.
- Cohen, G.L., (2003). Party over policy: The dominating impact of group influence on political beliefs. *Journal of Personality and Social Psychology*, Vol. 85, No. 5, pp. 808-822.
- Cooke-Davies, T. J. (1990). Changing corporate culture to improve project performance. In: 10th Internet World Congress on project management. Vienna I. P. M. A.
- Cooper, M.D. (2000). Towards a Model of Safety Culture. *Safety Science*, 36, pp.111-136.
- Creswell, J.W. (2007). *Qualitative inquiry and research Design: Choosing among five approaches*. 3rd edition, London: Sage Publications
- Czuchry, A.J. and Yasin, M.M. (2003). Managing the Project Management Process. *Industrial Management and Data Systems*, 103 (1), pp.39 - 46

- Dadfar, H. and P. Gustavsson (1992). "Competition by effective management of cultural diversity: The case of international construction projects." *International Studies of Management & Organization* 22(4): 81.
- Dainty, A., Bagilhole, B. and Neale, R. (2007). A grounded theory of women's career under-achievement in large UK construction companies. *Construction Management and Economics*, 18(2), pp.239-250.
- Dane, F.C. (1990) *Research Methods*. Brooks / Cole Publishing, Pacific Grove, California.
- Dattalo, P. (2008). *Determining sample size: balancing power, precision, and practicality*. Oxford University Press
- Deloitte (2013). *GCC Powers of Construction 2013: Construction sector overview*. Retrieved from: https://www.deloitte.com/assets/Dcom-MiddleEast/Local%20Assets/Documents/Industries/Real%20Estate/Construction/m_e_real-estate_gcc_construction_ppt_13.pdf.
- Deresky, H. (2011). *International management: managing across borders and cultures: text and cases*. Upper Saddle River, N.J., Prentice Hall.
- Dinsmore, P. C., Cabanis-Brewin, Jeanette (2005). *AMA Handbook of Project Management; Second Edition*, AMACOM.
- Doloi, H. (2009). Analysis of pre-qualification criteria in contractor selection and their impacts on project success. *Construction Management and Economics*, 27, pp. 1245-1263.
- Donaldson, T. and Preston, L.E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *The Academy of Management Review*, vol. 20, pp. 65-91.

- Druker, J. and Croucher, R. (2006). National collective bargaining and employment flexibility in the European building and civil engineering industries. *Construction Management and Economics*, 18(6), pp.699-709.
- Duncan, W. (2002). Project Management Culture. *PM Network*. Vol.14, No. 8, pp 26-27.
- Eaton Consulting Group INC. (2002) Rebuilding the Motorway in Croatia: Bechtel/ENKA Project, A available at: <http://www.eatonconsultinggroup.com/highlights.html> [20/04/04]
- Egan, J. (1998). Rethinking construction. Construction Task Force, London, HMSO.
- El-Said, H. and Harrigan, J., (2009). You Reap What You Plant”: Social Networks in the Arab World. The Hashemite Kingdom of Jordan. *World Development*, 37 (7), 1235–1249.
- Elena, R.D. (2010). Cultural difference in project management. *Annales Universitatis Apulensis Series Oeconomica*, 12(2), p.651-662. Retrieved from: <http://oeconomica.uab.ro/upload/lucrari/1220102/18.pdf>
- Elinwa A.U, & Joshua M. (2001), Time-overrun factors in Nigerian construction industry, *Journal of Construction Engineering and Management*, Vol. 127, No.5, pp. 419-425.
- Erez, M. and Earley, P.C. (1993). Culture, self-identity, and work. New York, Oxford University Press.
- Eriksson, M., Lillieskold, J., Johnson, N., and Novosel, D., (2002). How to manage complex multinational R&D projects successfully. *Engineering Management Journal*, 14 (2), 53-60.
- Erwin, P. (2014). Attitudes and Persuasion. Psychology Press
- Eskildsen, J., Kristensen, K., and Antvor, H. G. (2008). The relationship between job satisfaction and national culture. *The TQM Journal*, 22 (4), pp.369 - 378

- Faridi, A.S. and El-Sayegh, S.M. (2006). Significant factors causing delay in the UAE construction industry. *Construction Management Economics*, 24(11), pp.1167-1176.
- Fazli, S., Alvandi, M. and Rezaei, M. (2012). Identifying Significant Factors Affecting Decision Maker's Risk Attitudes in Multinational Construction Projects in Iran. *Journal of Basic and Applied Scientific Research*, 2(12), 12765-12772.
- Fellows, R. and Liu, A. (2008). *Research Methods for Construction*. London: Blackwell Publishing.
- Fellows, R. & Seymour, D. E. (Eds.) (2002) *Perspectives on culture in construction*, CIB Report.
- Fenn, P., Lowe, D. and Speck, C. (1997). Conflict and dispute in construction. *Construction Management and Economics*, 15, 513-518.
- Fisher K. and Fisher M. (2001). *The Distance Manager*. USA: McGraw-Hill.
- Fitzgerald, B., and Howcroft, D. (1998). Competing dichotomies in IS research and possible strategies for resolution. In *Proceedings of the international conference on Information systems* (pp. 155-164). Association for Information Systems.
- FitzMaurice, K.E. (2011). *Attitude Is All You Need*. Second Edition. FitzMaurice Publishers
- Flynn, F.J.C. (2001). Strong cultures and Innovation: Oxymoron or Opportunity. C.L. Cooper, S. Cartwright and P.C. Earley *International Handbook of Organizational Culture and Climate*: 24.
- Frame, J.D. (1995). *Managing Projects in Organizations: How to make the best use of time, techniques, and people*. San Francisco: Jossey-Bass Publishers.
- Frame, J.D. (1996). *The new project management: Tools for an age of rapid change, corporate reengineering, and other business realities*. San Francisco: Jossey-Bass Publishers.

- Frechtling, J. A., and Sharp, L. M. (Eds.). (1997). User-friendly handbook for mixed method evaluations. Diane Publishing.
- Freeman, R. Edward, (1984). Strategic management: A stakeholder approach. Boston: Pitman/Ballinger.
- Freeman, R. Edward, Harrison, Jeffery S., and Wicks, Andrew C. (2011). Managing for stakeholders: Survival, Reputation, and Success. Available: <http://site.ebrary.com/lib/unmc/Doc?id=10315690>
- Freund, R.J., Wilson, W.J. and Sa, P. (2006). Regression analysis. 2nd edition, London: Academic Press
- Gallivan, M. and Srite, M. (2005). Information technology and culture: Identifying fragmentary and holistic perspectives of culture. *Information and Organization* 15(4): 295-338.
- GCR (2017), Saudi Project Logjam to break this year. *Global Construction Review*, 19 June 2017, the Chartered Institute of Building CIOB
- Geertz, C. (1973). The interpretation of cultures; selected essays. New York, Basic Books.
- Gidado, K. (2004), Enhancing the Prime Contractor's Pre-Construction Planning. *Journal of Construction Research*. Volume 5, Number 1, March 2004. Pages 87-106. World Scientific Publishing Company.
- Gray, C.F. and Larson, E.W. (2002). Project Management: The Managerial Process. McGraw Hill. Retrieved from: <http://books.google.com/books?id=FGt1ZukGgQCdq>
- Gregory, Frank Hutson (1992). Cause, Effect, Efficiency & Soft Systems Models. *The Journal of the Operational Research Society* (1993) 44(4), pp 149-168.

- Guest, D. E., Michie, J., Conway, N. & Sheehan, M. (2003). Human resource management and corporate performance in the UK. *British Journal of Industrial Relations*, 41 (2), 291-314.
- Gupta, V., G. Surie, et al. (2002). "Southern Asia cluster: where the old meets the new?" *Journal of World Business* 37(1): 16-27.
- Haalien TM. (1994). *Managing the cultural environment for better results*. 12th World Congress. Oslo
- Hair, J., Anderson, R. and Black, W. (1998). *Multivariate Data Analysis*. (5th edition), Prentice-Hall International, INC., New Jersey
- Halawa, W.S., Abdelalim A.M.K. and Abd Elrashed, I. (2013). Financial evaluation program for construction projects at the pre-investment phase in developing countries: A case study. *International Journal of Project Management*. 31, 912-923.
- Hall, E.T. (1959) *The Silent Language*. Anchor Press/Doubleday, New York, NY.
- Hall, E.T., Hall, M.R., (1990). *Understanding Cultural Differences: Germans, French and Americans*, Seventh edition. Intercultural Press, Maine.
- Hampden-Turner, C. (1994). *Corporate culture*, Piatkus.
- Hampden-Turner, C. and Trompenaars, F. (1993). *The Seven Cultures of Capitalism*. Doubleday. Cambridge University Press, Cambridge.
- Hampden-Turner, C. and F. Trompenaars (1997). "Response to Geert Hofstede." *International Journal of Intercultural Relations* 21(1): 149-159.
- Handley, P. (1997). *BOT Privatisation in Asia: Distorted goals and processes*. <http://wwwarc.murdoch.edu.au/wp/wp82.rtf>, [23/03/04].
- Handy, C. B. (1995). *Gods of management: the changing work of organizations*, Oxford University Press, New York.

