A STUDY ON ANALYSING MEGA-PROJECT FAILURES IN SAUDI ARABIA BY USING AGENCY THEORY

by

ABDULLAH ALSABBAN

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ABSTRACT

Mega-projects are seen as a driving force for countries' economies (Flyvbjerg et al., 2003; Kipp et al., 2008). However, the rate of project failure has never been greater and it has been argued that performance in mega-project management has not improved over the last 70 years (Flyvbjerg, 2017). In this context, this case study research investigates the time and cost-related failure of the Haramain High-speed Railway (HHR) mega-project in Saudi Arabia.

The research question asked in this thesis is to what extent agency theory (AT), which posits the possibility of agent opportunism and is the primary theory in the thesis, can explain the HHR project's failure. AT is seen as an appropriate theoretical lens for studying the case as the HHR project contains a series of complex principal-agent relationships.

This prime theory is supported in the task of explaining the HHR project failure by two further subsidiary contextual theories; national cultural theory (CT) and project management theory (PMT). It was felt that, given the location and nature of the HHR project, it would be interesting to seek to understand the role of AT in explaining the HHR project failure in relation to the greater-utilised (within the project management literature) CT and PMT and in exploring the existence of overlaps between the theories.

The research adopts a case study approach consisting of qualitative data. 38 interviews were undertaken with project participants from different organisations involved with the HHR project. This was supplemented by site observations and official documents in order to triangulate the findings.

In the event, AT was found to be an underlying explanation for the failures observed in the HHR mega-project. Multiple agency problems (APs) were identified as major cause of failure. However, there were also other causes which were related to CT and PMT. These causes

(especially those CT-related) were less significant to the HHR project failure, although the research discovered that there was actually some interrelation between the AT, CT and PMT causes of failure.

The study makes a contribution to the project/mega-project management literature by extending the limited AT-related research on mega-projects, by looking at a more extensive range of principal-agent relationships than previous studies, by undertaking the first AT-related research into Saudi mega-projects and by establishing that some of the more established causes of project failure described in the literature can actually be contributors to, or consequences of, agent opportunism. This latter contribution highlights how the research's use of AT points the way to greater theoretical generalisability in the study of the causes of mega-project failure.

DEDICATION

This thesis is dedicated to my parents, Dr Sahl Alsabban and Mrs Amal Eshmawi; my siblings, Dr Lama, Mr Abdulaziz, Mrs Leenah, Mrs Shahad and Miss Maha; and my daughter Miss Sarah. The love and memories of this great family.

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LIST OF ABBREVIATIONS

Abbreviation	Definition
ACC	Al Arrab Contracting Company
AP	Agency Problem
APM	Association for Project Management
ARAMCO	Arabian American Company
AT	Agency Theory
CC	Cultural Cause
CT	Cultural Theory
PMT	Project Management Theory
DH	Dar Al-Handasa
GTPL	Government Tender and Procurement Law
HHR	Haramain High-speed Railway
IRGTPL	Implementing Regulations of Government Tender and Procurement Law
Masco	Mohammed Ali Al Suwailem Group
PD	Power Distance
PMC	Project Management Cause
PO	Permanent Organisation
PMBOK	Project Management Body of Knowledge
PMO	Project Management Office
PMT	Project Management Team
SRO	Saudi Railway Organisation
TCE	Transaction Cost Economy
TMO	Temporary Multi Organisation
TO	Temporary Organisation
UA	Uncertainty Avoidance
WBS	Work Breakdown Structure

PART I

INTRODUCTION

CHAPTER 1

INTRODUCTION

1.1 Research background

This thesis explores the causes of failure in a mega-project undertaken to create a new large-scale railway line and infrastructure within Saudi Arabia. It has been observed by Flyvbjerg (2017) that mega-projects – which he defines as projects that have a minimum cost of 1 billion US dollars; or projects with a noticeable cost that attracts public and media attention, as they have a large impact on the country's budget, the community and the environment – are the preferred model for delivering large-scale developments by both the public and private sector. A classic example is the Channel Tunnel between France and the UK completed in 1986 (StrategicPPM, 2010). Among others currently being executed, is the new airport in the city of Jeddah in Saudi Arabia, the country that is the case location in this thesis, with more projects currently being considered by the Saudi government for the future (Albawaba, 2010).

It has been contended, however, that most mega-projects go wrong – that is, fail to be delivered on full, on time and/or within budget (Robertson and Williams, 2006). More specifically, major infrastructure projects have historically had a poor performance record (Flyvbjerg et al., 2003). Yet despite the failures that occur with infrastructure mega-projects, Flyvbjerg (2009) confirmed that ever more frequent and larger-scale infrastructure mega-projects are being initiated, planned and built. This fact underlines the importance of this research, which is looking at the problem of mega-project failure.

1.2   The need for this research

There is a belief often expressed within the literature that the current techniques used within project management have matured over recent decades (Cooke-Davies and Arzymanow, 2003; Patanakul et al., 2010). However, the rate of project failure has never been greater and it has been claimed that performance in mega-project management has not improved over the last 70 years (Flyvbjerg, 2017). For example, Robertson and Williams (2006) have reported that more projects overrun in time than are completed within the original allocated time scales. These overruns commonly occur in a rate of 40% to 200% (Robertson and Williams, 2006). To illustrate, a third of the World Bank projects accomplished their goals at no extra cost, but suffered from typical delays of 50% in time (Robertson and Williams, 2006). In a telling development, Flyvbjerg (2014) tried to identify a sample of successful mega-projects that was large enough to permit quantitative analysis, but the attempt failed because he could only identify a small group of such projects that was, some way from permitting such analysis.

Therefore, it is argued here that is imperative to conduct research into what causes a project, and especially a mega-project, to fail. As mentioned, Robertson and Williams (2006) considered any project to be a failure if it failed to be completed within its allocated time frame, if it exceeded the specified budget, and/or it failed to deliver the project scope and specification. From this, we can ascertain that there are three classes of failure, i.e. time, cost and specifications, although Hodgson and Cicmil (2006) and Söderlund (2013) also stress the importance of looking at the human element part of a project (for example, health and safety, ethics and morality) and other researchers, such as Shenhar et al. (2001), partially looked at the term 'project failure' from the perspective of long-term and strategic use of the project output after the project delivery.

There are many examples of mega-project failure that can be presented to demonstrate the scale of the problem under study. For example, the Wembley Stadium project, which aimed to replace the original 1923 stadium infrastructure. This project cost more than double the initial estimate and took five years longer than the expected project duration. Part of the failure was due to the prototyping of unproven techniques and processes (mainly in building the unprecedented arch model), which as a result required the replacement of the subcontractor in the middle of the project execution (StrategicPPM, 2011). Another project failure can be found in the aforementioned Channel Tunnel project between England and France. The project was 80% over-budget and 20% overtime (at six years versus the planned five years). Similar to the failures of the Wembley project, the lack of precedent projects was seen as a cause of failure in this project, although other factors included insufficient experience to establish sound estimates, and poor communication between project actors (StrategicPPM, 2010). A third example of mega-project failure is the Gotthard Base Tunnel, the world's longest tunnel (total length of 57km), in the Swiss Alps, which suffered from a significant cost overrun (Scherer and Moss, 2010).

1.3 Background of theories in previous project management researches

While many technical factors behind project failure have been advanced (as seen above), there are also a number of theories that have been used to explain the above and other project failures in the current literature. One such theory has been agency theory (AT), which is to be used here as the primary theory for studying project failure. There are five key components to this.

The first component is concerned with the presence of a *principal-agent division*, which was observed by Berle and Means (1932) to be a result of the separation of corporate

ownership and control, both of which were formerly the responsibilities of the owner. The second continues the narrative and states that on many occasions there is an asymmetry of information between the principal and the agent(s). *Information asymmetry* occurs through the communication of insufficient and incomplete information between principals and agents (Ceric, 2012).

However, it is the third component, *the possibility of opportunism*, which brings the principal-agent division and information asymmetry to life. It occurs by the willingness of some agents to exploit the situation and make decisions to suit their agenda – that is, create an agency problem (AP) in the eyes of the principal. Authors such as Ahola et al. (2014) discussed the area of opportunism as a factor behind project failure. The fourth component is *managing opportunism* and that is where the thesis will discuss mechanisms in the literature proposed to overcome AP. AT has focused much here in terms of contract and incentives design.

Thus, to summarise, the AP is defined as the exploitation by the agent of the principal's loss of control and the agent's consequent information advantage in order that the project is delivered in line with the agent's interests rather that the principal's. To this problem, AT suggests potential solutions for principals.

A final component is *multiple principal-agent problem* – project environments usually involve more than one principal-agent relationship. The researcher is looking at a high-speed railway project of a total length of 470km between two holy cities in Saudi Arabia (Makkah and Madinah City). The project involves a large number of stakeholders. Due to the size of the project and the magnitude of the work that needs to be executed, the project stakeholder structure includes a multiple agency-principal element. Therefore,

this case will provide the potential to expand the current knowledge in relation to AT by involving more principals and agents in the study.

Arguably, AT provides the underpinning for another key theory within the project management literature – optimism bias, which seeks to explain frequent differences between expectations or estimations and the actual outcome (Sharot, 2011). In the context of project management, the concept of optimism bias could be seen in estimating the project activity, time and cost unrealistically. Optimism bias could also concern the value of the project outcome. For example, the Channel Tunnel project's planners were reported to have been optimistic in their predictions of the earning potential of the project services.

While it is said that optimism bias can result from naivety, it is also argued to result from opportunism, often agent opportunism (Sharot, 2011). In such cases, optimistic dates, times and specifications are set in order to achieve project initiation – the implication being that a realistic set of predictions would risk the project failing to achieve approval. This behaviour is also known as 'rent seeking behaviour'. Rent seeking behaviour in this context could concern the contractors' behaviour at the stage of project approval (or otherwise) by the client. Rent-seeking contractors tend to provide overly optimistic cost forecasts to their clients, whereas they should be producing expert technical forecasts. Authors such as Wachs (1990) stated that contractors and promoters often take that route of underestimation and misleading information for the purpose of approving non-viable projects.

1.3.1 Why agency theory?

Having outlined the main components of AT, we now discuss why it is being used in this thesis. The main rationale relates to a match between the characteristics of the case and AT as a theory. This research project is examining a mega-project in Saudi Arabia, a case project that, as will be seen, contains multiple principal-agent relationships. Flyvbjerg (2014) described mega-projects as a magnified version of other types of smaller projects as they are associated with greater complexity and larger numbers of stakeholders (Flyvbjerg, 2014). These characteristics of mega-projects, arguably, create a high probability of AP occurrence and, therefore, make AT an obvious theoretical lens.

This theoretical rationale is then supported by the existence of a strand of the project management literature that has utilised AT in exploring project failure (i.e. others in the project management literature have identified the suitability of AT for the study of complex projects), although, as will be explained, this literature is, as yet, thin and not greatly focused upon mega-projects. In other words, the potential for AT to explain project failure has been demonstrated, but not yet been fully exploited.

Accordingly, on the one hand, the literature shows that principal-agent problems are a potential explanation for failure in a number of business sectors where projects have taken place. Researchers, such as Clipsham et al. (2011) and Teo and Koh (2010), have used AT to look into failures of information system projects, where multiple agencies were involved. Wilhelm et al. (2016) is concerned with the issue of first tier suppliers who work as a bridge (double agent) between principals and other upstream suppliers who are expected to deliver the principal's needs. These examples show that AT has been utilised in two different areas of project management: information systems (IT) and the project supply chain. Bardsley (2001) applied the agency model into a third area - educational research projects. Closer to this study, within the area of construction

projects, Ceric (2012; 2014) conducted two similar research studies using AT, which involved multiple principal-agent relationship. Ceric (2014) argued that her research was the first to look into AT problems that exist between project client, the contractor and their project managers in construction projects. Therefore, looking into all previous literature, AT is a developing theoretical lens within the study of construction mega-projects.

On the other hand, as Ceric's claim suggests, the literature applying AT to project management is quite limited, which suggests that there are gaps to fill. From the literature, a number of observations can be noted. Firstly, the current presence of AT in the literature, especially in the area of construction mega-projects failure, is relatively weak. Therefore, there is a high potential for theoretical development in a construction mega-project management context – that is, to look into the problems of agent's opportunism, which can, if present, both lead the client to approve non-viable projects and cause projects to fail (Flyvbjerg, 2014).

Secondly, Ceric (2014) confirmed that there is no existing research that addresses more than the four project participants (project client, client's project manager, contractor and contractor's project manager) which were included in her research. This confirms the lack of literature concerning the full extent of the multiple principal-agent issue. Ceric (2014) in fact suggested that further research might look into a more complex set of relationships in projects, including subcontractors, consultants and others.

Thirdly, an extensive literature review revealed that there was not any existing previous research that addressed the issue of multiple principal-agent problems and its effect on mega-project failures.

Therefore, AT is considered as the primary theory for this research for the following reasons:

- The potentially profound effect of AP in causing mega-project failure. The researcher is interested in understanding just how much of the project failure in this railway project was the consequence of such problems.

- The need for the project management literature to use AT more extensively in the area of construction to understand better the complex relationships between mega-project stakeholders, each possessing as they do a different interest and agenda.

What also justifies the use of AT in this thesis is the existing gap in the literature of using AT in the analysis of mega-projects in Saudi Arabia. This thesis provides an entirely new context for such a study, which will make a contribution to the literature on construction management in Saudi Arabia, where major projects are currently being undertaken, and provide a new context for the study of AP in project management. It will be interesting to assess the extent to which AT applies in such a context.

1.3.2 Adding subsidiary theories

Therefore, the prime theory for analysis of mega-project failure in this thesis is AT. However, as the case is a mega-project and is situated in Saudi Arabia, it was felt useful to proceed in the thesis with two further subsidiary contextual theories – cultural theory (CT), specifically the (contested) theory related to national cultural differences, and project management theory (PMT), specifically temporality, team, task and transition (Söderlund, 2004).

In few instances, national CT has been utilised in project management research (Hofstede, 1983; Shore and Cross, 2005; Rees-Caldwell and Pinnington, 2013). In some of this research, CT when applied to project management has explored the significance and consequences of projects or mega-projects often being characterised by diversity in the project team's cultural background. It is argued in such research that different actors from different backgrounds may understand the required input and the expected outcome of projects in completely different ways which can then lead to sub-optimal actions and outcomes (Hofstede, 1983; Shore and Cross, 2005; Sanderson, 2012; Rees-Caldwell and Pinnington, 2013).

However, the use of CT in this thesis is different, because of the different make-up of the organisations and personnel involved with this railway project. In this project the make-up of the project team is actually largely homogenous – largely made up of Saudi organisations and management personnel. As such, the thesis assesses whether certain common cultural tendencies within Saudi Arabia provide an alternative explanation for the mega-project failure seen in the case study. It is suggested by Kardes et al. (2013) that project performance is a major area affected by cultural differences. For example, the culture of Saudi Arabia blames luck and fate in cases of project delay or failure. Additionally, time appreciation in the Saudi culture is not as serious as in other cultures (Hurn, 2007). Including this subsidiary theory is believed to both enhance the theoretical interest of the study but also, just as importantly to the researcher, further his practical wish to understand the causes of the HHR mega-project failure.

It is also necessary to possess, as a further subsidiary theory, the core features of a project environment that differentiate temporary multi organisations (TMOs) from permanent organisations (POs), and provide the context to the case and the study's interest in multiple principal-agent problems – temporality, team, task and transition

(Lundin and Söderholm, 1995). Time is the main distinguishing feature between tasks carried out by TMOs and POs. It refers to the limited duration available for project execution and its impact on the project performance (Turner and Müller, 2003; Lindkvist, 2005). Task is the second feature of a project that differentiates it from other forms of businesses which is characterised by its level of complexity (Hanisch and Wald, 2011) and uniqueness (Lundin and Söderholm, 1995). The third project feature, team, is concerned with issues such as team diversity, team size, effective team orientation and an experienced project manager. Finally, the concept of transition refers to two distinct meanings. Firstly, the practical transformation within the organisation to execute the actual work and secondly, the desirable perceptions of change within the project during the project execution (Lundin and Söderholm, 1995). These four project features can create issues and challenges for the project team members during the project execution process, which will be utilised to support the understanding of the HHR mega-project failure.

1.4 Research Question and objectives

In the context of the above, the prime research question is as follows:

RQ. To what extent can agency theory be utilised in the analysis and explanation of the mega-project failure of the Haramain High-Speed Railway (HHR) project within Saudi Arabia?

Against the background of the RQ, the research objectives can be stated as follows:

1. To identify the specific APs (if any) that occurred within the HHR mega-project.
2. To investigate the extent to which these APs explain the HHR project failure.

3. To evaluate the influence of Saudi culture and the project management context on the HHR project failure.

4. To explore potential linkages between APs, cultural factors and the project management context.

5. To develop a new framework that illustrates factors of mega-project failure, and any potential linkages between the three factors (APs, cultural factors and project management factors).

In the exploration of this research question a qualitative case study approach will be adopted, with the unit of analysis in the research being the transactional relationship between major project actors (clients, contractors and consultants). A total of seven main principal-agent relationships have been identified within the case project, as explained later in the thesis.

1.5 Contribution to the literature

It has been observed by the researcher that only a limited literature exists in the context of this research. This research is looking to fill the existing gaps in the current literature around AT – in the area of mega-project infrastructure and construction. Following the achievement of the research objectives, the outcome of this research aims to deliver three manifestations that ought to be perceived as areas of contribution to the current knowledge and literature on the application of AT to project management, particularly mega-project management. These manifestations are as follows:

1) Expand the limited existing research applying AT to mega-projects. This is particularly limited in relation to construction infrastructure projects.

2) Do first work on AT on the basis of multiple principal-agent problems in construction mega-projects. The multiple relationships start from the project client

and his project manager, project contractor and his project manager, as well as more complex relationships which include the project consultant. According to Ceric (2014), the context of this research may be considered as unprecedented work.

3) First research on mega-project failure in Saudi Arabia. This thesis will provide a case that assesses the extent to which project failure was caused by AP and / or Saudi national culture and project management features.

1.6   Organisation of the thesis

This thesis is composed of eleven chapters, the outlines of which follow:

Chapter 1 has presented the introduction of this thesis. Introducing the need for this research into mega-project failure and the role of AT in pursuing it. This was followed by the research question, the research objectives and the expected contribution to the current literature of the research.

A classical opening structure is presented by the literature review, which is put forward in three chapters (see Figure 1 below). Starting with chapter 2, it presents the first area of the literature by reviewing the critical perspective of projects to achieve understanding of the four concepts (*temporality, task, team and transition*), which differentiate project organisation from any other business organization. The chapter then reviews the distinguishing features of mega projects. Chapter 3 covers the primary theory of this research, AT. The last area of the literature review (Chapter 4) reviews national CT.
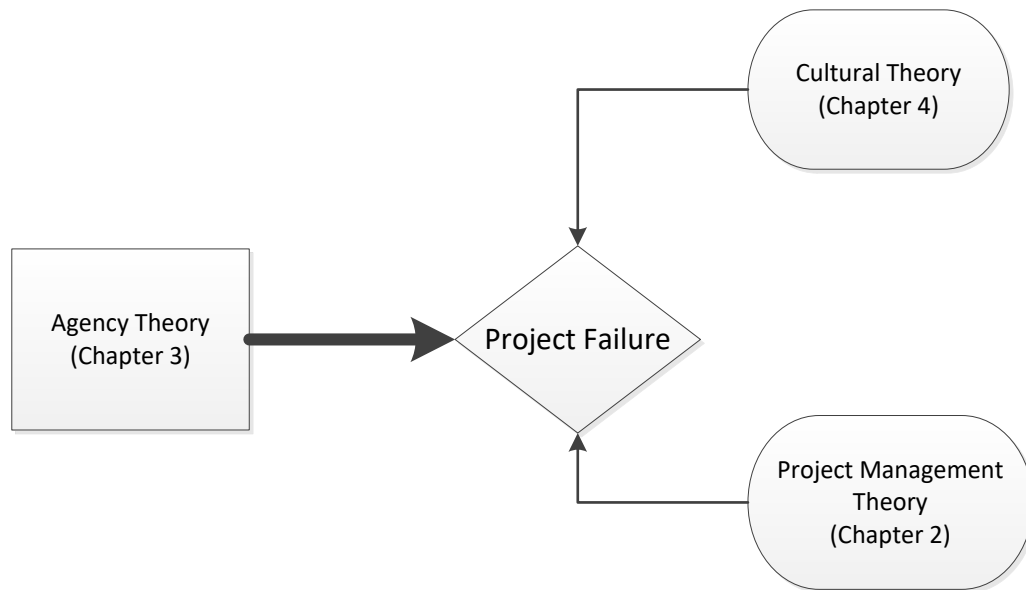
Figure 1: Conceptual model.

Chapter 5 is the research methodology chapter, which sets the logic behind the research strategy, research design and research methods employed. This chapter includes a section that will consider the practical element during the data collection trips, stating the difficulties faced by the researcher and how they have been resolved.

The next chapter (Chapter 6) is a descriptive section to provide an overview of the HHR mega-project. The chapter includes a detailed overview and evidence of the failure of the HHR project used in this research as a case study, which will help the reader to understand the complex structure of this project.

The next three chapters (Chapters 7, 8 and 9) present and analyse the findings from the collected data for this research. Chapter 7 identifies specific APs that have occurred within the case of the HHR project. This will be followed by Chapter 8, which presents the cultural causes of failure identified from this case. Finally, Chapter 9 shows other

causes of failure related to the four project management concepts (temporality, task, team and transition).

Chapter 10 is the discussion chapter that follows the data presentation and analysis given in the previous three chapters. This chapter starts with a brief summary of the three areas of the literature review. It will then be followed by a discussion of the findings in each of the three literature areas, and the importance of these causes of failure. After that, the researcher aims to provide a discussion of the linkages between causes of delays from the three different areas discussed in Chapters 7, 8 and 9.

Finally, the conclusion chapter is the eleventh and last chapter of this thesis. It draws a comprehensive summary of this research. Starting by presenting the need for this research and the gap in the current literature that necessitated further research, the chapter then will demonstrate how the research question and objectives were addressed. The contribution to the existing knowledge around the area of AT will be summarised. It will then discuss the limitations of this research and offer the researcher's reflections. Finally, it will suggest areas of further research, which may be undertaken in the future.

PART II
LITERATURE REVIEW

PREFACE TO THE LITERATURE REVIEW

From the outset of this PhD research project, the main interest of the researcher was to look into project failures. The common problem of project failure is a fundamental issue within this business discipline, which appears to act as an obstacle for economic growth (Flyvbjerg et al., 2006). This gives rise to the importance of conducting research that will investigate the issue of project failure.

In this section of the thesis, the author looks at three areas within the current project management literature. To start with, the first area (in chapter 2) is the specific project management literature that looks at the concept of projects and the project organisation. The two questions – 'what is a project?' and 'why does a project exist?' – are common questions that have been answered again and again by many scholars (Engwall, 1995; Morris, 1997). This will be followed by another important aspect of projects – project failure.

Furthermore, as much as it is important to understand projects in practical terms, it is even more important to understand the theoretical terms of projects (Söderlund, 2004). As a result, this chapter is also going to deliver this understanding by reviewing the most prominent project organisational theories.

Those theories that are located within the specific project management literature have named the organisational form that is used in executing projects as the *temporary organisation* (TO). The TO is created by a PO (Lundin and Söderholm, 1995). Chapter 2 will discuss the four concepts which it is argued by this literature distinguish the TO from its PO, and explore their stated relationship to project failure. It will deliver an

understanding of projects and project organisations from a TO perspective, and how they are differentiated from POs (Lundin and Söderholm, 1995). Having looked at these aspects of the project management literature, the chapter concludes by looking at a further strand of the project management literature dedicated to exploring the concept of mega-project, in particular, how such projects present even greater challenges.

However, there are wider literatures that have been applied to project management and these are also explored. As mentioned, due to project complexity, a PO forms a TO – made up of a number of organisations or individuals (team members) – to execute a project. Each team member is a specialist in his or her field. The involvement of this large number of project parties (i.e. client, consultant, contractor, sub-contractor, project designer) in a project – bearing in mind that each party is looking at the project from a different organisational angle – increases the potential of ending up with different conceptual understandings of the project and different vested interests, which can lead to APs.

Hence, the researcher has, as discussed and justified in the introductory chapter, selected AT to act as the primary theory of this research. Therefore, this will be the second area this section of the thesis is investigating. It will (in chapter 3) analyse the process of the AP occurrence, as well as different mechanisms suggested by authors, such as Crosby et al. (1990), Bhattacharya et al. (1998) and Coulter and Coulter (2002), in order to minimise the possibility of this problem.

The third area of this literature section (in chapter 4) will look at projects from a national cultural perspective – like AT, this theoretical lens has also been applied to project management. It will look at the potential significance of the fact that the HHR project took place in Saudi Arabia. Many researchers, such as Assaf et al. (1995), Odeh and

Battaineh (2002), and Al-Kharashi and Skitmore (2009), have looked at project failure in Saudi Arabia using different methodological approaches. This chapter will use national CT, in particular that of Hofstede (1984), to set up the researcher to assess whether certain common cultural tendencies within Saudi Arabia provide an alternative explanation for the mega-project failure seen in the HHR case.

Thus, the literature review section of this thesis is formed of three major areas of discussion as follows:

1. Critical perspective of projects
2. AT
3. Saudi cultural context
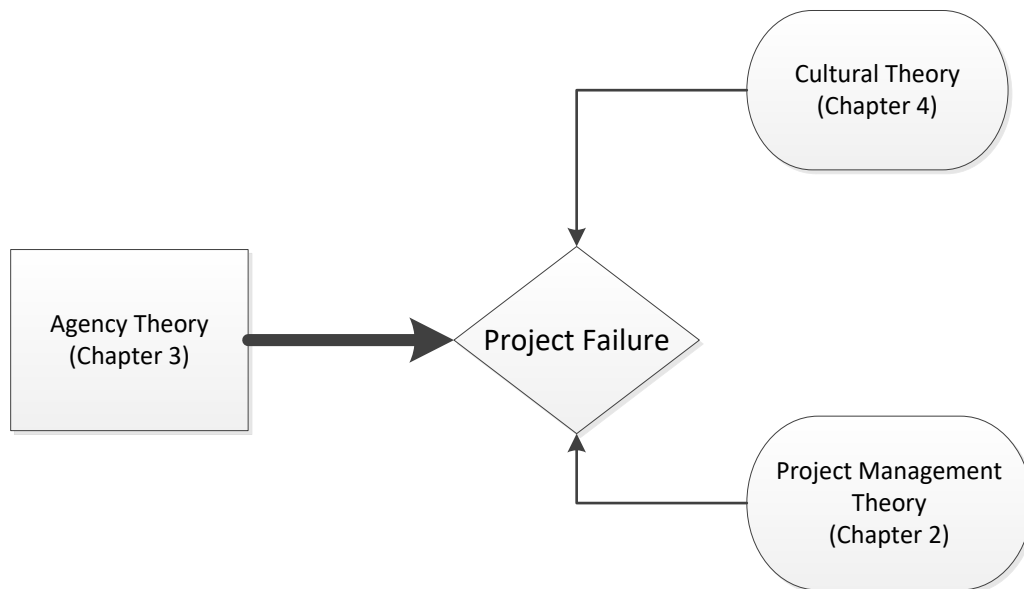
Figure 2: Conceptual model.

CHAPTER 2

PROJECTS AND MEGA-PROJECTS

2.1   Introduction to the chapter

Having stated the research question and outlined the literature that will be reviewed in order to set up the research question, we now start the literature discussion by looking at the specific project management literature that examines projects and mega-projects.

2.2   History and definition of projects

Project management originated as an organisational social practice form during the development of infrastructure and technology projects following World War II (Hodgson and Cicmil, 2006). It went through a practical development stage within a number of major projects, such as the Manhattan project in the 1940s (Engwall, 1995; Morris, 1997) and Polaris – US Navy project in the late 1950s (Marine Corps Gazette, 1966). During the 1960s and 1970s, there was much criticism about the managerial approach in practice; from there, the theoretical foundations of project management started to expand, mainly within the area of organisational management research, and around theories of project organisational structure (Packendorff, 1995). Moreover, throughout the 1980s and 1990s, project management operational research evolved further.

This went hand in hand with the development of computer technology, which led to the creation of software systems that assisted in delivering project planning, project control, risk assessment and analysis. With the utilisation of such technology, the communication network also increased (Hodgson and Cicmil, 2006). The aim of involving computer technology within the project management field – mainly by clients and agencies – was

to pursue robust managerial models that would minimise the issue of time and cost overruns, and to deliver projects without questioning the quality.

Accordingly, a number of project management control methodologies (e.g. the Prince 2 program) were very influential, which led to other schemes related to risk management being further developed (Hodgson and Cicmil, 2006). This coincided with the acceptance of promoting work in a project form. Clarke (1999) confirmed the effectiveness of project management tools, when utilised properly, to provide organisations with a useful management process, which allowed them to deal with any changes throughout a project.

As equally important – and as projects are considered to be socially constructed environments (Biesenthal et al., 2015) – it has been argued by Söderlund (2013), that there is a need to address two sides of project management. Firstly, the hard side, which is concerned with the administrative tasks, particularly the use of tools and techniques within project management as a hard system. Secondly, the soft side, which is mainly associated with handling the human factors within the project, including the soft skills that enable cooperation between people, groups and the project team.

Therefore, while issues such as project time and cost overruns consume a major proportion of today's research, scholars such as Hodgson and Cicmil (2006) and Söderlund (2013) emphasised the importance of considering other factors within the concept of project success, looking beyond the hard side of project management (budget, time and quality), to the soft side that include other areas of human factors within project, such as environment, ethics, judgement, health and safety, and morality.

The project management literature, therefore, is gradually developing and maturing. It is utilised in this chapter to explore some of the key aspects of the project environment.

2.2.1   What is a project?

It is essential to understand what a project is and what it is not, in order to move on and investigate how a project, therefore, could be managed. Interestingly, projects and project management have been addressed by scholars, from both within and outside the project management field, as self-evident, natural and indispensable (Engwall, 1995; Morris, 1997). This prompted some to call for a pause in order to ask the questions: what do we mean by a project; what is the actual definition of project management?

To answer this question, two perspectives were adopted by different scholars to define a project. On the one hand, an orthodox view of a project was provided by Kerzner (1998), who defined a project as:

> "A specific objective to be completed within certain specifications, with defined start and end dates, funding limits (if applicable) and which consumes resources (i.e. money, people, equipment)." (Kerzner, 1998, p. 2).

On the other hand, however, the reality of a project delivery highlighted that a project is not a simple operation that is often repeated (Linehan and Kavanagh, 2006). Instead, it involves organisational and social practices that characterise every project to be a unique endeavour (Söderlund, 2013), which led researchers to conceptualise projects differently. For example, Linehan and Kavanagh (2006) defined projects as:

> "…an emergent outcome of disparate, ambiguous, political practices." (Linehan and Kavanagh, 2006, p. 55).

Söderlund (2013) meanwhile looked at defining the term project as:

> "A particular kind of task, a temporary endeavour, and project management is the solution to solving that task. The project could then be broken into a series of activities, work packages, subprojects, and milestones. Project management as such is very much oriented towards these activities, including conceptual design, feasibility study, detailed design, detailed planning, etc." (Söderlund, 2013, p. 124).

Moreover, the Association for Project Management (APM, 2016) defined a project as:

> "A unique, transient endeavour, undertaken to achieve planned objectives, which could be defined in terms of outputs, outcomes or benefits. A project is usually deemed to be a success if it achieves the objectives according to their acceptance criteria, within an agreed timescale and budget." (APM, 2016, p. 1).

The previous definitions of the term 'project' include a number of characteristics. Within the context of this thesis, these characteristics were utilised to provide a definition for the concept of 'project' as follows:

- Unique endeavour executed to achieve a specific project goal (new product, new system, new plant, etc.).
- It starts at specific point in time and has a pre-determined deadline.
- It has a project life cycle that is associated with project phases, from the starting point to the termination of the project. In each of those project phases, new products or results are created.
- It involves "Single point of integrative responsibility". (Archibald, 1987, p. 15).
- It includes the application of project management tools and techniques.

Furthermore, Larson and Gray (2014) described projects to have two dimensions within the execution process (see Figure 3 below). These are the technical and the sociocultural dimensions. The first dimension is concerned with the technical side of the project management process. This involves all the formal and structural content related to this discipline, which includes project planning, scheduling and project control. One important element of the project control is the clarity of the project scope and, as a result, clear project deliverables and work breakdown structure (WBS) can be determined. Furthermore, this is followed by the creation of work packages and tasks. Each task has an estimated time and cost and can be monitored throughout the execution stage (Larson and Gray, 2014).
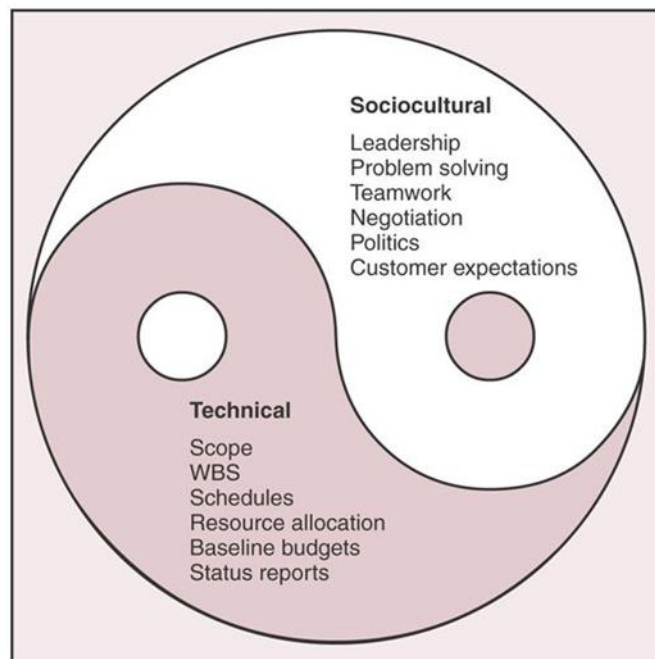
Figure 3: The socio-technical dimensions of the project management process (Larson and Gray, 2014).

In contrast, the second dimension is the sociocultural part of project management. According to Larson and Gray (2014), this dimension:

"Involves the much messier, often contradictory and paradoxical world of implementation. It centres on creating a temporary social system within a larger organizational environment that combines the talents of a divergent set of professionals working to complete the project." (Larson and Gray, 2014, p. 17).

Therefore, project managers have to apply their leadership to form a project culture that enables the project team to use their self-motivation to work as an effective team that can identify and resolve problems, deal with project changes and redirect the project back on track. This dimension also includes facilitating the interface between the external environment and the project. Project managers must consider the customer expectations, negotiate the requirements of the top management and manage and monitor other stakeholders, such as subcontractors (Larson and Gray, 2014).

Other authors, however, identify another approach to describe projects, Hodgson and Cicmil (2006) argued that the way to think about a project is as a form of a language – clearly because of the existence of communication barriers between different departments within a single organisation. In thinking about a project to be a form of a language, the vocabulary of project management would be a bar chart, WBS, critical path analysis, balanced matrix, project life cycle and so on. The application of all these project management techniques is practicing project management language in the real world. Hodgson and Cicmil (2006) emphasised the importance of this approach and argued that it needs to be learned and practiced across project management organisations, just like the language of accounting, quality and marketing and so on.

Hodgson and Cicmil (2006), however, highlighted a potential area of confusion that can be caused by applying this language approach within project management field, purely because of "language's undecidability and inherent ambiguity" (Hodgson and Cicmil,

2006, p. 56). For these researchers, difficulty within language communication stems from in and around the language itself. This, in turn, is because the meaning of communication appears to be understood and assigned in a social context (Delisle and Olson, 2004). It is said that "individuals create their own meanings and only through [social] agreements do parallel personal meanings develop" (Glanville and Ranulph, 1997, p. 3). Thus, this language approach gives rise to opportunities for misinterpretation between different stakeholders or actors within the project. This misinterpretation arguably can lead to AT problem, which can be a partial cause of project failure. Therefore, in this thesis, project management was considered as a form of a language (Hodgson and Cicmil, 2006).

2.2.2 Project success and failure

Having examined definitions of projects, we can advance to assess the notions of project success and failure.

2.2.2.1 Limitations of the project management knowledge base

As mentioned, there are growing incidents of project failure (Delisle and Olson, 2004). This is at a time when there is a clear lack of consensus among academics and practitioners as to whether existing project management knowledge, tools and techniques can reduce project failures or enhance project success. On the one hand, the Project Management Body of Knowledge (PMBOK) guide is seen by many academics and practitioners to be generally accepted (PMI Standard Committee, 2000; Delisle and Olson, 2004), and there is an existing belief that the current project management tools and techniques have matured (Cooke-Davies and Arzymanow, 2003). On the other hand, other practitioners and researchers have suggested that the development of better project management tools and techniques would result in delivering projects with higher success rates (Kerzner, 1992; Frame, 1995).

However, those that doubt the maturity of the project management 'toolkit' also advise us that not all projects are the same and that different projects are characterised with different contexts (Pinto and Covin, 1989). Moreover, it is argued that responding to this variation is not easy. Even if we argue that project characteristics and contexts need to be identified to better apply project management tools and techniques (Shenhar, 1998), an obstacle here is still that the early stages of projects are characterised with high levels of ambiguity, lack of clarity and accuracy with regards to the future process of the project (Kreiner, 1995).

Given that there are doubts over the project management toolkit, that project type and context vary and that responding to that variety is a challenge, it is perhaps not surprising that some argued that project performance has not improved over the last 70 years (Flyvbjerg, 2014). In fact, is it normal that projects commonly fail?

The answer is that there is always something to blame project failure on. However, does the blame solely lie with the literature? Scholars and researchers, such as Hodgson and Cicmil (2006), have defended project management tools and techniques by pointing the blame for failure towards a number of issues, as follows. Firstly, a "lack of adherence to project management tools and techniques" (p. 94). Secondly, poor implementation and application of these tools and techniques. Thirdly, a lack of project management competencies within organisations which can adequately utilise project management tools and techniques to avoid project failure.

There is, therefore, an apparent division between accepting the possibility of project failure as inevitable on the one hand, and on the other hand blaming the failure on the

ineffectiveness of project management tools and techniques application. This increases the importance of understanding what we mean by project success/failure.

2.2.2.2 Defining project success and failure

The notion of project success is an important area of project management that has been broadly researched in the literature (Albert et al., 2017). In projects, there are always difficulties in defining the term 'project success' or 'project failure'. This is due to the involvement of a large number of stakeholders in each project, and their benefits from that project which are multi-faceted in their nature (Shenhar et al., 2001). Jugdev and Müller (2005) stated that:

> "Trying to pin down what success means in the project context is akin to gaining consensus from a group of people on the definition of 'good art'" (p. 19).

Indeed, it needs to be remembered that different people perceive success or failure differently. For example, Shenhar et al. (2001) stated that:

> "An architect may consider success in terms of aesthetic appearance, an engineer in terms of technical competence, an accountant in terms of dollars spent under budget, a human resources manager in terms of employee satisfaction." (p. 702)

That being the case, it becomes apparent that each stakeholder (internal or external) within a project has different assessment and success criteria towards the project. Mainly because each stakeholder has different motives behind the project execution (Aaltonen, 2011; de Bakker et al., 2011; Mir and Pinnington, 2014). Therefore, project success has to be viewed from various perspectives related to the project client, contractor, developer, general public, end user, etc (Lim and Mohamed, 1999). This approach provides a more accurate assessment of project success that is measured based upon

the relevant project success criteria (for example; time, cost, quality, performance, safety and so on) to each stakeholder (Lim and Mohamed, 1999).

Within the notion of success criteria, however, Pinto and Slevin (2006) and Baccarini (1999) distinguished between two types of criteria. The first type is hard criteria that can be used for the assessment of project success (time, cost and performance). The second type is soft criteria – related to the human factor. Hussein (2013) and Pinto and Slevin (2006) perceived the second type to be subjective and hard to evaluate. Scholars, such as Pinto and Mantel (1990), Freeman and Beale (1992) and Shenhar et al. (2001), however, supplied the literature with specific frameworks to assess project success and failure.