- Harrison, G.L. (1993). Reliance on accounting performance measures in superior evaluative style: the influence of national culture and personality. *Accounting, Organizations and Society*, 18(4): 319-39.
- Helliar, C., Lonie, A., Power, D. and Sinclair, D., 2001. Attitudes of UK managers to risk and uncertainty. *Balance Sheet*, 9(4), pp.7-10.
- Henrie, M. and Sousa-Poza, A., (2005). Project Management: A Cultural Literary Review. *Project Management Journal*, 36 (2), 5-14.
- Hesselgrave, D.J. and Rommen, E. (2003). Contextualization: Meanings, Methods, and Models. Retrieved from <http://books.google.com/books?id=Sqb1SjbODw0C&dq>
- Hofstede Centre (2014). What about Saudi Arabia? Retrieved from: <http://geert-hofstede.com/saudi-arabia.html>
- Hofstede, G. (1980). *Cultural Consequences: International Differences in Work Related Values*. Beverly Hills: Sage.
- Hofstede, G. (1983). Cultural Dimensions for Project Management. *International Journal of Project Management*, 1 (1), 41-48.
- Hofstede, G. (1991). *Cultures and Organisations: Software of the mind*. UK: McGraw-Hill International Ltd.
- Hofstede G. (1993). Cultural constraints in management theories. *Academy of Management Executive*, vol. 7, num. 1, p. 81-94
- Hofstede, G. (2001). *Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations across Nations*. Ed. Sage Publications, California.
- Hofstede, G. and Hofstede, J. (2005). *Cultures and Organisations: Software of the mind*. 2nd edition, McGraw-Hill Europe.
- Hofstede, G., Hofstede J. and Minkov M. (2010). *Cultures and Organizations: Software of the Mind*. 3rd edition. New York: McGraw-Hill.

- Holliday, A. and Kullman, J. (2004). *Intercultural communication an advanced resource book*. London; New York, Routledge: vol. 1.
- Hunt, A. (2000). Effects of Business Culture on Projects. *Proceedings of the PMI. Research Conference Paris 2000*: 313-322.
- Hurn, B.J. (2007). The influence of culture on international business negotiations. *Industrial and Commercial Training*, 39 (7), 354-360.
- Ibironke, O.T., Oladinrin, T.O., Adeniyi, O. and Eboreime, I.V. (2013). Analysis of Non-Excusable Delay Factors Influencing Contractors' Performance in Lagos State, Nigeria. *Journal of Construction in Developing Countries*, 18(1), pp. 53-72
- Idris, A. (2007). Cultural barriers to improved organisational performance in Saudi Arabia. *SAM Advanced Management Journal*, 72, 36–53.
- Javier, P. and Narciso, C. (2008). What do software practitioners really think about project success: A cross-cultural comparison. *The Journal of Systems and Software* 81(6): 897.
- Jefferies, M, Gameson, R and Rowlinson, S. 2002. Critical success factors of the BOOT procurement system: reflection from the Stadium Australia case study. *Engineering, Construction and Architectural Management*, 9(4): 352–61
- Johnson, J.L., Cullen, J.B., Sakano, T. and Takenouchi, H. (1996). Setting the Stage for Trust and Strategic Integration in Japanese-U.S. Cooperative Alliances. *Journal of International Business Studies*, 27 (5), 981-1004.
- Johnson, J.W. and LeBreton, J.M. (2004). History and Use of Relative Importance Indices in Organizational Research. *Organizational Research Methods*, 7, 238-257.
- Kabasakal, H. and Bodur, M. (2012). Arabic Cluster: a bridge between East and West. *Journal of World Business*, 37, 40-54.

- Kaming, P.F., Olomolaiye, P.O., Holt, G.D., Harris, F.C., (1997). Factors influencing construction time and cost overruns on high rise projects in Indonesia. *Construction Management and Economics* 15 (1), 83–94.
- Kamla, R. and Gallhofer, S. (2006). Islam, nature and accounting: Islamic principles and the notion of accounting for the environment. *Accounting Forum* 30(3): 245-265.
- Karahanna, E. and Evaristo, J.R. (2005). Levels of Culture and Individual Behavior: An Integrative Perspective. *Journal of Global Information Management* 13(2): 1.
- Keil, M., Tan, B.C.Y., Wei, K., Saarinen, T., Tuunainen, V. and Wassenaar, A. (2000). A Cross-Cultural Study on Escalation of Commitment Behavior in Software Projects. *MIS Quarterly*, 24, (2), 299-325.
- Khoury, P. S., Kostiner, J. (1991). *Tribes and state formation in the Middle East*. London; New York, I.B. Tauris.
- Koster, K. (2010). *International Project Management*. London: SAGE Publication Ltd, p. 89-90.
- Kruglianskas, I. and Thamhain, H.J. (2000). Managing Technology-Based Projects in Multinational Environments. *IEEE Transactions on Engineering Management*, 47 (1), 55-64.
- Kulatunga U, Amaratunga D, Haigh R, Rameezdeen R. (2006). Attitudes and perceptions of construction workforce on construction waste in Sri Lanka. *Management of Environmental Quality: An International Journal* 2006; 17:57–72.
- Lampel, J. (2001). The core competencies of effective project execution: the challenge of diversity. *International Journal of Project Management*.
- Latham, M. (1994). *Constructing the Team*, HMSO, London, 87-92.
- Lee-Kelley, L. and Sankey, T. (2008). Global virtual teams for value creation and project success: A case study. *International Journal of Project Management*.

- Leech N, Onwuegbuzie A, (2008) A typology of mixed methods research designs, *Quality and Quantity*, 43(2), March, pp. 265-275.
- Lester, A. (2007). *Project Management: Planning and Control*. Retrieved from: http://books.google.com/books?id=eLEIEPepXoMC&source=gbs_navlinks_s
- Livermore, D. (2009). *Leading with Cultural Intelligence: The New Secret to Success*. New York: AMACOM Division American Management Association.
- Loosemore, M. and Lee, P. (2002). Communication problems with ethnic minorities in the construction industry. *International Journal of Project Management* 20(7): 517-524.
- Loosemore, M. and Muslmani, H.S.A. (1999). Construction project management in the Persian Gulf: inter-cultural communication. *International Journal of Project Management* 17(2): 95-100.
- Loughborough University and UMIST (2003). *Causal factors in construction accidents*. HSE Books Publications. ISBN 0717627497
- Low, S. P. and Shi, Y. (2001) Cultural influences on organizational processes in international projects: two case studies, *Work Study*, 50 (7), 276-285.
- Mahamid, I. (2013). Contributors to schedule delays in public construction projects in Saudi Arabia: owners' perspective. *Journal of Construction Project Management and Innovation*, 3(2), 608-619.
- Mäkilouku, M. (2004). Coping with multicultural projects: the leadership styles of Finnish project managers." *International Journal of Project Management*.
- Maloney, W. F. and Federle, M. O. (1990) *Organizational culture in engineering and construction organizations*, University of Michigan, Ann Arbor.
- Mansfield, N., Ugwu, O. and Doran, T. (1994) Causes of delay and cost overruns in Nigerian construction projects. *International Journal of Project Management*, 12, 254–60.

- Marshall, C., and Rossman, G., (1999). *Designing qualitative research*, third edition. Thousand Oaks, Calif: Sage
- Marzouk, M. M. and El-Rasa, T.I. (2014). Analysing delay causes in Egyptian construction project. *Journal of Advanced Research*, 5(1), pp.49-55.
- Masaoka, Y. (2003) Key elements of private infrastructure financing in the Asia-Pacific region, Nagasaki University. http://www.econ.nagasaki-u.ac.jp/info/ra/dp_arc/02_03/dp_0203.pdf [15/03/04].
- Mason, J. (2010). *Believe You Can: The Power of a Positive Attitude*. Revell.
- McCabe, T. R. (2009). "The Information Confrontation with Radical Islam." *Orbis* 53(1): 99-121.
- McSweeney, B. (2002). *Hofstede's Model of national cultural differences and their consequences: A triumph of faith and a failure of analyses*. Book SAGE Publications, London.
- Mearns, K. and Yule, S. (2009). The role of national culture in determining safety performance. *Safety Science*, 47, pp. 777-785.
- Mellahi, K. and Demirbag, M. (2011). *Multinationals in the Middle East: Challenges and opportunities*. *Journal of World Business*.
- Merkin, R. and Ramadan, R. (2010). Face work in Syria and the United States: A cross-cultural comparison. *International Journal of Intercultural Relations* 34(6): 661-669.
- Merkin, R.S. (2006). Uncertainty avoidance and face work: A test of the Hofstede model. *International Journal of Intercultural Relations* 30(2): 213-228.
- Milosevic, D.Z. (1999). *Echoes of the Silent Language of Project Management*. *Project Management Journal*, 30 (1), 27-39.
- Milosevic, D.Z. (2002). Selecting a culturally responsive project management strategy. *Technovation*, 22, 493–508.

- Mohr, J., & Spekman, R. (1994). Characteristics of partnership success: partnership attributes, communication behavior, and conflict resolution techniques. *Strategic management journal*, 15(2), 135-152.
- Mitra, S. and Tan, A.W.K. (2012). Lessons learned from large construction project in Saudi Arabia. *Benchmarking: An International Journal*, 19(3), pp. 308-324.
- Morris, P.W.G. (1994). *The Management of Projects: A New Model*, Thomas Telford, London.
- Muhwezi, L. Acai, J. and Otim, G. (2014). An Assessment of the Factors Causing Delays on Building Construction Projects in Uganda. *International Journal of Construction Engineering and Management*, 3(1), 13-23
- Munn, P. & Drever, E. (1990) *Using questionnaires in small-scale research: A*
- Muriithi, N. and Crawford, L. (2003). *Approaches to Project Management in Africa: Implications for International Development Projects. International Journal of Project Management.*
- Murray-Webster, Ruth and Simon, Peter (2006). *Making Sense of Stakeholder Mapping.* Published in *PM World Today -Vol. VIII, Issue 11.*
- Murphy David, *The Arab Revolt 1916-18: Lawrence Sets Arabia Ablaze*, Osprey Publishing, 2008,
- Ndekugri, I., Braimah, N., and Gameson, R. (2008). Delay analysis within construction contracting organizations. *Journal of construction engineering and management*, 134(9), 692-700.
- Newcombe, R. (2003) *From client to project stakeholders: a stakeholder mapping approach.* *Construction Management and Economics*, 21(8), 841-848.
- Newell, M. W. (2002). *Preparing for the project management professional (PMP) certification exam.* New York, AMACOM.

- Ngowi, A. B. (2000) Impact of culture on the application of TQM in the construction industry in Botswana, *International Journal of Quality & Reliability Management*, 17, 442-452(11).
- Nydell, M.K. (2006). *Understanding Arabs: A guide for modern times*. Boston: Intercultural Press. Retrieved from: http://books.google.com/books?id=ZNoiiefqAcC&dq=nydell&source=gbs_navlinks_s
- Obeidat, Bader Yousef; Rifat O. Shannak; Ra'ed (Moh'd Taisir) Masa'deh and Idries Mohammed Al-Jarrah, (2012). Toward Better Understanding for Arabian Culture: Implications Based on Hofstede's Cultural Model. *European Journal of Social Sciences*. ISSN 1450-2267 Vol.28 No.4 (2012), pp. 512-522. O'Brien, J. (1976), *Construction delays: Responsibilities risk and litigation* Chanes Book International, Boston
- Ochieng, E.G. and Price A.D.F. (2010). Managing cross-cultural communication in multicultural construction project teams: The case of Kenya and UK. *International Journal of Project Management* 28(5): 449- 460
- Ogbonna, E. & Harris, L. C. (2002). Organizational Culture: A Ten Year, Two-Phase Study of Change in the UK Food Retailing Sector. *Journal of Management Studies*, 39, 673-706.
- Ofori, G. (2010). "Globalization and construction industry development: research opportunities". *Construction Management and Economics*, 18(3), pp.257-262.
- Olander, S. and Landin, A., 2005. Evaluation of stakeholder influence in the implementation of construction projects. *International Journal of Project Management*, 23(5), pp. 321-328.

- Olomolaiye, P.O., Price, A.D.F. and Wahab, K.A. (1987). Problems influencing craftsmen's productivity in Nigeria build. *Environment*, Vol. 22 No.4, pp.317-23.
- Osgood, C. E. (1964). Semantic differential technique in the comparative study of Cultures1. *American Anthropologist*, 66(3), pp. 171-200
- Osmani, M., Glass, J. and Price, A. (2006). Architect and contractor attitudes to waste minimization. *Waste and Resource Management* 159 (WR2), 65–72
- Ozorhon, B., D. Arditi, et al. (2007). "Effect of host country and project conditions in international construction joint ventures." *International Journal of Project Management*
- Palys, T. and Lowman, J. (2014). *Protecting Research Confidentiality: What happens when law and ethics collide*. James Lorimer Limited., Publishers
- Pant, D. P., Allinson, C. W. & Hayes, J. (1996) Transferring the western model of project organisation to a bureaucratic culture: The case of Nepal, *International journal of project management*, 14 (1), 53-57.
- Peterson, M. F. and S. L. Castro (2006). "Measurement metrics at aggregate levels of analysis: Implications for organization culture research and the GLOBE project." *The Leadership Quarterly* 17(5): 506-521.
- Pheng, L. S. and C. H. Y. Leong (2000). "Cross-cultural project management for international construction in China." *International Journal of Project Management* 18(5): 307-316.
- Phillips, R. (2003). *Stakeholder theory and organizational ethics*. Berrett-Koehler Publishers.
- Phua, F. T. T. & Rowlinson, S. (2004). Operationalising culture in construction management research: a social identity perspective in the Hong Kong context. *Construction Management and Economics*, 22, 913- 925.

- Pizam, A., Pine, R., and Mok, C., (1997) Nationality vs. industry cultures: which has a greater effect on managerial behavior? *International Journal of Hospitality Management*, 16 (2), 127-145.
- Platteau, J.-P. (2008). "Religion, politics, and development: Lessons from the lands of Islam." *Journal of Economic Behavior and Organization* 68(2): 329-351.
- Plaza, M. and Rohlf, K. (2008). Learning and performance in ERP implementation projects: A learning-curve model for analyzing and managing consulting costs. *International Journal of Production Economics* 115(1):72-85
- PMI, P. M. I. (2008). A guide to the Project management body of knowledge (PMBok Guide), fourth edition. Newtown Square, Pa., Project Management Institute.
- Rabin, A.I. (2013). *Projective Techniques in Personality Assessment: A Modern Introduction*. Springer
- Rahman, Mohammad Anisur, And Chileshe, Nicholas, (20112). Attitudes, Perceptions and Practices of Contractors Towards Quality Related Risks in South Australia. 18th Annual Pacific-Rim Real Estate Society Conference Adelaide, Australia, 15-18 January 2012
- Raiden, A.B., Dainty, A.R.J. (2004). Current barriers and possible solutions to effective project team formation and deployment within a large construction organization. *International Journal of Project Management* 22(4): 309-316
- Ramanathan, C., Narayanan, S.P. and Idrus, A.B. (2012). Construction delays causing risks on time and cost – a critical review. *Australian Journal of Construction Economics and Building*, 12(1), pp. 37-57.
- Randall, D.M. (1993). Cross-cultural research on organizational commitment: A review and application of Hofstede's Value Survey Module. *Journal of Business Research* 26(1): 91-110.

- Rees-Caldwell, et al., (2012). "National culture differences in project management: Comparing British and Arab project managers' perception of different planning areas." *International Journal of Project Management*
- Reiman, T. O., P. (2002). "The assessment of organisational culture - A methodological study." VTT Tiedotteita - Research note 2140.
- Riley, M. J. & Clare-Brown, D. (2001) Comparison of cultures in construction and manufacturing industries, *Journal of Management in Engineering*, 17, (3), 149-158.
- Ren, Z., Atout, M. and Jones, J. (2008). Root causes of construction project delays. In: Dainty, A (Ed) *Procs 24th Annual ARCOM Conference*, 1-3 September 2008, Cardiff, UK, Association of Researchers in Construction Management, 749-757.
- Richman, L. and NetLibrary Inc. (2002). *Project management step-by-step*. New York, Amacom: xi, 292 p.
- Ritz, George J. and Levy, Sidney M. (2013). *Total Construction Project Management*. Second Edition. A book review by R. Max Wideman, FPPI
- Robbins, S. P. and Coulter, M. K. (1998). *Management*. Upper Saddle River: Prentice Hall International
- Robertson, T.S. and Kassarian, H., (1973). *Perspectives in Consumer Behaviour*, p.230
- Robertson, D. (2012). *The Practice of Cognitive-behavioural Hypnotherapy: A Manual for Evidence-based Clinical Hypnosis*. Karnac Books
- Rockart, J. F. (1982). Current uses of the critical success factors process. In *Proceedings of the Fourteenth Annual Conference of the Society for Information Management* (pp. 17-21).
- Rodney, T. J. (1993). *The handbook of project-based management*. England: McGraw-Hill
- Rooke, J., Seymour, D. & Fellows, R. (2004). Planning for claims: an ethnography of industry culture. *Construction Management and Economics*, 22, 655-662.

- Sabates, L.A. and Capdevila, J.M. (2010). Contribution from Attitude Change Theory on the Conceptual Relation between Attitudes and Competencies, *Electronic Journal of Research in Educational Psychology*, 8(3), pp. 1285-1290
- Saudi National Commercial Bank, (2011). In Focus Report, Saudi Construction Sector Review. Jeddah, Saudi Arabia,
- Schein, E. H. (1985). *Organizational culture and leadership*. San Francisco, Jossey-Bass Publishers.
- Schneider, S.C. (1998). National vs corporate culture: implications for human resource management, *Human Resource Management*, summer.
- Schneider, S.C. and Barsoux, J.L. (2007). *Managing across cultures*. Prentice Hall, London.
- Sekaran, U. (1992) *Research Methods for Business: A Skill Building Application*. John Wiley and Sons, USA.
- Serpell, A. F. and Rodriguez, D. (2002). Studying construction organisational culture: Preliminary findings. in Fellows, R. F. and Seymour, D. E. (Eds.) *Perspectives on culture in construction*, CIB Report, 275, 76-91.
- Shash, A. (2012). "Financial Analysis for Replacement of Construction Equipment in Saudi Arabia". *Australasian Journal of Construction Economics and Building*, 5(1), pp.16.
- Shash, A.A. (1993). Factors considered in tendering decisions by top UK contractors. *Construction Management and Economics*, Vol. 11 No. 2, pp. 111-18.
- Shaw, J.B., (1990) A Cognitive Categorization Model for the Study of Intercultural Management. *Academy of Management Review*, 15 (4), 626-645.
- Shore, B. and Cross, B. J. (2005). Exploring the role of national culture in the management of large scale international science projects. *International Journal of Project Management*, 23, pp. 55-64