Barnes' Iron Triangle dimension of success/failure

The basis of almost all framework types, however, is Barnes' Iron Triangle (Chan and Chan, 2004; Cao and Hoffman, 2011; Chang et al., 2013). In the 1970s, Barnes' Iron Triangle (see Figure 4 below) aimed to illustrate the dependencies between three interdependent dimensions (time, cost, and performance) (Weaver, 2007; Delo, 2013).

Figure 4: Barnes' Iron triangle of project management performance criteria.

Barnes, in his Iron Triangle, emphasises the relationship between the three dimensions during the project execution stage. For example, if the project execution exceeded the planned duration of the project schedule, this would usually also increase the project costs due to a number of reasons. For example, inflation with respect to material and human resources costs; additional overhead costs, including salary, accommodation, administration, etc. for the project team; interest payments for loans and overdraft while financing the project for a longer period; and penalties for the project late delivery (Lock, 2013). In other words, any failure on delivering the project on time would result with failure on delivering the project within budget. Moreover, failure to allocate a realistic time and budget for the project delivery would result in failure to deliver the agreed project specification and quality. Overall, Robertson and Williams (2006) considered any project completed outside the time frame, which exceeded the specific budget and/or did not deliver the project scope and organisational specification, to be a failure.

However, some argue that this is too simplistic and point to a more complex argument that could be made. According to this argument, failure to deliver a project on time, within the allocated budget and specifications should not be conceived as failure at all. Instead, the actual project cost and time are the time they took (at the project completion stage), suggesting that the initial time and budget were underestimated. So, they are only a failure when compared against an unrealistic project time and budget.

In such cases, Prater et al. (2017) emphasised that:

> "One significant cause of this under-estimation has been shown by research to be optimism bias, a human behavioural characteristic" (Prater et al., 2017, p. 371).

Flyvbjerg (2006) described optimism bias as a psychological and political explanation for this kind of human underestimation, which he defined as:

> "A cognitive predisposition found with most people to judge future events in a more position light than is warranted by actual experience" (Flyvbjerg, 2006, p. 6).

Researchers, such as Prater et al. (2017) and Varki (2009), have found that the human nature is characterised with optimism. This highlights the importance of researches in the soft side of project management.

Reflecting on the previous argument around the soft side of project management, including optimism bias, it is perceived as an immature field within the current research. Many of the classical contributions to project management research are not substantial as to what is actually happening in projects in practical terms (Winter et al., 2006). Therefore, an important area to consider in project management research, as suggested by Söderlund (2004), is the process of project organisations, in which it will be necessary to go beyond the orthodox of project managements models: PMBOK (guide), Gantt chart, project plan, program evaluation and review technique, and WBS (Maylor, 2001). In other words, this suggestion requires looking at people's behaviour (soft side) within projects, before trying to understand the hard side of projects (Geertz, 1973). The following example demonstrates the importance of understanding the soft side of project management, as it has high influence on the project outcome.

A project client conducts a feasibility study through a project consultant, to test project viability before project initiation. According to the rationalistic assumption of PMT, the project consultant produces a feasibility study document, which leads to the initiation of the project. Wachs (1990), however, stated that agents (the project consultant in this

case) might produce optimistic estimations in order to drive projects to the initiation stage for their own organisational interest and to win a project contract. This optimism bias by the agent (consultant) can be perceived as a rational behaviour for the favour of the consultant's organisation. In contrast, this behaviour can also be perceived as an irrational behavioural by the client organisation, as it will allow approving a non-viable project. Thus, understanding such behaviour by project agents is essential to have a deeper understanding of project failure, in particular whether a 'failure' really is a failure. Therefore, research of project management should look further into such issues and address this assumption of rational irrationality within agents' behaviours in projects, which can reduce the project team effectiveness.

Other dimensions of success/failure

Despite the fact that Barnes' Iron Triangle was considered as the basis of most frameworks, others were introduced into the literature. For example, Pinto and Mantel (1990) used three dimensions to measure project success. These dimensions are the client's satisfaction, the project value and the execution process. Freeman and Beale (1992) introduced seven dimensions to be used in measuring project success: execution efficiency, technical performance, organisational and managerial implications, personal growth, business performance and manufacturers' ability.

Other researchers, such as Shenhar et al. (2000), however, differentiated between two types of projects – operationally and strategically managed projects. The first are more concerned with the project delivery; while using the project budget, time and performance as project success indicators. Whereas, the second type extends further to strategically achieving business related goals and improving business performance after the project completion. Shenhar et al. (2001) found their framework of project success to be composed of four dimensions (see Figure 5 below).
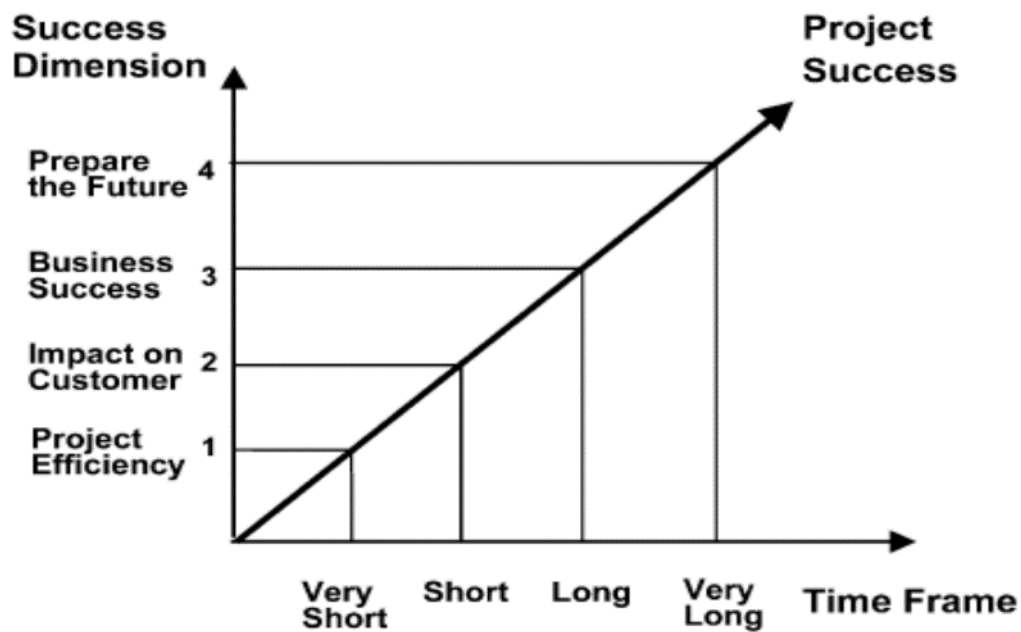
Figure 5: Time frame of success dimensions (Shenhar et al., 2001, p. 716).

Project efficiency (the first dimension) expresses the efficiency of the project management process and tells whether the project was delivered on time, within the allocated budget and executed within its resources constraints. This dimension provides an immediate chance to assess the project – even during the execution stage. The project success within this dimension, however, may not necessarily be conceived as success in the longer term after the project completion. Impact on the customer is the second dimension, which addresses the customers' requirements and needs from the project (functional, technical and so on). Using this dimension, a project can be viewed as successful even if it failed from an operational point of view (the first dimension). The third dimension is business success and is related to the influence the project outcome may have on the business on the long run. Preparing for the future is the fourth dimension; it addresses the impact of the project outcome in preparing the organisational infrastructure (for example, technological infrastructure) for the future (Shenhar et al., 2001).

Project success and failure in this thesis

However, it is Shenhar et al.'s (2001) first dimension – project efficiency – that presents a favourable framework in order to address the research question while using AT. This is because AT primarily analyses the problems between the client and his agents, starting from the project initiation stage and continuing throughout the project execution stage. Thus, using this theory in the analysis and explanation of project failure within the scope of this research is confined to the operational perspective.

Furthermore, having considered the literature on both performance perspectives and project types, it has been decided that this operational project will be considered from the perspective of the client, due to the following reasons: firstly, it is the client's first project of its kind; secondly, the project is built using public money and this increases the significance of finding out whether this project is a success or a failure; and thirdly, the client's decision to initiate this project is of great importance and interest because of its value in serving the Islamic community (SRO-4, 2014). Furthermore, it has been decided that in accordance with a client-focused perspective, the assessment of the project performance will focus on Barnes' three aspects of the 'Iron Triangle' (time, cost and quality), which also addresses the operational perspective. Thus, project failure – in this research – is defined as follows:

> "If it fails to meet its targeted cost, time, or scope" (Robertson and Williams, 2006).

2.3   The project perspective

Shenhar et al. (2001) stated that the "operational mindset is clearly reflected in the project management literature" (p. 702). However, there are further efforts within the

business sector to adopt the project operational approach and re-form their tasks as projects.

Temporary organisations

The process of re-forming tasks as projects can occur in various ways, by the formation of task forces, action groups or program committees, which are delegated to deal with or to handle some required actions (projects) in the form of a project organisational theme, known as TOs (Lundin and Söderholm, 1995). Furthermore, this theme of TO is utilised by some businesses in delivering certain organisational tasks in the form of a project. Thus, this takes us to the conclusion that a large proportion of today's businesses (POs) are creating project organisations in the form of TOs (Anvuur and Kumaraswamy, 2016), which hold the following characteristics:

- They manage complex tasks.
- They bring together the required capabilities, skills and knowledge that are necessary to deliver projects.
- Time delimited constraint.
- They deliver complex change.
- They are goals/objectives oriented (Anvuur and Kumaraswamy, 2016)

Despite the fact that literature around project management stated that "temporary organisations are formed within the organisational boundary of a single, parent organisation" (Haniff and Ogunlana, 2015. p. 1), we have to emphasise the importance of understanding the differences between permanent and TOs, including their structural nature, and their managerial and operational perspectives. This is in order to achieve sufficient insight into the project dynamic and its implication on project success or failure.

There are four concepts that distinguish TOs from permanent ones and they are: *task*, *temporality*, *team* and *transition*. These concepts can be utilised in the classification or description of an organisation as they manifest the general demarcation of TOs. These concepts differ from other crucial concepts that define POs, which are naturally defined by goals (instead of tasks), working organisation (instead of teams), survival (instead of time) and production process and sustainable development (instead of transition) (Lundin and Söderholm, 1995).

The rationale behind TO existence, as many researchers proposed, is to manage time delimited and complex tasks within a specific organisation (Meyerson et al., 1996; Liu, 1999; Hanisch and Wald, 2011). Goodman and Goodman (1976) identified four problems, which were addressed by the creation of TOs. The first problem was the complexity of some tasks, which need an integrated effort by the organisational members to execute and complete the tasks. Secondly, the problem of having unique tasks that may not fit with the permanent organisational processes and procedure. The third problem is the issue of organisational tasks with significant importance, which require the establishment of new organisational structures in order to manage them. The fourth and final problem is tasks defined by goals, with a specific deadline for completion. Therefore, it could be argued that TOs exist because of the requirement for specific functional organisational effort and the essential need for high levels of coordination in order to deliver complex tasks within limited time (Söderlund, 2004).

Temporary multi organisations

As mentioned above, a TO is a temporary system formed by POs (Turner and Müller, 2003) to deliver certain complex tasks and projects within limited time. The purpose of TOs has been consistent within the literature, which is to achieve higher organisational performance through highly specialised project teams (Bechky, 2006). However, in

certain type of projects, such as infrastructure projects, TOs are not established in the same format (by single PO); instead, it is a system formed by multiple organisations working together in a single endeavour (Haniff and Ogunlana, 2015).

The involvement of multiple organisations in the construction sector comes from a complex system, which requires functional specialism with high interdependencies in the project inputs, execution and outcomes (Hobday, 1998). Eventually, these multiple organisations form the project team through a selection procedure by the client (Mohsini and Davidson, 1991). The term 'project team' was contested by many authors in this case, such as Rowlinson and McDermott (1999), Davidson (1988) and Cherns and Bryant (1984), as they strongly suggested that this group of actors should be called TMOs, rather than a project team. This is because "project actors are temporarily 'seconded' to projects by their employing organisation or function, for the period of their involvement in the project" (Hall and Kutsch, 2007). The actors' involvement was described as 'temporary' because it lasts for the duration of each single project and, by the end of the project, different organisations or members separate or move to work on different projects.

Moving on to the definition of a TMO, it is defined as a TO that is formed by multiple organisations, aiming to deliver a facility sponsored by the client, through an internal integrated effort between these multiple organisations. The form it takes is that every single organisation within the TMO has an actor or group of actors to represent and supply their organisational services as a member of the TMO (Haniff and Ogunlana, 2015).

In modern days, the formation of a TMO has included the procurement of specialists' services by the client, such as client representatives, project consultants, main

contractors and subcontractors, where these relationships between the actors are usually mediated by contractual document. This is a result of clients' lack of skills to be able to undertake the project design and execution themselves. Hence, it is more common to outsource these services and mobilise external specialists to carry out these tasks (Eccles, 1981; Bygballe et al., 2013).

2.4   A conception on project organisations

As mentioned, Lundin and Söderholm (1995) identified four concepts that differentiate a TMO from a PO. These concepts are temporality, task, team and transition. Looking at the way these concepts are perceived in a TMO creates issues and challenges for the project team members, which they have to tackle in order to avoid project failure and build a team who can perform effectively. Further analysis of these concepts will follow; firstly, to draw the basic differences between a TMO and a PO; and secondly, review how these differences create the challenges that face project team members in a TMO, in order to reach the effective performing stage of Tuckman's model and avoid project failure. Figure 6 below provides a summary of the issues that can lead to project failure within these four concepts.
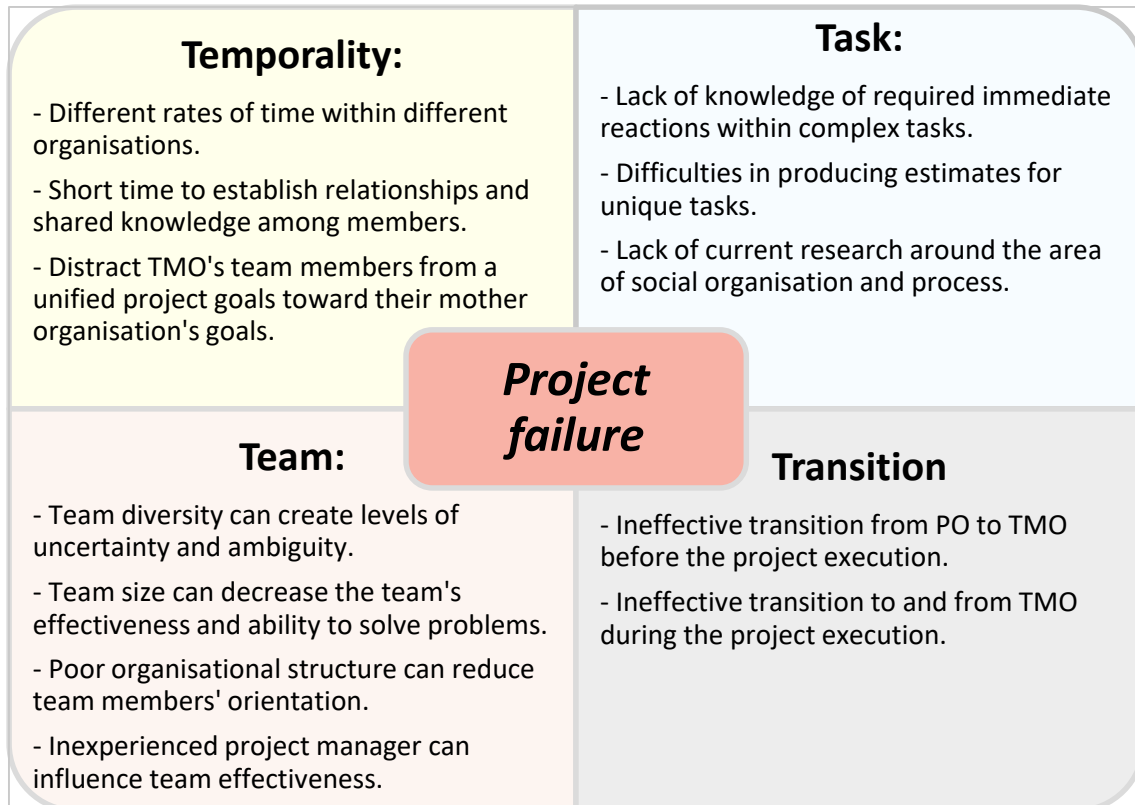
Figure 6: Four concepts (temporality, task, team and transition) and project failure.

2.4.1 Temporality

The main distinguishing feature between tasks carried out by TMOs and POs is temporality. In a PO, it is about business survival over the time that the business is running; whereas in a TMO, there is a starting point and a finishing point. In the literature, there is an apparent agreement on these distinguished descriptions of the concept of temporality between the two types of organisations (Haniff and Ogunlana, 2015). Within the TMO context, the literature in temporality has made a number of distinctions among different types or dichotomies of time, such as Kairos and Chronos, diachronic and synchronic, slow and fast, subjective and objective, and global and local (Söderlund, 2004). However, Biesenthal et al. (2015) argued that the first major type in temporality research was the distinction between event time and clock time, which is an overlapping distinction with the other distinctions mentioned above.

There are two different approaches of interpreting temporality, which provided the core argument of the distinction between the different types of time. The first approach interprets temporality as a very limited or short length of time, in order to achieve immediate organisational goals. This is an objective approach, which points out the focus on the actual quantified duration of a project, in relation to the organisational goals (Palisis and Bartolomeo, 1970; Söderlund, 2013). In line with this approach, Chronos is a similar classification which perceives time as objective, measurable and in a quantitative unit (Reo, 2007). In other words, it is a type of time based on the clock. Clock time was the approach that was dominant within temporal research in management and organisation literature until the mid-1980s. However, the notion of clock time lost its dominance as a result of the increased level of complexity in organisational life (Das, 1991; Lee and Liebenau, 1999). The increase in organisational complexity shifted the dominance to the other side of these distinctions; the second approach of looking at time within the context of this research.

The second approach conceived temporality as a short length of time available to achieve the required integration and participation between actors within the organisational setting, who are involved in interlinked project activities (Lanzara, 1983). The first approach shows a close link between time and the clock, as it is used to measure performance efficiency and productivity. Whereas in this approach, known as Kairos (Smith, 1969), there is another dimension to the perception of time, which emphasised the use of meaningful events and human activities as an indication of time, rather than actually measuring the time (Bluedorn and Denhardt, 1988). Event time is a perception that helps researchers gain a richer and deeper insight of organisational life, and is referred to as qualitative time (Starkey, 1989). Hence, Orlikowski and Yates (2002) did not conceive event time as fixed nor regular, but rather as a dynamic concept, which

varies by different organisational norms. As a result, each single organisation within a TMO context might have different measurement dynamics of time, which will distance that certain organisation from the rest. This means that the project, may be subject to failure as a result of ineffective project team performance. Despite the opposing views between the two approaches, Roe (2007) stated that they are competing in the field of management, and organisations can adopt both clock time and event time in organising their activities, as the discrete separation of the two approaches often collapses (Orlikowski and Yates, 1999). This can be illustrated by the notion of different rates of time.

Söderlund (2013) argued that different parts of an entity could operate with different orientations of time (or rates of time). For example, marketing typically adheres to daily checking of clients' orders and purchases; manufacturing operate with daily deliveries; while research and development (R&D) takes a longer-term period to operate.

Looking specifically at the project management practices, the clock time known as Chronos (Smith, 1969) is the common approach in managing time in order to meet project deadlines (PMI, 2013). This was supported with the assumption that projects can be effectively managed by following this approach, based on the predictions of past events, and by planning using objective tools and techniques to finalise the required work to deliver projects successfully (Atkinson, 1999). However, within the literature, there is lack of clear consensus on the duration of time that defines the term 'temporary' in relation to the project duration, the current literature states a number of variations which point out the length of 'limited duration' starting from a few months all the way to number of years (Porsander, 2000; Shenhar, 2001).

In spite of all the debates in the literature over the definition of time, many authors have investigated the impact of limited duration of a project on the performance of a TMO from the behavioural aspect, including the social participation and integration between the project's actors. Lindkvist (2005) indicated that the short duration of a project is not a positive factor as it does not allow actors to develop communities within a TMO. In other words, the amount of time project actors have during the project execution stage is deemed to be insufficient to develop and share knowledge relevant to the project task; neither is the time sufficient to establish a tightly working team in a suitable social structure form (Morley and Silver, 1977). Therefore, the limited time within a project can create difficulties in delivering a project that involves inter-dependent tasks which have to be performed by multiple organisations. This is because tasks with inter-dependencies require project team members to develop and share knowledge around those tasks (Lindkvist, 2005). Thus, TMO team members are required to overcome this obstacle to eliminate the possibility of project failure.

Other researchers such as Turner and Müller (2003) looked at the issue of limited time from a different perspective: the impact of the limited project lifespan within a TMO on project actors. Turner and Müller (2003) have explained this further; they proposed that the defined start and end of a project create a matter of urgency between the project actors to deliver the outcome of a project within the allocated timescale. Turner and Müller (2003) suggested that this level of urgency might be associated with stress because of the pressure of the project-limited time. Consequently, the existence of stress among the project team could act as an inhibiting factor in the development of an effective team, which may leave the team members in the storming stage and prevent them from reaching the performing stage. To overcome this stress issue, Morley and Silver (1977) called to increase the collaboration, organisational co-operation and interpersonal support between the project actors, to minimise anxiety and stress.

In contrast, Bryman et al. (1987) contended that while projects with a longer duration allow extra time for growing relationships, shorter projects tend to be predominantly task oriented rather than focused on improving relationships. Similarly, Bakker et al. (2013) argued that, in short duration projects, actors within a TMO have all their attention on the present time, rather than considering the impact of their behaviours on future situations. Therefore, failure to establish the required project knowledge could lead the project team to behave in a way that is not consistent with the project needs at certain stages of the project.

Furthermore, a TMO's engagement occurs over various stages of a project. Each organisation within a TMO is delegated to provide resources or certain types of services to the project over a certain period, ruled by contractual documentation, with identified delivery deadlines (Cherns and Bryant, 1984). Therefore, Haniff and Ogunlana (2015) argued that TMO actors are task oriented and more concerned with handling the project deliverables within the specified time, with not much concern given to relationship development with actors from other organisations. Consequently, building relationships within the project team becomes a major challenge among the team members, purely because of the limited project duration.

Despite the previous argument, Cherns and Bryant (1984) proposed – about the role of the client's management – increasing the level of co-ordination between actors within a TMO. In this regard, the factor of short project duration may affect the degree of collaboration and interpersonal support between project actors. Cherns and Bryant (1984) found that the actual performance of a TMO is greatly determined by the managers and their capabilities to enhance the co-ordination between the project actors. Moreover, they envisaged a TMO to be an organisational form that can handle project

uncertainties, due to the involvement of specialists and experts in every area of the project.

Thus, as much as a TMO might be task oriented, it is essential to highlight the importance of relationship development and of a collaborative approach between different organisations within the TMO, in order to achieve a lower level of project ambiguity and uncertainty, and to overcome the complexities associated with the temporality of the project. The failure in achieving this, potentially increases the likelihood of project failure, as project temporality can arguably result in: different organisations adopting different rates of time (Söderlund, 2013); insufficient time to form a tightly working team and the sharing of knowledge among TMO team members (Morley and Silver, 1977; Lindkvist, 2005); and high levels of stress that can inhibit an effective team formation (Turner and Müller, 2003). Evidently, project temporality is deemed as a potential cause of disorientation of TMO team members from a unified project goal. As a result, each team member follows their organisational interest, which can potentially be part of the causes of a project failure.

2.4.2 Task
Within the research of TMOs, the second theme is task. Normally, the purpose of task execution is to achieve specific goals. As mentioned previously, the motive behind the creation of a TMO is the need to accomplish certain tasks (Goodman and Goodman, 1976). Therefore, a TMO is dependent on a minimum of one task or a limited number of tasks (Lundin and Söderholm, 1995).

The literature around TMOs has tried to define the characteristics of a task in the form of an assumption. Meyerson et al. (1996) have made an assumption in the literature, which

states that any task performed by a TMO should have a level of complexity. To define complexity in this case, Hanisch and Wald (2011) claimed that complexity could be measured by the difficulty of the work that is to be executed. Other scholars such as Lundin and Söderholm (1995) measured it by considering task complexity as a form of task uniqueness.

At this stage, it is important to distinguish between two different types of TMOs. The first type of TMO concentrates on executing projects that are going to be repeated in the future; the second type of TMO would only perform unique projects with no possibility of repetition of the same project in the future (Gann and Salter, 2000; Prencipe and Tell, 2001). Thus, looking at the scope of TMOs, which are working on either type of projects, the organisations' members might not have an immediate knowledge in terms of how to act and perform the project delegated to them (Lundin and Söderholm, 1995). This highlights the importance of understanding the complexity of the situation in case of the involvement of multiple organisations to perform a project.

The assumption of task complexity within a TMO framework creates a number of issues, which have to be taken into account in the development of the theory of TMO. The first issue originates from the definition of complexity. By nature, projects are complex systems, for various reasons; they involve a number of tasks with multiple components and profound interdependencies within its tasks and components (Davies and Mackenzie, 2014).

In some industries (for example, the construction industry) project complexity expresses two main aspects. The first is managerial complexity, it appears in the process of bringing a number of tasks and different pieces of work to form a workflow and critical path. The second complexity is around technical issues within the execution of the project work

(Gidado, 1996). However, we should also consider that the degree of complexity will differ between the two types – managerial and technical – depending on the actual task, its purpose and the interdependencies between tasks, as well as the interactions between project actors (Hanisch and Wald, 2011).

The second definition of complexity is concerned with task uniqueness. It has been argued by El-Rayes and Moselhi (1998) that projects in some industries are characterised by the repetition of tasks. To be more specific, infrastructure projects appear to have a common occurrence of repetition of activities, as project elements will be repeated from one location or unit to another. Therefore, the time and cost estimations of repetitive activities can result in more efficient planning and scheduling of a project (Hyari et al., 2009). Despite the conclusion from the previous argument, planning for a unique project that is occurring for the first time, even if it includes repetitive tasks or activities, does not undermine the complexity of uniqueness. The managerial and technical aspects of the execution stage will still demonstrate the challenges of a unique project (Crawford and Pollack, 2007).

Söderlund (2013) presents two additional distinctions within task management. The first distinction divides the project activities into two perspectives. The first is the actual task and its evolution process; this component is more concerned with the technical aspects of the actual work. In this instance, a project is defined as a temporary endeavour to carry out a complex task, and project management is the solution to deliver it, through breaking down the project activities into subprojects, work packages and project milestones. The second perspective is the social perspective, which is concerned with people's behaviours, relationships and the social conditions while performing the project task (Söderlund, 2013). This second perspective has been discussed in greater depth in the literature that is related to organisation theory (Packendorff, 1995; Andersen, 2008).

The second distinction is between content and process. Pettigrew (1990) was found to be one of the most influential authors discussing this area of distinction. Both perspectives – content and process – in this respect, are interlinked but present two different aspects of project organisation. Content refers to the 'what' questions (for example, what to deliver from the project, what work has to be done to deliver it, what needs to be done to build an effective team); whereas process, is more concerned with the 'when' question (for example, when to carry out certain tasks, when to meet with the project team, when to terminate an activity or a process). Such processes will include delivery dates and deadlines. Thus, based on the last two distinctions – task and social organisation, and content and process – Söderlund (2013) highlighted four areas that are concerned with project management practices and they have been the core of project management research as follows:

1. Task and content: a significant amount of research has paid attention to the content of project tasks, which covers areas like scope management and WBS.
2. Task and process: similarly, research in project management has addressed processes related to tasks, which can be seen through Gantt charts and planning techniques.
3. Social organisation and content: this element of project organisation has been implemented through project documentation which shows the distribution of responsibilities, interdependencies between project actors and cross-functional teams, and so on.
4. Social organisation and process: this includes a number of examples, such as team temporary relationships, team dynamics, timing norms and deadlines.

The main argument here is that, historically, the first three areas have been much considered in the literature of project management, whereas the last area, which is social organisation and process, was given very little attention in project management research (Söderlund, 2013). Therefore, project management tools and techniques (including WBS, critical path and earned value techniques) are important, but it is necessary to supplement them with project management soft skills (such as feelings, emotions, cultural awareness, public relations, power and learning) and leadership, in order to achieve an effective TMO team (Söderlund, 2013). Otherwise, the project team might face the threat of dealing with issues that hinder the project progress such as APs.

Thus, the concept of project task presents three major areas deemed as risks which can potentially lead to project failure. Firstly, the lack of knowledge (managerial/technical), associated with complex tasks, which is required for any immediate reaction by the TMO project team members (Lundin and Söderholm, 1995). Secondly, the difficulties in producing accurate time and cost estimations for unique tasks. Finally, the effect of the existing minimal research in the area of social organisation and processes within project management literature, and how does that influence the social factors of human interaction and dynamics within projects. Further discussion around the area of social organisation is provided in the next concept that differentiates PO from TMO, which is team.

2.4.3 Team

To continue the narrative, as the design of TMO is based on the concept of task, a TMO is characterised by individuals with different capabilities and skills, forming the TMO team (Haniff and Ogunlana, 2015). There have been numerous suggestions in the literature about the process of team selection; in a number of project management texts, it has

been suggested that the selection of the project team members must be on the grounds of competency, in other words, each member should have the necessary technical skill set that is required to deliver the allocated task (Larson and Gray, 2014; Pinto, 2016). Another suggestion, with regards to the selection of the team members, was based on the interpersonal skills, in addition to competencies (Bryman et al., 1987).

Besides the importance of the two components suggested above, Baykasoglu et al. (2007) argued that it is not sufficient to only consider the interpersonal skills and competencies during the team selection. They deemed other factors to be critical in order for the team to achieve successful completion of their task, such as: members' eligibility for the task (technical and functional expertise), their capability to execute the task and deal with different levels of uncertainty, their problem-solving abilities, and their knowledge on the process of decision making. These issues are critical as they have an important effect on team performance and effectiveness (Baykasoglu et al., 2007).

Moving to the effectiveness of the selected team members, there are many aspects that would increase or decrease the team effectiveness. Researchers warn that the diversity of TMO members can push team effectiveness one of two ways. Diversity can lead to a positive result and increase the team effectiveness, as it will balance the performance of multiple team members and create a supportive dynamic among them (Larson and Gray, 2014; Pinto, 2016). The counter argument is that diversity could possibly create a level of ambiguity, uncertainty and conflict within the team members (McGrath, 1991).

The size of the selected team is another important factor, as it will affect the project team's level of effectiveness. Baykasoglu et al. (2007) presented a debate in their research, highlighting that once the team size goes over 12-14 members, the performance of the team drops off. However, a small size team suffers from different

problems, for example, the team's ability for problem solving decreases because of a lack of interaction and lack of adequate information being shared among members. Another factor that can influence the team effectiveness is the difficulty in building shared understanding between members; this is purely because, TMOs are formed by individuals from mixed specialised competencies (Lindkvist, 2005).

One of the critical highlights from earlier in this discussion, is the fact that there has not been a great deal of research relating to the area of social organisation within the field of project management. This was summarised by Bennis and O'Toole, who stated:

> "The things routinely ignored by academics on the grounds that they cannot
> be measured – most human factors and all matters relating to judgement,
> ethics, and morality – are exactly what make the difference between good
> business decisions and bad ones" (Bennis and O'Toole, 2005, p. 3).

In that sense, Söderlund (2013) considered this criticism very much relevant for the field of project management. Despite the little research that has been undertaken in the field of social behaviour in project management, authors such as Bourne and Walker (2005) and Hall and Kutsch (2007) looked into the behavioural aspect of project actors, and what factors could practically reduce the project actors' level of effectiveness within the team. This was highly connected to the area of project culture.

Project culture was found to influence the project actors' effectiveness as Bourne and Walker (2005) considered cultural norms as "the unwritten rules of behaviour" (p. 162). Thinking about how culture is formed within an organisation, Trompenaars (1993) listed three factors that determine organisational culture and they are:

1. System of authority between superiors and subordinates.

2. Relationships between employees and their organisation.

3. Employees' views about the organisation and his/her place in it.

<div align="right">(Trompenaars, 1993, p. 157).</div>

Thus, considering Bourne and Walker's (2005) statement about cultural norms, an organisational culture with poor structure and undefined rules is a culture that will influence team behaviours and effectiveness. This was supported by the argument by Hall and Kutsch (2007), as they suggested that project actors could eventually find themselves disconnected and alienated from the project, which is related mainly to the third factor mentioned by Trompenaars (1993) above. Figure 7 seeks to illustrate this.
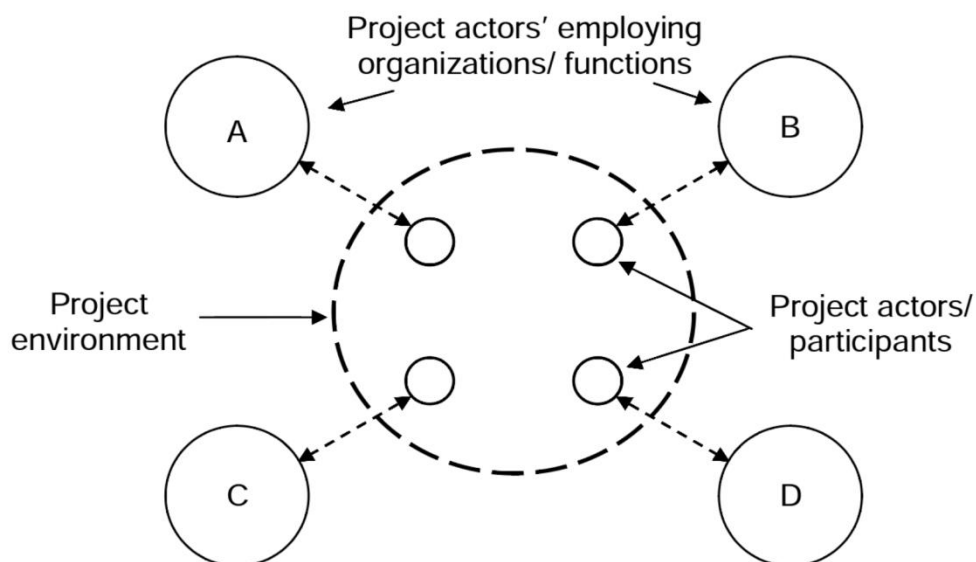
Figure 7: Actors in a project (Hall and Kutsch, 2007).

Figure 7 demonstrates the position of project actors who are seconded from their employing organisation, or their functions from outside the project environment, to the project organisation in order to represent those organisations/functions within the project. The core argument here is the fact that if project actors are not entirely clear of their own role within the project organisation (a poorly defined project organisational culture), it will create an uncertainty as to whom they should be giving their loyalty, whether to the employing or to the project organisation (Hall and Kutsch, 2007). The risk is that they might find themselves in the middle between the two organisations, which will hinder their work effectiveness within the project team (Oshry, 1996), mainly in cases where there are objective conflicts between the project organisation and the employing organisation.

Within the small amount of empirical debate in the current literature, Hall and Kutsch (2007) stated, "there is an implicit acknowledgement of this issue, judging by the amount of attention project teambuilding and, in particular, leadership are given. This attention implies that project participants need to be formed into a team in order to work effectively and deliver the project" (p. 4). This moves the discussion to the next point on team formation, members' integration and leadership.

One of the main streams of team building is establishing an effective level of integration between the team individuals that allows them to conduct themselves as effective members, to ensure effective achievement of tasks. Although a project involves individuals with distinguished competencies, two factors were identified that can help in building an integrated team. Firstly, an experienced project manager with sufficient leadership skills should be able to successfully create a level of integration between members, and raise the co-ordination standard throughout the project duration (Cherns and Bryant, 1984), in order to establish effective team work (Wang et al., 2005). Despite

the importance of project managers with the required leadership skills on project team building, Crawford et al. (2006) highlighted that little attention had been given to the research in areas such as soft skills, leadership and reflective ability for project managers. These areas will focus on turning project managers into reflective leaders (with an increased awareness level of their team building ability), as well as being trained technicians.

Secondly, as Cobb (2012) pointed out in his research, the importance of initiating shared knowledge between members needs to be recognised:

> "The more they share common ideas about the team and how it works, however, the more they will think and react as a cohesive, coordinated unit." (Cobb, 2012, p. 122).

As well as building an integrated team, the effectiveness of the team members is deemed to have high level of importance. However, there are multiple barriers to building team effectiveness, which can lead to poor team performance; for example, inadequate planning, accountability avoidance, role ambiguity and focus on individual outcome rather than team performance (Natvig and Stark, 2016). It is essential to overcome these barriers to form an effective project team, as successful project delivery takes more than integrated team members who are undertaking the project delivery. An effective team has certain characteristics, which can be developed through a number of stages over time and will help in avoiding team failure; this will eventually also minimise the possibility of project failure (Catalyst Consulting Team, 2012).

Tuckman (1965) introduced four major stages that can develop an effective team, these are: *forming*, *storming*, *norming* and *performing* (Bonebright, 2010). Tuckman, along with Jensen (1977) proposed the fifth stage called adjourning stage. The following table will show the steps that occur in each stage of team development.

Table 1: Tuckman's stages of team development (Tuckman, 1965; Tuckman and Jensen, 1977; Bonebright, 2010).

Stages	Description
(1) Forming	- Test the boundaries - Members discover the acceptable inter-personal behaviours - Create ground rules - Establish relationships - Identify the group competency for allocating tasks
(2) Storming	- Chaos - Confrontations - Conflicts
(3) Norming	- New norms are generated - Members accept participants and the whole team - Desire for harmony among members - Start sharing ideas and opinions - The team becomes more cohesive during this stage
(4) Performing	- Members understand their roles and perform effectively - The team is seen as a mechanism for problem solving - The team focuses on successful task completion
(5) Adjourning	- Task termination. - Disengagement from relationships. - Recognition of achievement.

Despite the fact that the development process of the team members progresses through the five stages, one after the other, it can fluctuate back and forth between these stages if there are any changes to the circumstances that surround the project team; for example, changes in team members, organisational priorities and leadership (Abudi, 2010; Seck and Helton, 2014). These changes may hinder the process of building a highly performing and effective project team.

Despite the argument about the possibility of building team integrity and increasing their work effectiveness, the main concern remains with the inadequate amount of time that is available for the team development and integration within the TMO context (Haniff and Ogunlana, 2015) – as there is an apparent lack of time for team members to engage in

activities that allow them to build confidence among each other, as an attempt to establish trust; unlike, the case within traditional forms of organisations (Haniff and Ogunlana, 2015). In spite of lacking the required time, scholars argued that in practice, team members are able to overcome this dilemma of inadequate time and build level of trust (Jarvenpaa et al., 1998; Guangquan et al., 2007; Robert et al., 2009). Building trust in such a short time between members was explained by the term 'swift trust' and defined as a "unique form of collective perception and relating that is capable of managing issues of vulnerability, uncertainty, risk and expectations" (Meyerson et al., 1996, p. 167).

It is argued by Bryman et al. (1987) that the existence of 'swift trust' in TMOs occurs as a result of the greater urgency in shorter projects, which unifies the final goal between members and accomplishes the final project delivery. Working to achieve one objective presents a reasonable belief to work on the basis of good trust and, therefore, to overcome various levels of uncertainty and ambiguity that arise within complex tasks among team members who have never worked with each other before. To support the previous argument, researchers suggested that while performing projects without sufficient time to slowly establish trust, team members would conduct themselves as if trust was already established within the organisation (Jarvenpaa et al., 1998; Powell et al., 2004).

It is interesting to observe the applicability of the concept of 'swift trust' within TMOs, where team members do not expect any future collaboration after the task and project completion (Goodman and Goodman, 1976). This begs the question of whether 'swift trust' is also applicable within the TMOs where actors anticipate to interact with each other in the future, after delivering the current project.