- Shore, B., (2008) Systematic Biases and Culture in Project Failures. *Project Management Journal*, 39 (4), 5–16.
- Sims, R.S. (Ed.) (2007). *Human resource management: contemporary issues, challenges and opportunities*. Information Age Publishing.
- Sindhu, Asad Jalal and Gidado, Kassim, (2014). *Facilities Management: Physical Built Environmental Factors that Influence User Performance in an Office Building*. The 2014 (5th) international conference on Engineering, Project, and Production Management (EPPM-Association), Port Elizabeth, South Africa. ISBN: 978-1-920508-31-9
- Skitmore, R. M., Tone, K. & TRAN, D. (2004) The impact of culture on project communications: Two case studies from S.E. Asia, in Ogunlana (Ed.) *Proceedings of the International Symposium on Globalisation and Construction*, 17-19 November. Bangkok, Thailand.
- Slack, N., Chambers, S. and Johnston, R. (2004). *Operations Management*. Prentice Hall.
- Soetanto, R., Proverbs, D. and Cooper, P. (1999). A conceptual model of performance and satisfaction for main participants of construction project coalitions. *Proceedings of ARCOM 15th Annual Conference*. John Moores University, Liverpool, ARCOM.
- Solomon, M.R., Bamossy, G., Askegaard, S. and Hogg, M.K, (2010). *Consumer Behaviour: A European perspective*. Fourth edition. New York: Prentice Hall.
- Slovic, P., Fishhoff, B., 1982. Response mode, framing, and information: processing effects in risk assessment. *New Directions for Methodology of Social and Behavior Science* 11, 21–36.
- Sorensen, J.B. (2002). The strength of corporate culture and the reliability of firm performance. *Administrative Science Quarterly*, n.1, pp. 70-91.

- Srivannaboon, M. O. (2006). "Success factors in virtual global projects." Global project management handbook 2nd Edition.
- Steel, P. and V. Taras (2010). "Culture as a consequence: A multi-level multivariate meta-analysis of the effects of individual and country characteristics on work-related cultural values." *Journal of International Management* 16(3): 211-233
- Suliman, A. M. T. (2006). *Human Resource Management in the United Arab Emirates*.
- Sweis, G., Sweis R., Abu hammed, A., Shboul, A. (2008). "Delays in construction projects: The case of Jordan." *International Journal of Project Management* 26(6): 665-674
- Tan, W. and E. Chong (2003). "Power distance in Singapore construction organizations: implications for project managers." *International Journal of Project Management*
- Taras, V., B. L. Kirkman, et al. (2010). "Examining the Impact of Culture's Consequences: A Three-Decade, Multilevel, Meta-Analytic Review of Hofstede's Cultural Value Dimensions." *Journal of Applied Psychology* 95(3): 405-439.
- Tayeb, M.H., (2005) *International Human Resource Management: A Multinational Company Perspective*. Oxford University Press. Retrieved from http://books.google.com/books?id=mxAGGEdPsQUC&dq=tayeb&source=gsb_nav_links_teachers' guide, SCRE, Edinburgh.
- Teijlingen, V.E., and Hundley, V. 2002. The Importance of Pilot Studies. *Journals RCNi*, 16, pp. 33-36.
- Thayer, Harry (1996). *Management of the Hanford Engineer Works in World War II, How the Corps, DuPont and the Metallurgical Laboratory fast tracked the original plutonium works*. ASCE Press, pp. 66-67.
- Tinnirello, P. (2009). *New directions in project management*. Boca Raton: Auerbach.
- Tiong, R. L. (1996). CSFs in competitive tendering and negotiation model for BOT projects. *Journal of Construction Engineering and Management*, 122(3), 205-211.

- Toda, M. M., Kanehisa (2004). "Ramadan fasting - Effect on healthy Muslims." *Social behaviour and personality* 32(1): 6.
- Toor, S-R. and Ogunlana, S.O. (2008). Problems causing delays in major construction projects. *Construction Management and Economics*, 26(4), 395-408.
- Trauner, T. J., Manginelli, W. A., Lowe, J. S., Nagata, M. F., and Furniss, B. J. (2009). *Construction Delays: Understanding Them Clearly, Analyzing Them Correctly*. Elsevier Inc., USA.
- Trefry, M.G. (2001). Organisational culture in multicultural organisations: a double-edged sword. Paper presented at the 16th Workshop on Strategic Human Resource Management, Bruselas.
- Trigunarsyah, B. (2004). Constructability Practices Among Construction Contractors in Indonesia, *Journal of Construction Engineering and Management*, 130 (5) 656-665.
- Trompenaars, A. (1994). *Riding the waves of culture: understanding diversity in global business*. Burr Ridge, Ill., Irwin Professional Pub.
- Trompenaars, F. and Hampden-Turner, C. (2004). *Managing People across Cultures*. Capstone, Chichester, UK.
- Tukiainen, Sampo; Nummelin, Johanna and Antti Ainamo, (2003) Impact of Cultural Dynamics on the Process and Outcome of a Global Engineering Project - a Case Managed by the Finns and the Poles. https://www.researchgate.net/publication/238725762_Impact_of_Cultural_Dynamics_on_the_Process_and_Outcome_of_a_Global_Engineering_Project_-_a_Case_Managed_by_the_Finns_and_the_Poles
- Van der Stede, W. A. (2003). The effect of national culture on management control and incentive system design in multi-business firms: evidence of intra-corporate isomorphism. *European Accounting Review*, 12:2, 263-285

- Van Oudenhoven, J.P. (2001). Do Organisations Reflect National Cultures? A Ten Nation Study. *International Journal of Intercultural Relations*, 25, pp. 89-107
- Vos, J.F.J. and Achterkamp, M.C. (2006). Stakeholder identification in innovation projects: Going beyond classification. *European Journal of Innovation Management*, vol. 9, pp. 161-178
- Walker, D. H. T., Bourne, L. M. and Rowlinson, S. (2008). Stakeholder and the supply chain, In: Walker, D.H.T, Rowlinson, S. (Eds.), *Procurement Systems: A Cross- industry Project Management Perspective*. Taylor & Francis, UK, 70–100.
- Wang, X., and Liu, L., (2007) Cultural Barriers to the Use of Western Project Management in Chinese Enterprises: Some Empirical Evidence from the Yunnan Province. *Project Management Journal*, 38 (3), 61-73.
- Wang and Yuan, (2011). Factors Affecting Contractor's Risk Attitudes in Construction Projects. *International Journal of Project Management.*, 29: 209–219.
- Walsham, G. (2002). Cross-cultural software production and use: A structural analysis. *MIS Quarterly*
- Weaver, Patrick (2006). A Brief History of Scheduling -Back to The Future-, My Primavera Conference 4-6 April2006 Hyatt, Canberra.
- Webb, J. R. (1992). *Understanding and designing marketing re- search*. London. Academic Press.
- Weisfeld, G.E. (1990). Sociobiological Patterns of Arab Culture. *Ethology and Sociobiology*. Vol. 11, 23-49.
- Wells, J. (1996). Labour migration and international construction. *Habitat International* 20(2): 295-306.
- Wild, R. (2002). *Operations management*. Cengage Learning EMEA
- Williams, R. (1958). *Culture and society. 1780-1950*. New York, Harper and Row.

- Williams, T. M. (1999). "The need for new paradigms for complex projects." *International Journal of Project Management* 17(5): 269-273.
- Winch G. M. (2004): *Managing project stakeholders*. In: Morris PWG, Pinto JK, editors. *The Wiley guide to managing projects*. New Jersey: Wiley; 2004. p. 321–39.
- Wolstenholme, A., Austin, S. A., Bairstow, M., Blumenthal, A., Lorimer, J., McGuckin, S., ... & Guthrie, W.(2009). *Never waste a good crisis: a review of progress since Rethinking Construction and thoughts for our future*. London: Constructing Excellence.
- Waterman, P. (1982). *Division and unity among Nigerian workers: Lagos Port unionism*. The Hague.
- Woodward, John F. (1997). *Construction Project Management: Getting it Right First Time*, Thomas Telford, illustrated Edition
- Xiao, H. B. and Boyd, David (2007). A cross-cultural analysis of construction practice through knowledge events. Conference Paper: 181-190.
- Yang, B., Qiang, M., Lin, Z., (2010). Study on classification of owner–consultant structure for engineering projects. *Shuili Fadian Xuebao (J. Hydroelectric Eng.)* 29, 19–23.
- Yasin, M.M., and Zimmerer, T. (1995). Achieving new venture success in the emerging Arab countries: a study of comparative cultures and strategies in two segments of the Arab world. *Cross Cultural Management: An International Journal*, 2(4), 3-14.
- Yasin, M.M., Zimmerer, T.W., and Wafa, M.A., (1997). American vs. Arab Project Managers: The Road to Effectiveness. *Cross Cultural Management: An International Journal*, 4 (4), 17-28.
- Yin R. K., (2009). *Case study research: Design and method*. London. Sage
- Zack, J. G. (2001). "But-for schedules –Analysis and defense." *Journal of Cost Engineering*, 43(8), 3-17.

- Zheng, S. and Chen, J. (2012). The Study of the Core Concept of Safety Culture in Highway Engineering Construction Projects. *Systems Engineering Procedia*, 4, pp. 460-467.
- Zwikael, O. and Shimizu, K. (2005). Cultural differences in project management capabilities: A field study. *International Journal of Project Management*

Appendix A: Consent Form

Research title: *the effect of Saudi Arabian National Culture (NC) on the occurrence of delay in the delivery of construction projects.*

I, Working as:

I agree to be involved in this research, which investigates about the effect of Saudi Arabian National Culture (NC) on the occurrence of delay in the delivery of construction projects. The purpose of this interview is to explore sources and effects of delay in the delivery of construction projects.

The rationale, procedure and the nature of this research has been explained to me and I have read the information sheet. I recognize and understand the principles and the process of the study. I have been given contact details for the research supervisors in case of any criticism. I understand that this interview survey contains questions related to my experience, knowledge, interface and daily managing of the projects.

I understand that all my details including contact details will kept confidential and all the data will be stored in a safe/protected place at the University of Brighton, which will be destroyed after 2 years. I understand that the research supervisors may observe relevant and anonymous sections of any data collected during this survey for education reasons.

I understand, I am free to depart at any time without giving any cause and my partaking is voluntary. My withdrawal will not affect my constitutional rights.

I understand that the only nameless excerpts of this interview will be used as part fulfilment of the PhD (doctoral) thesis write up which will be held at the University of Brighton. I give my approval and permission to the researcher to use nameless excerpts from this interview. Time – this interview is planned to take 30-45 minutes.

Personal information – personal information is elective; users have no obligation to provide their private details. However, if provided this information and the response will remain confidential and will only be used for this study.

<u>(Name of Participant)</u> Print Name: _____ Signature: _____ Date: _____	<u>(Name of Researcher)</u> Abdullah Alkharmany (PhD Candidate) Signature: _____ Date: _____
--	---

Appendix B: Semi-Structured Interviews

Name (Optional):

Organisation (Optional):

A. Personal and Organisational details

1. How would you classify your organisation?

Consultant Client contractor

2. What is your current job title?

3. What is your area of specialisation?

4. How many years of experience in the industry?

.....

5. What types of services is your organization involved in?

Heating, ventilation, Air conditioning, Refrigeration Escalators and lifts

Water Drainage Plumbing Fire Safety Security alarm-systems Renewal-

Tech

Others.....

B. Delays in construction projects

6. Delay in building projects is defined as “the situation when a task or activity or process is executed over a period ending at a time beyond the planned end time”. From your experience in mechanical services-type projects, can you please give examples of occurrences of delay during the following project stages:

a. Concept design stage

b. Outline design stage

c. Detailed design and manufacturing stage

d. Installation stage

e. Commissioning stage

7. From your experience, how are delays handled or dealt with by the project managers?

.....

8. From your experience, what strategy or strategies do you use for managing delays in construction projects?

.....

C. National Culture

9. National culture is defined as ‘a configuration of the set of languages, religion patterns, experiences, traditions, legal systems, family structures, beliefs, and values that exist within the population of a sovereign nation’.

Do you think National Culture has an influence on the effect of delay in construction projects? If Yes - Please give examples; If No – Why do you think so?

.....

10. From your experience, how often does delay originate from the following sources that are associated with National Culture?

Origins of Delay in construction projects that are associate with national culture	Please mark with 'X'				
	never	Rarely	Sometimes	Very Often	Always
International workforce with dissimilar religions, customs, believes, values, traditions	<input type="checkbox"/>				
Local rules, regulations, customs	<input type="checkbox"/>				
Issues in obtaining work permits	<input type="checkbox"/>				
Visa application procedures	<input type="checkbox"/>				
Flexibility to accept long working hours	<input type="checkbox"/>				
Changes in design and variation orders	<input type="checkbox"/>				
Dispute resolution mechanism	<input type="checkbox"/>				
Procurement methods used in projects	<input type="checkbox"/>				
Capacity of projects that cause over commitment of local contractors	<input type="checkbox"/>				
Cultural clash among Nemours stakeholders in project	<input type="checkbox"/>				
Blame-culture (conflict due to evading responsibility)	<input type="checkbox"/>				
Inflexibility and lack of trust	<input type="checkbox"/>				
Engagement of too many small sub-contractors	<input type="checkbox"/>				
Spoken Language difficulties and Lack of qualified interpreters	<input type="checkbox"/>				
Poor information sharing or weak communication systems	<input type="checkbox"/>				
Unfamiliarity of the project local environment	<input type="checkbox"/>				
Lack of long-term business relationships between key stakeholders	<input type="checkbox"/>				
Poor safety tradition	<input type="checkbox"/>				
Poor cooperation from local residents	<input type="checkbox"/>				
The culture of 'no challenge' to authorities	<input type="checkbox"/>				
Favouritism in appointment of contractors / employees	<input type="checkbox"/>				
Centralised decision making	<input type="checkbox"/>				
Effects of weather	<input type="checkbox"/>				
Lack of understanding the culture of staff	<input type="checkbox"/>				

11. What other innovations do you use to identify, mitigate or manage delays in your projects?

.....
.....

12. How do you deal with the effect of National Culture on successful delivery of your project?

Appendix C: The Cover Letter of Questionnaire Survey

Cover Letter of Questionnaire Survey

Dear Sir,

The effects of National Culture on the attitudes of construction project stakeholders in KSA.

I would like to invite your participation in this research, which seeks to deepen understanding of the influence of Saudi national culture on attitudes of stakeholders towards delay in construction projects in Saudi Arabia. The research is part of a PhD programme at the University of Brighton in the United Kingdom.

I would be very grateful if you could please complete the questionnaire enclosed and return it in the provided envelop. The questionnaire would take you approximately 20 minutes.

You are assured that the information obtained from this survey will be kept strictly CONFIDENTIAL and will be used for research purposes only. Upon request, you will receive a copy of a report detailing the results of this research. If you require any further information or clarification, I will be pleased to answer your questions. Contact details are provided below.

I appreciate that the questionnaire will take some of your valuable time however, without your expert input, the ambitions of this research project will not be realised.

Thanking you in anticipation.

Yours faithfully,

Appendix D: The Questionnaire

Part A

Details of the Respondent

- A person's attitude toward something encompasses his or her point of view about the topic (thought),
- How he or she feels about this topic (feelings),
- The actions (behaviors) he or she engages in as a result of attitude to preventing problems.

Please **tick or circle** on the right against each question.

1. How would you classify your role in the Saudi construction industry?
 1. Consultant
 2. Contractor
 3. Client

2. Your nationality:
 - a. Saudi
 - b. Non-Saudi

3. Age group:

1. Under 20	2. 20-29	3. 30-39	4. 40-49
5. 50-59	6. 60 or over		

4. Years of experience in the Saudi construction industry:
 1. 1-5 years
 2. 6-10 years
 3. 11-15 years
 4. 16-20 years
 5. More than 20 years

5. Highest level of qualification:
 1. None
 2. High school
 3. Vocational qualification
 4. Higher National Certificate/ Higher National Diploma (HNC/HND)
 5. Bachelor (BSc)
 6. Master degree (MSc)
 7. Doctorate degree (PhD)

Part B										
Establishing the Factors Influencing Attitude Towards Delay in Construction Projects										
What is your degree of agreement with the following questions (from 1-5) towards the occurrence of delay in construction project? Please tick or circle the situations on the right against each question that best indicates your attitude.										
		Strongly disagree	Disagree	Not sure	Agree	Strongly agree				
		1	2	3	4	5				
Education	1	My educational status has an influence on my feelings towards occurrence of delay in construction projects.				1	2	3	4	5
	2	My educational background has an effect on my point of view about occurrence of delay in construction projects.				1	2	3	4	5
	3	My educational background could affect how I act in dealing with delay.				1	2	3	4	5
Awareness	4	My awareness of delay helps me to feel confident in dealing with delay.				1	2	3	4	5
	5	My awareness of delay effects my point of view when I deal with delay.				1	2	3	4	5
	6	My actions and instructions are based on my awareness about project environments and situations.				1	2	3	4	5
Group influence	7	When I work in teams, my actions are often influenced by the feelings of others.				1	2	3	4	5
	8	My thoughts about delay can be affected by my interaction with others in my team.				1	2	3	4	5
	9	My reactions to dealing with delay are influenced by other people working on projects.				1	2	3	4	5
Work Environment	10	The dynamics of the environment in which I carry out the task affects the way I feel towards delay.				1	2	3	4	5
	11	The nature of work environment can influence my point of view about delay.				1	2	3	4	5
	12	The work environment would affect the way I respond to delay.				1	2	3	4	5
Experience	13	More experience in the construction industry makes me more confident when I handle delay.				1	2	3	4	5
	14	My thoughts process is influenced by my years of experience in construction industry.				1	2	3	4	5
	15	The actions I take regards delays are influenced by my experience in construction industry.				1	2	3	4	5
Organization Influence	16	My feeling about delay is influenced by the organization I work for.				1	2	3	4	5
	17	The organization culture I work in has effect on my thoughts process towards delay.				1	2	3	4	5
	18	When I work for big organization the actions that I take towards delay is different compared to when I work for smaller organization.				1	2	3	4	5
Human factors	19	My physical and psychological conditions affect my feelings towards delay.				1	2	3	4	5
	20	My thought processes towards delay are influenced by my health.				1	2	3	4	5
	21	The action that I take in response to occurrence of delay is influenced by my physical or psychological or physiological condition.				1	2	3	4	5
Motivation	22	More incentives providing project in avoiding delay can affect the way that I feel about delay.				1	2	3	4	5
	23	The manner in which I view the effect of delay is influenced by the incentives that are provided in the project.				1	2	3	4	5
	24	The incentives provided to avoid delay could influence how much effort I put in to avoid delay.				1	2	3	4	5
The updated changes in project	25	A project that undergoes numerous changes in client's requirements can affect my feelings towards delay.				1	2	3	4	5
	26	The way I think about the consequences of delay is influenced by the completeness of project information.				1	2	3	4	5
	27	My response to occurrence of delay is dictated by the completeness of project information.				1	2	3	4	5
External Environment	28	My feelings towards delay are influenced by the effect of legislation.				1	2	3	4	5
	29	The way I think about delay is influenced by the laws of the land.				1	2	3	4	5
	30	My actions regarding delay are effected by the general economic situation in the country.				1	2	3	4	5
Workflow	31	I feel that the complexity of a project may lead to delay.				1	2	3	4	5
	32	My thoughts regarding the occurrence of delay are affected by project processes and what happens during the implementation of the construction project.				1	2	3	4	5
	33	My action towards the occurrence of delay depends on project processes and what happens during the implementation of the construction project.				1	2	3	4	5
Outcome	34	I feel good if the outcome of projects is as planned.				1	2	3	4	5
	35	The outcome of construction projects influences my thoughts towards delay.				1	2	3	4	5
	36	The action that I take towards delay is influenced by the previous response that I made in similar situation.				1	2	3	4	5

Part C

Please **tick** the situations on the right against each question that best indicates your attitude.