As well as the concept of 'swift trust', researchers proposed a different organisational nature that evolves relationship between actors within TMO's, specifically within the construction industry (Manu et al., 2015). Eccles (1981) suggested that there are periodic relations between main contractors and subcontractors in the construction industry. A significant finding suggested that where an actor of a TMO had previously interacted with other members of the same TMO, the performance of the current project would be optimised (Rowlinson, 1988). Consequently, co-operation and partnership arrangements within construction industry have recently been encouraged (Latham, 1994; Beach et al., 2005; Gadde and Dubois, 2010).

An equally significant aspect to consider – when speaking about TMOs and the involvement of a number of actors from different sub-organisations who are forming the TMO – is the differences of goals and objectives between the two sides, and the possible subsequent implications on the TMO actors' work effectiveness. According to Alsedairy (1994), the goal differences between the actors of a TMO, or in between two sub-organisations, create tension and conflict. This conflict will slow down the project execution, cause friction, and devolve the level of trust and good relationships between project actors. Therefore, it could increase the difficulties in dealing with project ambiguity, uncertainty and project risks while working on complex task with inter-dependent activities, which might increase the risk of project failure (Meyerson et al., 1996).

Thus, team – as the third concept that differentiates PO from TMO – is found to have generated few risks which can lead to project failure. Firstly, McGrath (1991) argued that diversity within team members potentially creates ambiguity, uncertainty and conflict among them. Secondly, Baykasoglu et al. (2007) highlighted the impact of the wrong size team, which can decrease team performance (in bigger teams) or cause a lack of

managerial and technical skills (in smaller teams). Another risk is defined as poor organisational culture, which can cause team members to feel disconnected and alienated from the project (Hall and Kutsch, 2007). Finally, an unexperienced project manager is considered to be a major cause of an ineffective project team (Cherns and Bryant, 1984; Wang et al., 2005). The outcome of these risks, if they were not managed appropriately, can be counted as contributing factors that can cause a project to fail.

2.4.4 Transition

The fourth and last theme considered by Lundin and Söderholm (1995), in their comparison between temporary and POs, is about the concept of transition. They have identified two distinguished meanings of this term. Firstly, from the point of view of a PO, transition was defined as: the practical transformation within the organisation as a result of the actual work, in terms of the change occurred within the organisation from before to after initiating the project. The second definition refers to the desirable perceptions of change within the project during the project execution. The latter definition of transition is the one concerned with the operational and functional aspects of a TMO within the project. The main reason for PO to form TMO and take on the transition process is to achieve complex project's deliverables, in a specific allocated period, with a deadline date (Lundin and Söderholm, 1995). Little research has been done on the issue of the transition process. This was supported with Bakker's (2010) argument that "there was relatively little literature that could be matched with Lundin and Söderholm's description of this concept [transition]" (p. 6).

Despite Bakker's claim about the lack of research in the area of transition, Burstrom and Jacobsson (2012) argued that the successful achievement of transition processes is associated with operational complexities. This requires the stakeholders involved in the

transition process to carry out a number of transformative and translational activities at many levels within the PO; it starts with the individual and extends to the functional, strategic and operational levels (Burstrom and Jacobsson, 2012).

As a result of the transformative activities within the transition process, the evolution of TMOs comes into action. The evolution process starts by having the PO form a TO, which will take charge of the project. The TO employs internal expertise from within the PO, or external from outside the organisation, at which stage the TO transforms into a TMO (Haniff and Ogunlana, 2015). This presents a major challenge to project managers (PM) as these people must be borrowed for the project. The PM then needs to negotiate with the required personnel employers (functional managers internally within the PO, or other employers externally). The negotiation process continues between the PM and the actual people to persuade them to take on this task (Jacobsson et al., 2013).

However, some projects require certain project actors at particular stages of the project lifecycle, which means that project actors may join and leave the project at any time, from the start until the end of the project, which will create transition points. Hall and Kutsch (2007) argued, "these points of transition create additional tension and conflict within the project environment. Clearly, the scenario described need not arise in all projects but may potentially arise in any given project" (p. 5). The potential occurrence of such issues between project actors, because of these transition points, highlights the importance of social organisation research within the area of project management research, in order to avoid the fluctuation back and forth between the four stages of Tuckman's team development model.

Finally, moving to the project close out stage, TMOs cease to exist as each one of the TMO actors goes back to their original organisations, or otherwise takes over another

future project. Therefore, the transition process post-project period becomes the responsibility of the PO (Lizarralde et al., 2011).

Thus, the failure to conduct an effective transition stage by the PO towards a TMO, and/or the transition of actors in and out of the TMO, can potentially impact the formation of an effective project team, which as a result can be perceived as a risk that may lead to project failure.

2.5   Mega-projects

The project management literature has made a distinction between projects and mega-projects. This is of interest to this thesis for two reasons. First, the case study is a mega-project. Second, mega-projects contain more P-A relationships than smaller projects, thus mega-projects arguably heighten the relevance of AT as a lens for studying project failure.

2.5.1   Key features of mega-projects

Mega-projects are projects that cost multibillions of dollars (Marrewijk et al., 2008). Flyvbjerg (2009) stated that the US Federal Highway Administration defined mega-projects as projects that have a minimum cost of 1 billion US dollars or projects with a noticeable cost that attracts public and media attention, as they have a large impact on the country's budget, the community and the environment. Some mega-projects may cost multiple billions of US dollars, way beyond the minimum standard definition. Others, in a medium sized town, cost less than 1 billion US dollars, but are still considered as mega-projects. The definitions of mega-project within the literature, therefore, are subject to variable criteria.

Mega-projects will highly influence society and are always associated with high costs (Flyvbjerg, 2009). Thus, when determining whether a project is of mega size or not, various factors must be taken into consideration, such as where the project will be carried out, what the cost will be, as well as the impact of the project within a given area. Furthermore, mega-project failure runs part of the inevitable risk of incurring further costs, and this can affect society in a highly negative way. Therefore, the manner in which the project is delivered or executed is of huge importance (Flyvbjerg, 2014).

The mega-project is the preferred form of delivering goods and services throughout a range of sectors, such as: infrastructure, industrial plants, water and energy, government systems, banking, defence, information technology, air and space regeneration, major events and so on. For example, the form of mega-project is used in delivering high-speed railway lines, the Olympics Games, hospitals, seaports, motorways, offshore oil extraction, amongst others. These projects are not only large projects and cost large proportions of countries' budgets, but now they are also being initiated in large numbers with greater values than before (Flyvbjerg, 2014).

The current estimate of global spending in the infrastructure sector between the years 2013 and 2030 is 3.4 trillion US dollars per year (Dobbs et al., 2013). Another similar estimation was provided by The Economist (2008), who stated that the annual spending of infrastructure mega-projects in emerging economies is estimated at around 2.2 trillion US dollars, from 2009 until 2018. Therefore, there is a noticeable and significant amount of money invested in mega-projects, but with no signs of progress or improvements of performance over time, or in different geographical locations (Flyvbjerg et al., 2005). The core point from the previous discussion is that the continuation of mega-projects overrunning in time and cost highlights the importance of looking at the problem of failure in delivering mega-projects within the allocated time and budget.

Before any further investigation on mega-project failure, it is essential to distinguish this type of project from others in more detail, which will help the researcher to consider the differences in the analysis of this area of research. Flyvbjerg et al. (2003) and Capka (2004) have identified three key features associated with mega-projects, and they are:

- The involvement of a large mass of resources: the nature of mega-projects requires a large volume of labour, cost, financial and human resources. The amount of financial funding differs according to the context of the mega-project. However, mega-projects with a total cost of multi-billion dollars are very common (Van Marrewijk et al., 2008).

- Great impact on social, human and environmental aspects: mega-projects affect communities and countries differently. Mega-projects can strengthen, weaken or revive economies. This impact can reach nationwide over a long-term period, and that effect can be extended to the next generation affecting society, community and environment (Warrack, 1993; Flyvbjerg et al., 2003; Kipp et al., 2008). Mega-projects also have the public attention and interest, this is because of the large public spending in such projects. As a result, the project outcome can affect the reputation of project stakeholders including project participants, government personnel and public officials (Kipp et al., 2008).

- Extreme levels of complexity: this is, partially, due to the complex engineering and construction techniques that have to be executed to deliver the final product or service, which is associated with the co-operative difficulties between a large

number of stakeholders (each with different interests) involved within the mega-project (Capka, 2004).

Out of these key features – complexity – is considered as the main challenge for mega-project managers (Kardes et al., 2013). Accordingly, we will go on to expand further on the mega-project complexity challenge.

The origin of mega-project complexity comes from a number of contributing factors, including tasks and activities, components, funding and personnel, as well as various uncertainties and their intersections (Mihm et al., 2003; Sommer and Loch, 2004). Van Marrewijk (2005) suggested that these factors lead to mega-project complexity, as well as the great scale of the tasks, long period spans, multiplicity of stakeholders' disciplines, the number of actors and their different interests, multiple nationalities, high project uncertainty and political interest.

Therefore, complexity in mega-projects can be categorised into technical (concerned with the size of the project) and social complexity (concerned with the interactions among the participants involved in the mega-project) (Baccarini, 1996; Bruijn and Leijten, 2008). For example, looking at the Channel Tunnel, the undersea railway link between England and northern France, presents both type of complexity. Technical complexities originated from the concept of building the longest undersea tunnel, which was associated with a number of factors that aggravated that level of complexity, including geology, engineering, power supply and design. On the other hand, social complexity was due to the difficulties in coordination between large numbers of people who were involved in the building process, including contractors, sub-contractors and employees (collectively around 15,000 people), in which their daily expenditure was over 3 million British pounds (Anderson and Roskrow, 1994).

The previous example illustrates the nature of the complexity dilemmas that are facing global project management, as the complexities in that project are similar to other mega-projects around the world such as the tunnel mega-project in the USA, the international airport in Kuala Lumpur in Malaysia, and Burj-Khalifa, the tallest building in the world located in Dubai (Kardes et al., 2013). In addition, the greater number of distinguishable, ambiguous and interdependent tasks and work packages needed to complete the mega-project increases the complexity of the delivery methods (Kardes et al., 2013).

2.5.2 Mega-projects' problems, methods of initiation and managerial prescriptions

Problems with mega-projects

It has been argued that there are some inherent problems surrounding the concept of mega-projects and their management. These include the following:

1. High degree of technical and social complexity (Flyvbjerg et al., 2003).

2. A high uncertainty level that might trigger unforeseen project risks (Durand, 2003; Titus et al., 2011).

3. Poor performance data of mega-projects, nine out of ten mega-projects suffer from cost overrun (Flyvbjerg et al., 2005).

4. The massive impact mega-project failure can have on citizens, communities, businesses and countries (Orr and Metzger, 2005). For example, insufficient employment of resources, lower than the expected revenue, late deliveries, cost overrun and, in some cases, bankruptcy of organisations (Flyvbjerg et al., 2003).

As a consequence, Flyvbjerg (2014) recently reported:

"Performance in mega-project management is strictly poor and has not improved for the 70-year period for which comparable data are available, at least not when measured in terms of cost overrun, schedule delays and benefit shortfalls" (p. 12).

Methods of initiation

Despite these negative aspects, mega-projects are still taking place. In fact, mega-project promoters appear easily able to successfully promote their concepts and convince their clients to initiate these mega-projects (Flyvbjerg et al., 2003). In an attempt to figure out how promoters manage this initiation, Flyvbjerg (2014) identified two methods have been followed by mega-projects' promoters to achieve mega-projects initiation.

The first method is by under-estimating the project features, such as: project costs, design, specifications, changes in quality, time, delays, exchange rates, environmental or other external factors (Jaafari, 2011). Flyvbjerg (2014) argued that the underestimation comes from the lack of experience in finding the right estimates, which allows us to consider it as 'honest incompetency'. Langer (1975) posited a slightly different explanation that in some cases it is not because of this lack of experience, but the bias towards 'illusion of control' by the management, and their optimistic belief of their ability to influence the outcome, which leads to the underestimation. This bias toward 'illusion of control' could be justified, as per Hirschman's (1967) argument, that the underestimation of mega-project difficulties is associated with the overestimation of human creativity in dealing with them. Hirschman believed that "the only way in which we can bring our creative sources fully into play is by misjudging the nature of the task" (1967, p. 13-14).

The second method promoters and planners tend to use to initiate mega-projects is very different, however, and constitutes strategic misrepresentation. This method is concerned with the information presented within the preliminary project-planning document. The misrepresentation of the project information is not perceived as 'honest incompetency', but rather as an act of 'deception' toward the project client. This method is seen as unethical, as it penetrates the 'obligation of truth' in organisations (Flyvbjerg, 2014).

Project promoters believe that their behaviour – manipulating project information and misrepresenting project costs, time and benefits to get the project construction initiated – is justified, as their projects will provide many benefits to society (Wachs, 1990; Pickrell, 1992). Hirschman (1967) supported this, as he suggested the strategic misrepresentation and the ignorance of the real costs is what helps mega-projects to get started. If mega-project clients, he argued, knew about the real costs and difficulties in delivering mega-projects, they might not even start one and, therefore, mega-projects would never get built. For example, the San Francisco Transbay Terminal mega-project suffered from a huge cost overrun. Brown (2013) discussed this cost overrun, as he stated "News that the Transbay Terminal is something like $300 million over budget should not come as a shock to anyone. We always knew the initial estimate was way under the real cost" (p. 1). So, the argument claiming that a mega-project will never get built might be a reason for the need to accept these massive failures.

However, others have argued that the underestimation and misrepresentation of project information are negative behaviours, for two main reasons. Firstly, because these behaviours are not acceptable for legal reasoning, and secondly due to the fact that they are unethical behaviours. Flyvbjerg (2014) stated:

"In most democracies, for project promoters, planners, and managers to deliberately misinform legislators, administrators, bankers, the public, and the media about costs and benefits would not only be considered unethical but, in some cases also illegal" (p. 14-15).

Flyvbjerg (2014) is supported in this by numerous others in the literature, including Kelly et al. (2002), Elitzur and Gavious (2003), Wuyts and Geyskens (2005), Marler et al. (2006), Remington and Pollack (2007), Cavusgil and Mahnke (2012) and Kardes et al. (2013).

Managerial prescriptions to reduce complexity, failure and unethical behaviours
In response, Kardes et al. (2013) summarised nine managerial prescriptions, to reduce mega-project complexity and failure and to assist in avoiding these unethical behaviours, as follows:

1. The importance of addressing the need for possession of the required knowledge and skills, mainly by managers and their employees, as it will increase their efficiency in using any new technology that exists in most mega-projects. The role of training plays a major factor in increasing the effectiveness and reducing any resistance to change throughout the execution (Marler et al., 2006).

2. Allocating sufficient time to clarify the project goals and hidden agendas, and developing effective information flow methods on all levels of management within the organisation. This will help to avoid any project goal deviation based on disagreements between the project personnel (Remington and Pollack, 2007).

3. Contracts should clearly identify the project goals, obligations and rights for all project stakeholders, including sponsors, contractors, subcontractors and consultants. It is a prevention step to avoid any deception which might occur from any project actor because of any conflicts of project interests (Elitzur and Gavious, 2003).

4. Independent and more effective project appraisal, transparency and scrutiny, to overcome the issue of 'illusion of control', through utilising a reference class forecasting and comparing the estimates with others from previous similar projects.

5. A healthy and positive spirit of co-operation and collaboration between project actors, which is considered to be a prerequisite factor for mega-project success, including hard and soft aspects and criteria (Kelly et al., 2002; Wuyts and Geyskens, 2005)

6. Developing a mutual interest for all project parties, based on sharing projects' gains and risks, as it will deliver the best form of collaboration. In other words, a culture of 'sink or swim together' (Cavusgil and Mahnke, 2012). For example, the London Heathrow Terminal 5 project was accomplished on time and on budget, and most problems were sorted quickly and the project actors performed in an efficient manner (Kardes et al., 2013).

7. In addition to well-defined contracts, the role of trust between project actors leads to a better co-operative approach and enhances the quality of their relationship. This is conceived as a 'moral contract' (Arino et al., 2001).

8. Balancing the power in controlling and monitoring project parties, as excessive control might result in increased distrust, which can lead to behaviours that differ from the project goals and interest (Van Marrewijk, 2005).

9. Finally, starting with viable projects, shaping projects at early stage as flexibility to change decreases at a later stage (Miller and Lessard, 2007). The World

Bank (1996) stated that projects with enhanced initial design showed a success rate of 80%, whereas projects with a poor front-end phase had a success rate of 35%.

It is argued, therefore, that there is nothing inherent about mega-projects that means they must fail. What is also worth noting is that it can be observed from the above that there is an overlap here between the suggested prescriptions for mega-project management and the assumptions and dictates of the prime theory in this thesis, AT. These prescriptions made recommendations with regard to certain issues relating to APs. For example, clarified goals and establishing a co-operative and collaborative spirit will reduce the principal-agent division; the development of mutual interest reduces information asymmetry; well-defined contracts and monitoring agents contributes to reducing and managing agent's opportunism. This highlights the necessity of AT in understanding mega-project failures, as well as problems within smaller projects.

In summary, although the list of prescriptions by the likes of Kardes et al. (2013) provides a theoretical platform for managing mega-projects, from a practical perspective there is a different picture of mega-projects in the real world; that despite the theoretical indications on managerial shortfalls and how to manage them, mega-project failure is still occurring. Interestingly, Kardes et al. (2013) also stated that these theoretical prescriptions could be "affected considerably by major component of the project such as culture, resources, information flow systems, contractual agreements and treaties, and partners and stakeholders" (p. 914). Taking this into consideration, the research moves to focus on mega-project failures within the Saudi Arabian perspective.

2.6 Mega-project failure in Saudi Arabia

The Kingdom of Saudi Arabia is passing through an intense period of initiating mega-projects in order to upgrade the country's infrastructure. Albawaba (2010) confirmed that research reports stated that the Saudi government invested around 400 billion US dollars between 2008 and 2013. This budget was invested in the development of infrastructure across many industries, such as oil and gas, education, transportation, power, real estate and others. Since the 1970s, the construction industry was the greatest recipient of government expenditure, it received on average 43.8% of the total government expenditure (Assaf et al., 1995). The construction industry employs 15% of the labour force and accounts for 14% of total energy consumption in Saudi Arabia. The Saudi construction industry contributed between 30 and 40% of the output of the non-oil productive sector during the period 1980 to 2000 (Al-Kharashi and Skitmore, 2009). These figures clarify the importance of this industry's contribution to the country's economic growth, and these figures are subject to increase in the future.

2.6.1 The problem of mega-project failure in Saudi Arabia

A critical problem for the Saudi construction industry is excessive project delay (Albogamy and Dawood, 2015; Al-Emad et al., 2017; Al-Emad and Rahman, 2018). Al-Khalil and Al-Ghafly (1999) in the Eastern Province of Saudi found that 59% of projects were delayed during the period from 1985 to 1994. Assaf and Al-Hejji (2005) reported that 70 per cent of public projects failed to be delivered on time. Another survey carried out by Al-Kharashi and Skitmore (2009) stated that 70% of projects undertaken by the Ministry of Housing and Public Works suffered from delay in submissions. Another study by Falqui (2004) reported that 952 (40%) out of 2379 projects had been delayed, although Falqui (2004) suggested that recognisable improvements had taken place in project management over the last few decades (cited in Al-Kharashi and Skitmore, 2009).

Many articles have discussed various causes of mega-project delay. Assaf and Al-Hejji (2005) listed 56 main causes of mega-project failure in Saudi projects. These were classified into nine groups: materials, work force, equipment, financing, changes, government relations, scheduling and controlling, environment and contractual relationships. These nine groups had various levels of importance for different project parties. Assaf and Al-Hejji (2005) concluded that the most important factors were delays in progress by contractors, payment by owners, the relationship between contractors, organisational bureaucracy on the project owner's behalf, labour shortages and unskilled labour.

Al-Khalil and Al-Ghafly (1999) surveyed delay factors within public water and sewage projects and identified 60 causes of delay. The conclusion was that delay occurred as a result of the owners' involvement, the contractors' and sub-contractors' performance, financial issues, project change factors and slow decision-making processes by the owner (cited in Assaf and Al-Hejji, 2005). Al-Barak (1993) reported the main causes of project delivery failure were poor activity estimation practices, lack of experience, bad decisions in determining a company's policy, and crises in the national economy.

Thus, there is a noticeable effort from researchers to figure out the different causes of mega-project failure in Saudi. However, the current literature in this field remains narrow, and little has been done to explain what is behind these causes of failure. Thus, there is a clear gap in the literature around the theoretical underpinnings tying these descriptive explanatory factors together within the area of mega-project failure in Saudi Arabia.

2.6.2 Research explaining mega-project failure in Saudi Arabia

Throughout the process of reviewing the literature around mega-projects in Saudi Arabia, the researcher observed that a limited theoretical lens was utilised within previous research around the area of project failure in Saudi Arabia. The literature has identified ten authors who established all factors that cause failure in Saudi mega-projects and they are "Al-Mudlej, 1984; Al-Hazmi, 1987; Al-Ojaimi, 1989; Al-Ghafly, 1995; Assaf and Mohammed, 1996; Al-Khalil and Al-Ghafly, 1999; Odeh and Battaineh, 2002; Assaf and Al-Hejji, 2005; Arain et al., 2006" (Al-Kharashi and Skitmore, 2009, p. 4). Collectively, these researchers identified 112 causes of failure. These 112 causes were listed into the seven groups, which had been identified by Odeh and Battaineh (2002). This section aims to analyse these factors and demonstrate their importance toward the failure of Saudi mega-projects. To start, the following table shows the seven groups and the number of causes of failure related to each group:

Table 2: Seven groups of causes of project delay.

Number	Group name	Number of factors of delay
1	Client related	27
2	Contractor related	34
3	Consultants related	12
4	Materials related	9
5	Labour and equipment	17
6	Contract related	10
7	Contractual relationships	3

It can be seen that the total number of factors of delay from the first three groups (client related, contractor related and consultant related) form around 65% of the total number of factors of delay in Saudi Arabian mega-projects. The other four groups formed the remaining 35%. This observation shows that the major project actors cause the majority

of the causes of delay in Saudi Arabia, which again supports the case for exploring project failure while using a relevant theoretical lens.

Another observation found within the literature on project failures in Saudi Arabia came via a comparison study by Assaf et al. (1995) and Assaf and Al-Hejji (2005). There was a ten-year gap between the two studies featured in this paper yet surprisingly, the factors of delay in both lists appear to be almost similar. The following table presents the comparison. The left column shows causes of delay published by Assaf et al. (1995) and the right column presents similar causes of delay published by Assaf and Al-Hejji in (2005). It is important to note that the 20 factors of failure listed are in no particular order.

Table 3: Comparison of construction projects factors of delay between the years 1995 and 2005 (Assaf et al., 1995; Assaf and Al-Hejji 2005).

No.	Causes of delay (1995)	Group name	Causes of delay (2005)	Group name
1	Shortage of construction materials	Materials related	Shortage of construction materials in market	Materials related
2	Materials changes in types and specifications during construction	Materials related	Changes in material types and specifications during construction	Materials related
3	Slow delivery of materials	Materials related	Delay in materials delivery	Materials related
4	Damage of materials in storage	Materials related	Damage of sorted materials when needed	Materials related
5	Delay in the special manufacture of building material outside kingdom	Materials related	Delay in manufacturing special building materials	Materials related
6	Shortage of labour	Labour & equipment	Shortage of labour	Labour & equipment
7	Labour skills	Labour & equipment	Unqualified workforce	Labour & equipment
8	Nationality of labourers	Labour & equipment	Nationality of labourers	Labour & equipment
9	Equipment failure	Labour & equipment	Equipment breakdown	Labour & equipment

10	Equipment shortage	Labour & equipment	Shortage of equipment	Labour & equipment
11	Unskilled operators	Labour & equipment	Low level of equipment operator skills	Labour & equipment
12	Equipment productivity	Labour & equipment	Low productivity and efficiency of equipment	Labour & equipment
13	Financing by contractor during construction	Contractor related	Difficulties in financing project by contractor	Contractor related
14	Delay in contractor progress payments by owner	Client related	Delay in progress payment by owner	Client related
15	Design changes by owner, or his agent, during construction	Client/ consultant related	Change of orders by owner during construction	Client/ consultant related
16	Obtaining permit from municipality	Client related	Delay in obtaining permits from municipality	Client related
17	The conflict between contractor and consultant	Contractor /consultant related	Conflict between consultant and design engineer	Contractor/consultant related
18	Slowness of the owner's decision making process	Client related	Slowness in decision making process by owner	Client related
19	Inadequate early planning of the project	Client/ contractor related	Ineffective planning and scheduling of project by contractor	Client/ contractor related
20	Insufficient communication between the owner and designer in the design phase	Client/ contractor related	Misunderstanding of owner's requirements by design engineer	Client/ contractor related

From the previous comparison study of the causes of failure by Assaf et al. (1995) and Assaf and Al-Hejji (2005), we can draw two outcomes as follows: firstly, some of the 20 factors of failure listed above seem to have an apparent link to issues around the relationships between the major actors within mega-projects. To illustrate, Assaf et al. (1995) and Assaf and Al-Hejji (2005) listed some factors causing delay in Saudi mega-projects that can be related to the contractor's exploitation behaviours in times when the

client was kept uninformed. For example, shortage of labour, unqualified workforce, shortage of equipment, unskilled equipment operators, and ineffective planning and scheduling by the contractor.

Secondly, Assaf et al. reported that the 20 causes of delay in Saudi mega-projects listed in Table 3 were the same in 1995 and ten years later in 2005; and there is a possibility that it is still the same in the following years. This can be a result of the limited research conducted in the area of mega-project failure, which may have affected finding a solution for these causes of failure. Although, Odeh and Battaineh (2002) and Assaf and Al-Hejji (2005) provided some recommendations in their research.

2.6.3 Recommendation for current causes of failure

Following the identification of the list of causes of in Saudi infrastructure mega-projects, authors such as Odeh and Battaineh (2002) and Assaf and Al-Hejji (2005) summarised a list of recommendations – probably best seen as assertions – to avoid project delay in the Saudi context. To start with, and referring to projects in Saudi Arabia, Odeh and Battaineh (2002) listed the following recommendations:

1. Enforcing liquidated damage clauses and offering incentives for early completion.
2. Developing human resources in the construction industry through proper training and classifying of craftsman.
3. Adopting a new approach to contract award procedure by giving less weight to prices and more weight to the capabilities and past performance of contractors.
4. Adopting new approaches to contracting, such as design-build and construction management (CM) types of contract (p. 72).

Assaf and Al-Hejji (2005) recommended the following in connection with their work on causes of delay in large construction projects:

1. Owners need to consider factors such as paying progress payments on-time, limiting the number of change orders during the construction process, avoiding delay in approving the project design document, and checking the capabilities of the bidder before signing the agreement.

2. Contractors must pay attention to the following points: shortage and low productivity of the current labour force, cash flow issues, planning and scheduling the project activities to avoid disputes and cost overrun, and site management to ensure submitting the project on time, within the allocated budget and delivering the expected quality.

3. Consultants should facilitate the design document review, as any delay will affect the work's progress. Consultants need to be more flexible with contractors and keep in mind the cost and quality relationship.

Faridi and El-Sayegh (2006) argued that an agreed schedule is important between contractors and consultants and it must be strictly followed; owners should also incorporate and follow the project schedule. The market needs involvement from project management organisations to help minimise delay. Human resource management needs more attention to improve labour skills and productivity. Finally, contractors need to allow more time for obtaining permission and approval from the government.

The previous recommendations and assertions can be classified into two categories. The first category is related to better project management, using the PMBOK, and effectively applying its methods and techniques to deliver a better project outcome. (PMBOK, 2008). The second category was a list of recommendations provided by a number of

researchers, but the effectiveness of those recommendations has not been tested in practice to determine if they are practically valid.

Furthermore, after looking at the previous list of recommendations provided by Odeh and Battaineh (2002) and Assaf and Al-Hejji (2005), two issues came to light. Firstly, the approach that was used to produce some of the recommendations was as simple as suggesting avoidance of the causes of failure after they had been identified (for example, if Factor A is a cause of delay, the recommendation is to avoid doing Factor A). Secondly, by reviewing the relevant literature, the process in which these recommendations were produced lacked the required investigation and theoretical support necessary to deliver a better understanding of the actual problems behind the factors of failure.

2.7 Lack of generalisability in existing research

The discussion of mega-project management in Saudi Arabia highlights a frequently commented upon criticism of the project management literature, namely that much of it is too descriptive. To take the literature regarding Saudi projects, it is said that numerous authors (Assaf et al., 1995; Odeh and Battaineh, 2002; Assaf and Al-Hejji, 2005; Al-Kharashi and Skitmore, 2009; Al-Khalil and Al-Ghafly, 2010) have simply researched a project case, identified the surface causes of problems/failures and then reported them (Dyer and Paulson, 1976; Packendorff, 1995; Thomas, 2000; Cooke-Davies and Arzymanow, 2003; Padalkar and Gopinath, 2016). There is said to be a lack of theoretical engagement within the existing literature around the area of project failure, with Packendorff (1995) commenting that "descriptive empirical research grounded in theoretical problems is rare" (p. 325). The existing research merely provides explanations of failed projects by listing the surface causes of failure, which Padalkar and Gopinath (2016) claims can only deliver descriptive research.

Why this criticism is believed to be an important one is because the descriptive nature of such research means that it lacks theoretical generalisability. It is suggested that a search of the literature often reveals one paper describing certain surface causes, while others describe other surface causes. All of these causes, however, are said to be case-specific and thus not amenable to generalisation. In this thesis, the researcher is, by contrast, looking to identify fundamental underlying causes of failure and provide theoretical explanations of why these causes of failure occur (see Figure 8). It does this in part by utilising Lundin and Söderholm (1995) '4Ts' framework (discussed in this chapter) as a subsidiary theory. It also does this by adopting AT as the primary theory, a theory discussed in the next chapter.
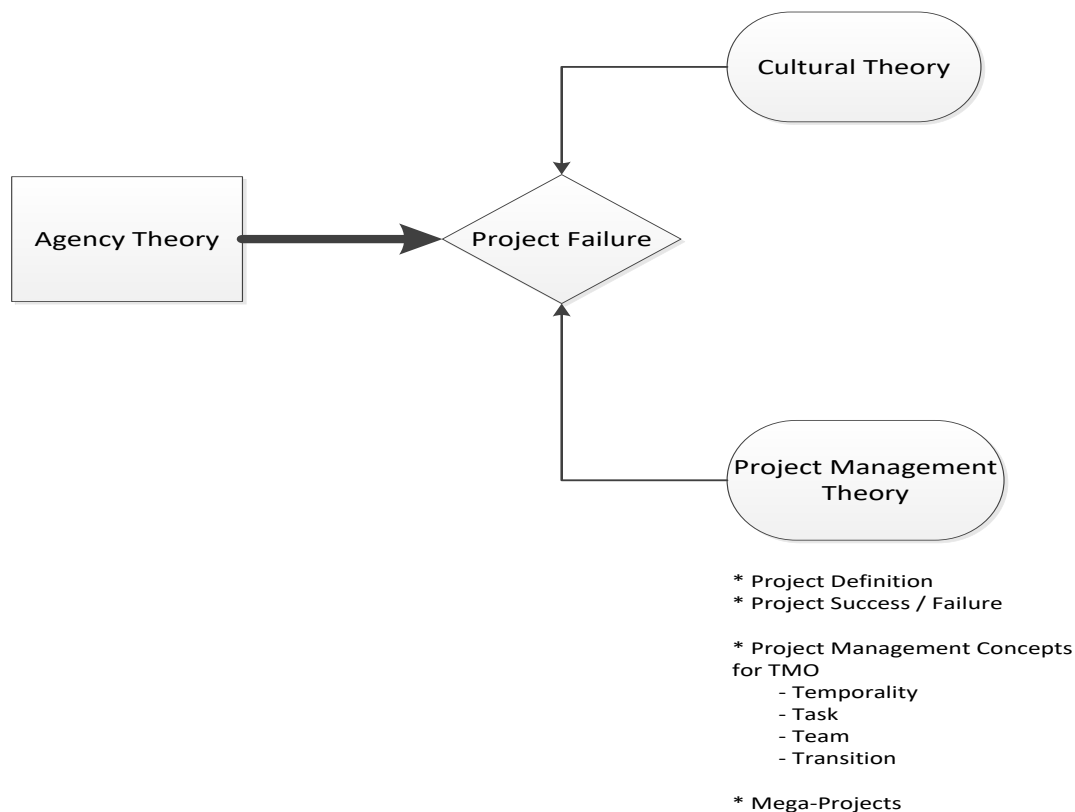
Figure 8: Conceptual model – Project management theory.

2.8   Summary

This chapter started by defining what is meant by the term 'project' and examining the parameters of the concept of 'project failure'. The chapter then touched on the theory of TO and the theory of TMO, and how these organisational forms are different from a PO. This was followed by an analysis of the four concepts of the critical project perspective (temporality, task, team and transition). Finally, the chapter explored the concept of mega-projects.

The four concepts of TO were introduced as potential factors that might explain the failure of projects such as the one examined in this thesis, the HHR project. Starting with the concept of temporality, the projects' limited duration was found to have a negative impact on a number of issues. Firstly, the failure to enhance the relationships between project's team members. Secondly, the difficulty of establishing shared knowledge among the team members to perform projects with inter-dependent tasks (Morley and Silver, 1977). Thirdly, the high level of urgency to perform the project tasks, which increases the stress among project team members, which leads to confrontation and less collaboration (Turner and Müller, 2003).

Task was the second concept; Lundin and Söderholm (1995) identified two factors that can lead to project failure within this concept. Firstly, the lack of knowledge that is required to manage complex tasks; and secondly, the difficulties in producing time and cost estimates for unique tasks. Furthermore, through the analysis of this notion, the issue of social organisation and process was found to be quite neglected in the project management literature, unlike the other three areas identified by Söderlund (2013). This was perceived as a factor that may hinder the process of building an effective team, which can lead to project failure (Söderlund, 2013).

Further analysis around the area of social organisation and process followed within the third concept of 'team'. As much as it is important to choose a project team who are capable and competent of delivering the project, if project failure is to be avoided it is essential to determine the organisational (project) culture, which plays a major role in the project team effectiveness (Trompenaars, 1993). Furthermore, failure to build team integrity will inevitably reduce the level of co-ordination and co-operation between the TMO actors, which eventually leaves the actors to act in favour of their original organisations and thus increase the likelihood of project failure.

Finally, the last concept concerns the project team transition. The complexity of projects, necessitated the employment of different actors at different stages of a project; and this makes it harder to form a performing project team. Therefore, a bigger margin for project failure exists.

Therefore, the four core characteristics of projects are presented as potential factors behind the HHR project failures. However, as mentioned in the introduction, the prime theory for exploring the HHR project failure is AT. As it turned out, and as is discussed in detail in chapter 3, the analysis of the '4Ts' started to suggest why this might be an appropriate theoretical lens. During the analysis of the four concepts, projects were found to be complex in nature, particularly in the case of mega-projects which have also been discussed in this chapter. This was said to require project clients to hire specialist organisations to perform different tasks, at different stages of a project, under conditions of limited performance duration. As a result, a number of problems were said to commonly arise, which, in turn, were said to cause project failure in a direct or indirect manner. Arguably, however, many of the identified problems within TMOs and the critical perspective of projects are, at their core, APs. Thus, to be able to understand these problems further, the next chapter will explore AT in detail.

CHAPTER 3

AGENCY THEORY

Since Meyerson et al. (1996) and Lundin and Söderholm (1995) suggest that projects with a certain level of complexity are expected to be delivered by a TO for the interest of a PO. It becomes factual that the organisational structure of a project is formed of the principal and numerous agents. This was one of the reasons why it was felt appropriate for AT to be the prime theory in this thesis for explaining the HHR project failure. In this chapter, AT is discussed in detail. Its overlap with the critical perspective on projects is also explained.

3.1　Agency theory and a critical perspective on projects

AT is concerned with the potentially opportunistic behaviours of agents, at the expense of the principal, and how the principal might manage them (Mitnick, 2013; Steinle et al., 2014). It is the second area of the literature review (see Figure 2). This section seeks to highlight the overlap in the literature between the first area, critical perspective of projects, and this second area, AT.

Critical perspective of projects

Agency theory
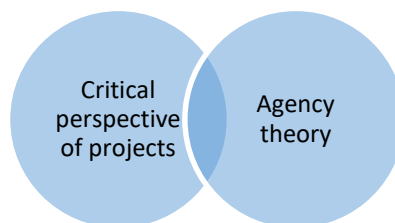
Figure 9: AT and critical perspective of projects.

The initial need for the existence of the 'project' entity on the part of POs arguably creates an impact on both areas of Figure 9. This impact can be illustrated as an opportunity that is associated with subsequent threat. The opportunity is potential business growth, achieved by the successful completion of complex tasks within the PO, but executed by a TO due to the lack of speciality within the PO (Lundin and Söderholm, 1995). Projects draw together different skill sets to solve a business problem and create value.

However, the PO (as the owner of the project dealing with agents) is also faced with the threat of losing control over the delegated task to the TO. This separation between ownership and control provides the potential for APs and is something that is inherent to the project environment (Charreaux, 2004).

The literature review in Chapter 2 examined a range of critical perspectives on projects and project management via the four concepts that define TOs. Haniff and Ogunlana (2015) and Lindkvist, (2005) considered time to be the distinguishing feature that differentiates a TO from a PO. Therefore, the concept of temporality can be used to illustrate the overlap between the two areas of literature. As mentioned in Chapter 2, temporariness can be defined as a limited and short time to achieve organisational goals (Palisis and Bartolomeo, 1970; Söderlund, 2013), or as a short time for the actors to integrate and create interpersonal relations (Lanzara, 1983). Either way, the implications of project temporality are very much in the realm of AT.

Within the project management literature, the implications of project short duration have been described as:

1. Not sufficient time for project actors to develop good relationships among each other and to establish tightly working groups (Morley and Silver, 1977).

2. Inadequate time to enhance the level of the project actors' familiarity with the allocated task and to establish sufficient shared knowledge about the task (Morley and Silver, 1977).

3. Because of the short duration, TO members tend to focus on the present task rather than the effect of their present behaviour on future relationships (Bakker et al., 2013).

4. Although, Robert et al. (2009), Jarvenpaa et al. (1998) and Guangquan et al. (2007) argued that despite the short time period in projects, team members are able in some occasions to overcome this dilemma and establish a level of trust among themselves.

The above implications of short project duration can have either a positive or negative outcome on a project, depending on their occurrence within a project. If only conditions one to three apply to a project situation, then the short project duration will have a negative effect. However, if condition four applies as well, the negative effect of the other three might be mitigated.

Mukherji et al. (2007) used these implications of short project duration to highlight two types of project working:

- A cooperative/collaborative relationship (where one to four applies).
- Conflicting and confrontational relationship (where one to three applies).

The first, a cooperative/collaborative relationship, is considered a constructive approach to building the required effective communication channel between different project actors. Such a channel enables them to tackle issues that arise during the project

execution and establish shared ground to achieve the project goal. The second scenario, however, is seen as less constructive and means the project actors face considerable difficulties in eliminating the implications of a project's short duration, and lays the foundations for AP. Mukherji et al. (2007) work through various eventualities in relation to the second scenario as seen below:

- Firstly, a TMO is characterised by the diversity of the project actors. This diversity can be based on personal backgrounds or the members' professions. Either way, it can be associated with an increased level of uncertainty and conflict (McGrath, 1991). In an organisational culture, where the main orientation is towards performing the task and not having sufficient time to optimise the project actors' relationship nature, once conflict of interest comes into action between actors, this division in the relationship will often be the start of an AP (Caers et al., 2006).

- Secondly, where conflict and confrontation is the norm of the relationship between project actors, and in line with the difficulty of establishing shared knowledge due to the shortage of time (Morley and Silver, 1977), relationship integrity between the actors is hardly going to exist. Therefore, the gap between the relationship actors is likely to be more pronounced and, due to the lack of shared knowledge, one actor might have an information advantage over the other and that can lead to asymmetry of information, which is a second component of the AP.

- The third scenario occurs when different actors have different goals and objectives from the project. As a result of the conflictual nature of the

relationship, the tension will rise between them (Alsedairy, 1994) and it is likely that different project actors will consider achieving their own goals and interests from the project as a result of the project short duration, and they will not consider the impact of their behaviour for any future situation (Bakker et al., 2013). Thus, the project short duration and its implication will result in the case where some actors behave opportunistically to reach their own goals.

These problems are said to be heightened where there are numerous multi-disciplinary organisations, to the extent that it has been suggested that the term 'project team' should, in construction projects, be replaced by the term TMOs (Cherns and Bryant, 1984; Davidson, 1988; Rowlinson and McDermott, 1999). In construction projects, there is a hierarchical complexity because of the number of organisations involved in a project and the interdependency of the activities they undertake. When combined with short project duration, the existence of the TMO may lead to multiple APs.

Thus, it can be seen that the (especially critical) project management literature, even when discussing other specialist project management concepts and perspectives, outlines scenarios that are very much in line with AT. There is a clear overlap between critical perspectives on project and AT. In this thesis, this will be made more explicit, a task that starts by outlining the main components of AT.

3.1.1 Justification of selection of theoretical lens

Before outlining and discussing the components of AT, it is necessary to explain why AT has been chosen as the primary theory for this thesis. The explanation starts by noting that the initial inspiration for this study was the observation of the failure in the delivery of the HHR mega-project. From preliminary informal observations, and from the first

stages of this study, it became apparent to the researcher that the HHR mega-project, the first project of its kind in the region to be built by the Saudi Railway Organisation (SRO), included a large number of project actors, which led to the existence of multiple principal-agent relationships. AT was at that stage seen as one potential theoretical lens that could be used, but there were potentially others too.

What pushed the researcher further down the line towards AT was a perception from the early observations and stages of the study that the failure within the project might have been to a significant extent caused by information asymmetry and opportunistic behaviours within the principal-agent relationships.

The above features of this case then aligned with a gap in the literature identified by Ceric (2014). Ceric claimed that the current presence of AT within the project literature, especially in the area of construction mega-projects failure, is weak, notwithstanding the research that she herself had done to try to address the gap. Furthermore, Ceric (2014) also noted that there is no existing research that addresses more than the four participants (project client, client's project manager, contractor and contractor's project manager), which were included in her research. Ceric's contribution here was interesting to the researcher because it simultaneously confirmed the researcher's initial thoughts that AT was relevant to mega-project failure, while also making clear that there was a significant research gap, not least in the case of the more complex multi-agent mega-projects.

Both practical and theoretical reasons, therefore, appeared to justify choosing AT as a primary theory for this study to investigate the HHR mega-project failure.

It is understood by the researcher that the existence of opportunistic behaviours from the agents' side within the HHR mega-project does not automatically indicate AT. For example, such behaviours could have potentially pointed to the use of transactional cost economy theory (TCE). This provided the researcher with an opportunity to choose between AT and TCE, two theories underpinned by the opportunism assumption. However, the origin of the opportunism within the HHR mega-project seemed, from initial observation, to be coming more from information asymmetry and incentive misalignment (AT) than from incomplete contracts and hold up issues (TCE). This observation determined the decision not to pursue TCE.

Equally, inter-organisational relationships can also be investigated by resource dependence theory (RDT), which was another potential theory to explain HHR mega-project failure. Malatesta & Smith (2014) identified three principals pertaining to RDT as follows: firstly, the need for resources by organisations to achieve their goals; secondly, that these resources can be obtained from the same organisation or from other organisations; and thirdly, the role of power and how it is considered an important factor in understanding the inter-organisational relationships when an organisation seeks to obtain required resources from another organisation.

The opportunism seen in the initial observations of the HHR project could, in theory, be a result of power asymmetry between principals and agents being exploited. While power is not the same as opportunism, opportunism can result from power asymmetries. The researcher recognised the potential relevance to the HHR project. There is a large literature on buyer-supplier power and how it affects inter-organisational relationships.

Chicksand (2015), for example, highlighted the importance of understanding the different level of power between actors within business relationships when undertaking a proper analysis of forming appropriate relationships. Chicksand stated that "it was argued that for partnerships to succeed, there should be an equal sharing of risk and rewards, and this is most likely to be achieved when there is a balanced power position between the buyer and supplier (interdependence)" (2015, p. 128). By the same respect, a less trusting relationship than a partnership might be more likely when power is imbalanced.

In the case of the HHR mega-project, the various agents' opportunistic behaviours could, in theory, be an outcome of imbalanced power relations between the principal and these agents. As mentioned, there is literature saying that power can lead to opportunism, in particular, supplier opportunism. This can occur through the agents exploiting the power asymmetry and behave opportunistically (Chicksand, 2009), knowing the balance of scarcity and utility means that the relationship is both of relatively limited importance to them and easily replaced.

However, the initial observation of the case suggested that it was information asymmetry rather than power asymmetry that resulted with the agents' opportunistic behaviour. In particular, there was no particular evidence that suppliers (agents) were dominant.

There can always be arguments over the choice of theoretical lens for a piece of research, but, taking all the above into consideration, AT was considered appropriate as the primary theory for this study.

3.2 Origins of Agency Theory

Much of the early analysis of AT was carried out by Berle and Means (1932). Berle and Means posed the classical agency-theory problem, the division between owners and agents (Williamson, 1996). Following the 1929 financial crisis, the classical AT came to light as a result of the segregation of ownership from control, thus creating two functions within the structure of a corporation (Charreaux, 2004).

Subsequent development of AT gave way to two different approaches: economic and institutional (Williamson, 1996). Ross and Mitnick were prominent in developing the economic approach, studying compensation contracting problems and the personal incentives problem (Mitnick, 2013). Analysis from the institutional perspective also generated interesting analysis and findings. Barnard (1938) had observed that within employment relationships, supervisors and workers observed a zone of discretion or indifference within which the worker made key choices (Mitnick, 2013). This prompted further analysis of organisational structure and leadership culture (Olaniran et al., 2015).

While containing different approaches, AT is based upon certain comment components. These are now these discussed in detail below.

3.3 Components of Agency Theory

In the context of applying AT to the mega-project environment, there are five main components of AT that need to be discussed. Firstly, the principal-agent division, and secondly, the asymmetry of information that can occur between principals and agents. These two components *can* then lead to agents acting in an opportunistic manner (the third component), which is regarded by Williamson (1985) as realistic agent behaviour. The forth component is concerned with techniques and mechanisms to deal with the pre-

or post-contract opportunistic behaviours, with unsuccessful management leaving APs (either adverse selection or moral hazard) unsolved. The final component looks at the presence of multiple principal-agent issues that are commonly found in projects, particularly mega-projects.

3.3.1 The Principal-Agent Division

This component was the initial reason for the manifestation of the AT. Since the 1930s, literature has emerged that has analysed and explored the relationship between the two actors; the first actor being the principal and the second the agent (Nie, 2010). On the one hand, the principal provides the financial means/resources for (in this context) the project, as well as approving forecasts, plans and milestones. The principal monitors the project and accepts project completion (PMI, 2000). On the other hand, the agent has been delegated the responsibility, by the principal, to conduct the day-to-day management of the project. It is the responsibility of the agent to ensure, through his managerial role, that he steers the project towards the agreed objectives (IPMA, 1999).

This work delegation initiates a principal-agent relationship between the owners and the agents, as owners depend on their agents to undertake the work on their behalf (Müller and Turner, 2005). The prevalence of this relationship has resulted in literature that analyses the behaviour of both the principal and the agent in numerous ways, which will be discussed throughout this chapter. It has also analysed such behaviour in different contexts. Yilmaz and Muslumov (2008) examined the area of insurance, where banks undertake high risks that are associated with moral hazard. Other study contexts include political contexts (Fratianni et al., 1997) and principal-agent relationships within corporate governance (Chen et al., 2012) and tax governance (Garbarino, 2011).

Business-to-business relationships are another important area in which the principal-agent relationship has been analysed within the literature. This literature looks into the principal-agent relationship between suppliers and buyers (Steinle et al., 2014), and includes three prominent areas of analysis. The first area looks at the manufacturing environment, where manufacturers act as principals and the distributors act as their agents. The second area looks at the service environment, such as the management and labour sectors (Mukherji et al., 2007). The third area deals with the project management environment, where the project owners are the principals and the contractors are the agents, who ought to deliver the principal's objectives from within the project. The latter is the focus of this thesis: the project management environment.

It appears, within the current literature on principal-agent problem in projects, that there is no consensus on the nature of the principal-agent relationship, although those accepting the dictates of AT are relatively few, making the use of AT within the project (and particularly construction mega-project) environment relatively thin. There is agreement that the principal-agent relationship begins when the principal depends on the agent to carry out work on its behalf (Bergen et al., 1992). However, while Fenling and Feiran (2012) deemed such relationships to be contractual and sometimes conflictual in nature, there are other assumptions in the literature that contextualise the relationship in other ways.

So, while Caers et al. (2006) states that a basic assumption within AT is that there is a conflict between the interests of the principal and the interests of his agents, other authors such as Mukherji et al. (2007) have mentioned other assumptions, such as cooperation and collaboration, as well as accepting the existence of confrontation, conflict, domination and exploitation.

To further understand the nature of the relationship between the principal and agent, it is imperative that we understand how the relationship is formed, as the relationship formation method may affect its nature. Business-to-business relationships can be envisaged as a status that has been built up or formulated by the parties involved. The formation process of this relationship can be influenced by the characteristics of both parties, or by the nature of the interaction between them during the relationship development process (Hardy and Phillips, 1998). The interaction may involve a series of business negotiations, which might also affect the outcome and the relationship status (Hakansson and Snehota, 1995). If associated with characteristics such as cooperation and collaboration, then the outcome can result in a stable relationship. It has been suggested that this exists where parties are found to be tied together in a balanced, stable and informal bond (Stevenson and Greenberg, 2000). However, it is recognised that this is not always the case and that the formation of the relationship might set the scene for conflict (Hakansson and Snehota, 1995; Mukherji et al., 2007).

3.3.2   Information asymmetry

The second component of AT addresses the problem of asymmetry of information, and will be discussed within the business-to-business relationship context. In this context, a relationship is formed between principal (buyer) and agent (supplier). Following the day-to-day work delegation from the principal to the agent, Provan (1991) and Xiang et al. (2015) contended that agents have an information advantage over their principals. Further, Provan's research suggests that there is a positive relationship between the amount of information received by an individual and the influence of this individual on the decision-making process. Therefore, because agents have the information advantage over principals, it can be assumed that the information that they possess allows them to undertake the required decisions. Since the principal has less information, it can be assumed that it is less able to understand the effectiveness of, and justification

for, that decision (Provan, 1991). This illustrates the information advantage the agent may have over the principal.

Another way to interpret this information advantage is from a technical level, in terms of the technical performance side (Xiang et al., 2015). In supplying products or services, the agents are the experts and are considered superior in having technical, as well as managerial information. Normally, this expert information will not be shared with the principal, as it is the core skill of the agent's business. It has been observed that this often creates instability in the relationship between principals and agents (Caers et al., 2006).

Following the description of the above two contexts of information asymmetry, it is important to note that the literature defines two types of information: public and private information (Borisova and Yadav, 2015; Aguirre and Beitia, 2017). The first is when both parties (principal and agent) are aware of the same information; the second is when one party (most likely the agent in this case) withholds and solely possesses certain information. Borisova and Yadav (2015) discussed that information advantage in business-to-business relationships can arise through two different scenarios: firstly, it can occur through skilled analysis of available public information; and secondly, due to the existence of private information that is not available within the public domain. Therefore, private information will certainly lead to information asymmetry (Liu et al., 2016); and public information could do so, if one or both parties do not have the skills to professionally analyse public information as required (Borisova and Yadav, 2015).

Therefore, one way or another, there can be an occurrence of information asymmetry. This can destabilise a relationship between a principal and an agent. But does it always have to? This is debated in the literature. Caers et al. (2006) contended that the concept

of information asymmetry is not necessarily a negative concept. This can be the case, first, where the principal's and the agent's interests are perfectly aligned and they have established a cooperative and collaborative relationship, both of which are relationship forms that, according to Mukherji et al. (2007), commonly exist between principals and agents. This can be illustrated as follows: in the case of public information, where both parties can peruse the available information – but for some reason one party is not aware of certain information – the cooperative collaborative nature of the relationship will help the two parties to adjust the situation to a state where both parties are informed (Caers et al., 2006). Second, in the context of private information, in a business-to-business exchange some of this private information might be commercially trivial. This is another scenario where information asymmetry will not necessarily cause a failure in delivering the project benefits according to the principal's requirements.

However, these two above scenarios may not always apply. For example, the private information in the relationship between the two parties might be critical and might help the informed party substantially increase commercial returns in the relationship (Mukherji et al., 2007). In a cooperative relationship between the two parties where their interests are aligned, it is expected that this information would be shared between them (Crosby et al., 1990; Coulter and Coulter, 2002). However, if the information is not shared, this can result in another potential scenario.

Mukherji et al. (2007) described the principal-agent relationship as potentially having other characteristics from cooperation and collaboration. It was said it can be characterised by confrontation, conflict and exploitation. Both parties may also not have similar interests from the project. The natures of these characteristics are far from positive and likely to result in negative implications that are not in line with the principal's expectation. In such scenarios, the agent (supplier) will take advantage of the information

asymmetry that exists, in order to forward their own interests, with very little consideration to the principal's interest (Xiang et al., 2015). Due to the lack of the principal's expertise to analyse available public information, or the inability to obtain private information from the agent, the agent tends to make critical decisions on the principal's behalf (Bergen et al., 1992); the principal is then not in a capacity to assess these decisions. The agent's exploitation of this information asymmetry occurs to achieve the agent's organisational goals.

This notion of the agent taking advantage of this scenario leads us to the third component of AT. This is the controversial concept of opportunism.

3.3.3   The possibility of opportunism

The concept of opportunism has been defined by Williamson (1979) as a seeking process for self-interest that is associated with guile. In the context of this thesis, it means opportunism exhibited by the agent (supplier) to take advantage of the principal (buyer) by making managerial and/or technical decisions against the principal's interests. This is possible as the agent exploits the advantageous position they are in with regard to information. These decisions are most likely to deliver the agent's interests out of the project.

Opportunism is purely selfish behaviour as it ignores other actors' interests (Lai et al., 2005). It is perceived by some as a common behavioural phenomenon within any social-economic activities, although others demur on this (Mohamed et al., 2011; Church et al., 2014; Brookes et al., 2015). The potential of this selfish behaviour would increase under circumstances where the information asymmetry increases in a relationship (Xiong and Li, 2013). It can occur through various types of opportunism, as follows.

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3.3.3.1 Type of opportunism

The literature on opportunistic behaviour, in a business-to-business context, differentiates between various types of opportunism. Wathne and Heide (2000) distinguished active from passive opportunism; they also classified being opportunistic as an act of violation, evasion, refusal to adapt or forced renegotiation. Other researchers, such as Masten (1988) and Luo (2006), identified weak from strong opportunism. Weak opportunism is the violation of unwritten agreements, but undermines relational norms. The occurrence of weak opportunism can be explained as the result of a lack of cooperation and/or a lack of moral organisational norms. Whereas the strong form of opportunism is defined as explicit violation of contractual agreement (Masten, 1988; Luo, 2006).

Since there are claims that contracts can guard against opportunistic actions, a question remains as to why the strong form of opportunism still occurs, even when there are contractual documents in place (Schepker et al., 2014). One possible explanation to the latter question may be weakly designed contractual documents, in which there are insufficient governing clauses. The agent may exploit this weakness, violate the contract and take the opportunity to push forth his own personal agenda (Schepker et al., 2014).

D'Alpaos et al. (2013) provided another possible explanation: even at the presence of penalty clauses, agents may conduct an opportunistic behaviour, which can have three possible explanations. The first possible explanation claims that agents may act opportunistically depending on the committed fee and the associated costs imposed by the court of law in order to settle the dispute between the two parties. The second discusses whether the value of the gain from the opportunistic behaviour is greater than the penalty imposed on the agent in the event of delay (D'Alpaos et al., 2013). The final

explanation is that the principal will not raise any disputes case to the court, for one of two factors: firstly, the discretion of the court in enforcing the penalty clauses (i.e. the principal could lose), as well as the efficiency of the court system (i.e. the length of time the trial may consume), can often lead to the principal favouring an informal settlement of the dispute; and secondly, an unwillingness on the part of the principal to destroy a valuable relationship, which might cost the principal more than any court gain (Atanasov et al., 2012).

Opportunism has also been described as either subtle or blatant. Muris (1981) defined blatant opportunistic behaviour as the obvious attempts to behave opportunistically. This reflects the type of relationship between the two parties, and how the business outcome is the only concern of the agent. The subtle form is when the act of opportunism is difficult to detect, and is possibly masked to look like a legitimate un-opportunistic act. It can occur through a number of ways such as distortion of data, cheating, stealing, misrepresentation and false threats (Anderson, 1988).

3.3.3.2 Suggestions of bias in AT

Regardless of what type of opportunism the agent might adopt, one of the key assumptions of AT is that there is a significant chance that agents will act opportunistically and will be self-interest driven (Mukherji et al., 2007). However, some argue that one should be a little careful about labelling agency behaviour in this way, and that AT is 'biased' toward principal's interests. This can be illustrated in what Bergen et al. stated:

> "It is important to note that most agency models define efficiency from the
> principal's point of view. The assumption is that the principal is the dominant
> party in the relationship. Thus an efficient contract is one that brings about

the best possible outcome for the principal given the constraints imposed by the situation, rather than one that maximizes the joint utility of both principal and agent" (1992, p. 2).

Liu et al. (2016) said that the principal should actually consider increasing the benefits allocated to the agent in proportion with the opportunistic tendency – "the more obvious the opportunistic tendency, the higher the incentive intensity and the greater the proportion of benefits allocation should be" (p. 1109). This gives rise to the argument of whether AT bias toward the principal's interest is behind the assumption of agent opportunism in the principal-agent relationship.

Wherever the answer to this may lie, the view is taken in this thesis that such behaviour should be conceived as opportunism. Moreover, of prime interest to the discussion of AT here, the existence of the agent's opportunistic behaviour increases the significance of the aforementioned principal-agent division and heightens the significance of the aforementioned information asymmetry issues between the two parties. As Mejia et al. (2005) comment, opportunistic behaviour by agents can occur mainly when the information asymmetry between the two parties (principal and agent) is high. The justification of this opportunism occurrence belief is that high information asymmetry increases the difficulty for principals to claim whether agents are acting opportunistically or not (Xiang et al., 2015).

Researchers such as Selviaridis and Wynstra (2015) suggested that one way for principals to mitigate these opportunistic behaviours is through contract design. Cavusgil et al. (2005) and Huo et al. (2016) perceived the role of contracts as an effective safeguard and deterrent against opportunism by specifying rewards and punishment and through the enforcement of law. This controlling mechanism of the suppliers' tendency

toward opportunism is essentially optional between the following two forms of contracts: firstly, behavioural-based contract by specifying to the suppliers how to behave (directives and rules); secondly, outcome-based contract by specifying what to achieve (defining, measuring outcomes) (Fayezi et al., 2012). According to Eisenhardt (1989), the latter type (outcome-based contract) is more effective when: (1) the principal is risk averse; (2) there is a substantial goal conflict between principal and agent; and (3) the project outcome is measurable. Thus, by addressing transaction and actor characteristics, AT can inform whether outcome-based contracts would be more effective (Selviaridis and Wynstra, 2015). Of course, in this thesis, the choice is to a significant degree academic, as the researcher is only assessing the causes of project failure and whether AT provides a convincing explanation, not going into great detail about how the failure might be addressed, including contractually.

Having established the concept of opportunism and contract design as a controlling mechanism, we need to engage with an issue that has been mentioned above in passing. Namely, the degree to which opportunism is a common form of behaviour. This is now discussed.

3.3.3.3 Debating the extent of opportunism in the economy

There is a long-running debate regarding the incidence of opportunism within the academic literature. This debate has two sides. Firstly, some researchers contest the idea of a significant presence of opportunism in business-to-business markets and claim that AT and transaction cost economy (TCE) theory exaggerates its existence (Shapiro, 2005). The second side of the debate is conducted by, among others, AT and TCE researchers, who beg to differ by assuring the existence of opportunism and believing that it is a realistic behavioural assumption (Williamson, 1993b; Shelanski and Klein,

1995; Geyskens et al., 2006; Macher and Richman, 2008; Handley and Angst, 2015; Kang and Jindal, 2015).

The first side of the debate is concerned with the critics of opportunism. It started when the concept of opportunism arose in the 1970s. Since then, there have been several criticisms and challenges toward the concept of opportunism. To illustrate, Hakansson and Snehota (2006) stated that opportunism is a minor part of business-to-business strategic exchange. From their definition of the term 'strategy', they identified the concept of opportunism as a minor part of business strategic behaviour. Moreover, the evidence of opportunism being a major feature of businesses was, they said, less than conclusive (Hakansson and Snehota, 2006).

Moreover, some of the non-economic literature on AT ruled out opportunism and considered it an unrealistic assumption (Shapiro, 2005). Indeed, Kauppi and Raaij (2015) contended that in many cases opportunism is actually 'honest incompetence'. This concept regards both parties (principal and agent) to be honest but with less competence (Hendry, 2002), which can be explained as follows: the principal may not be competent enough to deliver a project's precise expectations to the agent, or the agent may not have the required competence to understand those deliverables, which will eventually affect the way in which the agent behaves.

One reason why it has been argued that opportunism might be a minor feature of business markets is that social relations bestow social obligations (Granovetter, 1985), which, it is said, proponents of the opportunism concept underplay. Granovetter (1985) claimed that opportunism is an under-socialised concept, as it "does not allow for the extent to which concrete personal relations and the obligations inherent in them discourage malfeasance, quite apart from the institutional arrangement" (p. 489). In

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terms of personal relationships, a strong concrete relationship is associated with a number of expectations and obligations and is characterised by certain ethical behavioural norms and morals, such as trust, which is considered sufficient to discourage opportunistic behaviour by the parties involved. Further discussion on trust and ethical responsibilities will follow.

Where trust exists within a principal-agent relationship, the trustor (the principal) is accepting vulnerability to any uncertain behaviour from the trustee (the agent). The fact that the principal trusts his agent, it is argued, creates an ethical responsibility for the agent, and this is generally associated with the idea of morally right behaviour. Thus, principal is trusting the agent not to exploit certain situations and there is a duty on the agent not to act opportunistically (Greenwood and Buren, 2010).

Trust, it is argued, can be an existing relationship factor between principal and agent, certainly in cases where the two parties have worked together in previous projects. In other cases, where principal and agent have not yet developed a trusting relationship, multiple researchers who looked into the relationship theory indicated that it is realistically possible to establish trust, as well as commitment, through 'growing relationship length' (Bhattacharya et al., 1998; Rousseau et al., 1998; Deeds and Hill, 1999; Lai et al., 2005).

Starting from the vulnerable actor (principal), Mayer and Gavin (2005) argued that the acceptance of a vulnerable actor to be in that position with another actor – at the time where trust is present in the relationship – shows commitment and willingness to be more interactive and work in growing the relationship. On the other hand, Mayer et al. (1995) proposed three attributes of the agent (trustee) to build perceived trustworthiness: firstly, the abilities and competences of the trustee to build trust; secondly, benevolence, and

this concerns the trustee's belief that he wants to act correctly towards the trustor (principal), aside from thinking about the profit motives; and finally, integrity, which refers to the ability of principal to govern agents' behaviours. Thus, the principal's commitment to cooperate, alongside with the agent's willingness to act accordingly, will result in a continuous cooperative approach in their relationship. Alexrod (1984) contended that relationship-based trust can be developed over time, as long as there was a pattern of co-operative behaviour between principal and agent.

Following the establishment of relationship-based trust, Crosby et al. (1990) and Coulter and Coulter (2002) argued that through growing relationship length principals are able to reduce the level of vulnerability by gathering more information about the agents, which will result in minimising the information asymmetry, simultaneously, allowing agents to adapt their goals to those of the principal. Hence, both parties have aligned objectives and the principal's vulnerability is finally eliminated through sharing the relevant knowledge and unifying their goals. Thus, growing and increasing the relationship length between principal and agent is a tool to build shared knowledge between the two actors and build knowledge-based trust. Therefore, there is a direct positive relation between the relationship length and trust.

A final argument on this side of the debate concerns a suspicion that many researchers have ignored the aforementioned effect of social relations and exaggerate in the presence of opportunism because they want to justify the necessity of "hierarchical control mechanisms such as monitoring and incentives" (Ghoshal and Moran, 1996, p. 18). In other words, the behavioural assumption is invented as it leads the analysis to a favoured conclusion.

Sitting behind the above arguments is empirical research which some argue supports the idea that opportunism is a minor economic problem. Researchers from this side of the debate argue that there is a lack of sufficient empirical support within the literature for the concept of opportunism, which further undermines the case for the concept (Carter and Hodgson, 2006; Yam and Chan, 2015).

On the second side of the debate, however, researchers such as Williamson (1993b) and Shelanski and Klein (1995) disagree with the above and consider opportunism to be a realistic assumption in their studies. Despite of all the challenges and criticisms discussed above – which were taken into account by AT and TCE researchers – they have argued that the concept of opportunism has been critically assessed in the development of their commercial frameworks and that it is a realistic behavioural assumption. This has been explained from a number of perspectives.

The first explanation was provided within the transaction cost analysis theory. This theory suggests that many business partners will act opportunistically whenever the opportunity becomes available in order to achieve certain organisational objectives. Klein and Paladino (1996) stated that agents carry out a cost-benefit analysis to help in directing their behaviour by measuring the financial gains and losses. In such cases, if the agents' gains from an opportunistic act are more than the losses then they will act opportunistically.

The second perspective acknowledged the effect of culture on individuals who act opportunistically (Williamson, 1993a). Studies have taken into consideration, for example, national cultural differences to explain the basic assumption of opportunism. Despite what has been discussed as general cultural considerations, there is not a theoretical framework that explicitly demonstrates how culture can affect the

opportunistic behaviour of an economic actor. However, it has been argued that cultures that are characterised with a high degree of individualism might exhibit opportunistic behaviour more often than collectivist cultures. This is because individualist societies prioritise tasks over relationships (Hofstede, 2011). Therefore, keeping valuable relationship is not considered as an incentive to dismiss a chance of opportunistic behaviour.

This can lead to the third explanation, which considers opportunistic propensity as part of human nature (Chen et al., 2002). This is, of course, controversial and has arguably led economists into speculating about specific scientific matters.

Overall, therefore, supporting the previous debate, authors such as Williamson (1993b) and Shelanski, Klein (1995), Geyskens et al. (2006), Macher and Richman (2008), Handley and Angst (2015) and Kang and Jindal (2015) considered opportunism to be a realistic behavioural assumption and, like the camp criticising the concept, have marshalled evidence to support their case. The debate does not look likely to be settled soon. This thesis, however, will proceed on the basis outlined by AT, that opportunism is a significant possibility and requires a managerial response.

3.3.3.4 Specific types of opportunism – pre and post-contract opportunism

It can be seen from the above analysis that the principal-agent division and information asymmetry create the conditions where an agent can exploit the principal's vulnerable position. It is argued by many that the agent will exploit the principal if it has an opportunistic disposition and the circumstances mean that the gain to the agent from opportunism outweighs the risk of detection and retribution on the part of the principal. What is to be established in this section is that the exploitation can take place in two different stages of a project. Opportunism in each stage has been distinguished as a

totally different type. There are two types of opportunism in particular that have been identified by many researchers (Caers et al., 2006; Ceric, 2012; Eriksson, 2016) - adverse selection (pre-contractual) and moral hazard (post-contractual).

Adverse selection is the type of opportunism that occurs before signing a contract between principal and agent. At the pre-contractual stage, the principal can only gather public information about the agent. In the same instance, it is challenging for the principal to obtain private information about the agent. Therefore, due to this information asymmetry, the principal is not able to observe, collect or verify the relevant information and characteristics about the agent or manager before setting up the contractual document (Caers et al., 2006; Saam, 2007). The failure to solve the information asymmetry between principal and agent in such a case will affect the selection process of the agent by the principal. This may result in the principal choosing an agent with the wrong level of competence and who may not be capable to deliver the principal's goals.

To illustrate by way of example, Pontes (1995) argued that agents hold more information about their own characteristics and capabilities than principals and they may use this asymmetry of information in exaggerating their competence and commitment, showing their overconfidence of their ability to achieve principals' goals (Rosa, 2011). Researchers have also mentioned how agents may provide false forecasts of price estimations to principals, and underestimate the probability of a bad outcome to encourage the project initiation (Wachs, 1990; Rosa, 2011). Agents are said to do this just to get the project started, as they know that it is rare for a principal to stop a commenced project and that the money will always be found (Wachs, 1990). For example, in the UK, MacDonald (2002) found that in 50 road projects, the final costs were 24-26% more than what was initially agreed.

The second type of opportunism is moral hazard, which is known as post-contractual opportunism (Eriksson, 2016). It occurs where there is a division between the principal and agent, a degree of information asymmetry and when the principal is not fully confident that the agent will act on the principal's behalf once the contract is signed. In particular, moral hazard occurs where the agent can obtain more private information through its actions, which might be very difficult for the principal to observe (Fenling and Feiran, 2012). Furthermore, Alparslan (2006) argued that not only can hidden actions cause moral hazard, but hidden intentions as well, and that exacerbates the difficulty of the principal to identify this type of agent opportunism.

Because of the low level of confidence the principal has towards the agent, and the information advantage the agent has over the principal, the agent is able to prioritise his own interests from the project. This prioritisation will be at the cost of the principal's interest. Therefore, the agent will only deliver the principal's interests if they are aligned with his (Müller and Turner, 2005). AT suggested a solution for this problem through the realignment of principal and agent interests in the contractual document, an option now discussed (Müller and Turner, 2005).

3.3.4 Opportunism management

As discussed earlier in the opportunism section, there are two generic possible outcomes once there is division between principal and agent and once information asymmetry exists. The first outcome is when trust is the moral norm between the two parties. In the context of lean supply management, Lamming (1996) stated that under such moral norms "problems that occur are targets for solution, not opportunities for reinforcement of artificial impediments in the flow of the supply chain" (p. 189).

In this scenario, the agent's opportunistic behaviour is removed from the equation. Hence, both parties are not divided, and both share the relevant knowledge and information that is required to perform certain tasks. In addition, they will work together to find solutions for issues that slow down work progress. They both put trust in each other, in the hope that nobody will get fooled (Bohren, 1998), and, eventually, the information asymmetry will be eradicated (Mukherji et al., 2007). Ceric (2014) found in her research that trust is the most important strategy to manage and minimise the level of information asymmetry between principals and their agents.

The second outcome is when the relationship between principal and agent lacks trust. In this case, it is imperative to address the notion of opportunism. From this standpoint, researchers have discussed a number of methods to manage this opportunistic behaviour. These opportunism management mechanisms will be presented in the following two distinguishable steps or scenarios:

The first approach is to deal with opportunism by changing the agent's attitude toward dealing with the project principal. The aim here is to develop the level of trust between project parties - to allow them to deal with each other in a cooperative and collaborative manner. Relationship theory indicated that it is possible to establish trust and commitment via growing the relationship (Bhattacharya et al., 1998). Once trust has been established between the principal and agent, increasing the intensity and the duration of interaction between the two parties will reveal additional information to principal about the agent. This will reduce the division and the information asymmetry between them (Crosby et al., 1990; Coulter and Coulter, 2002). Thus, without a division in the interests of the principal and agent – and where both parties are holding the relevant information required to manage the project – a cooperative/collaborative relationship should be the driver to eliminate any opportunistic behaviour. So, this mechanism is to accept that trust

does not exist at the present time, but to believe that the advantages of trust outlined in the above section can nevertheless be secured in the future.

The second scenario is where a principal aims not to change the agent's attitude, but to change his behaviour. In this scenario, principals accept the fact that the agent may wish to act opportunistically, but they aim to prevent this through certain mechanisms. There are a range of mechanisms here, starting with the realignment of the incentives for the agent to make it favour not acting opportunistically (Müller and Turner, 2005). For example, as suggested by Cox and Thompson (1997), the client can restrict the agent's opportunistic behaviours by providing certain incentives such as winning future projects. The incentive of establishing long-term relationships between the principal and the agent can establish a long-term collaboration (if not necessarily trust) between the two actors. Consequently, the agent may not act opportunistically, even under the circumstances of incomplete contracts or weak monitoring by the principal, to avoid the risk of losing future work opportunities (Eriksson, 2016). Thus, this mechanism (incentive realignment) delivers a greater level of consistency of the principal's and the agent's interests, which will result in minimising the conflict of interest from the project between the two and increase the level of collaboration and cooperation in that relationship (Basu and Lederer, 2011).

Other methods were suggested by Steinle et al. (2014) which are monitoring, screening, and signalling. These techniques can provide efficient management of the information asymmetry between principals and agents. This includes operational possibilities of both measurable and non-measurable information. Starting with the measurable information, Eisenhardt (1989) claimed that monitoring the agent's actions or outcomes evidently might result in avoiding the information asymmetry issue. According to Steinle et al. (2014), regular meetings are a potential monitoring mechanism. The effectiveness of

these mechanisms is empirically supported by Hawkins et al. (2008) as they reduce the information imbalance, and improve the process of observable information exchange in more appropriate manners (Müller and Gaudig, 2011).

Signalling is the second mechanism used to understand information asymmetry. It aims to achieve authenticity in the agent's voice by reducing information asymmetry (Taj, 2016). It has been used in many different fields of management. One important function of this management mechanism can be employed in reducing information asymmetry by controlling the unobservable actions to project principals, which can be conducted by their agents. For example, in corporate governance, CEOs used their financial statements to signal unobservable qualities of operational work (Zhang and Wiersema, 2009). Screening mechanisms can also be used to reduce the information asymmetry level between the principal and his agent in both pre-contractual, resulting in better selection of the project agent, and post contractual stages, for better performance by the agent. This method, however, generates additional costs to the principal (Saam, 2007). Finally, bonding is another mechanism to manage information asymmetry (Jensen and Meckling, 1976). This mechanism binds the agent to produce certain information to the principal, for example, on the process of producing his work. The agent agrees on penalties in cases where the required information is not provided to the principal (Saam, 2007).

There are, therefore, a range of mechanisms that can be used to address potential opportunism. However, they have to be used in the knowledge that any failure in managing opportunism, dealing with the risk of its occurrence, or not dealing with the principal-agent division and information asymmetry, will lead the agents to acting opportunistically, whether in the pre-contractual stage (adverse selection), post-contractual stage (moral hazard), or both. According to Kutsch and Hall (2005), the

failure of the principal to indeed deal effectively with the risk of the agent's opportunistic behaviour can be explained by one or more of the following:

1. Risk refusal: where the principal refuses to consider that type of risk to keep the negativity away from other project stakeholders.
2. Risk avoidance: this is due to the lack of attention to that risk which might come from the principal's lack of experience.
3. Risk delay: this is because of the principal's lack of interest to consider the risk.
4. Risk ignorance: due to the lack of awareness of the risk and its probability of occurrence.

Therefore, there are various issues in addressing opportunism. These are amplified when there are situations, in our context a project, with multiple principal-agent relationships.

3.3.5 Multiple principal-agent issue

As discussed earlier, APs appear in cases where one party delegates or authorises another to conduct and manage certain tasks or activities. The first party is the project owner (principal) and the second is the project contractor (agent) (Wu et al., 2014). Certain projects and industries, however, involve more than one party who act as the principal and the agent (a case where a subcontractor is hired, for example). Researchers, such as Toor and Ogunlana (2010), perceived certain types of industries to be 'highly goal conflicted'. The reason is the involvement of numerous stakeholders in the project or process, with the possibility that each stakeholder may have different goals.

The construction project industry is the focus of this thesis, and is one of the industries perceived by Toor and Ogunlana (2010) to have a large number of stakeholders with different project goals and interests. In the construction industry, the stakeholder's structure involves multiple links between two distinguishable parties, both of whom have certain agreements to execute certain parts of the project. Consequently, and according to Wu et al. (2014), an AP may potentially appear between every two parties within the same project. Hence, multiple agency (principal-agent) problems come in to action.

A demonstration of the multiple principal-agent problem can be explained, as follows. Ceric (2014) included the project owner, contractor and their project managers in her research. The classical AP occurred between the project owner, who was the overall principal of the project, and the contractor, who was the agent. In the multiple AP, the contractor is taking the principal role, with respect to the contractor project manager. Furthermore, Ceric (2014) proposed that future research should enlarge the scope, and include more project stakeholders to investigate the multiple agency issue. The following list gives examples of other stakeholders who may be involved in an infrastructure construction project:

- Project consultant.
- Sub-contractor hired by the overall contractor.
- Project designer hired by the main contractor.

With respect to these three stakeholders, the project owner is the principal, and the project consultant is the agent. This point of contact between the two actors is the first area for a potential AP to take place. Another point of contact is between the project contractor, who is acting as a principal with respect to any further sub-contractors, and

the project designer in the case of a design-and-build project type; the sub-contractors and project designer will be the agents of the main contractor. This presents the possibility of a minimum of two different areas of AP. The first AP is between the main contractor and the project designer, and the second is between the main contractor and subcontractor/s (subject to increase once additional subcontractors get involved in the project).

As noted by Toor and Ogunlana (2010), it becomes apparent that the magnitude of multiple APs can affect a project severely, each different stakeholder having as they do a certain agenda to fulfil by completion of the project. This highlights the importance of this research, not least as the literature on multiple principal agent problems within the area of construction mega-projects is currently thin.

3.4   Summary

This chapter aimed to provide a thorough review of AT, having justified its use as the primary theory in this research. It included a critical review of the theory's five components (principal-agent division, information asymmetry, possibility of opportunism, management mechanisms and multiple principal-agent problems), which will be used in the analysis of the case study of this research. The first component (principal-agent division) looked at the basic construct of AT and how the relationship between the principal and the agent could be either characterised by co-operation and collaboration or confrontation and conflict, with the latter entrenching the principal-agent division. The second component, information asymmetry, can exist within such a relationship and provide the agent with an information advantage. If agents exploit the advantage they said to be acting opportunistically to achieve their own interests – the third component. The fourth component contains the methods to manage the agent's opportunistic

behaviour, mostly relating to monitoring and incentives within the contract document. Finally, the last component covers the possibility of multiple principal-agent relationships (and potentially APs), a high possibility occurrence in certain industries, where multiple relationships exist and where the project actors are 'highly goal conflicted', such as the focal industry in this thesis, the construction industry (Toor and Ogunlana, 2010). Thus, these five components constituted the structure of AT chapter, as demonstrated in the conceptual framework (see Figure 10).
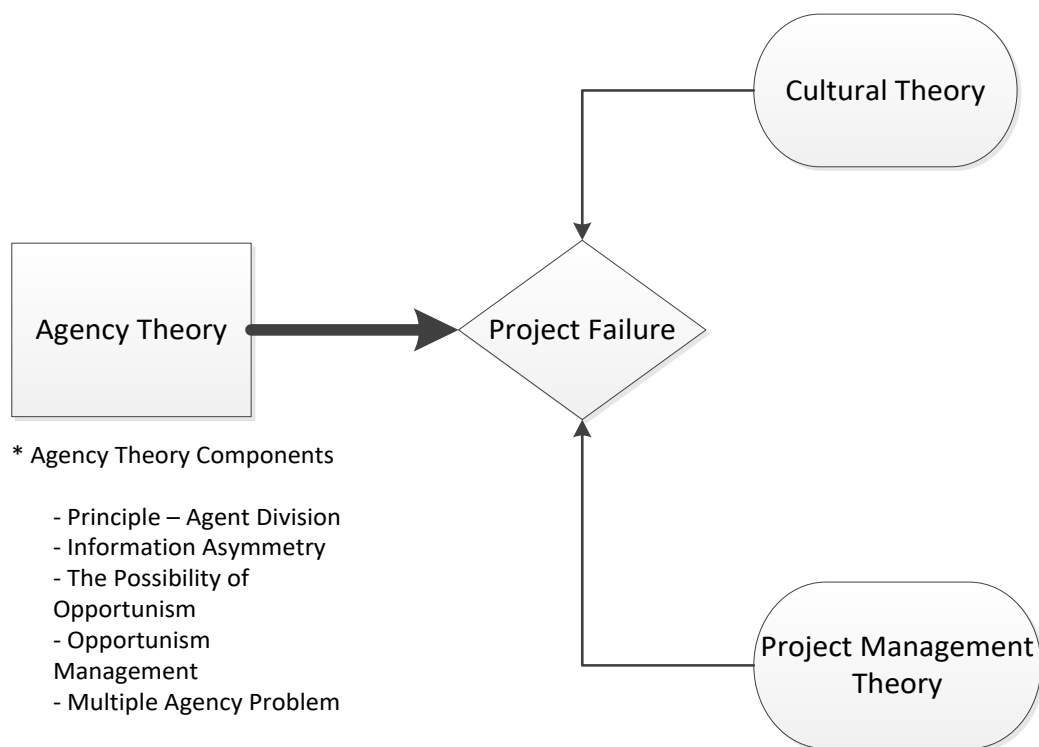
Figure 10: Conceptual model – Agency theory.