Positive Attitude: reacting positively and learn to avoid future occurrences of delay.

Neutral Attitude: ignore the situation and leave it to others to find a solution.

Negative Attitude: reacting negatively by focusing on bad aspects, complaining or blaming others.

			Positive Attitude	Neutral Attitude	Negative Attitude
Education	1	How does your educational background effect on your attitude towards occurrence of delay in construction projects?			
Awareness	2	If you have full awareness of a delay situation how would you instinctively respond in handling the delay?			
Group influence	3	When a delay affects my team, I often respond is often respond in one of the following ways			
Work Environment	4	In the organization that provides a good work environment, my attitude to respond to delay is often ...			
Experience	5	The more experience I have in construction industry it affect my attitude towards delay in			
Organisation Influence	6	The organisation I work for affects my attitude towards delay in			
Human factors	7	My physical or psychological or physiological condition can influence my attitude towards occurrence of delay in.....			
Motivation	8	When there are incentives provided, it affects my attitude towards delay in			
The updated changes in project	9	When I'm working on projects that have a lot of changes, my attitude towards delay is			
External Environment	10	The general economic situation in the country affects my attitude towards delay in			
Workflow	11	When there is a clear project processes, my attitude towards delay is			
Out - com	12	Working with a project team that often deliver successful project outcomes, my attitude towards delay is			

Part D							
To what extent do you agree or disagree with the following statements affecting your <u>attitude towards occurrence of delay</u> in construction projects?							
Please tick or circle the number on the right against each question that best indicates your opinion.							
		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	
		1	2	3	4	5	
Power Distance Index (PDI)	1	Over centralisation of decision making and display of intrinsic inequalities in management affects my feelings in dealing with any delay in construction projects.	1	2	3	4	5
	2	I think that subordinates are expected to strictly follow the instructions of their bosses when trying to mitigate the occurrence of delay in construction projects.	1	2	3	4	5
	3	Centralisation and intrinsic inequalities affect my reaction when I deal with delays.	1	2	3	4	5
Individualism Index (IDV)	4	My feelings towards delay depend upon whether the delay affects my close associate.	1	2	3	4	5
	5	My thought process in dealing with delay is different when the client or contractor is my family relation.	1	2	3	4	5
	6	The action I take in dealing with a delay situation would certainly be different when the project is for someone I personally know.	1	2	3	4	5
Masculinity Index (MAS)	7	Feelings of a project participant towards delay are influenced by the gender of the participant.	1	2	3	4	5
	8	The distinct separation of roles between men and women affects my thought process in handling delay in construction projects.	1	2	3	4	5
	9	My response to delay is affected by the society expecting men to be tough and assertive and women to be modest and tender.	1	2	3	4	5
Uncertainty Avoidance Index (UAI)	10	My feelings towards delay in projects are affected by the need to follow traditional codes of beliefs and ideas.	1	2	3	4	5
	11	My thoughts in dealing with delay give great importance to rules, and it does not matter if these rules work or not.	1	2	3	4	5
	12	My action depends on truth, regularity, and security when I act to deal with the effect of delay.	1	2	3	4	5
Long Term Orientation Index (LTO)	13	When a delay occurs, I have a strong feeling that I need to provide detail information about its cause and effect.	1	2	3	4	5
	14	I often think that I can save time now to gain time for future occurrence of delay.	1	2	3	4	5
	15	My reactions to delay are often hinged on the concern of the future effect on the project.	1	2	3	4	5

Appendix E: Ethics Approval Form

**UNIVERSITY OF BRIGHTON
SCHOOL OF ENVIRONMENT AND TECHNOLOGY
ETHICS APPROVAL FORM MPhil/PhD and STAFF RESEARCH PROJECTS**

Please attach the SET Research Ethics Checklist you have already completed to this form.

Section A – Key details

1. Name of student/Principal Investigator: Abdullah Alkharmany
2. Name of supervisors: Dr. Kassim Gidado and Noel Painting

3. Title of project (no more than 20 words):

Project Management: The effect of Saudi Arabian national culture (NC) on the occurrence of delay in the delivery of construction projects.

4. Aims of the study

Please summarise your aims in one or two sentences. Write no more than 100 words.

<p>This research aims to investigate the effect of national culture (NC) on the occurrence of delay in building projects, and to develop a model that can be used by construction project managers to mitigate the effect of national culture (NC) in construction projects in Saudi Arabia.</p>
--

5. *A brief summary should be provided discussing the relevant published literature so that the Committee can understand the context to your research. In addition, please supply four or five up-to-date references to the relevant published literature. You may supply up to 800 words.*

The term 'national culture' is explained by a number of theorists and experts. These studies are divided into two groups: single dimensional vs. multidimensional constructs and heterogeneous vs. homogeneous programming (Young and Nie, 1996). The single dimensional studies are suitable for organisational analysis only whereas multidimensional constructs can be truly applied on entire national culture for detailed and comprehensive analyses. On the other hand, both heterogeneous and homogeneous concepts perceive consistency or regularity from the cultural perspective. Heterogeneity is the state of being heterogeneous. Heterogeneity in any society refers to individuals or a group of people who are different in terms of their cultural backgrounds, ages, sexes, or ethnicities. In contrast, homogeneous assumes that all people or group are similar in qualities and other aspects which are not true in the case of culture. This is the reason that Hofstede considers the heterogeneity concept to conceptualise national culture and then named it as "collecting programming" of mind that differentiate people of one society from another (Hofstede, 1980). The term collective programming is used by Hofstede for indicating the experiences, values, beliefs, traditions, religious patterns, family structures, legal systems, and languages of the inhabitants and expatriates living in any country. The general aim of this report is to understand the nature of the national culture and factors, dimensions, and variables that can affect the national culture of any society. The particular aim is to apply Hofstede's six-dimension framework on the national culture of Saudi Arabia. The term is different in other countries and its meaning is also taken in a different sense. For example, Indian engineers associated with building services engineering are called facilities planners (Kunders, 2004). In fact, building services engineering is a branch of engineering which refers to the internal structure and environment of the building (Chadderton, 2013). The engineers related to this field of study are accountable for designing and installing mechanical and electrical equipment that fulfil the requirements of health and safety systems. In addition, engineers usually ensure safe environment friendly operations of contemporary buildings. Heating, Ventilation, and Air-conditioning (HVAC) systems are the most important components of mechanical building services in Saudi Arabia (Fasiuddin and Budaiwi, 2011; Ventures Middle East, 2012; Budaiwi and Abdou, 2013). Saudi Arabia is the third biggest market in the world in terms of HVAC systems. The country also leads in the Gulf Cooperation Council HVAC industry and is expected to grow rapidly in the upcoming years due to its huge investments in mega building projects and development plans concerned with education and social housing between 2010 and 2015 (Ventures Middle East, 2012). The HVAC market alone in Saudi Arabia accounts for nearly 24 per cent of the entire construction industry and is an essential element of the building construction industry. In 2011, the HVAC market in Saudi Arabia was approximately US\$ 3.1 billion and its annual growth rate was estimated at nearly 3 per cent (Ventures Middle East, 2012). Saudi Arabia is a warm country and this is the reason that ventilation and air-conditioning equipment account for two-third of HVAC market and heating system comprised of only one-third. Different types of construction parties and experts contribute to building services projects. The dissimilar nature of their jobs sometimes causes delays in delivering the project on time which consequently amplifies the associated costs. This is the reason that building services projects are highly risky projects in the construction industry in terms of design and technical aspects. Engineers and architects work closely with other construction stakeholders to avoid delays. Two chief reasons for delays in the building services projects are described by Bramble and Callahan (2010). According to them, delays happen due to either direct or indirect actions of construction stakeholders or because of the external factors that are uncontrollable. Several former studies classify delays into different categories as per their nature or by associating them with concerned party. For example, delays can be classified as: owner related, consultant related, contractor and sub-contract related, project manager

related, engineering related, and design related etc. Despite their association with any practically party, they can be generally classified as: concurrent delays, excusable delays, and non-excusable delays. All these kinds of delays result in cost overrun, time overrun, disputes, negotiations, lawsuits, litigation, and abandonment of building projects (Haseeb *et al.* 2011). Therefore, the primary aim of this study is to investigate these types of delays in mechanical services in building projects and to establish how they are influenced by the Saudi Arabian national culture (collective programming).

References

Budaiwi, I.; Abdou, A. (2013). HVAC system operational strategies for reduced energy consumption in buildings with intermittent occupancy: The case of mosques. *Energy Conversion and Management*. 73 p. 37-50

Chadderton, D.V. (2013). *Building Services Engineering*. 6th edition, New York: Routledge

Fasiuddin, M. and Budaiwi, I. (2011). HVAC system strategies for energy conservation in commercial buildings in Saudi Arabia. *Energy and Building*, 43, pp. 3457-3466.

Haseeb, M., Lu, X., Bibi, A., Dyian, M. and Rabbani, W. (2011). Problems of projects and effects of delays in the construction industry of Pakistan. *Australian Journal of Business and Management Research*, 1(5), pp. 41-50.

Ventures Middle East (2012). Heating, Ventilation, and Air-conditioning (HVAC) market in the GCC. *Construct Arabia*, Retrieved from: <http://www.constructarabia.com/wp-content/uploads/downloads/2012/07/GCC-HVACMarket-2012.pdf>

6. Research design

Please provide no more than 800 words and ensure that you discuss your sampling strategy (if appropriate), data collection methods and strategy for data analysis.

The mixed research methodology has been adopted for this research. It involves the use of literature review, interviews and questionnaires to collect data, and focus groups will be used to test the developed model:

Literature Review:

The literature material will be collected from a range of sources. It will cover two objectives: 'to explore sources and effects of delay in the delivery of construction projects' and 'to identify the nature of Saudi national culture'. The literature review helps to develop a comprehensive research framework by identifying study variables and to establish the need for research and finding the gap and weaknesses of existing studies that are conducted on national cultural impacts on the sources of delay in the construction projects.

Interviews:

The researcher intends to conduct (25-30) face-to-face interviews with the mechanical engineers and other related professionals divided between UK and Saudi Arabia. The interviewer will select experienced and qualified professionals for interviews. they will be

chosen by using the Chartered Institution of Building Services Engineer (CIBSE), the Royal Institute of British Architects (RIBA) and (Building.co.uk) all of which provide data for professionals in the building field; participants in Saudi Arabia will be acquired from the Saudi Council of Engineers, after that they will be contacted by phone or email to set the appointment.

A clear agenda will be told to the interviewees to understand the purpose of the interview. Interviewees will be given enough time to talk about different factors and sub-factors that can hinder the success of accomplishing projects on time and within estimated budget. They will share their views, practical experience, and perception.

During the interviews to be conducted in Saudi Arabia, in addition to the causes of delay in projects, the main focus will be the national culture and their extent to which they can affect the construction projects.

Pilot interviews will be conducted to ensure effectiveness. The actual interviews will take 30-45 minutes, and will be recorded (after participants' permission is taken) but in the event that any interviewee will not permit recording then hand written notes will be taken.

The research will analyse the data collected from the interviews by using Nvivo program. This application allows users to systematically analyse the data which can be in the form of text, pictures, audio, or video.

Questionnaire:

Following procedure will be followed:

1- Determining objectives

The questionnaire will be used to accomplish third objective of the research project: 'to identify how the Saudi Arabian national culture affects the delivery of construction projects'. While addressing this objective, various attributes will be considered through which data will be analysed on later stages.

2- Sampling

The population of the study will consist of at least 300 professionals working on construction projects (mechanical types) in Saudi Arabia.

3- Designing

Questionnaire's language and content will be easy, understandable, and appropriate so that participants can easily understand and fill the questionnaire without any feeling of misunderstanding. Also, clear instructions will be provided about how to fill the questionnaire correctly. It will be in Arabic and English. It will contain the maximum number of close-ended questions but one or two open ended questions may be part of it.

4- Structure

Questionnaire will be divided in two sections:

- General attributes of the respondents.
- Sources and effects of delay on the delivery of mechanical service packages.

Participants will be asked to prioritise each source and its impact according to their knowledge and experiences. They will be given an ordinary scale to rate each sourcing consist of (1 to 5) numbers where low number will represent the minor source and high value will indicate major source or impact (the Likert scale).

5- Pilot study

It will be performed by colleagues and doctors in university. They will be selected on grounds of their experience and education related to construction, mechanical engineering, etc.

6- Cover letter

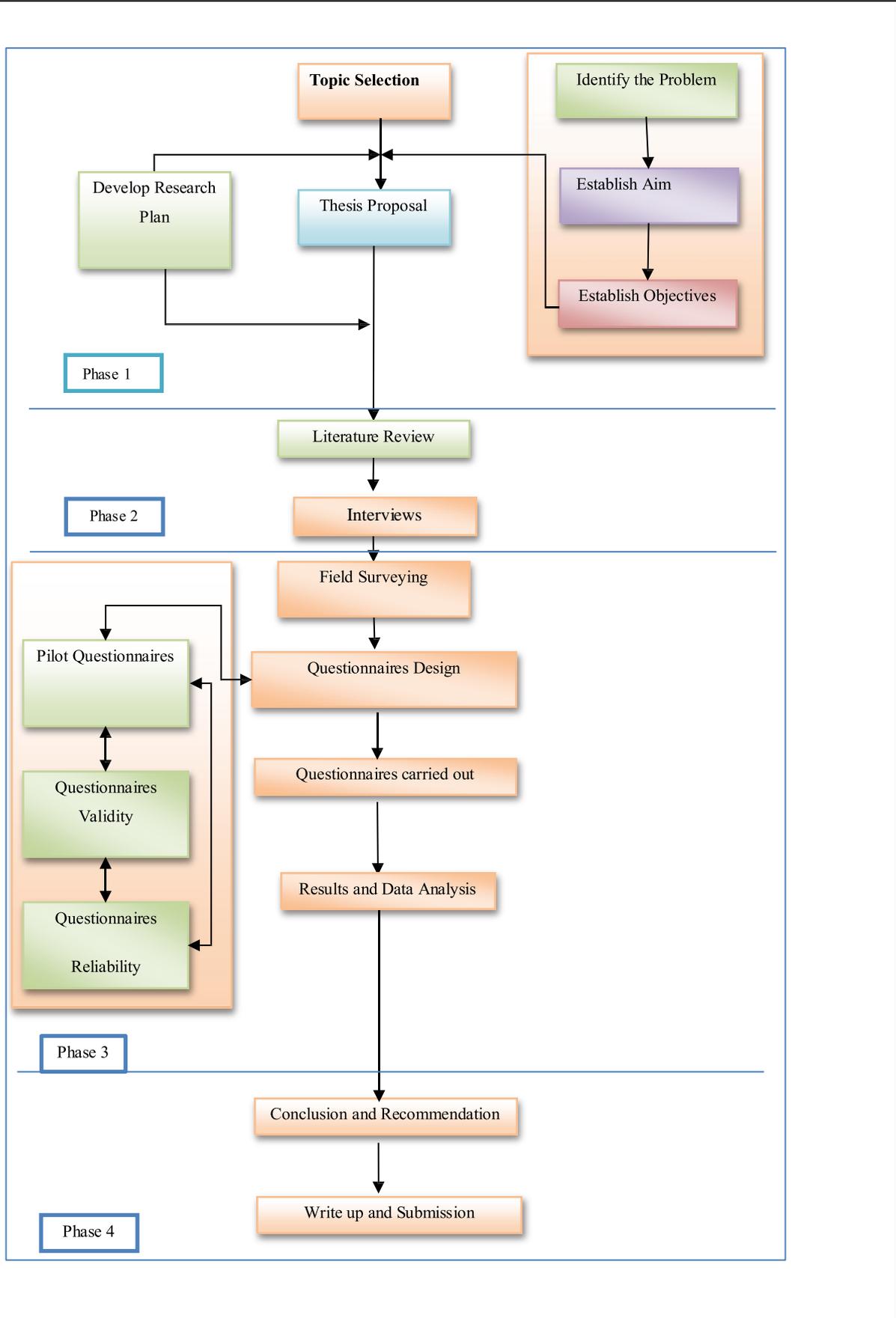
A short and well-written cover letter describing the purpose and scope of the questionnaire can encourage respondents to fill up the questionnaire on time. Participants will be informed about the requested date of return to receive responses on time.

7- Distribution

The researcher intends to choose online surveys (survey monkey) which website link will be send by emails to the Saudi Council of Engineers members.

8- Analysing

SPSS will employ to conduct data reliability analysis, descriptive statistics (mean, median, mode, standard deviation of demographic data), factor analysis, correlation analysis, and regression analysis.



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Figure1 Research Design

7. Provide details of financial sponsorship and any ethical issues this may raise (50-150 words)

Not Applicable

8. If the project involves funding from a Research Council or other organisation with an ethics policy (e.g. a charity) please confirm that the organisation's ethical procedures have been considered and outline any actions taken.

Not Applicable

Please use the SET Research Ethics Checklist to decide which additional section(s) of this form to complete and complete appropriately

If you ticked yes to Question 1 in the checklist (Negative Environmental impacts) complete Section B

If you ticked yes to any of Questions 2-9 (Human Participant Issues) complete Section C

If you ticked yes to Question 10 (Indirect Involvement of the Public) complete Section D

If you ticked yes to Question 11 (Secondary Data Sources) complete Section E

The project student and the supervisor or the principal investigator in the case of staff research must sign the form in Section F

Section B - Potential Risk to the Environment

The aim of this section is to check whether you have taken the necessary steps to ensure your research will avoid causing significant negative impact on the environment.