To conclude, this chapter has continued the exploration of the thesis' research question. AT, discussed in this chapter, has been put forward in the research question as a potential explanation for the failure seen in the HHR mega-project. The research question accepts, however, that even if AT is found to be a significant factor behind the HHR failure, it is unlikely to be the sole factor. As a result, the thesis examined (in chapter

2) various theories of project management, in particular those relating to the '4Ts' of Lundin and Söderholm (1995). These characteristics may well also be factors behind the HHR project failure.

In this context, the next chapter will discuss the final area of literature. This is national CT, a further subsidiary theory for this research. This theory, like the '4Ts', is introduced as a potential alternative and/or additional explanation of the HHR project failure.

CHAPTER 4

NATIONAL CULTURAL THEORIES AND THE SAUDI CONTEXT

As mentioned, the researcher wishes to explore with national CT whether Saudi culture was a significant cause of the HHR project failure. It does so using Hofstede's (2011) well known culture framework. This analysis will complete the exploration of the research question regarding the extent to which AT can explain the HHR project failure. AT is the prime theory being used to explore the project failure, but the '4Ts' from the project management literature and the CT discussed in this chapter are being advanced as subsidiary theories highlighting factors that may also have played a role in the HHR failure.

4.1 The context to Hofstede's national cultural framework

CT has been studied in various fields, such as politics, history, art, linguistics and management. However, the in-depth cultural behaviour studies emerged from the fields of social anthropology, sociology and social psychology (Sennara, 2002). Interestingly, there is no consensus on one definition of 'culture', across and within different fields (Ferraro, 1990). Kroeber and Kluckhohn (1952) defined culture as:

> "Culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievements of human groups, including their embodiments in artefacts; the essential core of culture consists of traditional (i.e. historically derived and selected) ideas and especially their attached values; culture systems may, on the one hand, be considered as products of action, and on the other as conditioning elements of further action." (p. 181).

This definition by Kroeber and Kluckhohn (1952) was influential for scholars that followed. For example, Downs (1971) provided a different definition of culture as being "a mental map which guides us in our relations to our surroundings and to other people". More recently, Hofstede's (2011) definition was "culture is the collective programming of the mind that distinguishes the members of one group or category of people from others" (p. 3). In line with the cultural theory (Hofstede's theory) used in this research, the latter definition of culture by Hofstede is deemed appropriate to be followed for the purpose of this thesis. This is purely because this thesis is concerned with analysing culture from a business and strategic perspective rather than anthropological or sociological perspective.

These definitions lead us to think whether culture can be learned or whether is it otherwise inherited. Every person is characterised by certain patterns of thinking, behaviours and feelings, which were learned in their lifetime, mostly during childhood. Ferraro (1990) said about culture, that it is transmitted through the learning process of a person in one environment and not by the genetic process. Similarly, Hofstede et al. (2010) confirmed that "culture is learned, not innate. It derives from one's social environment rather than from one's genes" (p. 6).

A further issue relates to the importance of distinguishing culture from the human nature on one side, and from the personality of an individual on the other side. This can be demonstrated in Figure 11, (taken from Hofstede et al., 2010).
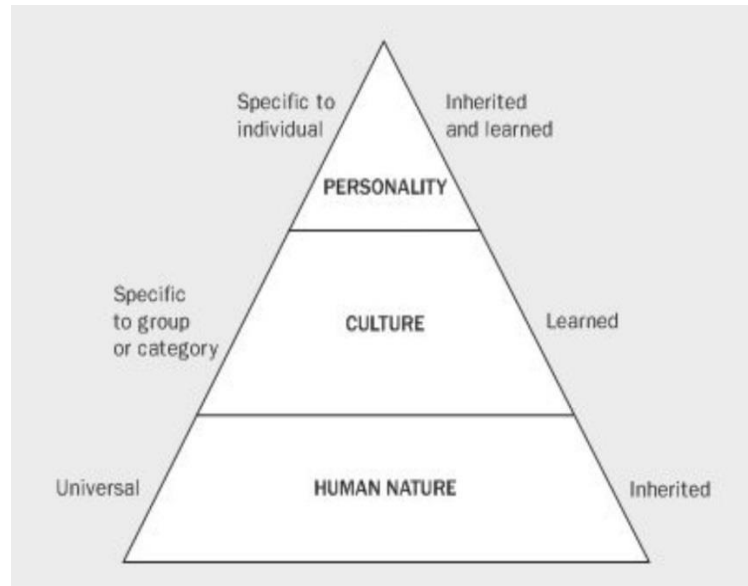
Figure 11: Three levels of uniqueness in mental programming (Hofstede, 1991).

Human nature is a universal measure of someone's mental ability, which is inherited through their genes. For example, the person's ability to feel love, anger, sadness and joy is part of their human nature. However, the manner in which each individual expresses these feelings is modified with culture; where a person chooses how to express these feelings or use these feeling in their behaviours. This process is learned through generations and is not unique to a certain individual. Finally, personality is a unique personal process of programming the inherited nature with the learned culture. Looking at Figure 11, Hofstede et al. (2010) clearly defined the three levels of mental programming, but they agreed that the borders that separate the three levels are not clear.

4.2   Hofstede's national culture framework

Having provided a context to Hofstede's (2011) national cultural framework, its components can now be examined. This starts with his four concepts of culture and then the actual framework.

4.2.1 Symbols, Heroes, Rituals, and Values

Hofstede et al. (2010) identified four concepts to describe the manifestation of national culture. These concepts are: symbols, heroes, rituals and values. Hofstede illustrated these concepts with the different layers of an onion shell, "the onion Diagram" (see Figure 12) below.
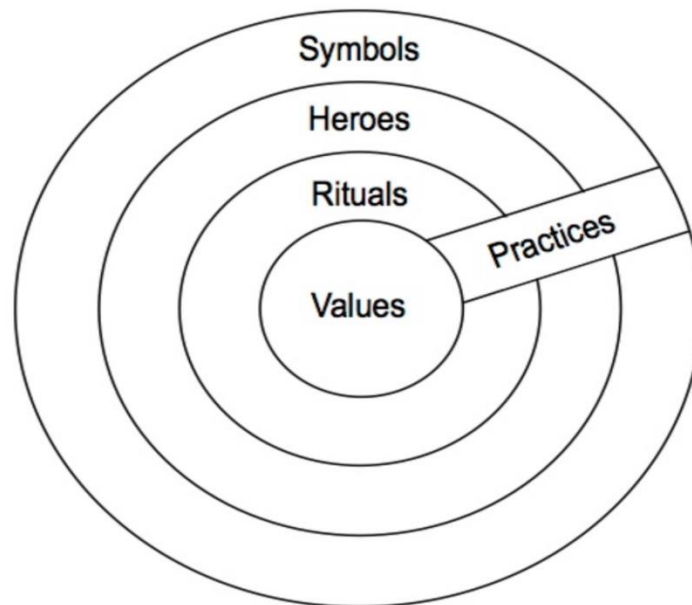
Figure 12: Hofstede's onion diagram (Hofstede, 1991).

Symbols (for example, gestures or words) have been placed in the outer 'superficial' layer in the onion diagram, as symbols can be easily changed, developed and then copied by others. The concept of 'heroes' comes in the next inner layer, which are persons who can be dead, alive, real or imaginary, and taken as models for people's behaviour. The next layer presents rituals, which are defined as collective activities that are socially essential to reach the desired ends (for example, greeting and giving the required respect to other people, as well as religious and social ceremonies). The inner layer on the onion diagram is values, representing the core of the cultural manifestation.

The cultural values are invisible and acquired from people's childhood, which makes it the hardest one of the four concepts to change.

For the purpose of this research, it is important to define the Saudi culture using the four concepts introduced by Hofstede et al. (2010), as presented in the onion diagram. This is purely to understand the level of flexibility within the culture, and to be able to provide pragmatic and practically valid recommendations at the end of this research, which can be applied in Saudi organisations and are not classified as inconsistent with the Saudi culture.

Saudi Arabians are known as people who are hospitable and very religious, with high regard for their values and traditions. Islam is the only religion across the nation and it dictates every aspect of life (for example, what they wear, eat, when and how they should pray). This applies even during the working hours as well. There are breaks to allow people to perform their prayers, and business shops are closed during those times (World Trade Press, 2010).

Furthermore, Saudi Arabians do value their personal relationships and courtesies in providing services and performing jobs (Hofstede, 1991). World Trade Press (2010) stated that in Saudi Arabia, even "in a business environment, you can expect either a glacial pace or lightning speed" (p. 22). Thus, it is apparent that the core of the Saudi culture (rituals and values) is having a major impact on how the Saudi people conduct themselves in business.

Considering Hofstede et al.'s (2010) suggestions that the core on the onion diagram is the most difficult to change out of the four layers, the researcher has to consider these cultural norms and values during this research and in its outcome. For further analysis

of the Saudi culture, the researcher will look into the six cultural dimensions by Geert Hofstede (2011).

4.2.2 Hofstede's six dimensions of cultural theory

Hofstede's cultural framework identifies six universal dimensions of culture that can accommodate all societies and allows for cultural comparison on an international level (Beugelsdijk et al. 2015). These dimensions are power distance (PD), uncertainty avoidance (UA), individualism/collectivism, masculinity/femininity, long-term vs. short-term orientation, and indulgence vs. restraint.

During the process of building this framework, Hofstede collected data, and studied and analysed the values of people from over 50 countries around the world (Sennara, 2002). Furthermore, a number of researchers have built on Hofstede's framework of CT from a business perspective. For example, Storti (1990) referred to four fundamental dimensions to culture: concept of self, concept of time, personal vs. social responsibility, and locus of control. Similarly, Jackson (1995) also identified four dimensions: sociological differences, corporate cultural differences, industrial and professional cultural differences, and individual psychological differences. Trompenaars and Hampden-Turner (1998) is also credited with a useful adaptation. A number of other researchers, including Bjerke and Al-Meer (1993), Beugelsdijk et al. (2015), have also sought to validate Hofstede's dimensions and framework.

However, as well as praise and emulation, Hofstede's framework has received considerable criticism since its emergence in the early 1980s. Cray and Mallory (1998), for example, criticised Hofstede's framework because it was narrow and only considered national culture and not other cultural domains, for example, organisational culture. Lowe

(2001) explained further that Hofstede avoids any clarification of the relationship between national and organisational culture in his study (Hofstede, 1984). Cray and Mallory (1998) concluded that Hofstede's "dimensions seem to have some predictive validity, but their applicability may be considerably blunted by the intrusion of other levels of culture" (p. 57). This is clearly because Hofstede did not conduct an empirical investigation on the relationship between his dimensions, mainly of his study participants' values and attitudes and their organisational structures (Tayeb, 1994). Tayeb (1994, p.435) commented:

> "The relationships are conceptual and speculative. He arrived at his conclusions about the overwhelming influence of cultural factors on organizational structure on the basis of these speculations and subsequent 'after event' corroboration with findings of other studies, rather than 'hard evidence'."

Hofstede's framework has also been criticised as it does not consider the influence of individual differences within a nation. Bond (1988) commented: "The ecological or culture level approach [of Hofstede] does not yield individual level dimensions of values" (p. 1009). This has left Hofstede open to the criticism of propagating stereotypes.

Furthermore, there have been methodological criticisms. The basis of Hofstede's study was restricted to the IBM survey material (mainly for the initial four dimensions), the Chinese value survey (for the fifth dimension) and world value survey (for the sixth dimension) – which led to the findings from one organisational background on each of those dimensions.

A last criticism on Hofstede's study is related to the cultural dimensions' generalisability. The Chinese Culture Connection group revealed that one of the Hofstede's cultural

dimensions – UA – is irrelevant to the population in China. Therefore, UA was downgraded as a cultural dimension into a non-universal one (Bond, 1988).

While mindful of these criticisms, this research has decided to study Saudi culture by adopting Hofstede's six dimensions. This is for the following reasons:

1. This research is focusing on the aspect of national culture and its relation to project failure. The criticism regarding the narrowness of the framework is of limited concern as a result.

2. The importance of the time dimension to this thesis. Key aspects of this research project are around project temporality and failure of project delivery within the allocated time. Hofstede can help with this, as one of the dimensions in Hofstede's CT is about the concept of time.

3. Hofstede's study is comprehensive, and involved detailed research and analysis in one of the biggest multinational corporations (IBM). The research was undertaken over several years, and involved participants in over 50 countries, including Saudi Arabia, the location of the case study in this research (Hofstede et al., 2010).

4. Hofstede's study is measurable, by allocating different countries in an identified index.

5. As Hofstede is a researcher in the business field, the researcher has an interest in the aspects of national culture identified by, and applied in, business corporations, by Hofstede and other researchers.

6. The six dimensions by Hofstede are consistent with the major areas of intercultural comparison related to Saudi Arabia for the purpose of this research.

Thus, the Saudi culture will be studied in relation to Hofstede's six dimensions as follows:

1. Power distance – related to the problem of human inequality and its solutions.

PD has been defined as "the extent to which the less powerful members of organisations and institutions (like the family) accept and expect that power is distributed unequally" (Hofstede, 2011, p. 9). Hofstede suggested that the followers endorse inequality in societies as much as the leaders, and it is natural to have inequality and power in all societies, but in various levels. Moreover, the notion of PD does not exist only in the work place, it extends further to other institutions (for example, family and whole society). In this context, the superior person is the one who is entitled to privileges and respect (Hofstede et al., 2010). So, because there are different levels of PD, societies can be described as high PD or low PD. The following table will differentiate between the high and low PD society.

Table 4: Cultural dimension – power distance (Hofstede, 1984; 2011).

Power distance	High power distance society	Low power distance society
Characteristic of the relevant society	- Inequality between members in organisational society. - Hierarchical organisational structure. - Hierarchical relationship structure. - Authority and power are only for certain people in the society. - Privileges are expected and status symbols are popular. - Managers make decisions autocratically and paternalistically. - Parents expect obedience from the children.	- Equality between members of an organisation. - Flat organisational structure. - Equality in relationship structure. - All society have equal power and authority. - Status symbols and privileges are frowned upon. - Managers take decisions after consulting with subordinates. - Parents treat their children as equal. - Older people are neither feared nor respected.

	• Older people are feared and respected. • Followers expect to be informed what to do.	• Subordinates expect to be consulted.

Hofstede (2001) standardised the measurement of PD among the countries in an index, with the Philippines scoring the highest (94), and Austria the lowest (11). Hofstede declared that the Arab countries – where Saudi Arabia can be embedded - have scored (80). Bjerke and Al-Meer (1993) used Hofstede's cultural dimensions to specifically allocate Saudi Arabia in their study within Hofstede's index; their result for Saudi was (73) which was considered to be at the high end of the range. Accordingly, Saudi Arabia is classified as a high PD society.

Furthermore, some of the characteristics of high PD societies presented in Hofstede's study seem to fit with the culture of Saudi Arabia; however, the Islamic religion advise otherwise. For example, Islam and the Arab culture recognise hierarchy, and despite the argument that managers may make decisions autocratically and paternalistically, the Islamic religion suggests consulting subordinates before making decisions. This was important to clarify for the purpose of a religious belief.

Another aspect that was addressed for the Saudi nation is that managers dislike the impersonal and formal notion of 'business is business'; they would rather deal informally and use the personal approach among themselves (Bjerke and Al-Meer, 1993). Moreover, the World Trade Press (2010) expressed inequality in the Saudi society to extend further with foreigners "it is usual practice to keep foreigners waiting" (p. 22), this was stated in relation to business meetings on an individual or group level, and in functionary or government official business.

2. Uncertainty avoidance – related to the amount of stress a society may suffer from uncertain future.

Hofstede (2011) distinguished UA from risk avoidance. UA is related to a society's tolerance for uncertainty and ambiguity, "It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations" (p. 10). This dimension identified two types of UA societies, they are high UA society and low UA society. Within the high UA societies, Hofstede (2001) observed that managers are given a lot of power and authority to maintain more control on others' behaviours. However, a major threat is that these managers may exploit their authority and power to pursue and make decisions for their own interests. The following table compares the characteristics of both types:

Table 5: Cultural dimension – uncertainty avoidance (Hofstede, 1984; 2011).

Uncertainty avoidance	High uncertainty avoidance society	Low uncertainty avoidance society
Characteristic of the relevant society	- Uncertainty considered as threat and must be fought. - Higher stress, anxiety, emotionality. - Low scores on subjective health, and well-being. - No tolerance for oblique ideas: what is different is dangerous. - High need for structure and clarity. - Stay in jobs even without liking them. - Emotional need for rules even if they are not obeyed. - More emotional resistance to change.	- Uncertainty in life is accepted and treated in a daily basis. - Lower stress, ease, low anxiety, self-control. - High scores on health issues and well-being. - Tolerance for oblique person or ideas: what is different is curious. - Comfortable with chaos and ambiguity. - Changing jobs is no issue. - Dislikes of rules whether written or un-written. - Less resistance to change. - Conflict in organisation is normal.

	Conflict in organisation is undesired. Loyalty to employer is a virtue.	Loyalty to employer is a virtue.

In Hofstede's research (1984), he measured this dimension of UA in an index that had similar range to the one used in PD. The result among the countries included in the study presented Greece with the highest UA score (112), while the lowest was Singapore (8). Hofstede gave a general score for the Arab countries in this dimension and that was 68, which allocated Saudi Arabia in the high end of the index. Matching Hofstede's outcome, the other study by Bjerke and Al-Meer (1993) also presented Saudi Arabia in the category of high UA with a score of 73.

Managers in Saudi Arabia are very much attached to their religion and traditions. They do not have any tolerance for people who deviate from both Arab culture and Islamic teaching. They do not like conflict and tend to solve a conflict situation with authoritarian behaviour (Bjerke and Al-Meer, 1993). This begs the question, to what level are the rules in Saudi Arabia formal and rigid? The answer was provided by expatriates, as they described their experience in Saudi as "total chaos" and "rules and regulations being applied about 20 per cent of the time" (Muna, 1980, pp. 83-84).

Another point related to UA is the concept of fatalism. This can be discussed in two perspectives: cultural and professional. Firstly, there is a cultural belief that destiny always depends on a superior power, and this higher power dictates the outcome of an event. Thus, late delivery or lack of progress on a project is blamed on fate rather than effort (Larson and Gray, 2011). It is important to highlight that this cultural fatalistic approach is opposite to the teaching of the Islamic religion (Muna, 1980), which will lead to the second perspective. In the Saudi professional world, Muna (1980) stated that the

Arabic managers, including the Saudis, are far from being fatalistic, she described them as future oriented managers, planning with rationality, and they do attempt to prevent failure.

3. Individualism/collectivism – related to the level of integration of individuals into a group or a society.

This dimension describes "the relationship between the individual and the collectivity" (Hofstede, 2001, p. 209), in more particular terms the "extent to which people are autonomous individuals or embedded in their groups" (Triandis and Gelfand, 2012, p. 499). The level of individualism or collectivism can affect the norms of a person's relationship with their organisation and their reasoning of whether to comply with the organisational regulations (Hofstede, 1984).

Hofstede (1984) found that society in the USA is the most individualistic society, with an index score of 91, and the society in Venezuela is the most collectivistic society with an index score of 12. Saudi Arabia, under the Arab countries category in Hofstede's study scored 38, which indicates that the Saudi has a relatively collectivist society. In Bjerke and Al-Meer's (1993) research Saudi was also presented as a relatively collectivistic society, with an index score of 41, alongside India (48), Japan (46) and Iran (41). The following table shows some of Hofstede's characteristics which apply in the Saudi collectivistic culture.

Table 6: Cultural dimension – individualism/collectivism (Hofstede, 1984; 2011).

Individualism/ collectivism	Collectivism in society	Individualism in society
Characteristic of the relevant society	- People are born into extended family, which avoid exchanging loyalty. 'We' – consciousness. - Stress on belonging. - Harmony must be always maintained. - Other people classified as in-group or out-group. - The word 'I' is avoided in the speaking language. - The purpose of education is to learn how to do. - Managers rate obtaining security on their job position as more important.	- Everyone is supposed to take care of him/herself and close family only. 'I' – consciousness. - Right of privacy. - Speaking one's mind is healthy. - Other people classified as individuals. - The word 'I' is indispensable in speaking language. - The purpose of education is to learn how to learn. - Managers rate autonomy as more important.

The table above described some of the characteristics of the Saudi collectivistic culture. It can be seen that in Saudi society an important cultural attribute is defined by feelings of obligations for others, rather than logic (Larson and Gray, 2011). These feelings of obligations are extended to family and friends in the social and professional world. Therefore, it is not surprising to see Saudi managers depend on these relationships and friendships to get things done in their organisation. In that case, formal planning and business policies may act only as "shells" or "facades" for an organisation that is operated by smaller groups of families or close friends (Muna, 1980, p. 36). Hofstede (1991) confirmed that the personal relationship plays a major role in businesses in Saudi Arabia as he stated:

"For the Swedes, business is done with a company; for the Saudis, with a person whom one has learned to know and trust. As long as one does not know another person well enough it is convenient to have present an

intermediary or go-between, someone who knows and is trusted by both parties" (Hofstede, 1991, p. 50).

Furthermore, in business meetings, the person may wait far beyond the allocated meeting time before being called for to enter. Once there, there may be other people present, as it is rare to have one-to-one meetings in Saudi. Moreover, there may be continuous interruptions during the meeting, visitors may arrive and start speaking to the host, and secretaries may come and go throughout. Therefore, it is said to be important for the guest to remain composed and continue the discussion whenever the host is ready (Larson and Gray, 2011).

The Islamic religion is considered as an important source of the collectivist cultural orientation. Saudi managers, as Muslims, are expected and required to co-operate and collaborate with others and to share grief and happiness among each other. They are also required to offer all cultural and social rights to non-Muslims as well, as they are defined to be general bonds of humanity (Maududi, 1967).

4. **Masculinity/femininity – related to the level of division between the roles of men and women.**

This the fourth dimension of Hofstede's cultural dimensions, which discussed the masculinity versus femininity across the whole society, not per an individual's characteristics. Hofstede's study of IBM revealed the following: (a) there is less difference between women's values and their roles within the societies, in comparison to men; (b) men's values vary across different societies, men are competitive and assertive and totally different from women on the one side, but caring and modest (similar to women's values) on the other side (Hofstede, 2001). The assertive side has been

described as 'masculine', and the caring and modest 'feminine'. Further descriptions of the two terms are found in the following table.

Table 7: Cultural dimension – masculinity/femininity (Hofstede, 1984; 2011).

Masculinity/ femininity	Femininity	Masculinity
Characteristic of the relevant society	• Men and women must be caring and modest. • Balance between work and family. • Sympathy for the weak. • Both parents deal with facts and feelings. • Attitude on sexuality: sex is a way of relating. • The focus of religion is on fellow human being.	• Men must be, and women may be, assertive and ambitious. • Work is prevailed over family. • Admiration for the strong. • Fathers deal with facts and mothers deals with feelings. • Moralistic attitude about sexuality: as it is a way of performing. • The focus of religion is on god or gods.

The masculinity versus femininity index in Hofstede et al. (2010), presented scores for 76 countries. Masculinity score was found to be the highest in Slovakia (110), followed by German speaking and some Latin countries. The most feminine country was found to be Sweden (5). Arab countries scored (53), which puts these societies including Saudi Arabia marginally on the feminine side. More specifically, Bjerke and Al-Meer (1993) stated that, in their study, Saudi Arabia scored (43). This was surprising to some people who have a stereotypical picture of a Saudi society as being one dominated by men. However, men in Saudi society do show and express their emotions. They are usually seen embracing, holding hands, caring about other people and being friendly among their society (Bjerke and Al-Meer, 1993). Similarly, Muna's study (1980) reported that Arabic employees expect their managers to treat them with kindness, care, respect, and give them sufficient guidance.

Having said this, there are some restrictions in the Saudi feminine society – in relation to work and professional life – that originate from the country's laws and society's social constraints, which limit women to certain fields of work, such as healthcare, services and education. For example, it is impossible to see women in the construction industry, nor in government offices and municipal departments, which corresponds with sectors and industries occupied by men only (World Trade Press, 2010).

The four cultural dimensions that have been discussed thus far are Hofstede's cultural dimensions introduced in his book, 'Culture's Consequences' (1980). Hofstede later added a fifth dimension looking at the issue of time. This will be discussed next.

5. **Long-term/short-term orientation – related to the option to focus on people's effort whether in the past, present or future.**

This dimension was not based on the IBM survey material, instead it was based on the results of the Chinese value survey, that was undertaken across 23 countries worldwide (Hofstede, 2006). This dimension is the only one out of the six that is connected to economic growth (Hofsted, 2006; Bond, 1988). On this, long-term oriented society is said to have better economic growth. This type of society is characterised with perseverance, relationships are ordered according to status, and they have a sense of shame. On the other hand, short-term oriented societies are stuck with their social obligations, respect their traditions and care about personal stability and steadiness at work (Hofstede, 2011).

Examples of the long-term oriented countries are countries in East Asia, such as South Korea with a score of 100, Taiwan (98), followed by Central and Eastern Europe, and South Asian countries. Short-term oriented countries are Australia with a score of 21, the USA (26), Latin America, and finally Muslim and African countries. In this dimension,

Saudi Arabia was given a specific score of 36, which categorises the country's society as a short-term oriented culture according to Hofstede et al.'s model (2010). More details of the two societies' characteristics are in the following table.

Table 8: Cultural dimension – long-term/short-term orientation (Hofstede, 2011).

Time Orientation	Short-term orientation	Long-term orientation
Characteristic of the relevant society	• The most important event in life happened in the past or is occurring now. • Personal stability: a good person is usually the same all the time. • There are guidelines and definitions of good and evil. • Traditions are sacrosanct. • Family life is guided by imperatives. • Success and failure are related to luck. • Slow economic growth.	• The most important event in life is going to happen in the future. • A good person adapts to every circumstance. • The definition of good and evil depends on the situation. • Traditions are adaptable to change. • Family life guided by shared tasks. • Success or failure related to lack of effort. • Fast economic growth within the country until level of prosperity.

From the table above, most of the characteristics of the short-term oriented society apply in the Saudi culture. Larson and Gray (2011) stated that it is very hard to get involved in projects in Saudi Arabia as Saudis have a different perception of time in comparison to the European view. The Saudis' approach to time can be seen from a favourite expression in the country: "bokra insha Allah", which means, "tomorrow if God wills" (p. 548). This is in contrast to the expression in North America, "the early bird gets the worm". This is purely because Saudis believe that they do not have control over time,

hence there is no guilt in failure to achieve plans (Larson and Gray, 2011). Thus, achieving deadlines is associated with fate and luck rather than hard work.

On a different aspect of business life, in the case of business engagements, it is a necessity to arrive on time for business appointments in Saudi, but at the same time you have to be patient as the meeting may start at a later time, or it can be cancelled even while a person is waiting. Therefore, it is always recommended to leave extra time when setting schedules. The best time to set a meeting is in the morning or immediately after a prayer time (which is usually used as an indication to set out a meeting time). In addition, meetings can be carried out throughout the day and a person should be prepared for the fact that meetings may last until midnight on some occasions.

6. Indulgence/restraint

This is a new dimension that was added in Hofstede's et al.'s (2010). It uses Minkov's label 'Indulgence versus Restraint'. This dimension complements long-term/short-term dimension, and looks into aspects that were not covered in all the previous studies. Hofstede (2011) stated:

> "Indulgence stands for a society that allows relatively free gratification of basic and natural human desires related to enjoying life and having fun. Restraint stands for a society that control gratification of needs and regulates it by means of strict social norms" (p. 15).

The following table shows the characteristics of this dimension:

Table 9: Cultural dimension – indulgence/restraint (Hofstede, 2011).

Indulgence/ Restraint	Indulgence	Restraint
Characteristic of the relevant society	• Higher percentage of happy people. • Higher importance of leisure. • Maintaining order within the society is not provided with high priority. • Higher birth rates among educated population.	• Lower percentage of happy people. • Lower importance of leisure. • Higher number of police officers per certain number of population. • Lower birth rates among educated population.

The table above listed the differences between the two different societies in this dimension, where 93 countries were included in Hofstede's study. Indulgence was found to be prevailing in American countries, Western Europe and some parts of Africa, whereas restraint tends to prevail in Asia, Eastern Europe and Muslim Countries (Hofstede, 2011). However, according to Hofstede et al. (2010) Saudi Arabia has scored 52 in this dimension's index, this categorises Saudi Arabia as a relatively indulgent society.

4.3 Summary

It is suggested by Kardes et al. (2013) that project performance is a major area affected by national cultural differences. In this project, early observations revealed that the make-up of the project team is actually largely homogenous – largely made up of Saudi organisations and management personnel. This was deemed worth exploring in the research, alongside AT. This was because some Saudi national culture features have been deemed to have an impact on project management organisations. For example, Hurn (2007) argues that time appreciation in the Saudi culture is not taken as seriously as in other cultures. World Trade Press (2010) stated that in Saudi Arabia, even "in a business environment, you can expect either a glacial pace or lightning speed" (p. 22).

Larson and Gray (2011), meanwhile, have claimed that in Saudi society an important cultural attribute is feelings of obligations for others, rather than logic. Overall, it is believed that the core of the Saudi culture (rituals and values) has a major impact on how the Saudi people conduct themselves in business.

Taking into consideration the unit of analysis in this research is the transactional relationship between major project actors (clients, contractors and consultants), it was believed that national cultural theory (Hofstede's cultural theory) would help the researcher to achieve the practical wish to understand the causes of the HHR mega-project failure. It would also help the researcher be able to provide pragmatic and practically valid recommendations at the end of this research, which can be applied in Saudi organisations and are not classified as inconsistent with the Saudi national culture.

In addition, as this research is investigating inter-organisational relationships and not internal organisational dynamics, it was not deemed necessary to supplement Hofstede's national culture theory with theories relating to organisational culture. The researcher wished to retain a focus on those theoretical lenses that appeared from initial observations and initial contact with the literature to have the greatest explanatory potential in relation to the HHR failures.

While much criticised, Hofstede's six dimensions assist researchers in identifying the characteristics of different types of society. In this chapter, the Saudi Arabian society was identified within these six cultural dimensions. Figure 13 below illustrates Saudi Arabia's position and score within Hofstede's national cultural index for the six cultural dimensions.
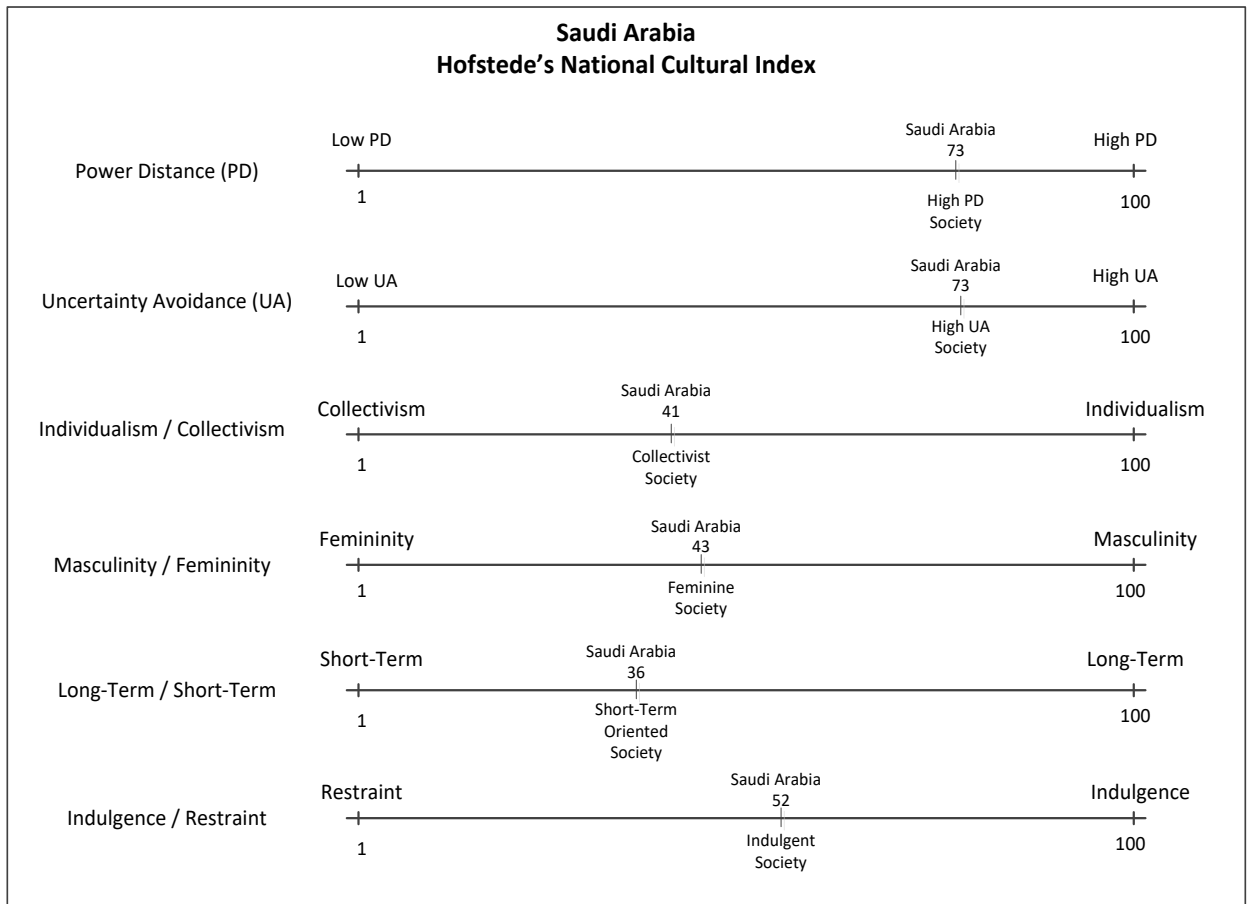
Figure 13: Saudi Arabia - Hofstede's national cultural index.

This cultural analysis provides us with a series of characteristics of Saudi national culture that can be examined as potential causes of project failure. These cultural dimensions are incorporated to the conceptual framework (see Figure 14 below).
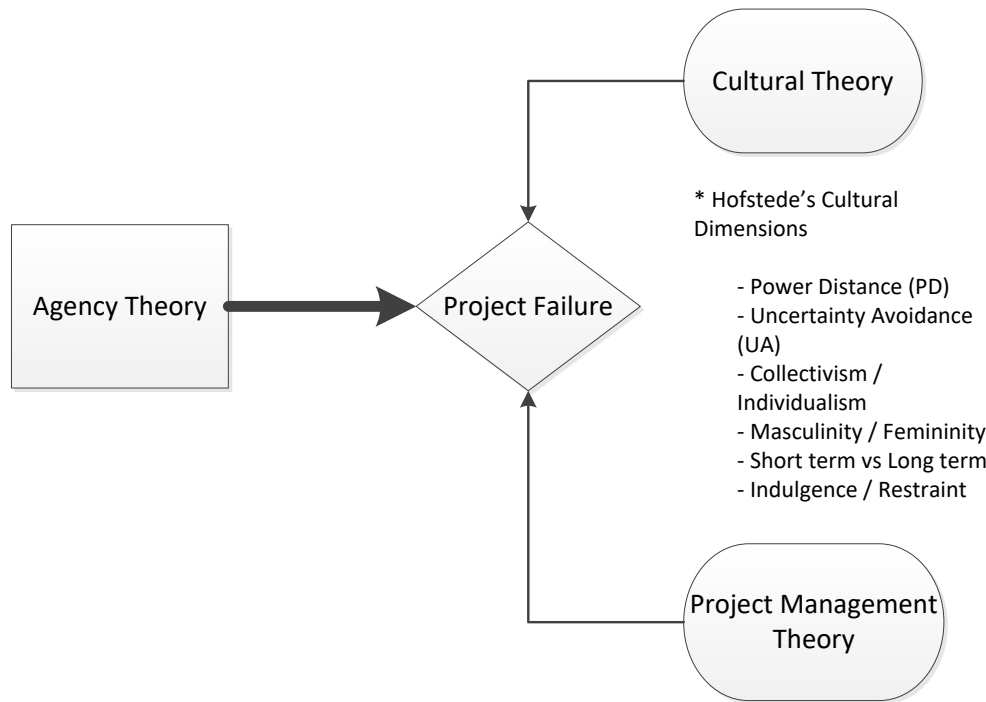
Figure 14: Conceptual model – Cultural theory.

In particular, three issues arising out of the six dimensions suggest themselves as potential factors causing project failure. First, a factor that relates to high PD is the fact that authority and power is limited for people who tend to make their decisions autocratically. This could feasibly result in un-manageable conflict of interest within a relationship in the project environment, which can lead to a possible opportunistic behaviour. Second, a factor that relates to short-term orientation is the perception of the Saudi society toward time – that is, giving less importance to the activities that will occur in the future which can have an impact on the effectiveness of the project plan (for example, addressing project risks), and, therefore result in project failure. Third, a factor that relates to indulgence is less priority given to maintaining order within the society. This could imply a risk of occurrence of any factor that might lead to project failure – including APs cultural and project features factors of failure.

POSTSCRIPT ON THE LITERATURE REVIEW

This section of the thesis has reviewed the literature in relation to the primary theory (AT) and the subsidiary theories (PMT and CT) in this research. It started with the first area (in Chapter 2) pertaining to the project management literature that looked at the concept of projects and project organisation. It began by providing a background on the term 'project', 'what it means?' and 'why does it exist?' This was followed by critical demonstration of project success/failure and how project failure is perceived for the purpose of this research. Later, it provided an analysis of the four concepts that differentiate TMO from PO (time, task, team and transition), which helped in identifying issues that might negatively influence project team performance and which may cause project failure. Finally, the chapter explored the concept of mega-projects, which by nature have a large number of project actors who are 'highly goal conflicted' (Toor and Ogunlana, 2010), which increases the potential of ending up with different conceptual understandings of the project and different interests, which can lead to APs.

The possibility of APs having been raised, the second literature area discussed (in Chapter 3) was theoretical approach that seeks to explain APs, that of AT (the primary theory of this research). The chapter included an analysis of the process of APs occurrence, and the different mechanisms suggested by authors, such as Crosby et al. (1990), Bhattacharya et al. (1998) and Coulter and Coulter (2002), in order to minimise the potential of such problems. Finally, the possibility of multiple APs occurrence in mega-projects, which potentially can lead to project failure, was discussed.

The last area (in Chapter 4) looked at national CT and assessed the cultural characteristics of Saudi Arabia. Such theory is introduced as a potential alternative and/or additional explanation of the HHR project failure. The researcher wanted to examine whether Saudi culture was in any way a cause of failure in this railway project.

Thus, reviewing the literature in the three areas discussed above results in an updated conceptual model (see Figure 15) below.
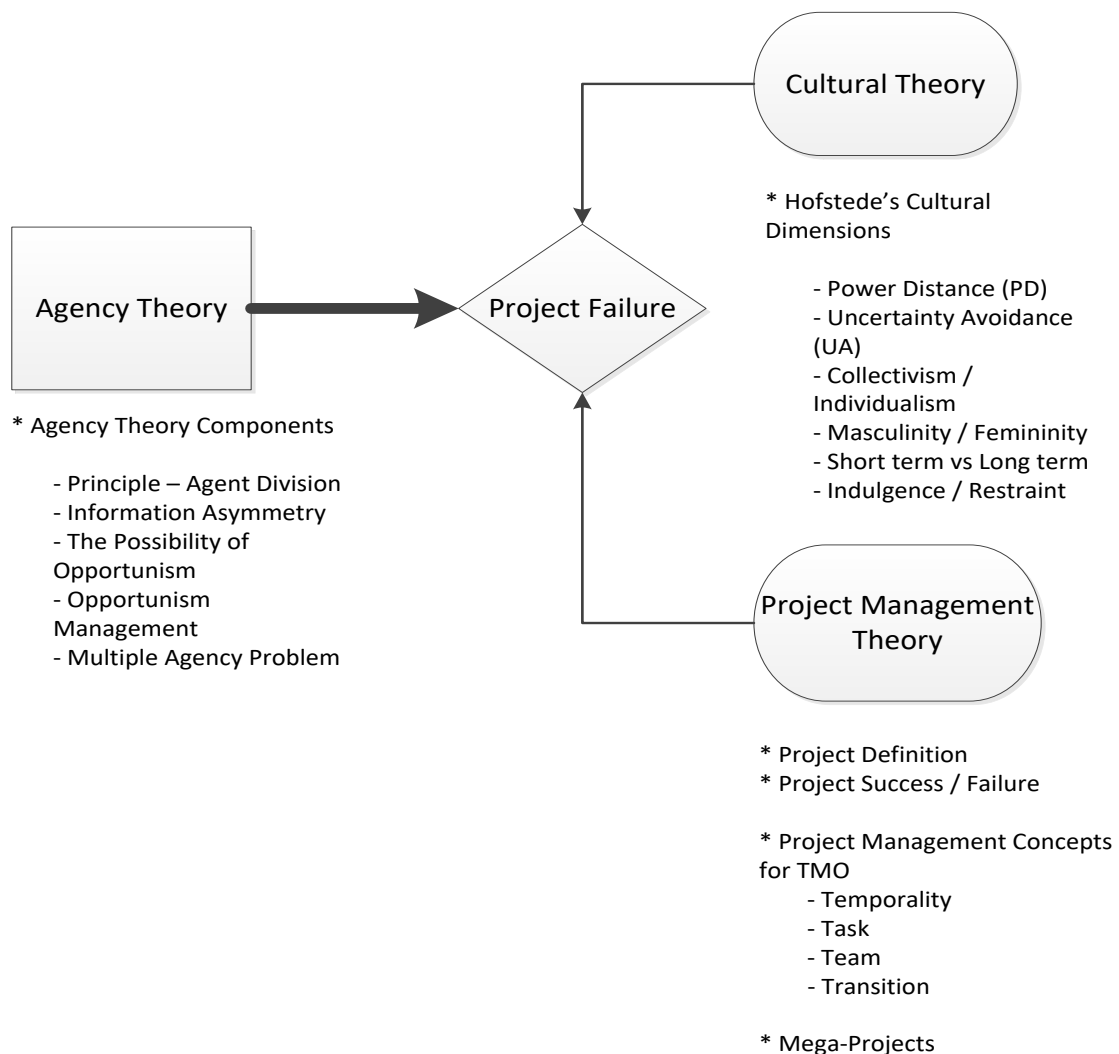
Figure 15: Conceptual model – three theories' components.

We are now, thus, in a position to move forward with the exploration of the stated research question:

RQ. **To what extent can agency theory be utilised in the analysis and explanation of the mega-project failure of the Haramain High-Speed Railway (HHR) project within Saudi Arabia?**

We start by examining the research methodology adopted to explore the question.

PART III

METHODOLOGY

CHAPTER 5

RESEARCH METHODOLOGY

5.1   Introduction

This chapter starts by re-stating the research question and objectives of my research. Then, it describes, evaluates and justifies the research methodology which underpins my research. It will also help in answering the research question and achieving the research objectives. In order to do this, the researcher will explain the philosophical approach to knowledge within this research by clarifying the ontological and epistemological approach. This will be followed by a discussion of the methodology of which this research was conducted, including the research design (case study design), and the different methods that were used in addressing the research question. The chapter will then provide further discussion of the data collection procedures, as well as the analysis steps that were followed. Finally, there is a discussion of the ethical considerations and the limitations of this study.

5.2   Research question and objectives

A focused research question is essential to a sound study (Gratton and Jones, 2007). Moreover, the data that will assist in answering a research question must be obtainable and the researcher should have the skills that are appropriate to undertake certain research (Blaikie, 2010). As mentioned earlier in the introduction chapter, the research question is as follows:

> **RQ.   To what extent can agency theory be utilised in the analysis and explanation of the mega-project failure of the Haramain High-Speed Railway (HHR) project within Saudi Arabia?**

In order to answer the research question and address to what extent AT can be used to analyse and explain project failure in Saudi Arabia, a set of five objectives must be achieved within this research. These objectives are:

1. To identify the specific APs (if any) that occurred within the HHR mega-project.
2. To investigate the extent to which these APs explain the HHR project failure.
3. To evaluate the influence of Saudi culture and the project management context on the HHR project failure.
4. To explore potential linkages between APs, cultural factors and the project management context.
5. To develop a new framework that illustrates factors of mega-project failure, and any potential linkages between the three factors (APs, cultural factors and project management factors).

Therefore, the first step of this research is to investigate whether there are any APs within the HHR project case study, in particular, multiple APs from multiple relationships, which involve the client representative and his project manager, three contractors and their project managers, and project consultant (see Figure 16 below).
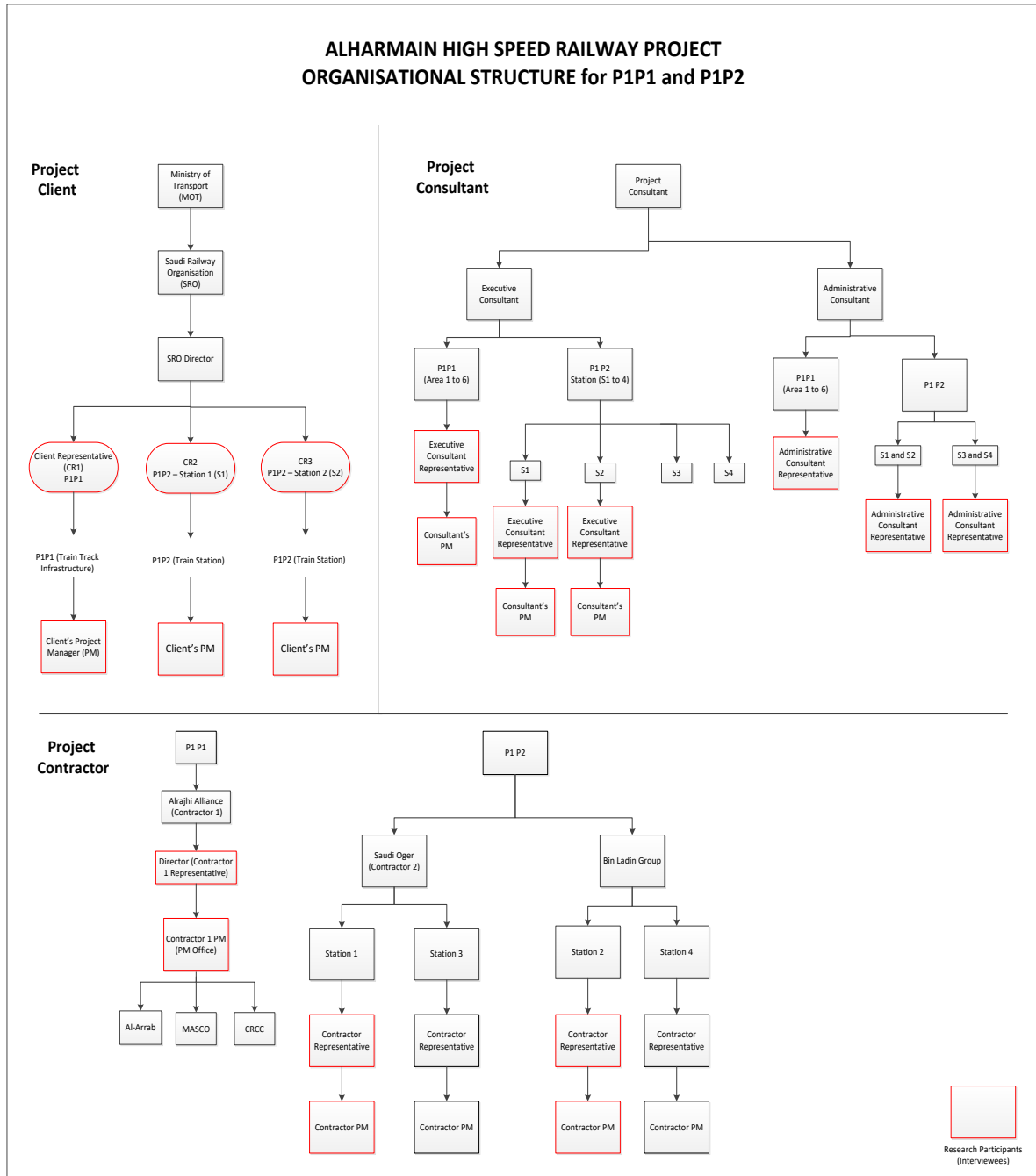
Figure 16: The HHR mega-project organisational structure.

Each two actors involved in a relationship within the project may, or may not, have an AP between them. The researcher aims to identify all APs that might have an impact on the project failure. The second objective aims to analyse these APs and relate them to AT components in the literature review chapter. Furthermore, the researcher aims to investigate the level of importance of these APs in order to find out the extent to which

these APs contributed to the project failure. The third objective aims to find out the influence of the Saudi national culture and project features on the HHR mega-project failure by identifying [if any] Saudi cultural causes and project management features causes of failure. The fourth and final objective is to explore if any linkages and interrelations exist between the three cause of project failure (APs, national cultural factors and project management context).

5.3   Theoretical perspective as a researcher

5.3.1   Philosophical underpinning of the study

According to Cohen et al. (2000), a research is:

"Concerned with understanding the world and that this is informed by how we view our worlds, how we take understanding to be and what we see as the purpose of understanding" (p. 3).

In order to grasp the thinking behind this research, the philosophical rationale used by the researcher needs to be explored for two reasons. Firstly, the philosophical approach is integral to any research as it constitutes the researchers' 'silent thinking' about their research (Scott and Usher, 1999). Secondly, because the researcher's value set and the ethical mind-set (or 'paradigm') have a major influence on how the study or research is conducted (Kuhn, 1962; Cohen et al., 2007); which was later described as 'research culture' (Johnson et al., 2007). Although the number of these paradigms has been debated, this research was conducted while considering the premise that there are three research paradigms, each with their own position on human nature and existence issues and they are: interpretivist, positivism and pragmatic 'or mixed methods' (Johnson et al., 2007). Thus, to clarify the philosophical approach of this research, it is essential to identify the ontological and epistemological position as well as the methodological premise, which will form the basis of which the researcher will conduct this research.

The ontological assumptions are concerned with the nature of reality. There are two aspects of ontology and both of them are accepted to produce valid knowledge (Saunders et al., 2016). Therefore, the researcher needs to define and understand the ontological position of this research in order to differentiate the two perspectives of reality (Mason, 1996). The first aspect is known as subjectivism (Saunders et al., 2016) or the Nominalist view, where reality is considered to be an individual's (or social actor's) own making (Cohen et al., 2000). The second aspect of ontology is objectivism. This is where reality is seen to be external to individuals (or social actors) and imposed on them (Cohen et al., 2000).

These two aspects of ontology have their devotees within researchers, in both business and management fields (Saunders et al., 2016). Furthermore, the researcher recognises that in some situations, reality is formed by individuals, and the way they perceive and interpret this reality is affected by cultural, social and educational experiences (subjective reality). However, the researcher also believes that reality may not be formed by individuals, as there are specific agenda imposed upon them by their employing organisation (objective reality). For example, in this research, multiple individuals from different organisations (entities) together form a project team. The team members – under the influence of cultural, social and experience – form the subjective reality. However, the objective reality can be seen when the client's representative and his project manager are employed to deliver the client's interests and goals; the contractor's project manager and employees are taking their employer's instructions on-board while executing the project; and consultancy firms employ their expertise to deliver the service according to the contractual document with the client. This research, therefore, is positioned in between the two aspects and my ontological approach is somewhere in the middle, between the subjective and objective approach. As the researcher concluded

what constitute reality for this research, this gives rise to the questions of how is this reality measured? And what will constitute the knowledge of this reality? This takes us to the next philosophical part, which is epistemology.

Epistemology is the second philosophical ground. It is concerned with the grounds and nature of knowledge, which depends on the ontological approach of a research. Epistemological questions are essential in a research process as it generates explanations and the required knowledge to understand the ontological view of a social world (Mason, 1996). Epistemology is a word that defines the way we conceptualise our reality (Denzin and Lincoln, 2000). On the one hand, researchers argue that knowledge can be described as real, hard and can be transmitted in a 'tangible format' (Trochim, 2002). The other side of the argument, stating that knowledge is subjective and originates from insight and experience (Denscombe, 2003). Despite the argument of what constitutes the knowledge of our reality, it is important to explicitly clarify the epistemological approach of this research because it:

"Holds up the methods and procedure of the natural science for producing

valid knowledge claims" (p. 12).

The epistemological approach of this research is positioned in between the two epistemological extremes, which are the subjective and objective approaches. The appropriateness of this research position is derived from the fact that this research is inquiring about the objective epistemological knowledge within the area of project management practices (objective knowledge), as well as the project actors' behaviours under the influence of social and cultural experience within the field (subjective knowledge).

Following the identification of the ontological and epistemological position, the researcher will explore the three research paradigms, so as to be able to subscribe to the adequate paradigm for this research. Starting with the interpretivism, it mainly acknowledges subjective realities and social phenomena (Saunders et al., 2016), which does not align with the philosophical approach of this research. Positivism, conversely, takes the philosophical approach that supports objectivism (Saunders et al., 2016). Therefore, these two paradigms are excluded from this research's methodologies. The last available paradigm is 'pragmatism', acknowledges observable phenomena, subjective meanings or both. In the pragmatism paradigm, the focus is on the research question and it allows applying all approaches and choosing research methods that can help in understanding the research problem. It includes the additional benefit of triangulation of data collection methods to increase the validity of the collected knowledge (Robson, 2000; Cohen et al., 2007; Creswell, 2012). Thus, the pragmatic approach was adopted in this research.

5.3.2 Theoretical approach

Pragmatism is an epistemological approach that can adopt practical applied research to find knowledge that is applicable in specific contexts. It focuses on practices and problems; and addresses problem-solving and practical future recommendations as contribution to the knowledge (Saunders et al., 2016). In this research, the researcher was involved in practical aspects of project management practices in Saudi Arabia. Specifically, the APs within the project team, which is formed by the involvement of a number of social actors (e.g. client representatives, consultants, contractors and project managers), each represent different employing organisation. In consideration of addressing the APs in the context of the research question of this study, the researcher was also considering issues of cultural and social construction which affect the project

actors and their behavioural aspects in project management practices in general, and more specifically within the AP.

Therefore, predominantly 'the knowledge of what APs there are and how they can be managed' in Saudi project management context lies between beliefs, values, and practices of the people in Saudi Arabia; and international knowledge, theories and practices within project management field. In order to utilise the latter (knowledge, theories, and practices) to apprise the former, the researcher subscribed to the abduction process. Moreover, this research is neither falsifying nor verifying a theory (as in deductive approach), nor generating and building a new theory (as in inductive approach); but rather 'incorporating existing theory where appropriate', leading this research to the abductive approach (Saunders et al., 2016, p. 145):

> "Abduction begins with the observation of a 'surprising fact'; it then works out
> a plausible theory of how this could have occurred" (Saunders et al., 2016,
> p. 148).

This research started by the observation of agents' opportunistic behaviour towards projects' principals. The implications of this kind of behaviour were found to have a level of contribution towards project failure, which highlighted the importance of looking at this phenomenon, specifically in a project management context. The researcher then, named AT as the appropriate theory to explain how this phenomenon occur. Van Maanen et al. (2007) noted that some theories are more effective in revealing more facts behind certain phenomenon than others. This research is considering AT as the primary theory to investigate in the area of APs (agent's opportunistic behaviour) and their impact on project failure. The national CT and project features are also considered as the subsequent theories for this research. The theories are introduced as a potential alternative and/or additional explanation of the HHR project failure.

However, the use of CT in this thesis is different, because of the different make-up of the organisations and personnel involved with this railway project. In this project the make-up of the project team is actually largely homogenous – largely made up of Saudi organisations and management personnel. As such, the thesis assesses whether certain common cultural tendencies within Saudi Arabia provide an alternative explanation for the mega-project failure seen in the case study. It is suggested by Kardes et al. (2013) that project performance is a major area affected by cultural differences. For example, the culture of Saudi Arabia blames luck and fate in cases of project delay or failure. Additionally, time appreciation in the Saudi culture is not as serious as in other cultures (Hurn, 2007). Including this subsidiary theory is believed to both enhance the theoretical interest of the study but also, just as importantly to the researcher, further his practical wish to understand the causes of the HHR project failure.

It is also necessary to possess, as a further subsidiary theory, the core features of a project environment that differentiate TMOs from POs, and provide the context to the case and the study's interest in multiple principal-agent problems – time, team, task and transition (Lundin and Söderholm, 1995). These four project features can create issues and challenges for the project team members during the project execution process, which will be utilised to support the understanding of the HHR mega-project failure.

5.3.3 Influence on my research design

The theoretical perspective and the philosophical approach of this research formed a link to the traditions of the academic research. They can also establish a link to the research design that was employed for this study. In this research, the researcher began with observing a phenomenon in project management practices that takes place in the real

world and, as a result, causes project failures (agent's opportunistic behaviour). Then, a plausible theory connected to the observed phenomenon was chosen for use in the investigation process (AT). Some data were collected and referred back to the theory in order that it may uncover further issues that result in project failures (Van Maanen et al., 2007). Applying this abductive approach required the researcher to collect rich data that contained sufficient level of details in order to explore the phenomenon (Saunders et al., 2016) of this research.

Therefore, the role of the researcher was to establish variables that linked the phenomenon which were causing project failure to the chosen theory for this research. The researcher then addressed the required data by setting up questions for the research participants (i.e. to be asked in data collection methods such as interviews), and targeted other data sources that could be used to answering the research question, such as observations and document review. Therefore, in order to achieve the required detailed understanding and deep insight of the phenomenon (Creswell, 2012), this research adopted the qualitative case study approach, which is a feasible option under this research theoretical perspective (pragmatism). Further details will follow of why the qualitative case study approach fits this research process.

5.4   Methodology

5.4.1 Qualitative approach

Blaxter et al. (2006) stated "Different kinds of research approaches produce different kinds of knowledge about the phenomena under study" (p. 1). For example, in quantitative approach, quantitative data is concerned with the frequency of a phenomena (Lacono et al., 2011). Whereas in qualitative approach, data is more concerned with:

"Detailed descriptions of situation, events, people, interactions, observed patterns of behaviours, direct quotations from people about their experiences, attitudes, beliefs, and thoughts and excerpts or entire passages from documents, correspondence, records, and case histories" (Patton, 1990, p. 22).

In the process of making the choice of methodology that underpins this research, the type of data required to answer the research question had to be first identified. The aim of this research project was to look at the impact of APs on project failure. This means that an in-depth investigation and analysis of the situation were required to deliver the outcome of this research. So, this research was concerned with collecting data that provided detailed understanding and deep insight of the phenomena not the frequency. To do so, Lacono et al. (2011) stated that the qualitative research methodology is the right approach for this type of research.

Furthermore, Trauth (2001) listed five factors that should influence the decision of choosing this approach. These factors are as follows: firstly, the nature of the research problem, this means that the researcher should know what the problem is in order to know how to carry on the investigation process; secondly, the researcher's theoretical lens used to frame the research investigation process; thirdly, the uncertainty level surrounding the research problem, fourthly, the researcher's skills and ability in using this approach; and finally, the academic philosophical approach of the research. In applying these five factors to this research, the nature of the problem in this research related to AT, and the required data concerned with the agent's opportunistic behaviour were not 'out there' available to be collected or discovered – as in quantitative research. Moreover, this data around the agent's opportunism needs interpretation (Denscombe, 2003). It also involves forming an insight perception that involves human interaction

(Foskett et al., 2005) – and that shows the significant and important role of the researcher. Finally, within the ontological and epistemological position of this research, the researcher aimed to produce qualitative data and interpret it to answer the research question.

The qualitative approach stresses the type of evidence required for such studies, which is based on what the participants say and do. This will assist in understanding the explanations of what is going on in the real world. Strauss (1967) supports:

> "Qualitative data for a number of reasons: because the crucial elements of sociological theory are often found best with a qualitative method, that is, from data on structural conditions, consequences, deviances, norms, processes and systems" (p. 18).

Furthermore, project management is an area of knowledge and practice that is full of complexity and uncertainty, which involves a significant level of human participation. Mason (2002) believes that a qualitative method is reliable for understanding such complex situations. This is because there are numerous methods of data collection available for gathering qualitative data. Among others, these methods include interviews, questionnaires, observation, participant observation, documentary analysis, discourse analysis (Ritchie, 2003). The ability of using different methods during the data collection stage, when looking for qualitative information, will enable in-depth and breadth analysis (Snape and Spencer, 2003; Veal, 2005; Blaxter et al., 2006; Creswell, 2012) and may eventually lead to a basis for theoretical explanation of existing phenomenon – even from studying a single case (Hyde, 2000).

However, the qualitative method requires intensive understanding of the research area or context in which to interact with participants, in order to achieve the objectives of the

research. Therefore, as long as the researcher has sufficient knowledge in the area of this research, the level of effectiveness of the qualitative method will increase within the context of this research process (Snape and Spencer, 2003; Alvesson and Skoldberg, 2009). The qualitative research method needs the researcher to be actively involved in order to solve "the intellectual puzzle" as Mason (2002, p. 18) expressed. The conclusion of the qualitative research should be logical (Hinton et al., 2003). Therefore, this type of research requires tremendous amounts of reflection from the researcher's side to assess the information provided from participants, and to also debate and challenge some of the decisions and actions (Carcary, 2011).

The following guidelines are provided by Mason (2002) for the conduct of qualitative research:

- The research should be executed rigorously and systematically;
- The research must be strategic, flexible and contextual;
- The claims and quality produced are under the researcher's accountability;
- The researcher should engage in precise, critical analysis;
- The researcher should come up with logical, convincing discussion.

The researcher addressed these guidelines during the data collection period. This was purely because the main question of this research project required considerable exploration, probing, analysis and reflection to deliver expected findings from this AP phenomenon and its influence on project failures.

5.4.2 Case study design

A case study is an empirical action to explore certain phenomenon within the real-life context (Saunders et al., 2016), more precisely, when the relationship between the

phenomenon and the context is not reasonably clear (Yin, 2015). Creswell (2012) stated that 'a case' could be an individual, many individuals (in separate or a group form), activities, events or a program (e.g. a contractor, several contractors or the implementation of a new system in an organisation).

The case study design provides the opportunity to carry out an extensive analysis into the problem, plus it is helpful to use different research strategies in order to reach a good answer to the question. McNeill (1990) confirms that this research design allows the researcher to profoundly investigate and analyse a case, or a few cases within the field of the research. Bearing in mind that case study design tests the research cases as individuals, not as part of the population. It is also called ideographic research design. In contrast, the nature of case study may establish a basis for grand theory as Blanche and Durrheim (1999) stated "Rich ideographic information about cases has been the start of many grand theories" (p. 255). In the context of this research, case study design has an added value in allowing the researcher to investigate project failures by using AT. For the first time in Saudi Arabia, therefore, the nature of this design helped the researcher to find out more about the enquiries in this research, which theories were influential in analysing HHR mega-project failure.

Talking about the research enquiries, Yin (2003) suggested that, based on the type of enquiries in the research, the researcher can determine the strategic approach in which he will follow through the case study research. These three strategies are identified as explanatory, exploratory or descriptive. Based on the enquiry of this study from the research question (the extent AT can be used in analysing project failures in Saudi), my case study was primarily explanatory. Although, in the operational level of exploring this enquiry (from the research question), the researcher wanted to know certain managerial practices concerned with descriptive and explanatory approaches (e.g. how APs occur

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and why). The purpose of understanding these realistic practices was that it would lead the researcher to explore the issue further and answer the research question. Yin (2003) discussed that:

> "…'how' and 'why' questions are more explanatory and likely to lead to the use of case studies, histories, and experiments as the preferred research strategies. This is because such questions deal with operational links needing to be traced over time, rather than mere frequencies or incidence" (p. 6).

The in-depth analysis within the case study design enabled the researcher to combine various managerial elements and investigate how they operate in certain contexts. The rich understanding that can be gained from such a case study design (Saunders et al., 2016) may enable the researcher to contribute to more effective project management practices in Saudi mega-projects as an outcome of this research. Hitchcock and Hughes (1995) explained that:

> "Case studies can be of particular value where the researcher aims to provide practitioners with better or alternative ways of doing things. This partly accounts for the popularity of case study within management research and the whole area of managing change". (p. 322).

Case study types

Yin (2015) distinguishes between four types of case study strategies, on the basis of two dimensions. The first dimension differentiates single case from multiple cases. The second dimension differentiates between holistic and embedded cases. Saunders et al. (2016) explains that a single case study is used in critical, extreme or unique case; whereas multiple cases mean that the researcher is choosing more than one case – based on the rational of whether the research findings can be replicated. The second

dimension is holistic versus embedded case, which mainly refers to the number of units of analysis. The holistic case study design includes a single unit of analysis, whereas the embedded case study design is composed of multiple units of analysis (see Figure 17 below).
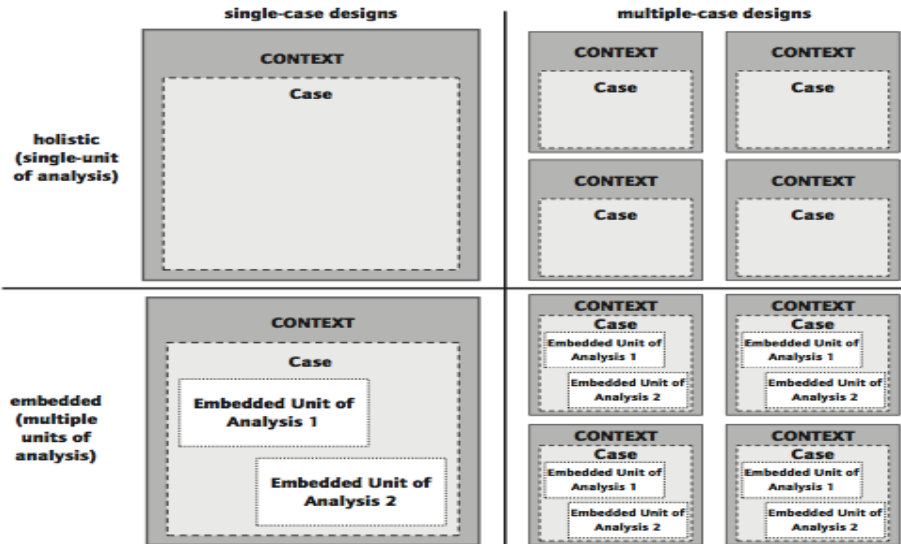
Figure 17: Basic types of designs for case study (COSMOS Corporation, 1983).

The initial concern in this research was to look at the phenomenon of project failure and the role of AT in analysing some of the causes of failure, which is the first research of its nature. Therefore, this research subscribed to single case study type. Saunders et al. (2016) stated that: "single case study may be selected because it is typical or because it provides you with an opportunity to observe and analyse a phenomenon that few have considered before" (p. 179). Although the single case study was formed by a group of three different contractors, they were working for the same client on the same mega-project but at different sites and locations. Furthermore, as this research focused on causes of failure related to the AP, the unit of analysis of this research was defined as the transactional relationship between major project actors (client, consultant, contractors and their project managers). Thus, with a single case study formed by a

group of three contractors and one unit of analysis, this research positioned itself in the top left quarter of Figure 17 above. After identifying the type of the case study, this leads us to discuss the strengths and weaknesses of this design.

Strength and weaknesses of case study design

Time: one of the main issues with case study design is the amount of time it requires to reach the end of the research. In spite of the fact of being time-consuming, it gives an opportunity to the researcher to use more than one data collection method, depending on what suits the situation. An important issue, besides the timing of the design, is that regardless of the method used for data collection; the data will be collected from a number of different sampling points, instead of having a continuous observation period. This means, some important and valuable data might be missed, not observed, or not collected between different sampling points (Gomm et al., 2000).

Observation and causal relations: thinking about the limitations of case study design. The difficulty of testing the established causal links between variables is one of them (Blanche and Durrheim, 1999). Another limitation, as Burns (2000) stated, is the difficulty in interpreting the observed information – during the data collection – within a case study design research. On the other hand, this allows the researcher to express his or her opinion and points of view regarding the research, "While external checks are weak" (ibid, p. 474). Therefore, the researcher was aware of additional factors at the time that may have helped to interpret the observed information.

Sampling: when a research is looking at one or more cases, the sample in this design could be one or more people, one or more locations, one or more organisations, or one or more event (Bryman and Bell, 2011). So, it is from a limited number of cases that the researcher can opt. The critical part, which the researcher may face, is the agreement of

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the project organisation to allocate the amount of time the researcher needs to collect the required data. Choosing the population after having an agreement with project organisation is not a difficult issue, as long as the organisation has the initial interest to contribute to the research and there is interest from the interviewees themselves. Burns (2000) stated that the bigger the sample, the better, as a lesser possibility of error would exist. Therefore, for this research project, the researcher looked for a reasonable number of cases to be studied, which fitted within the time constraints. This can be illustrated by the inclusion in the research of all three project contractors, rather than a restricted investigation which only included a single contractor.

Practicality: case studies provide a huge amount of information through a variety of different data collection methods, which may make most, if not all, the collected data challenging to use, for the analysis stage of the research project. This might increase the level of bias as some data may be ignored or the researcher could be selective of the utilised data. Burns (2000) mentioned that case studies require the physical presence of the researcher at the time of collecting and observing data.

Besides all the limitations and weaknesses mentioned earlier about case studies, there are strengths in this design, for example, it aids researchers to deal with complex and uncertain situations within the research area. It gives an opportunity of using multi data collection methods (triangulation) depending on what the situation needs (Denscombe, 1998). Walliman (2001) stated that case study design is a very useful one in situations where data needs investigation and probing, and it is feasible when the researchers want to ask questions about observed information (Burns, 2000). So, this research design is useful for testing project failure while complex situations are anticipated.

Ethical Implications: using this design in this research with multiple data collection methods generated concern regarding ethical issues. Especially during the researcher's observation process of the project, where issues regarding the quality of work and the performance from the project team may have arisen. This issue was critical, as the way in which the researcher handled it should have been ethically approved. On the other hand, interviewing revealed the identity of the interviewee. Therefore, sensitive information may not have been provided by the interviewee. However, high levels of anonymity and confidentiality were required to acquire some information. In this case, the name of participants was concealed in order to gain required information. Moreover, any unethical conduct within the organisation practices was reported generally in the finding report of this research.

Internal validity: talking about the internal validity of case study design, the question of the research, and to what extend the findings match the reality, is what the researcher should think of. Burns (2000) stated "internal validity has been assessed by a number of strategies, such as triangulation, rechecking with participants as to observer interpretations made, peer judgement, and long-term observation" (p. 476) – these strategies were adopted by the researcher to optimise the internal validity of the collected data. Such techniques helped in strengthening the findings as well.

External validity: Case study external validity is weak and the final results of a research following this design are not generally similar to that research conducted by social surveys (Gomm et al., 2000). At the same time, it could bring broad generalisations to life, as McNeill (1990) mentioned. In one case, we could generalise the result from a case study research and the result suggested to be shared with other cases. This depends on the level or extent that these cases were similar to the original case (Denscombe, 1998). The reason of not generalising the result from this design is, as

Burns (2000) discussed, that this design provides a very small amount of evidence that supports its generalisations. The strength of random sampling does not exist in this design through checking a large number of samples from the population. The generalisation of case study design is eventually left to the reader as each reader could relate their findings from one case to the experience he or she had in the past. In this regard, Burns (2000) said: "case studies are generalisable to theoretical propositions, not statistical populations" (p. 474). Lacono et al. (2011) affirmed that case studies are generalisable theoretically (analytical generalisation) but not overly popular.

In project management, many different projects are suffering from similar kinds of practices and delay factors. So, the recommendation from this research could be used for other similar projects in the field of construction projects in Saudi Arabia, as well as in other developing countries with a similar cultural background. Simultaneously, project managers could adapt the recommendations to their own experiences of managing projects, in order to enhance the management practices in current projects. However, the researcher aimed to enhance the research outcome level of generalisability by using a number of data collection methods (triangulation), which will be explained further next.

5.4.3 Research and data collection methods

Cohen et al. (2007) defined method as "the range of approaches used in educational research to gather data which are to be used as a basis for inference and interpretation, for explanation and prediction" (p. 44). This research selected three data collection instruments as methods to gather data and they are:

1. Semi-structured interviews;

2. Observation (Field notes);

3. Document review (note taking).

In regards to the choice of data collection methods, Robson (2000) stated that:

> "There is 'no best method' but the choice should be according to the feasibility of time and resources. The reason behind choosing multi-methods, in collecting data, is that every method has strength as well as weaknesses, and matching the strengths of one with the weaknesses of another could help in later stages of the study" (p. 304)

Selecting three methods ensured triangulation in this research. Triangulation is using two or more methods to gather data for a research (Cohen et al., 2003; Yin, 2015). Cohen et al., suggested triangulation approach to map-out, and explain more, the complexity and richness of human behaviours – through studying and analysing the behaviours from different standpoint. The significance of triangulating the data collection method is that it will provide the researcher with multiple reference points (Bryman and Bell, 2011). Therefore, triangulation approach strengthens up the data. Hammersley and Atkinson (1983) said that the qualitative research findings could be strengthened up by combining a number of research data collection methods such as interviews, observation (field notes), and other documentary sources. Furthermore, the researcher's decision of using 'multi-methods' approach in this case study was related to the validity factor. Morse et al. (2002) stated the following definition in terms of validity:

> "… to validate is to investigate, to check, to question, and to theorize. All of these activities are integral components of qualitative inquiry that ensure rigor." (p. 14)

Hitchcock and Hughes (1995) said:

> "The most common way in which validity can be strengthened is by some form of triangulation or diversity of method" (p. 106).

Therefore, the researcher considered a number of data collection methods, based on different situations that required different methods of data gathering. This will help in achieving an improved evaluation of the case study.

5.4.3.1 Interviews

Interviews can be structured, un-structured or semi-structured. The researcher preferred to use the semi-structured interviews in this research, as this kind of interview delivers more focused, richer and deeper information than other types of interviews. The semi-structured interview process takes a longer conversational route of up to two or more hours (Yin, 2015). The semi-structured interview allows the researcher to reveal how the interviewee constructs reality and sees the situations instead of just answering the researcher's question. This insight to reality could provide data with better value (Yin, 2015) considering the ontological approach of this research. Therefore, a semi-structured interview benefits from asking the constructed questions for this research, as well as having the chance to probe and ask further questions, which will help to understand the genuine situation from the interviewee who knows the practical reality better. The reason for choosing this kind of interviews (semi-structured interviews) was the uncertain influence of APs in HHR mega-project (i.e. the research has a focus in this area of problem and anticipated the need for follow up probing questions) – as this research is unprecedented in this context.

Interviewing respondents is a method that is characterised with a list of positives for this research. First of all, it is a good method to follow if probing questions are included in the data collection stage (Walliman, 2001); and it is a useful method to get the story and justification of the answer from the participant's experience (Thomas and Nelson, 1996;

McNamara, 2006). Burns (2000) said: respondents like to give a speaking response rather than writing. Moreover, the interviewer is able to observe the interviewee whilst responding.

The downside of this method is that there is no guarantee that the information collected during the interviews is right (McNeill, 1995). This could be because it is difficult to ensure confidentiality and anonymity for the respondents through this method of data collection, because the respondents are identifiable to the interviewer (Nachmias and Frankfort, 1992). To illustrate the previous point, Greenfield (1996) wrote about a situation of a manager who agreed to be interviewed. The interview was recorded and at the end of the lunchtime interview, the manager admitted to the interviewer that if the interview had not been recorded, he would have revealed the low morale and problems within the organisation, instead of discussing the good parts of it. The researcher appreciated the down side of this method and managed to find a contingency plan to deal with the anonymity and confidentiality of the respondents in order to ensure obtaining the required data (further details in regards to the confidentiality and anonymity factors will be discussed later in this chapter in the ethical consideration section).

Taking into considering the philosophical approach (ontology/epistemology), the researcher decided to use interview as a data collection method in order to understand the individuals' history and experience, and their effect in dealing with the APs in an attempt to avoid opportunistic behaviours. Consequently, using interviews to find qualitative data allowed the interviewees to reveal experiences and deeper feelings than it is possible if other method was used (e.g. questionnaire); this is a major strength of this method (Rubin and Rubin, 2004). This was achieved by forwarding follow up questions which leads the discussion to the three different types of interview.

5.4.3.2 Observation

Observation is the second method that has been conducted to gather data in this research. One of the most common methods is direct observation in the field of the research. This kind of observation focuses on human actions, the physical atmosphere in a real-world situation (Yin, 2015). Yin (2015) said that executing this method will prompt the researcher to use their five senses, collecting notes from the field of observation and creating a basic explanation of what the researcher has seen, heard or sensed from the observed situation. Observation is an effective tool to test non-verbal communication in the field site, which cannot be tested by interviews, questionnaires or any other data collection methods (Sobreperez, 2008). It also allows the observer to see the detailed operational processes of the natural situation or environment (Morgan, 1997).

From the discussion about observation method, the researcher saw a place for this method in this research, mainly during and after conducting the first method (interview). In construction projects, the project execution team is quite large, and the sampling targets the main stakeholders of the project (client, consultant, contractor and project manager). While using this method, the researcher was able to observe non-verbal communication between the project stakeholders, observe human actions and physical reactions to certain situations and observe the nature of relationships – all of which were noted in the observation form (see Appendix 4). The combination of the two methods (interview and observation) enabled the researcher to analyse unclear and ambiguous actions and situations. The observation method gave the opportunity to establish a connection with the data collected from participants and the real situation in the project field, as natural actions were captured and the actions of the project execution team were observed. The observation process offered the researcher an opportunity to put his own perspective on the data collected from other methods in connection with what he has

observed in the real environment. Thus, this method helped in collecting data with value and strength, which increased the validity and reliability of the data in parallel with the other methods used in this research.

5.4.3.3 Document review

The third method used in this research was document review. In this method, written materials are the main sources of information (Yoddumnern-Attig et al., 1993; Yin, 2003). There are two major categories of documents: public and personal documents (Lincoln and Guba, 1985). In this research, the researcher has used public documents (e.g. magazines, newspapers) that were available and provided information about the case project. This helped to form a background about the area in which the researcher was getting involved throughout the data collection period. On the other hand, private documents (e.g. various sections of project planning document project planning software pages, contractual documents) were used to gather supportive information to analyse the data that was collected through other methods, and review certain parts of the documents that could be related to AT components. The positives of using this method were the fact it was inexpensive and unobtrusive, whereas the negatives were the fact it consumed time and, in some cases, it was difficult to gain access (Krishna, 2008).