9. If the research is likely to have significant negative impacts on the environment provide details of these impacts (*for example the release of dangerous substances or damaging intrusions into protected habitats*).

Not Applicable

10. Please describe how you will mitigate against significant environmental harm and manage risks.

Not Applicable

Section C - Potential Risk to Human Participants directly working with the researcher

The aim of this section is to check whether you have taken the necessary steps to ensure your research will avoid causing physical or emotional harm, pain, discomfort or stress to human participants.

11. If human participants are directly involved provide brief details regarding the participants and how they will be contacted (*e.g. number, age, gender, ethnicity, general residential location*).

Approximately 20-30 people will be contacted for interview; and 300 will be asked to respond to the questionnaire. All participants will be over 24 years of age and no one will be classified on the basis of gender, ethnicity.

12. If human participants are directly involved provide details of any participants who might be considered vulnerable due to age or to a social, psychological or medical condition. Examples include children, people with learning disabilities or mental health problems but participants who may be vulnerable are not confined to these groups (*see the University's 'Guidance on Good Practice in Research Ethics and Governance' for more details. Proposals involving such participants are often likely to require ethical approval from the Faculty of Science & Engineering Research Ethics and Governance Committee*).

It is not anticipated that any participant will be from groups considered vulnerable.

13. If human participants are directly involved provide details of any risks participants are likely to face that would not be considered minimal risks (*see the University's 'Guidance on Good Practice in Research Ethics and Governance' for details of possible risks including, but not limited to, physical risks to participants, distress arising from prolonged testing or questions of a sensitive nature, risks for researchers and risks for vulnerable people*).

If risks are only minimal please describe the risks and explain why you believe they are only minimal.

There is no physical risk engaged in this research. Questions about the personal information or sensitive nature would be avoided.

14. Describe the procedures that will be put in place to ensure safe and ethical direct involvement of human participants (Where necessary and as appropriate *include comments where necessary on obtaining informed consent, reducing harm, providing feedback and accessing participants through an individual providing information such as a teacher, manager, employer etc.*). Examples of consent and information forms can be found on Student Central.

Confidentiality and Privacy will be guaranteed such that individuals will not be openly identified. For the interviews and focus groups, all the participants would be asked to sign a consent form and an information sheet will be handed to them. Participation in interviews, focus groups and questionnaire will be voluntary and participants can opt out at any stage. Prior permission would be sought from the participant, details of the venue and time duration of the interview or focus group would be discussed before holding the interview or research activity. Duration of the interviews and focus groups will not be more than 30-45 minutes. Permission will be sought to use organisation's meeting/conference room for the purpose. Safe environment and distance would be observed in case of one to one interview sessions. This research is not binding to any participants and he/she can withdraw at any time without giving any reason. Participants can get access to their own data if they may wish to do so.

15. If covert or other controversial research methods are to be used or if the research procedures contravene conventional ethical protocols (*including consent, confidentiality and feedback*), justify the use of such methods and procedures here and outline the measures that will be put into place to mitigate against potential harm. If no controversial techniques will be used and the research will follow normal ethical protocols, please write 'normal ethical protocols' in the box below.

Not applicable

16. If human participants are to receive financial reimbursement for their time (*excluding reasonable expenses to cover travel and other costs*) provide details and a short justification (*e.g. amounts and form of reimbursement*).

Not applicable

17. Describe in 50-100 words how you will ensure data collection is confidential and anonymous (*e.g. interviews cannot be overheard, details will not be accessible to others*), how data will be stored and who will have access to the data. If the data will not be confidential or anonymous outline the justification for this decision here and procedures for mitigating against potential harm. In particular, please outline consent and data protection procedures for the use of participants' images if photographic or video recordings are to be made in the course of the research.

All data should be stored securely. Documentation should be kept in a locked cabinet or desk, and electronic data should preferably be kept on a removable disk or data stick which can be locked away, or if this is not possible on a password protected computer. (*See the University's Guidance on Good Practice in Research Ethics and Governance for further details*)

A register of all the events, time and venue would also be kept secured in the locked cupboard at the researcher's office at the university. A strict confidentiality approach would be adopted throughout this research. A locked/secured cupboard will be used for the safe storage of any other form of data (in applicant's office) at the University of Brighton. Online details/response will be stored on university's password protected computer which cannot be accessed other than the researcher or his supervisors. Participant's details will not be released to any third parties without their prior consent and no one other than researcher and the supervisors will have access to this data.

Section D - Potential risk to members of the public indirectly involved in the research without their knowledge at the time

The aim of this section is to check whether you have addressed any ethical issues arising from activities such as covert observation of people in non-public places and the use of methods that will affect privacy.

18. If the public are indirectly involved in the research without their knowledge at the time please provide brief details (*e.g. how they will be involved and (where known) the age, gender, ethnicity and location of those who will be indirectly involved*).

Not applicable

19. Provide details of any negative impacts members of the public will be likely to face and that would not be considered minimal impacts (*e.g. invasion of privacy, harm to property, being subject to what an individual perceives to be inappropriate behaviour*). If risks are only minimal please describe the risks and explain why you believe they are only minimal.

Not applicable

20. Describe any procedures that will be put in place to ensure safe and ethical indirect involvement of members of the public (*include comments where necessary on providing information and feedback if requested by the public*). Examples of information forms can be found on Student Central.

Not applicable

21. If covert or other controversial research methods are to be used or if the research procedures contravene conventional ethical protocols (*including consent, confidentiality and feedback*), justify the use of such methods or procedures here and outline the measures that

will be put into place to mitigate against potential harm. If no controversial techniques will be used and the research will follow normal ethical protocols, please write 'normal ethical protocols' in the box below.

Not applicable

22. Describe in 50-100 words how you will ensure data collection is confidential and anonymous (*e.g. people will not be able to be identified by photographs or notes taken by observers*), how data will be stored and who will have access to the data. If the data will not be confidential or anonymous outline the justification for this decision here and procedures for mitigating against potential harm.

All data should be stored securely. Documentation should be kept in a locked cabinet or desk, and electronic data should preferably be kept on a removable disk or data stick which can be locked away, or if this is not possible on a password protected computer. For undergraduate projects normally only the student and supervisor will have access to the data (*see the University's 'Guidance on Good Practice in Research Ethics and Governance' for further details*).

Not applicable

Section E - Secondary Data

Secondary data refers to any data you plan to use that you will not collect yourself. Examples of sensitive secondary data include datasets held by organisations, patient records, confidential minutes of meetings, and personal diary entries (these are only examples and are not an exhaustive list)

23. Please provide details (50-100 words) regarding any secondary data to be used that may carry sensitive personal or sensitive organisational information.

Not applicable

24. If secondary data sets containing sensitive personal or sensitive organisational information are to be used outline how such use will be ethically managed (*include details such as anonymising data sets, ensuring protection of source agency, gaining consent of data owners, and how the data will be stored*).

Not applicable

Section F – Further Details, Accompanying Documentation and Signature

25. Please add anything relating to ethical issues that should be considered when assessing this project that has not been addressed elsewhere on this form. Continue on another sheet if necessary.

Not applicable

26. Indicate which of the following are attached to this form.

The Research Ethics Checklist should be attached for all projects; you only need to provide the other documents if they are applicable to your project

Attached

SET research Ethics Checklist (please remember to attach)

Participant information sheet

Material to be used to advertise the project

Participant consent form (or introduction to be used on questionnaire, see below) ...1..

Please note that projects that use questionnaires to be completed by respondents do not need a separate consent form, as consent is inferred if the questionnaire is completed; however, the opening statement on the questionnaire should indicate that this will be the case. All those completing a questionnaire should be offered an information sheet providing further details of the project and contact details of the University. When questionnaires are conducted by the researcher as part of an interview then a consent form should be signed.

27. Please sign this form.

Student / Principal researcher's name: Abdullah Alkharmany

Signed

Date

28. This form must be checked and approved by your supervisor (for MPhil / PhD students)

Any further Comments from supervisor:

Supervisor name: Dr Kassim Gidado & Noel Painting
Signed
Date

Appendix F: Information about ATLAS/ti

What is ATLAS.ti?

ATLAS.ti is a powerful workbench for the qualitative analysis of large bodies of textual, graphical, audio and video data.

Its sophisticated tools help the researchers to arrange, reassemble, and manage their material in creative, yet systematic ways. ATLAS.ti keeps the researchers focused on the material itself. Whether the field is anthropology, economics, criminology, or medicine: ATLAS.ti will meet the qualitative analysis needs.

ATLAS.ti offers an unsurpassed range of media for the researchers to work with: Whether it's coding hundreds of documents, audio clips or photos.

ATLAS.ti works with text documents in all major formats—including txt, .doc, .docx, .odt, and, of course, .pdf. Perform fully automated searches across one or multiple documents, auto-coding, and other powerful semantic operations to extract meaning.

ATLAS.ti works with dozens of graphic and audio formats (.wav, mp3, .wma, etc.) as well as most common video types (.avi, .mp4, .wmv, etc.).

The researchers can import data from Evernote, Twitter, and any other favourite Reference. It can be a manager for a literature review, or import entire surveys to analyse answers to open-ended questions.

The source: <http://atlasti.com/product/what-is-atlas-ti/>