The researcher considered this method as a suitable one for this research because it provided qualitative data and included a large amount of information which could be used for the benefit of this research case study (Gratton and Jones, 2007). It was important to review the documents thoroughly, as the validity of the information was determined by the form and the context of the document. Therefore, the researcher strategically attempted to access the documents from reliable sources. Finally, in advance to the process of document review, the researcher identified what type of information was

required to answer the questions, or to help collect the data through other methods, in order to answer the research question.

5.5   Variables and Measures

This section of the methodology chapter will explain the variables and measures used in this study. It is important to understand the origin of the themes and areas of exploration that the researcher used in setting the major areas for investigation. In order to answer the research question of this study, the researcher had to look into three main areas within the literature. These three areas were presented as three sections within the literature review, they were: critical perspective of project management; AT; and Saudi Arabian cultural perspective. Each one of those areas had a number of components – the components were used as variables in this study. For example, the critical perspective of project management had four components (time temporality, team, task and transition), which were used as variables for this study. Furthermore, the components of each area were sub-divided into sub-components which were used as measures in this study. These measures were then used as the basis for areas of exploration through the methods of data collection in this study (interview, observation, and document review). Table 10 shows the areas, variables, measures and areas for exploration, which were used in designing the semi-structured interview's questions, themes for observation and document review, as part of the data collection process.

Table 10: Variables and measures.

Literature review section	Area of research (Section title)	Variables (Section components - description)	Measures (Sub-section components – description)	Areas for explanation
Section 1	Project management	**Temporality**	Objective time (quantitative)	The impact of temporality on project performance
			Subjective time (qualitative)	
		Task	Task and content:	The agents' performance in these four areas
			Task and process:	
			Social organisation and content	
			Social organisation and process	
		Team	Diversity	The impact of team size and diversity as well as impact of project culture on team will be explored and identified if it is an area leading to AP.
			Size	
			Organisational team functionality	
		Transition	Parent to TO transition	This study aimed to explore the transition complexities within the two positions and its impact on project failure
			Operational multiple-transitions within TMO	

Section 2	Agency theory	**Principal-agent division**		
		Information asymmetry	Pre-contractual information asymmetry	Information asymmetry between principal and agent before signing the contractual document.
			Post-contractual information asymmetry	Information asymmetry after signing the contractual document.
		Opportunism	Adverse selection	The impact of adverse selection towards the project failure
			Moral hazard (post-contractual opportunism)	The impact of post-contractual opportunism on project failure
		Opportunism management	Relationship nature	The relationship nature and its impact on APs occurrence
			Contractual nature	Impact of incentives and penalties embedded in the contract on APs occurrence
			Potential opportunism acceptance	Explain the lack of action by principal toward the AP
		Multiple principal-agent problem	Multiple APs from multiple relationships	The existence of multiple APs and its impact on project failure

Section 3	Cultural aspect – Hofstede's dimensions of culture	**PD**	High PD	The impact of the high PD cultural nature on APs occurrence and project failure
			Low PD	
		UA	High UA	The impact of high UA Saudi cultural nature on APs occurrence and project failure
			Low UA	
		Individualism/collectivism	Individualism	The impact of collectivist nature in the Saudi society on APs occurrence and project failure
			Collectivism	
		Masculinity/femininity	Feminine society	The impact of Saudi feminine society on the occurrence of AP and project failure
			Masculinity society	
		Time orientation	Short-term orientation	The impact of the Saudi short-term oriented society on the occurrence of APs and project failure
			Long-term orientation	
		Indulgence/ Restraint	Indulgent society	The impact of the Saudi indulgent society on APs occurrence and project failure
			Restraint society	

For more detailed explanation of the variables and measures table, see Appendix 1.

5.6 Data collection

Following on from the identification of the research problem, the research methodology, data collection methods and the design of the questions which were to be asked in order to investigate and obtain the required data for this research – this section explains the data collection process, including all phases that the researcher went through to complete the data collection, in order to answer the research question.

5.6.1 Data Collection phases

As mentioned earlier, there are three data collection methods (i.e. interview, observation, document review). In order to complete the process of data collection, the researcher had to go through various phases which helped to the successful completion of the process (see Table 11). This started with obtaining a written permission from the HHR project's president. Obtaining this permission to conduct the data collection process allowed the researcher to proceed to the next phases of the process. The following three phases included pilot process for the interview method. This was followed by selecting the cases and areas, and allocating the sample of the interview method. After the completion of the first five stages, the researcher proceeded to the sixth phase (implementation phase – 6.1, 6.2, 6.3) and that included the three different methods of data collection. At a later stage of this study, additional data were needed, which required the researcher to conduct a follow-up data collection. The follow-up data collection included the same methods as in the first stage of collecting data (Interview, observation and document review). The follow-up data collection included four phases. Starting from phase seven, a pilot process was conducted for the interview forms to check the design of the interview method (similar to phase 2 – from the first stage of data collection). Phase

eight was to address all necessary changes reflected from participants' feedback in phase seven. In phase nine, a second pilot process after the modification and all necessary changes were addressed by the researcher to the interview method (including clarity of the questions). Finally, phase ten was the phase of implementing the follow up data collection. The table below provides more details about the phases and the duration each phase consumed.

Table 11: Data collection phases.

Phase	Purpose	Duration	Action taken
Pre-Phase 1	Preparation: to obtain a permission report from SRO President	1 week	In this phase, the researcher aimed to facilitate the access process for the data collection. This was achieved through submitting a request from the researcher's sponsor to the SRO. Thereafter, a written permission was obtained. Further details on this will be provided on Section 5.6.2 in this chapter.
Pre-Phase 2	Preparation: first interview pilot process (1)	1 week	This phase included the first pilot study to check the initial design of the interview method of data collection. Further details will be provided on Section 5.6.3.
Pre-Phase 3	Preparation: modification to interview method	1 week	In this phase, the researcher considered the feedback from all participants in phase 2, and all necessary changes to this method were conducted. Further details will be provided in Section 5.6.3.
Pre-Phase 4	Preparation: second pilot process (2)	1 week	A second pilot process was conducted in this phase to check the changes that were made to interview method and the clarity of the modified questions and statement to participants. Further details will be provided in Section 5.6.3.
Pre-Phase 5	Preparation: case, and area selection	1 week	The researcher gathered as much information as possible to ensure that the selected areas within the project were the adequate areas to help in answering the research questions. Further details will be provided in Section 5.6.4 in this chapter.
Phase 6.1	Implementation: data collection (interviews)	4 weeks	The researcher conducted 21 (one-on-one) semi-structured interviews, which were voice recorded.
Phase 6.2	Implementation: data collection (observation)	3 weeks	Field notes were taken from on-site observations while using the observation form (see Appendix 4). The observations were conducted in the selected areas for data collection (see Page 177), focusing on the variables and measures of the three theories utilised in this research (see Appendix 1).

Phase 6.3	Implementation: data collection (document review)	3 weeks	The researcher collected data from reviewing documents. This was by taking notes from reviewing the available documents.
Follow up data collection			
Pre-Phase 7	Preparation: first interview pilot process (1)	3 days	This phase included the first pilot study to check the clarity of questions within the interview method of data collection. Further details will be provided on Section 5.6.3.
Pre-Phase 8	Preparation: modification to interview method	2 days	In this phase, the researcher considered the feedback from all participants in phase 7, and all necessary changes to this method were conducted. Further details will be provided in Section 5.6.3.
Pre-Phase 9	Preparation: second pilot process (2)	3 days	A second pilot process was conducted in this phase to check clarity of the modified questions and statement to participants. Further details will be provided in Section 5.6.3.
Phase 10.1	Implementation: data collection (interviews)	2 weeks	The researcher conducted 21 (one-on-one) semi-structured interviews, which was voice recorded.
Phase 10.2	Implementation: data collection (observation)	2 weeks	Field notes were taken from on-site observations.
Phase 10.3	Implementation: data collection (document review)	2 weeks	The researcher collected data from reviewing documents. This was by taking notes from reviewing the available documents.

5.6.2 Obtaining a permission report from SRO President

The HHR project was a mega-project. This meant that: a large number of project actors were involved in the project execution; various regions and locations could be the target for this research; and a huge number of tasks that were executed by different departments and project actors. Therefore, in order to avoid the complexity of the researcher gaining access to different project actors, locations, departments and offices; obtaining a written permission from the project president was considered the right milestone. The researcher then started the process of obtaining this permission. A formal request was sent from King Abdul-Aziz University (the researcher sponsor) to the SRO. The request was then accepted by the SRO, the researcher then was called in for a meeting with the SRO President. This permission had no time restriction (i.e. it was given with an open date until the completion of this study).

The meeting with the SRO President involved two parts. Firstly, the written permission to conduct the data collection for this research was handed in to the researcher. The permission instructed all parties involved in the project (i.e. consultants, contractors, and client) to respond to the researcher and provide the required information for the purpose of this study. In the second part of the meeting, the SRO President was curious to know more details about this study. This was the start of a general discussion about this research, which involved questions by the SRO President and answers from the researcher. The SRO President was interested in this research and interacted with the researcher. After receiving a good explanation of this research from the researcher, what it was about and the major problems the researcher was looking for; the SRO President provided recommendations of the best three areas (one area per contractor) of where the researcher could find valuable data that would be relevant to this study. The nomination of the areas was based on the area with most number of issues that are

related to this study. Thus, this recommendation was taken into account in the case, and area, selection process which will be discussed later in this chapter.

5.6.3 Piloting and evaluating the interview method

As it has been mentioned previously, the first data collection method in this study was interviews, which was conducted in the HHR project. This method was piloted in order to check the clarity of the questions' wording, the sequence and finally to ensure that there was no ambiguity in understanding the questions throughout the interview questionnaire (see Appendix 2). Other reasons behind this piloting process was to eliminate questions, if any, which would not reveal usable information; and finally, to assess the timing factor for the interviews completion (Hasen and Kamed, 1999). This was implemented for the initial and follow up data collection stages.

Following the process of designing the interview's questions, the researcher was ready to start piloting this method. The interviews piloting process involved seven participants who volunteered to contribute to this process. The researcher was assiduous in the selection strategy of the voluntary participants, as there were different sample categories in this study (i.e. client, administration consultant, executive consultant, three contractors and project manager). The piloting process involved one of each sample category with exception to the contractors – the researcher decided to involve one representative from each of the three contractors involved in the project at the time. The main reason for this was to use this piloting process in providing the researcher with a general knowledge of where the critical area or location of each contractor was within the project – in terms of issues and problems – that could be used as valuable data source in answering the research question.

After completing the piloting process, each participant was requested to provide their feedback on the interview, in terms of: clarity of questions' wording, question order, the form of the interview, the timing factor, and any other issues triggered during the interview time. After the researcher received their feedback, all the necessary changes were taken into account and considered in the execution of this data collection method (Hasen and Kamed, 1999) – this included changes to the wording of the interview questions. The following table will express the changes that occurred to this method following the pilot process.

Table 12: Changes to interviews following the pilot process.

Change number	Changes in interviews
1	Add personal details for participants.
2	Increase the interview time.
3	Changes the wording of some questions to suit the category of the participant.
4	Expand and clarify some questions to provide better understanding.

Following the changes undertaken by the researcher to the interview method, a second piloting for the interview was conducted. This was to ensure that following the modifications to the questions, all participants understood the questions and statements made by the researcher. Other seven participants volunteered to be involved in the second pilot process. It was important to the researcher to select different participants from the ones who contributed in the first pilot study, to avoid the impact of the first seven participants' familiarity with the questions on the feedback of the second pilot process. At the end of the second pilot process, all participants confirmed that the questions were understood – and no further piloting was required.

At the time of the pilot process (Phase 2 and 4 in Table 11), the researcher took the opportunity to test the two different ways of recording the interviews in order to find out which way is more efficient in recording the data and, therefore, to be used in the actual data collection stage. Some interviews were recorded by using electrical recorder; others were recorded by written notes that were taken by the researcher. The researcher found that using the electrical recording device allowed him to fully concentrate on the questions and answers from the participants. It also allowed the researcher to focus more on the probing questions pursuing the required data. Thus, the researcher decided to use the electrical recording device.

5.6.4   Selection of case and locations

The initial reason for this study was the failure in the delivery of the HHR project within the project deadline. The main aim from the start of this research project was to investigate on the problem of HHR project failure. The HHR project is situated in the same region of the researcher's homeland. At the time when the project initiation took place and the contractors started the project execution, this caused major road closures, road diversions and traffic interruptions inside the cities and along the motorways. There was a noticeable level of ambiguity and unawareness within the researcher's family, friends, community and the general public about the reasons behind all these road interruptions. The researcher had observed the slow work progress in certain areas and that incentivised the researcher to enquire about those construction projects. Following some enquires and a few discussions with people who work in the project, and a review of the available public documents about the project, it was observed that there was a delay in the timescale of the project execution. Thus, the researcher then decided to conduct this research to investigate on the project failure for various reasons, as follows: this project was the first railway project to be built by the SRO in Saudi Arabia; there was

a plan to initiate a number of railway projects in other regions of the country; there was a future vision for building metro services inside the major cities; and there was a high impact and disruption of any failure of these projects on public services and societies.

The HHR project is a mega-project that consisted of four train stations at four major cities in the region, with a total length of around 450km of train line. The following table (Table 13) shows the breakdown of the project parts based on the contractors' sections.

Table 13: Description of the HHR project's sections and areas.

Contractor	Project section	Project area
Contractor 1 (Al-Rajhi Alliance)	Train track line (app. length of 450 km). Divided into 6 areas	Area 1
		Area 2
		Area 3
		Area 4
		Area 5
		Area 6
Contractor 2 (Bin-Ladin Group)	Train stations (total number of two stations)	At the city of Makkah
		At the city of Madina
Contractor 3 (Saudi Oger)	Train stations (total number of two stations)	At the city of Jeddah
		At the city of Rabigh

As mentioned earlier in this chapter, the design of this research was a single case study of the HHR project, which involved a group of three contractors. As we can see from the table above, there were a number of areas for each contractor. Those areas were scattered across the 450km between the four major cities of the region. Therefore, as the primary aim of the design was to include the three contractors, the researcher decided to choose three areas (one area per contractor) to be included in the data collection process. In order to choose the appropriate area that could add better value to this research, the researcher targeted the three areas suffering from the highest failure rate (one area per contractor).

The process of choosing the appropriate areas involved a number of stages, including observation process and document review. This was supported by recommendations from the SRO President and the voluntary participants in the first and second interview pilot process. Table 14 will show these stages as follows:

Table 14: Area selection stages.

Stage	Method	Conclusion	
		Contractor	**Area**
Primary process for area selection			
Stage 1 Researcher observation	Field work observation: this stage involved visiting the different areas and the researcher conducted observation of the work progress in those areas to identify the area that is behind schedule the most.	Contractor 1	Area 2
		Contractor 2	Makkah City Station
		Contractor 3	Jeddah City Station
Stage 2 Researcher observation	Document review: the researcher conduced a document review process to review the work progress in each area to identify the area that is behind schedule the most.	Contractor 1	Area 2
		Contractor 2	Makkah City Station
		Contractor 3	Jeddah City Station
Supporting process for area selection			
Stage 3 SRO President recommendation	Meeting discussion: after the researcher explained the concept of the research, the SRO President provided the following conclusion (recommendation)	Contractor 1	Area 2
		Contractor 2	Makkah City Station
		Contractor 3	Jeddah City Station

Stage 4 Voluntary participants recommendation (from first pilot process)	Interviews discussion: the pilot interviews were not specified on certain area of the project. Participants were asked about the areas which were behind schedule the most and the following conclusion was drawn.	Contractor 1	Area 2
		Contractor 2	Makkah City Station
		Contractor 3	Jeddah City Station
Stage 5 Voluntary participants recommendation (from second pilot process)	Interviews discussion: the pilot interviews were not specified on certain area of the project. Participants were asked about the areas which were behind schedule the most and the following conclusion was drawn.	Contractor 1	Area 2
		Contractor 2	Makkah City Station
		Contractor 3	Jeddah City Station

Thus, after conducting the two primary processes for area selection, the conclusion from both processes were identical. Furthermore, the supporting processes that included stage 3, stage 4 and stage 5 from the table above produced the same conclusion of the selected areas. Therefore, this research is considering the following areas for this study:

- Area 2 for Contractor 1.
- Makkah Station for Contractor 3.
- Jeddah Station for Contractor 2.

After choosing the areas for data collection, this lead the discussion to the sampling strategy for the three areas.

5.6.5   Sampling strategy

The sample for interviews involved 21 participants, who were key performers within the multiple principal-agent relationships used in this research. The participants were selected based on their experience, qualification and proximity to the relationships that were investigated in this research. As such, all participants were able to report the nature of the relationships. Furthermore, the participants took part in the in-depth interviews and the majority of the participants were interviewed more than once. Ceric (2014) recommended in his paper that future research in the APs area might consider looking into more complex relationships, in comparison to his research which included project client, contractor and their project managers. As this research was aiming to investigate on project failure in HHR mega-project – mainly by looking at the APs and more complex relationships – the project consultant and his project manager were added to the project actors who were involved in Ceric's study (2014) for the purpose of investigation in this

study. Therefore, in applying this sample to each of the areas identified above, the sample for this study can be demonstrated in Table 15, as follows:

Table 15: Sample table showing the participants and their positions in this study.

		HHR project – Interview Sample			
Sample area	**General participants**	**Specific participants**	**Number of sample (interview)**	**Area sample size (interviews)**	**Total sample size (interviews)**
Area 1	Client	Client representative	1	7	
		Client project manager	1		
	Contractor	Contractor representative	1		
		Contractor project manager	1		
	Executive consultant	Executive consultant	1		
		Consultant project manager	1		
	Administrative consultant	Administrative consultant	1		
Area 2	Client	Client representative	1	7	21
		Client project manager	1		
	Contractor	Contractor representative	1		
		Contractor project manager	1		
	Executive consultant	Executive consultant	1		
		Consultant project manager	1		
	Administrative consultant	Administrative consultant	1		

Area 3	Client	Client representative	1	7	
		Client project manager	1		
	Contractor	Contractor representative	1		
		Contractor project manager	1		
	Executive consultant	Executive consultant	1		
		Consultant project manager	1		
	Administrative consultant	Administrative consultant	1		

As demonstrated in the table above, each area of the case study involved: client representative and his project manager; contractor representative and his project manager; executive consultant and his project manager; and finally, administrative consultant. The researcher interviewed the same sample in the first data collection trip and in the follow-up data collection, however, it was not possible to interview all the participants in the follow-up data collection trip because the project was in the final stages of its execution and some participants had already left. Furthermore, Appendix 3 provides more details of the interviews schedule.

5.6.6   Data collection in practice

5.6.6.1 Interview

Interviews were one of the data collection methods used in this study. The form of conducting them was on a one-to-one basis. This form (one-to-one) created an environment of self-disclosure by the interviewees, as some of them felt comfortable to expose their own past experiences when working for other organisations or on different

projects, and occasionally compared it with the present practices at the time of the interview.

In terms of scheduling the interviews, the researcher started by contacting the interviewees and scheduling a meeting of around one hour to conduct the interviews. This approach did work to certain extent and with some of the interviews. However, as the nature of this infrastructure project imposed on project actors to be mobile most of the time between their offices, field visits, formal, informal and emergency meetings throughout the day; occasionally the researcher had to rearrange an alternative time to conduct the interview. Setting a fixed scheduled time was not possible at some occasions. This was because project managers, for example, were called for emergency field visits or required for other reasons. Consequently, the researcher had to increase the level of flexibility during scheduling the interviews. Furthermore, a different approach was followed by carrying out an informal friendly visit with the specified interviewee, to arrange an interview time. Interestingly, some participants offered to carry on the interview straightaway. As the researcher expected this to occur, the interviews were carried out and the data were collected successfully.

All interviews were carried out on site (this involved different locations within the project area). The length of most interviews was approximately one hour, but it did vary, some interviews lasted longer and some shorter than the hour depending on the participant's interaction. As all participants were English speakers, the researcher found it more convenient to conduct the interviews in English, which saved the translation time, compared to if they were conducted in Arabic. All participants were comfortable and happy to be asked and answer the interview questions in English, which eased the process of preparing the data and information for use in the next stage of this research.

From the outset of the interview time, the researcher took the time to consider some ethical issues and make sure that every participant understood and signed the consent form to participate and take part in the interview. This involved three steps: firstly, the researcher started by verbally explaining the purpose of this research; secondly, inform participants about the researcher's background; thirdly, interviewees were asked to sign the consent form to participate. At this point the researcher turned on the electrical voice recorder and the interview commenced. It was exciting to observe two behaviours from the participants at this point. The first type of participants started explaining the major issues they were facing in their part of the project, here the researcher found that the information actually fitted with the first question of the interview in certain situations. In others, the researcher had to redirect the conversation in a polite way and started to ask the interview questions.

Therefore, this was the start of the analysis stage of the required data as the researcher had to make analytical decisions to control and restrict the discussion around areas that answer the research question. This was to mitigate the challenge of the transcribing process, as the academic calendar time was limited for the researcher to transcribe unnecessary data. Gillham (2000) provided a warning around the transcribing process stating:

> "Things to be careful about while using interviews: The need for economy in interviewing. Even one interview generates a huge amount of work for the researcher. As a simple rule of thumb, a one-hour interview (assuming you have tape-recorded it) is ten hours of transcription and almost as many hours of analysis. So, you have to control the number of interviews and their length" (p. 66).

Nevertheless, voice recording the interviews helped in transmitting exactly the same data from the interviews and facilitated the interview time as the researcher did not waste any time in taking notes. Hitchcock and Hughes (1995) stated:

"The tape recording of the interview session will produce the most complete record of what was said" (p. 170).

Once an interview was completed, the researcher started to transcribe the interview as soon as possible. This is because the actions and voices of the participants were still memorable to the researcher.

5.6.6.2 Observation

At the time of the researcher's presence on the project site, interviewing the participants was the first thing in the researcher's mind. Although, the observation process always started once the researcher arrived at the project site. The observation process was carried out in the offices (interactions between staff) and in the project's work field. The relevant information of the observation session was noted by the researcher by using the field observation notes template (see Appendix 4).

Using this method during the data collection had a huge importance to the validity of the data that was collected using the other methods. Gillham (2000) confirmed this by stating:

"The overpowering validity of observation is that it is the most direct way of obtaining data. It is not what people have written on the topic. It is not what they say they do. It is what the actually do" (p. 46).

At the time of observation, the researcher did not have a particular schedule for places to visit as in someone observing a lecture or a lesson, but followed a 'fly on the wall' technique (Griffin, 1985). This was partly based on the need to cross-check some claims from the data collected through the interview method, or to have further insight about certain issues.

The observations were recorded by using the field observation notes templates (see Appendix 4). The researcher recorded the location, time and date of the observations as well as summary notes from each observation session. These notes were inserted as quotations to support the data analysis stage.

5.6.6.3 Document review

The document review method involved two types of document: public and private documents. Public documents included public magazines, newspaper and internet web pages. These documents were available for public access. However, there was a magazine full of issues related to this project which was not yet publicly available at the time of the data collection of this research. This magazine was given to the researcher by the client representative at the first stage of the data collection, which helped the researcher to form a more detailed insight about various aspects of the project, as well as use the information for the benefit of this study.

Private documents involved project planning documents, project management software (showing project progress) and project contractual documents. The availability of the private documents to the researcher was not an issue for most of the time. Occasionally, the researcher had to request to view some documents, and at other times the documents were offered to be viewed without request. Some participants preferred not

to show the researcher their organisation's private documents. Therefore, the researcher assumed that those documents may not be available for review or even exist. However, the accessible documents provided the researcher with valuable information and they are as follows:

1. Local newspaper.

2. HHR project – special edition magazine.

3. P1P1 project plan document.

4. Government Tender and Procurement Law (GTPL) document.

5. Implementing Regulations of Government Tender and Procurement Law (IRGTPL) document.

6. E- Documents from the SRO website.

At the time of the document review process, the researcher gathered the necessary information which considered to be relevant to this study using the template prepared in advance to keep record of the notes (see Appendix 5). This template helped in finding the required information during the data analysis process.

5.7   Data analysis

5.7.1   Transcribing the collected data

After collecting all the data through interviews, observation and document review, the researcher moved into the stage of transcribing the gathered information. All the interviews were recorded and transcribed after the data collection period, using the software called 'Express Scribe', which eased the process of following the interview records and transcribe them into documents. As the talking speed of the participants varied, the software provided a speed control which could slow down the speed of the fast-paced conversation, which saved significant time for the researcher. The availability

to rewind and forward the recording within the software also assisted the researcher at some stages.

The second and third methods of data collection involved taking notes from observation sessions and from document review. After completing the data collection, the researcher started to transcribe the observation notes. This was followed up by the production of observation reports which included pictures that were taken at the time of observations. The information from these reports were then entered into the (N-Vivo Software) for the thematic analysis. Similarly, the notes that were taken from the document review method were transcribed and also used in the N-Vivo software.

5.7.2   Thematic analysis

Conducting qualitative research results in huge amount of data and information that requires analysis. It may be quite difficult and time consuming to do, as the sum of the data cannot be quantified and presented as a summary of the whole findings. Therefore, one of the most common approaches of analysing qualitative data is by conducting the so-called "thematic analysis" (Bryman and Bell, 2011). Miles and Huberman (1984) state that data analysis is composed of three activities. The first activity is data reduction: hence the qualitative research resulting in too much collected data. A process of data reduction should start before the data is collected by making some decisions regarding which people to interview, which places to visit, etc. in addition to following the above process, during and after the data were collected, the researcher reduced the volume of information by producing summaries, writing abstracts, writing memos and coding the themes of the collected data. Miles and Huberman (1984) emphasised that these activities are part of the data analysis. The second activity is data display: qualitative data, usually in the form of a long text that results in unwarranted conclusions in some

cases. Displaying the information as some form of network, chart or matrix will assist in reducing and analysing the data, and in drawing a justified conclusion for the research. The last activity is finding a conclusion and some verification: this activity starts once the data collection is started. The researcher will have a sense of what conclusions could be drawn, whilst collecting the data and will be looking to firm it up with some evidence and addition of emphasising information (Miles and Huberman, 1984).

The researcher followed this approach, to facilitate the data analysis process, by using different techniques. This comes after the emergence of significant software that can assist in analysing qualitative data, known as computer-assisted qualitative data analysis software (CAQDAS). NVivo software was used to organise the qualitative data in this research. This software assisted the researcher in coding, retrieving and creating memos of the interviews. In general, it did ease the thematic analysis, and organised and accelerated the analysis process. Thinking about coding in qualitative research, Gibbs (2002) mentioned that the use of coding could be confusing in qualitative research. The difficulty emanates from the fact that each interviewee could use a different term for a similar situation (Kikooma, 2010). Although, this was managed by the researcher at the stage of conducting the thematic analysis. As well as using the software, the researcher used the manual coding process.

Both coding methods (through using the software and manual coding) were utilised in this research at different stages. Starting with entering the data into the software whilst collecting it and also afterwards, in order to be able to code the relative information to each theme, insert some memos if needed at some events, and then looking at further analytical procedures for the data (based on the variables and measures that were explained above). In this way, the researcher benefited from the time factor and organised the themes and sub-themes before receiving uncontrollable amounts of

information after the data collection. Both coding methods were used after the data collection stage to summarise, and also at further stages of analysis.

Lacey and Luff (2007) stated that there is not a specific correct way that has to be followed in qualitative data analysis. In this study, the researcher subscribed to the framework analysis approach to deal with the obtained data. This approach provided a systematic demonstration of the stages that the research had gone through in the analysis process. Therefore, a clear visible picture of the analysis was presented to the reader. This approach provided the opportunity to include priori concepts as well as emergent issues raised by participants during the data collection process. Framework analysis is composed of five stages, which have been adopted in this study. These five stages as follows:

- Familiarisation: transcribing and reading the data.
- Identification: this relates to identifying thematic framework (coding) from priori issues and from emerging concepts from the first stage (Familiarisation stage).
- Indexing: this is the stage of applying and inserting the data into the relevant theme within the thematic framework.
- Charting: the researcher used headings originated from the thematic framework in order to create charts related to the obtained data. This eased the process of analysing and creating the outcome of this research. Furthermore, there are two ways in creating the charts. Firstly, respondent chart which looks into cases of each respondent across all headings from the thematic framework. This can be demonstrated in Table 16, as follows:

Table 16: Respondent chart.

	Theme 1	Theme 2	Theme 3	Etc...
Respondent				

The second chart is thematic, which looks into each theme across responses from all participants. The researcher subscribed to this type (thematic chart) in this study. Table 17 illustrates the form of thematic chart, as follows:

Table 17: Theme chart.

	Respondent 1	Respondent 2	Respondent 3	Etc...
Theme				

- **Interpretation and mapping**: this stage is where the researcher look for concepts, explanations and patterns in the data (Lacey and Luff, 2007).

Finally, the expressions of all the evidence gathered from interviews, notes from observation and document review are through direct quotations, or otherwise summarising and paraphrasing the participants' perceptions. Moreover, to guarantee confidentiality and anonymity of all participants, all participants were given codes and their responses were embedded under those codes.

5.8   Validity and reliability

As this research subscribed to qualitative data only, reliability and validity will be discussed and justified within the context of the methodological and philosophical position in this study. On the one hand, the key concept that is related to assessing the quality of a research is reliability. Reliability is generally concerned with the consistency of the collected data (Charles and Craig, 2003; Gratton and Jones, 2007). On the other hand, researchers such as Gratton and Jones (2007) and Lacey and Luff (2007) argued that when researchers consider the concept of validity, they are required to consider

whether the methods which were used in their research were actually measuring what they were supposed to measure; and whether the research outcome (conclusion) derived through those measures was valid.

In Cohen et al. (2000), Maxwell (1992) argues that in qualitative research replaces validity with authenticity. Following Maxwell's argument, Cohen et al. (2000) discussed that the importance of qualitative research comes from the meaning of the data that is gained from the research subject, and the conclusions drawn out from the obtained data. In this way, qualitative research tends to represent individual's reality instead of the identical reproduction of certain reality. Moreover, Cohen et al. (2000) suggested that the term 'understanding' is a more suitable one for validity in qualitative research. Therefore, although the qualitative research is not generalizable, issues and themes will emerge to address the research question, contribute to the existing knowledge and suggest further areas of research.

Despite the previous argument, the external validity of this research can be discussed from two perspectives, as follows. Firstly, in relation to generalisability (external validity) of qualitative research that has adopted a single case study design. Research in this form focuses on the nature of the case study. Despite the fact that this research project was conducted in Saudi Arabia, it looked at an international phenomenon which is 'AP'. This phenomenon is occurring around the globe, as a result of the separation between ownership and control (Charreaux, 2004). This certainly applies in project management sector, which is associated with: high levels of complexity and similarities in various locations around the globe (Flyvbjerg et al., 2003); poor performance, as nine out of ten mega-projects fail (Flyvbjerg et al., 2005); and low success rates, in which success was described as 'rare' in mega-projects by Flyvbjerg (2014). The poor performance and low success rate is partially because of this international phenomenon 'AP', which is the main

area of investigation in this study. Additionally, the project actors who were the main participants in this study are project management organisations who have worked on international mega-projects in Saudi Arabia and other countries around the globe. Thus, the setting of project management sector around the globe; the cases involved in this study; and the organisational nature of the major actors, collectively add certain level of external validity to the findings from this research, which can be understood and applied to other set of cases where appropriate. The second perspective looks at the significance of this research and its relationship to the theory. This is where the researcher outlined the outcome of this study and established a relationship between this outcome and the theory used in this research (Saunders et al., 2016). To illustrate, the outcome of this study will be related to the extent of APs impact on the HHR mega-project failure.

In terms of reliability, this study used specific research techniques to ensure the consistency of the collected data and to set aside research errors, subject errors and subject bias throughout the research. For example, interviewing and questioning participants was conducted in 'neutral' time (Charles and Craig, 2003) (i.e. timing the interviews after a site visit and after dealing with problems was avoided as much as possible). Also, during the interviews, the researcher reminded the participants that there are no right, wrong or favourite answers (Rubin and Babbie, 2001; Charles and Craig, 2003). Moreover, a number of features within the research design and methodology of this study were included to increase the reliability as follows: choosing single case study with multiple individuals (three different contractors in this case); obtaining the data from multiple sources included (client, contractor, consultant, and project manager); multiple sites of data collection (dependent on each contractor working site); and multiple data collection methods (interview, observation and document review). Thus, all these features helped the researcher to ensure that the research findings matched reality. To illustrate, the three different data collection methods allowed the researcher to conduct

the triangulation approach. Furthermore, there was always the opportunity to investigate on certain issues through interviews with other sources (participants). Additionally, the data collection process included a follow up data collection. This increased the reliability of the data obtained from the initial data collection process, as the follow up data collection process contributed to further investigation of priori findings and to the finding of more data and information in certain themes through using the same data collection methods (triangulation).

5.9   Ethical Consideration

This research involved a number of ethical considerations, it took into account: The University of Birmingham's Ethical Code of Conduct; the permission for obtaining the data from the SRO; and permission from the participants, who were involved in interviews. The ethical approval was granted from the University of Birmingham's Ethical Review Committee to the researcher, from the outset of this research (before the beginning of any data collection). The application of the ethical approval can be found in Appendix 6. There were two applications for each stage of data collection, the applications reference number are: initial data collection stage (ERN_15-0617); follow up data collection stage (ERN_17-0300).

After the ethical approval to conduct this research was granted by the University of Birmingham, the researcher pursued obtaining permission from the SRO to conduct the study in the HHR project; outlining that all obtained information from the project will be used for the purpose of this study only. This process started by a formal request from the researcher sponsor (King Abdul-Aziz University) (see Appendix 7) which was forwarded to the SRO. The request was accepted and permission from the SRO President was granted (see Appendix 8). This permission granted the researcher access

to conduct this study with the specified design and data collection methods (interviews, observation and document review).

The last ethical consideration was concerned with the participants' consent to contribute to this study. In order to address all issues in this regard, the researcher showed the permission letter provided by the SRO President and then asked each participant to sign a consent form if they were still willing to participate in this study (for a copy of the consent form – see Appendix 9). The consent form included an introduction to the researcher, a brief description of this study and some operational and managerial issues, related to the conduct of collecting the data for this study and the process of handling them. At the stage, before the participant signed the consent form, the researcher explained and clarified these issues in more detail and ensured that the participants understood and agreed to participate under these circumstances. Participants were offered the opportunity to be provided with an explanation by the researcher in relation to any procedure-related doubts. The researcher reminded all participants of their rights to withdraw from this study at any time (Charles and Craig, 2003), up until the point when the research thesis was submitted to the University. Moreover, participants were informed that a report presenting the research results would be sent to those who provided their contact details (Pelkonen and Maija, 2004; Crow et al., 2006). In addition, those contact details would remain confidential and only used by the researcher for the purpose of sending the research outcome report (Denscombe, 2002). Finally, the researcher assured all participants that any information and data they provided would not be used for any purposes other than this research project and would be dealt with in confidence; and that, in line with the University of Birmingham's Code of Ethics, the data and information the participants provided would be kept on a secured computer with a password for ten years and then it would be destroyed.

5.10   Limitations

The process of conducting this research involved expected and unexpected limitations. Some examples of the expected limitations are as follows: whether the researcher would have obtained different data from other participants or more data from bigger sample; time was another constraint, as there was limited time to choose the sample size, gather the data, transcribe and analyse the obtained data and write the outcome of this research; through the data collection process, which provided an insight to the case through the participants, the researcher was faced with expected contradictory statements from one of the contractors, in comparison to what was said by client representative and consultant – this caused a concern to the researcher as which statement was 'correct'. Although, the observation and document review provided sufficient evidence and the researcher was confident that a realistic picture had been established.

There were further unexpected limitations, such as: time-consuming travel between different locations of the project, in order to conduct different sessions of observations; conducting the interviews with participants; and the documents review. A final unexpected limitation emerged while interviewing the participants. In a number of interviews, the participants got carried away in speaking about the problems and factors which lead to project failures, but which expanded beyond the information required for this research. The researcher facilitated the situations and redirected the focus of the discussion into areas and themes of this study.

5.11   Conclusion

This chapter started by exploring the research question and the research objectives. It outlined the philosophical approach underpinning this study, which included the ontological and epistemological position, and explained the paradigm followed in this study. Then the chapter identified the theoretical perspective approach and justified the subscription to the abductive theoretical approach. The discussion continued to the methodology of this research. The effectiveness of the qualitative case study design to answer the research question was discussed. This was followed by a discussion around the triangulation approach and data collection methods adopted in this research. Furthermore, the researcher demonstrated the variables and measures that were used in this research, which was essential to understand the origins of the themes of investigation and questions that were asked in the interviews.

The next part of this chapter focused on the operational methodology including data collection and data analysis process. The data collection section provided an overview of the data collection phases: obtaining permission from the SRO President for data collection, piloting the interviews, selecting the case and locations for data collection, sampling strategy, and finally the undertaking of the three methods of data collection (triangulation approach). To continue the narrative of this chapter, the researcher then moved to discuss the data analysis stage, starting by the process of transcribing the data and conducting the thematic analysis. Other areas were considered in this chapter such as the validity and reliability of this study, ethical considerations and the limitations of this research.

Now, after outlining all sections of the research methodology chapter and the procedures of their application, this thesis will move to the next chapter, which will represent a background of the HHR mega-project case and evidence of its failure.

PART IV

EMPIRICAL FINDINGS

CHAPTER 6

CASE BACKGROUND AND EVIDENCE OF FAILURE

6.1   Introduction

This chapter provides a description of the Saudi railway project case from which the data used in this research were collected by the researcher. A brief summary of the railway history will be provided, including a background of the SRO and its future plans. The project that was chosen for the purpose of this research was the Haramain High Speed Railway (HHR) line, which was initiated in 2010 and was under construction throughout the time of this research. This chapter will discuss the project's details, such as the project phases and the main project actors. Finally, the researcher will provide description of this mega-project and evidence of its failures.

6.2   Railways Background in Saudi Arabia

Historic Railway: The Hejaz Railway

The Hejaz railway line was built over hundred years ago. The building process started in 1900 and the completion date was 1908. Billings (2006) has stated that the line connected Istanbul and Madina and was used to transport pilgrims. The line was supposed to have an extension to the city of Makkah (the proposed route of the HHR line), at the bottom right corner of the map in Figure 18; however, this was never completed. The total journey time on the line used to be – before the operation was suspended – about four days, whereas before the line started to operate it used to take six weeks or more on camels.
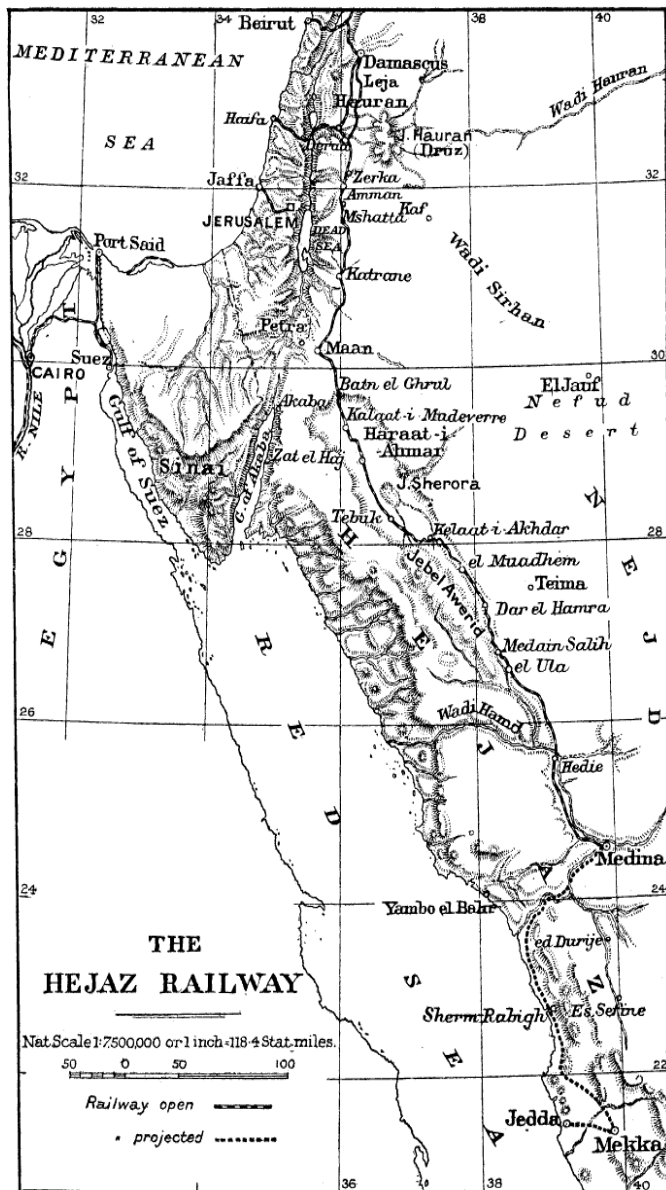
Figure 18: The Hejaz railway (Maunsell, 1908).

6.2.1   Current operating railway: Dammam-Riyadh railway line

Despite the fact that the Hijaz Railway was the first railway line built in Saudi Arabia, the

Dammam-Riyadh railway line is the only current operating railway line. It links King

Abdulaziz port in Dammam (the east coast of Saudi), through the city of Dammam, and

then on to other cities and towns, towards the capital Riyadh. The length of the line is approximately 1380km, which includes passenger and cargo lines (SRO, 2014).

The Dammam-Riyadh railway line was proposed and executed by the Arabian American Company (ARAMCO) in the 1940s. It was run by Aramco and entrusted to them by Ministry of Finance, at which point it was called the Railway Department. On 13th May 1966, the SRO was established and took full responsibility for operating this railway line (SRO-1, 2014).

In December 2010, SRO signed a contract worth about €1 million with German International Cooperation, in order to create a master plan for Saudi railways for the period 2010-2040. The master plan included 19 individual railway lines, covering 9,900km, to be implemented in three stages according to priority, as follows:

- Stage 1: this stage has top priority and covers the period 2010-2025 covering a length of 5,500km.
- Stage 2: this has medium priority, over the period 2026-2033, with a total length of 3,000km.
- Stage 3: this will be within the period 2034-2040, over a length of 1,400km.

The three stages of construction will be at a total cost of 365 billion Saudi Riyal (SAR), divided into the three stages as follows: 63 billion SAR, 209 billion SAR and 93 billion SAR respectively. This denotes that Saudi Arabia is heading towards a huge investment in the railway industry within the next few decades (SRO-2, 2014), which again indicates the importance of this research project.

The following map shows the currently operating railway line, as well as other projects under construction and also future projects. The project that will be used in this research is shown in red colour.

Figure 19: Railway lines in Saudi (SRO-3, 2014).

6.3   The Haramain High Speed Railway Mega-Project (HHR)

The HHR project, therefore, is to be one of the first projects to be constructed and built under the SRO's management (PC-1R). The government of Saudi decided to build this railway project to link the two holy cities of Makkah and Madinah, as Figure 19 above shows. The total length of the project is approximately 450km and consists of four major train stations. The train was designed to reach a maximum speed of 360km/h (SRO-4, 2014).

6.3.1 The Project Importance

This project is considered to be of high importance in the country because of its value in serving the Islamic community (SRO-4, 2014). The HHR will provide a convenient, safe, comfortable and fast way to transport pilgrims travelling between the holy cities.

6.3.2 The Project Phases

The project has been divided into two phases. *Phase 1* is looking after the infrastructure work and the construction work of the stations. This phase is divided into two packages, as outlined below. *Phase 2* is concerned with establishing the train system of over 450km, which will include all the operations and signalling systems.

Phase 1 Package 1 (P1P1)

Package 1 is the first part of this project which represents the civil work of the track. This includes "the design and implementation of project infrastructure works such as roadway excavation, backfilling, preparing the ground, constructing bridges, culverts and tunnels for laying track" (SRO-4 , 2014, p. 1). There were four bidders for this part of the project. His Excellency Dr Ibrahim Al-Assaf, the Minister of Finance, and His Excellency Dr Jobarah Al-Seraisry, the Minister of Transport, are the government representatives who signed a contract with the Al-Rajhi Alliance, who became the formal contractor for this stage of the project.

Phase 1 Package 2 (P1P2)

This part of the project is related to building of four train stations. The two stations in Makkah and Madinah will be the terminus stations and the other two stations will be

through stations. Each station contains a departure and arrival concourse alongside the main building, a mosque, a helipad, a civil defence fire station, a short and long-term car park, a VIP lounge, shops, restaurants and cafes. Each of the stations have been linked with public transport services, including buses and taxis, as well as corridors for pedestrians heading towards the light rail train station, which is intended to be built in these cities (SRO-4, 2014).

In relation to the contractors for this package, there were eight consortia that were pre-qualified for this part of the project. Binladin Group was signed up to complete the construction work of the stations in Makkah and Madinah; the contract for the station in Jeddah (the biggest station) was awarded to Saudi Oger (SRO-4, 2014).

Phase 2 (P2)

This phase is about building an electrified railway, over 450km in length. According to SRO: "This Phase of the HHR Project includes the construction of railway tracks, installation of signalling and telecommunication systems, electrification, operational control centre, the procurement of 35 train sets and the operation and maintenance for a period of 12 years" (SRO-4, 2014, p.1). The contract for this phase of the project was awarded to Al-Shoula Group.

6.4 Project phases and contractor history

6.4.1 P1P1 phase's contractor

Al-Rajhi Alliance, who is the contractor for the P1P1 part of the project, is a consortium formed of three companies, which are as follows:

1. Al Arrab Contracting Company (ACC). In 2005, Al-Rajhi Alliance acquired a share of Al Arrab Group, which expanded the scope of the ACC's targeted projects to work in larger projects and new sectors including civil construction, water, aviation and rail. In 2011, Al-Rajhi Alliance increased its share of ACC to 100%, which made the company become a totally Saudi company (ACC, 2013).

2. Mohammed Ali Al Suwailem Group (Masco) is the second company in this alliance. This company has been awarded Grade A by the Ministry of Municipal and Rural Affairs in the fields of highways, bridges, architecture, dams, electrical works and others, to give the company the ability to bid on projects with no value limitations. (Masco, 2013).

3. CRCC is a Chinese group which is rated as first class in railway engineering constructions. They are specialists in tunnel, bridge and urban railway transit, amongst other works. The contribution of this group has an added value element, in terms of their experience in mega-projects around the globe.

6.4.2 P1P2 phase's contractors

This phase is related to building the train stations in the four cities and will be accomplished by two major contractors, they are:

1. Saudi Oger, which has worked on many major projects in Saudi, such as university projects, major roads, royal projects and other mega-projects. Saudi Oger is responsible for delivering two stations within this project (Saudi Oger LTD, 2014).

2. Saudi Binladin Group is a very well-known company, working mainly on mega-projects both nationally and internationally. Binladin Group is regarded as having a high level of professionalism in their work in different construction sectors (Saudi Binladin Group, 2012).

6.4.3 Phase 2 contractor

Briefly, as this phase will not be included in the case study, Al Shoula Group is a consortium of 15 Saudi and Spanish companies. The work for this phase is being carried out in parallel to the Phase 1 execution at certain areas and stages on the project.

6.5 Funding the project

HHR is a public project funded by the Ministry of Transport. This project has a unique priority to the King of Saudi Arabia, as it will be serving the Islamic population around the globe who come to perform Pilgrimage and Omrah. Therefore, it was important to achieve the fastest possible delivery date. As mentioned previously, the cost of each phase is as follow: P1P1, after the scope changed, will be produced at a total cost of SAR 10.765 billion; P1P2 – including all four stations within the project (S1, S2, S3 and S4) – will be delivered at a total cost of almost SAR 9.4 billion; and the finally Phase 2 at a total of SAR 30.8 billion; which makes a total project cost of **SAR 50.965** billion. (N.B. 5.03 SAR = 1 GBP).

6.6 The project team

This section will present a brief structure of the main stakeholders of Phase 1 of this project, which is related to the cases of this thesis as follows:

- SRO: the SRO is managing the project as the client representative.

- Dar Al-Handasa (DH) Performance Supervision Consultancy: DH is a consultancy agency which is monitoring and controlling the contractors work and co-ordinating the execution between the client and contractors.

- Contractors:

  o Al-Rajhi Alliance: is the only contractor involved in the P1P1 part of the project, and is formed by three major subcontractors, as mentioned above.

  o Binladin Group: is the contractor for the train station in the city of Makkah.

  o Saudi Oger: is the contractor for the train station in the city of Jeddah.

6.7   Evidence of failure

The purpose of this section is to provide an overall assessment of the project performance, in order to demonstrate the areas of success and failure that occurred during the execution stage and after the project completion.

The HHR project performance in terms of time, cost and quality

6.7.1 Time

The time aspect of the iron triangle was the only one where both packages of Phase 1 of this mega-project (P1P1 and P1P2, which were investigated in this thesis) have failed.

Table 18: Estimated and actual project duration (PC-1R, PC-2R and PC-3R – official government (SRO) data).

Project Case	Estimated planned project duration		Actual project duration
	Original project scope	Updated project scope	Total project duration
P1P1	3 years	5 years & 8 months	8 Years
P1P2 – S1	2 years & 1 month	N/A	6 Years
P1P2 – S2	2 years & 1 month	N/A	6 Years

P1P1 part of the project was initiated in 2010 followed by P1P2 in 2012. This indicates that the project was ongoing throughout the timeframe of this research and was delivered in 2018.

Table 18 above shows the estimated project duration and then the actual project duration, after execution. It is clear that there is a major failure on this project with regards to the project time. The time overrun in the project execution period exceeded the original time planned by the client, in terms of delivering the project and starting the service. As a result of this delay, the client applied penalty clauses on the contractors, where appropriate, which reduced the contractor's profitability and the ability to bid for other projects. Therefore, the time aspect of the project completion was perceived as a failure to both the client and the contractors.

Against this, while the time overrun was recognised by the project consultant, this was not seen as a failure from its own perspective. The reason behind this, as PC-2R commented, was that "there are no liabilities imposed on the consultant if the project gets delayed". PCO-1R agreed, saying "it is for the benefit of the consultant if the project gets delayed". The GTPL document confirms that by stating "a contractor shall bear the cost of supervising the execution of the project during the period in which he is subjected to

the delay penalty" (GTPL document, article 50, p. 22). Therefore, any time overrun within the project will not incur any costs on the consultant. This matter is picked up in a later chapter.

6.7.2 Cost

Project cost is the second aspect which will be used in assessing the failure of the project performance. From Table 19 below, it can be observed that the first package of the first phase (P1P1) of this project suffered from failure, whereas the second package (P1P2), which includes the construction of the train stations, has been delivered according to the estimated budget.

Table 19: Estimated and actual project cost (PC-1R, PC-2R and PC-3R – official government (SRO) data).

Project Case	Estimated planned project cost		Actual cost after execution
	Original project scope	Updated project scope	Completion cost
P1P1	SR 6.75 Billions	SR 10.765	SR 16.5 Billion
P1P2 – S1	SR 2.9 Billions	N/A	SR 2.9 Billion
P1P2 – S2	SR 3.178 Billions	N/A	SR 3.178 Billion

In relation to the P1P1 part of the project, there was an increase in the estimated cost in comparison to the original cost estimate. This was because of the change in the project scope. However, that part of the project still failed to be delivered within the revised estimated cost, and the cost overrun reached above 45% of the revised estimated price.

The consequences of the P1P1 project cost failure fell mainly upon the project client. In relation to the project contractor, how it was affected by the project cost failure can be

explained twofold, as follow: firstly, in cases where the time delay occurred because of factors that are related to the contractor, the contractor incurred additional costs for the duration of the delay for his staff and the supervision consultant; secondly, in case where the time overrun occurred as a result of external factors, the contractor will have the grounds to claim for compensation. Finally, the consultant is the actor who was least affected from any project cost failure. Again, these matters are picked in a later chapter.

6.7.3   Quality

This project is of a high level of importance to the government of Saudi Arabia, starting from the pre-initial planning, throughout the execution and continuing until the project's completion. One important element the client emphasised was the quality of the final product. PC-3R commented that "the most important thing in delivering this project is to ensure that we deliver the project specification and to ensure that the standard of the service after the project completion is very high". PC-2P agreed, saying "the client is very strict with the contractor when it comes to the quality of the execution". PECO-2R said that "as a supervision consultant, we do not approve any work that the contractor does until we ensure that it is following the project specifications and the quality of the work is as the client required". He added: "We do not compromise in the quality of the work, and we will ask the contractor to re-do the work if needed".

Therefore, it is apparent that the quality of the project execution was a priority to the project client, and the supervision consultant was strictly monitoring this part of the project. Thus, there was no project failure recorded here on the part of the major project actors (client, consultant, and contractor).

However, during the project execution period, and due to the large number of road diversions and the amount of construction work (e.g. excavations) that were related to the project, other public services and businesses were severely interrupted as a result of the project. Therefore, the execution of this project had a negative influence on the population's daily life quality and business performance in general. The reason behind this was, as PC-1R confirmed, that "the traffic police normally do not allow more than one diversion in the highway, for example. We obtained an exemption to this just to enable the contractor to carry on his work as he planned". The failure in delivering the project on time exacerbated the problem. Therefore, while there was no quality failure on this project, there were externalities to the wider stakeholders within Saudi society.

6.8   Summary

This chapter started by providing a brief introduction to the railway history in Saudi Arabia. This was followed by the provision of background information on the case used in this thesis, including the mega-project phases, the contractors for each phase and the major project actors of this mega-project. The last section of this chapter then provided primary data, both official government data on project delivery performance and qualitative interview data from project participants, on the different aspects of the mega-project failure. This data, highlighting the significant failures affecting this project, revealed the importance of this research in investigating the causes of this failure. As discussed earlier, there was an obvious failure in the total project time (for Phase 1 of the project). The additional cost failure was mainly found in the P1P1 part of the project. The next three chapters will, therefore, investigate what were the factors that contributed to this project failure, in particular, the extent to which the failure can be explained by AT. Indeed, this investigation will start with an investigation into whether there were any APs causing the failure.

CHAPTER 7

FINDINGS – AGENCY FACTORS

7.1   Brief re-cap of agency theory

This chapter is presenting the findings and results that are related to AT. AT is the prime

theory that informed the research question of the thesis. This research question raised

the possibility that the project failure in the HHR case could be the result of APs, which

is, by way of definition, the agent's opportunistic behaviour. This research did indeed

discover a series of APs in the HHR project. These opportunistic behaviours will be

analysed in order to assess their impact on the project failure.

Briefly, and as mentioned earlier in Chapter 3, AT was inspired by the separation

between ownership and control that became established by the early decades of the 20th

century (Charreaux, 2004). Five components were identified in relation to this theory.

Firstly, a principal-agent division was the initial reason for the manifestation of AT.

Secondly, information asymmetry, where Provan (1991) contended that agents have an

information advantage over their principals. Thirdly, opportunism, which was defined by

Williamson (1979) as a seeking process for self-interest that is associated with guile –

the opportunistic behaviour is usually a result of the information advantage which can be

exploited by one actor towards the other. Fourthly, opportunism management, which

presents a number of techniques that can reduce the impact of AP, for example,

establishing trust, monitoring through regular meetings, agent reporting, observations

(Steinle et al., 2014) and incentives.

The researcher also raised the possibility of multiple APs existing in the mega-project environment. As Wu et al. (2010) discussed, it is possible that an AP may appear between every two parties within the same project. This research project has investigated and identified APs within a specific number of relationships from the mega-project case, which will be discussed next.

7.2   Project actors' relationships and APs presentation

Ceric (2014) demonstrated the multiple APs in her research by including the project owner, contractor and their project managers. Ceric (2014) proposed that future research should enlarge the scope and include more project stakeholders to investigate the multiple agency issue. Therefore, this research was the first to include the consultants, as well as the project client and contractor. Due to the context of Phase 1 of this mega-project case which involved one client, one consultant and three different contractors, seven relationships were identified for the scope of this research (see Figure 20). These relationships will be investigated and analysed in order to identify APs among them, and to assess the impact of those APs towards the project failure.
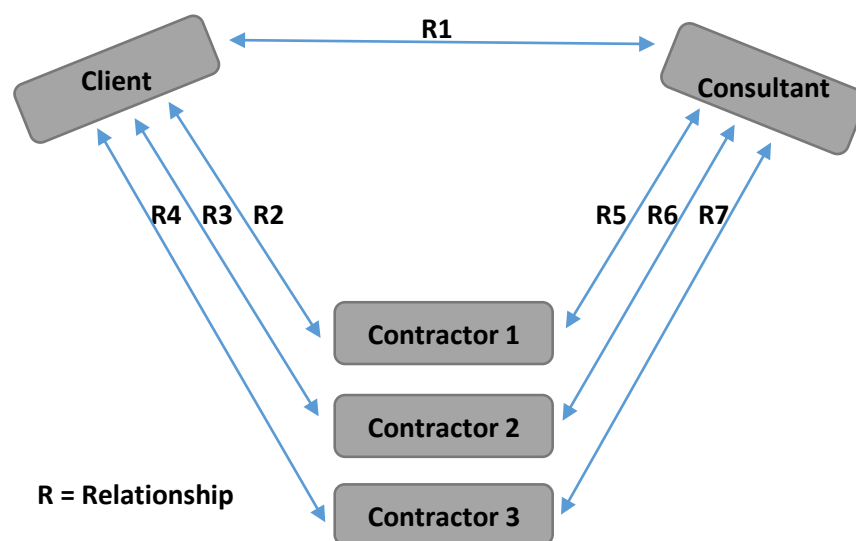
Figure 20: Relationships diagram.

Each relationship from the above diagram will be reviewed individually, while at the same time there is recognition that opportunism in one relationship might affect other relationships. Different interviewees were selected for the different relationships. The criteria for interviewee selection were on the basis of seniority, expertise and proximity. The interviewees that were interviewed for each relationship are shown in Table 20 below.

Table 20: List of interviewees for each relationship.

Relationship	Interviewees and their codes in this thesis	
	Interviewee	Code
R1	Project client representative – area 1	PC-1R
	Project client project manager – area 1	PC-1P
	Project executive consultnt representative – area 1	PECO-1R
	Project executive consultnt project manager – area 1	PECO-1P
	Project consultant representative – area 1	PCO-1R
	Project contractor representative – area 1	PCON-1R
R2	Project client representative – area 1	PC-1R
	Project client project manager – area 1	PC-1P
	Project contractor representative – area 1	PCON-1R
	Project contractor project manager – area 1	PCON-1P
	Project executive consultnt representative – area 1	PECO-1R
	Project consultant representative – area 1	PCO-1R
R3	Project client representative – area 2	PC-2R
	Project client project manager – area 2	PC-2P
	Project contractor representative – area 2	PCON-2R
	Project contractor project manager – area 2	PCON-2P
	Project executive consultnt representative – area 2	PECO-2R
	Project consultant representative – area 2	PCO-2R
R4	Project client representative – area 3	PC-3R
	Project client project manager – area 3	PC-3P,
	Project contractor representative – area 3	PCON-3R
	Project contractor project manager – area 3	PCON-3P
	Project executive consultnt representative – area 3	PECO-3R
	Project consultant representative – area 3	PCO-3R
R5	Project executive consultnt representative – area 1	PECO-1R
	Project executive consultnt project manager – area 1	PECO-1P
	Project consultant representative – area 1	PCO-1R
	Project contractor representative – area 1	PCON-1R
	Project contractor project manager – area 1	PCON-1P

	Project client representative – area 1	PC-1R
R6	Project executive consultnt representative – area 2	PECO-2R
	Project executive consultnt project manager – area 2	PECO-2P
	Project consultant representative – area 2	PCO-2R
	Project contractor representative – area 2	PCON-2R
	Project contractor project manager – area 2	PCON-2P
	Project client representative – area 2	PC-2R
R7	Project executive consultnt representative – area 3	PECO-3R
	Project executive consultnt project manager – area 3	PECO-3P
	Project consultant representative – area 3	PCO-3R
	Project contractor representative – area 3	PCON-3R
	Project contractor project manager – area 3	PCON-3P
	Project client representative – area 3	PC-3R

During the data presentation in this chapter, the researcher will only consider the relationships which involve AP. Within each relationship considered, one or multiple APs may be identified. In the case where a relationship has multiple APs, the researcher will start by presenting the pre-contractual APs (adverse selection), followed by the post-contractual APs (moral hazard). In the process of presenting AP findings, each AP will be presented separately from the others, according to the following model in Figure 21 below – that is the four elements within AT described throughout this thesis.

Figure 21: Agency problems presentation order.

The discussion around each AP will start by describing the issue, followed by the information asymmetry (specifically related to that problem) that existed in the relationship. This is followed by a description of the agent's opportunistic behaviour and its impact at the time of the project execution. The intervention stage will then review the client's reaction to the AP, if there was any. Finally, the description will be concluded by

a final revision of the outcome after the client's intervention, assessing whether there was a change or not in the agent's behaviour and project outcome. In order to emphasise moving between the stages of Figure 21 during the discussion of the APs, a word or two will be highlighted in **bold** to indicate the beginning of each stage.

7.3   Agency problems

As an introduction to the APs, Table 21 below presents the eight agency issues that were identified from the HHR project case. Each AP is coded and aligned with the relevant relationship. The perceived severity of each AP impact on the project failure is illustrated (using a qualitative measure) by the number of stars (*= low severity; ****= high severity). The four stars rating system had four levels of scoring defined as follows:

One star (*) – very low severity of impact

> Insignificant cause of project failure that does not require the clients' intervention as it can be resolved in between managements.

Two stars (**) – low severity of impact

> Low significant cause of failure that does not require immediate intervention from the client as there is plenty of time to negotiate a mitigation procedure.

Three stars (***) – high severity of impact

> Significant cause of failure that requires the clients' intervention as it might interrupt other major project activities and cause project failure.

Four stars (****) – very high severity of impact

> Major cause of project failure that needs urgent attention and intervention from the client as it will result with major project failure and might create other causes of project failure.

Finally, the table summarises the principal's intervention in each AP and the outcome of these interventions.

Table 21: Agency problems impact, intervention and outcome.

Relationship (R)	Agency problem (AP)	Issue	Impact (****)	Intervention	Impact Post-Intervention (****)
R1	**AP 1** 'Adverse selection' (with additional moral hazard)	Consultant misrepresented the qualification of his employees to win the tendering process.	**** 'time & cost'	Adverse selection was harder to observe by the client in order to react.	**** 'time & cost'
R1	**AP 2** 'Moral hazard'	Late and wrong supervision approvals by the project consultant.	**** 'time & cost'	The client's intervention was by monitoring the performance of the consultant.	** 'time & cost'
R2	**AP 3** 'Adverse selection'	Contractor 1 underestimated and misrepresented the project cost.	**** 'time & cost'	Client had no chance to intervene as the tendering process was in accordance with the national law.	**** 'time & cost'
R2	**AP 4** 'Moral hazard'	Contractor 1 took over the project management after dismissal of qualified staff.	**** 'time & cost'	It was challenging for the client or the consultant to intervene due to lack of awareness of the issue at the time. Furthermore, the contractor's incentive was money, but financial incentives did not exist. Although, penalties were imposed for any delay.	**** 'time & cost'
R2	**AP 5** 'Moral hazard'	Contractor 1 employed illegal workforce to work for the project.	**** 'time & cost'	The client imposed penalty clauses for the delay and required the contractor to increase the project manpower but no result.	**** 'time & cost'

R2	**AP 6** 'Moral hazard'	Contractor 1 misrepresented the designer capability to design this project.	*** 'time & cost'	The client applied penalty clauses on the contractor if any delay occurred. Occasionally, the client issued technical approvals on modified designs.	** 'time & cost'
R4	**AP 7** 'Adverse selection'	Contractor 3 employed illegal workforce.	*** 'time'	The client obtained exemption for illegal workforce for this project; the contractor reacted accordingly.	-
R5	**AP 8** 'Moral hazard'	Contractor 1 failed to submit project plans to the consultant.	**** 'time & cost'	The consultant prepared a detailed project planning document and it was handed in to the contractor.	** 'time & cost'

From the table above, it can be observed that there were three scenarios in relation to principal (client) intervention. The first scenario was that the principal did not intervene. This was mainly in relation to adverse selection by the project consultant (R1) and Contractor 1 (R2). This was because adverse selection was hard to detect, in part because of the dictates of the Saudi tendering and procurement law. The second scenario was that the principal did intervene in an attempt to reduce the AP impact, but this resulted in no change to the outcome. This scenario can be seen in APs four and five, where the problems were within the contractor's internal organisational management. The final scenario was where the intervention did result in a reduction of the impact of the AP on the project failure. The degree to which the impact of the AP was moderated, however, was varied. For example, in AP seven, the AP was completely eradicated as the two actors co-operated, whereas in APs two, six and eight there was only a marginal change in the impact on project failure. Further discussion of these APs follows below.

7.3.1 Relationship 1 (R1): Client (principal) – Consultant (agent)

The responsibility of the project consultant was to supervise the execution process of the three contractors in this mega-project. This included the construction of the train track (P1P1) and the train stations (P1P2). In this relationship, two APs were identified, which had a considerable impact on the project failure. The first AP pertained to pre-contractual (adverse selection) opportunism and the second was post-contractual (moral hazard) opportunism, both of which were performed on the agent side.

- *Agency Problem 1*

The **first problem** related to the project consultant tendering process. PCON-1R stated that "there was a problem in employing consultants for this project". PC-1P clarified, saying "some of the consultant's personnel are good but others are causing serious issues within the project progress". There was evidence that the problem in employing the project consultants originated from the **information asymmetry** between the principal and the agent, although it was also facilitated by naive client contracting. In short, PC-1R believed that "the consultant represented themselves with higher qualification" than was in fact the case, resulting in a classic case of adverse selection. There was evidence that this was then compounded by additional moral hazard following contract award.

Unsurprisingly, representatives of the agent itself, the consultant, were insistent that their organisation had acted appropriately in relation to this matter when asked about the selection process of their project team. PECO-2R replied: "We chose the project team in this project by finding candidates with relevant experience. We are a consultant party, so most of our employees have to be academics with sufficient background".

However, this view was not shared by other project actors and, indeed, evidence was presented to the contrary. It was concluded by various project actors that the agent had behaved **opportunistically** in the form of misrepresenting its employees' capabilities and qualifications and that this put it in a greater position to win the contract (PC-1R). PCON-1P argued further that this facilitation of adverse selection was then compounded after the consultant organisation had won the contract as the agent exploited the potential for information asymmetry further by "winning the contract and [then] employing some [further] consultants with low prices and no experience", with some of the consultant personnel described by PCON-1P and PC-1R as "fresh graduates".

This opportunistic behaviour by the agent was described by PC-1R as an attempt to "decrease the costs", which was part of the reason for the consultant having a team that "have a lack of experience and awareness with regards to the type and size of the project" (PCON-1R). **PC-2R commented** that "this caused project failure, as their production was quite bad in certain occasion". PCON-1R added that "some consultants did not have the ability to compromise in certain technical situations during the project execution".

In terms of the client being able to respond to the opportunism when, as was the case, it became visible to it, the researcher asked if this dual (adverse selection and moral hazard) opportunistic behaviour was manageable. PCON-3R indicated that it was **not manageable**, purely because "the consultant's contract with the client is ruled by the number of employees not by their experience". PC-3R emphasised that, saying "the consultancy firm should not employ fresh graduates just to complete the number of the team", but that the contract did not preclude it. This left the client in a very weak position as, according to the IRGTPL document, it had no recourse:

"No Bid shall be excluded on technical grounds as long as it complies with the terms and specifications and conforms to the provisions of the Law and these regulations." (IRGTPL document, article 30, p. 18).

There was no question that the experience of the consultant employees mattered. PC-2P, for example, highlighted the importance of "searching for the right experienced consultant, even if it took a longer period, which is better than taking any one from the market who might not have the technical experience on this project, which might cause project delay".

Thus, it can be observed that the agent won the bid by employing the right number of consultants, but with the wrong qualification, increasing its profitability due to the low costs of these employees. Furthermore, the client had no clear intervention to rectify the situation prior to the project execution stage, as there was no shortfall in the agent's profile according to the IRGTPL. It goes without saying, of course, that this situation was entirely avoidable. The contract should have stipulated the necessity of qualifications and experience and this should have been rated during the bidding/evaluation process. However, this does not detract from the fact that opportunism took place and had an effect.

Thus, the existence of this AP can be established. However, while the researcher was conducting qualitative research, it was felt both useful and feasible to explore with the interviewees the importance of this AP as a cause of the identified project failure. There is a significant element of subjectivity here. However, in order to try to assist with interpretation a 'star' rating was adopted. The interviewees were asked to rate the importance from one to four. The table below shows the interviewee responses.

Table 22: Interviewees' rating for AP1.

Agency problem	Interviewee	Pre-intervention rating	Post-intervention rating
AP1 *'Adverse selection'* Agent misrepresented the qualification of his employees to win the tendering process.	PC-1R	****	****
	PC-1P	***	***
	PCON-1R	****	****

As indicated above, PC-1R rated the severity of this AP with the top score (****) saying "the lack of the consultant experience is a major cause of the project failure". PCON-1R agreed, saying "I score four stars for the severity of this cause of delay".

From the responses above, the researcher came to the conclusion that there was evidence to suggest that the importance of this AP, as a cause of the project failure, was the highest. Indeed, the impact of this AP was observed in the next one.

- *Agency Problem 2*

The **major issue** in this relationship during the project execution (post-contractual) stage was the quality and speed of the consultant's performance. This was mainly in relation to the consultant's wrong and/or late approvals of the contractor's work. That **information asymmetry** contributed to the perpetuation of this can be illustrated via interviewee testimony on how eventually the situation changed – the consultant's actions are finally being monitored and assessed. For example, PC-1P said:

"At the moment, the consultant approved some designs which I found to be not valid for the benefit of the project; and by reviewing these designs, I believe we will save around SR500,000".

During the interview with PC-1P, the consultant arrived at the interview location and the researcher observed:

PC-1P clarified the wrong approvals by the consultant to those designs. The consultant accepted the responsibility and agreed to act on rectifying the situation (Observation 1).

For a long time, however, moral hazard was facilitated by client ignorance and inaction. PC-1P commented on his impressions having started working for the client on this project: "After four years [since project commencement], I was surprised that there was no one from the consultant side who was monitoring the design of one bridge". Another wrong decision the consultant made, which "the contractor suffered from and caused severe delay in his progress" (PC-1R), was approving the wrong amount of work that was completed by the contractor. PC-1R "noticed that the contractor completed SR200 millions worth of work and was only paid SR120 millions". Furthermore, PCON-1P said "the consultant stopped me from carrying out the work on the train track (total length of 1.5 km) as he heard informally of making a new train station near the airport. This was left for over one year with no further approval. Eventually, that train station near the airport was found that it was not part of the HHR project. Instead, it will be built as part of the new airport project". Similarly, PC-3P commented that "some of the project delays occurred because of the consultant's late approvals and delay in solving technical issues".

These performance problems, while serious, were not all necessarily the consequence of opportunism. However, **this research** uncovered evidence that, at least in part, they were. First, there is the issue above that the senior managers within the consultant knew that many of their employees were insufficiently qualified and experienced for the tasks they were being given. Second, there was also a perverse incentive (from the client's perspective) for the consultant. PC-2R commented on this, saying "as long as the work gets delayed, it is for the benefit of the consultant". PC-2P concurred, "as far as the consultant is concerned, I do not think he is much affected by the project delay. The longest the project last, the consultant will get paid for that period". PCO-1R explained further: "The consultant makes money by allocating site engineers and site supervisors, not by finishing the project on time. They do not mind if they have to attend a meeting for the whole month, even if there was no outcome".

The impact of this AP can be seen to be of high importance as it caused severe project delay. PC-1R highlighted the influence of the consultant's opportunistic behaviour on the project delay: "The consultant's performance caused a major project delay". PCON-1R agreed, commenting that "at this stage, the consultant is responsible for major part of the delay". The reason behind the consultant's opportunism was argued to be because "at the moment, the consultant does not have liabilities" (PC-2R). However, the IRGTPL document stipulated:

> "In supervision contracts, if a consultant delays provision of a supervision team or defaults in execution of his obligations, he shall be subject to a penalty to be determined in the contract, provided that the total penalty does not exceed 10% of the total value of the contract" (IRGTPL document, article 79, p. 44).

However, **it seemed** that the consultant was not penalised for the poor performance when it was finally recognised because the contractual document between the client and the consultant was not properly set up to create the necessary incentives. PC-1R said that "the consultant should be accountable on reviewing the design document". PC-1P agreed, saying that "the consultant should be accountable as well in delays in design approvals", adding that "in the consultant contract, he should be allocated a period of time to finish the work, otherwise, he should pay the cost of the supervision". Yet at that stage of the project execution, the client was left with no ability to penalise the consultant for the performance shortfall. In this case, the impact of the consultant's opportunistic behaviour was said to have "dissolved" in between national culture and project features causes of failure (PECO-1R) – that is, their opportunism was explained away by some by other factors.

However, while there was limited scope for imposing penalties, the client did, as mentioned, eventually intervene in terms of monitoring the consultant. PCON-1P commented that "the client got involved and monitored the consultant in those situations that caused delay to keep the work going". The **client's monitoring** to the consultant did make a change to the outcome of this AP, albeit late in the project duration. PC-1P commented: "Now, we started asking questions to the consultant and they started to respond and make actions as they feel that they are monitored by the client". However, PC-2R admitted that "monitoring on its own is not enough to eliminate and change the impact of this problem in project failure", although as Table 23 shows, the level of importance of AP2 before and after the principal's intervention is different – intervention has had an effect.

Table 23: Interviewees' rating for AP2.

Agency problem	Interviewee	Pre-intervention rating	Post-intervention rating
AP 2 *'Moral hazard'* Late and wrong supervision approvals by the project consultant.	PC-1R	****	**
	PC-1P	****	*
	PCON-1R	****	**

PC-1R, while rating for this AP, said "I see the level of importance of this problem to score four stars. We could reduce the problem's impact by 50%". Adding when asked if it was possible to eradicate the impact, he commented that "if the consultant gets the accountability of such failure as the contractors do, this was not going to be the case". That is, its behaviour would have changed more extensively. Similarly, PC-1P gave the rate of four stars and confirmed that "to dissolve this issue, the consultant should be penalised for such behaviour", which of course it wasn't. It is apparent, therefore, that this AP had the highest level of importance on the project failure and could not be totally eliminated without embedding a penalty in the consultant's contract.

Therefore, there is evidence that this relationship has serious APs that had a serious impact on the project's performance. The same can be said for APs found in the next relationship to be examined.

7.3.2 Relationship 2 (R2): Client (principal) – Contractor 1 (agent)

Contractor 1 was executing the construction work of the train track for the full distance of the project (P1P1). In this relationship, there were four APs, which were considered

as major issues that contributed to the project failure. The first problem was concerned with adverse selection opportunism (pre-contractual), and the other three were moral hazard opportunism (post-contractual).

- *Agency Problem 3*

This **AP** occurred during the contractors' bidding process and the awarding of the contract by the client. PCON-1R commented that a contractor "might have the need to take a certain project for the sake of occupying his workers or to apply for additional work visas (to import cheaper manpower from overseas) for his organisation, more than the need to deliver a project and this is what may cause serious failure". If that was the case in this project, then one method contractors can use to achieve their organisational goals is by misrepresenting the project estimations in order to win the project.

The **information asymmetry** between the two actors in this relationship started when "the contractor provided wrong figures and underestimated the project costs at the bidding stage" (PCO-1R). For example, PECO-1P highlighted that "the contractor for Package 1 of this project (P1P1) estimated the land reclamation costs [at] less than 20% of what the other contractors estimated for Package 2 (P1P2) for the amount of work", adding that "this is an obvious variation between the three contractors in this project. And I am surprised that it was not spotted by the bid examination committee". Moreover, **PC-1P provided his view** that "the contractor exploited the client in winning the contract" – that is, that the contractor's under-estimation of the project cost and resources was a deliberate act of opportunistic behaviour in the cause of winning the project contract.

This AP had a **noticeable impact** on the project failure by increasing the delivery period and the project cost. This is because the contract was awarded to the lowest bidder with wrong project estimations. This bidder also, it turned out, had "some faulty machinery

and not enough resources" (PC-2P). The opportunism also potentially deprived (unless the second bidder was playing a similar game) the client from selecting the best contractor for this part of the project. PCO-1R explained further: "The client signed the bidder for 100, then the contractor manages to increase the job cost into 200 but they were signed by the client because he was with the lowest figure (100), and the second bidder was (120)". PCO-1R also claimed that during the bidding phase "there were many loopholes in the contractual document in which the contractor abused". For example, PC-2R commented: "Unlike before, the contracts these days do not embed a clause to check the contractor's resources and materials".

Another example can be seen in the GTPL document, which states:

"No bid may be excluded on grounds of its low prices unless it is less by 35% (thirty five percent) or more than the government authority's estimations and prevailing prices. The bid examination committee may recommend that the bid is not to be excluded after negotiating with the bidder, conducting the financial and technical analysis and becoming convinced of the bidder's ability to execute the contract". (GTPL document, article 22, p. 13).

In addition, the IRGTPL document included:

"If it appears that the bidder is qualified and experienced and the prices submitted by him, albeit low, cover the cost of the execution, a recommendation to award the bid to him shall be made" (IRGTPL document, article 37, p. 22).

PC-1R admitted that "the contracting and bidding system in Saudi needs to be revised". He thought that "any contractor who provides estimated prices that lower than 10% should be investigated", adding "the current percentage of 35% causes a greater possibility of project failure". Indeed, PECO-1R went so far as to comment: "With the current bidding system, it is difficult to assess the contractor capability for executing the project". **This shows** that it was not possible for the client to intervene and **change** the outcome of this AP under the rules of the current law. Thus, the level of importance did not change throughout the execution of the project as shown in Table 24 below.

Table 24: Interviewees' rating for AP3.

Agency problem	Interviewee	Pre-intervention rating	Post-intervention rating
AP 3 *'Adverse selection'* Contractor 1 underestimated and misrepresented the project cost.	PC-1R	****	****
	PC-1P	***	***
	PECO-1R	****	****
	PCO-1R	****	****

In terms of the impact of the contractor's underestimation and misrepresentation of the project cost, PC-1R, PECO-1R and PCO-1R agreed in giving this AP a "four star" impact. PC-1P scored it as "three stars" as he thought "other causes of failure partially dissolved the impact of this problem". From the interviewees' responses, the average rating led the researcher to suggest four stars for the level of importance of this AP due to its impact on the post-contractual phase of the project – where it resulted in other opportunistic behaviours in the execution stage, which will be explained in the next APs in this relationship.

- *Agency Problem 4*

This is one of the APs that emerged as a result of the pre-contractual underestimation of the project cost by the contractor. Following the project initiation, the contractor aimed to reduce the project cost, which resulted in moral hazard opportunism. The issue in this AP was the redundancies made by the contractor to some of its staff and that of its subcontractors, in order to take full control of the project and to increase profitability.

PECO-1R **commented: "**This contractor is formed by an alliance between three subcontractors, and a Project Management Office (PMO) to facilitate them". PCO-1R explained that "the PMO office consisted of thirty-five engineers who have been sacked one after the other and the top management of the contractor took full control of the PMO". PC-1R confirmed that "the client was not aware of the changes in the contractor's PMO, which caused major delays to the project as a result of very poor facilitation and wrong decisions".

This information asymmetry between the contractor and the client resulted in the contractor making **opportunistic decisions**. For example, PECO-1R explained: "The contractor's top management reduced the work scope from one of the subcontractors who was experienced in building bridges, and passed it over to the other sub-contractor (a sister company of the top management) who was not specialised in delivering that job". The contractor's justification for this move was provided by PCON-1R: "In some contracts, we could not increase the agreement budgets after the national increase in the labour fees. Therefore, we had to withdraw the task from some subcontractors and we hand it in to other organisations for execution instead".

This explanation, however, appears unconvincing and this AP resulted in severe delays to some of the project tasks and activities. For example, the researcher has observed

two similar tasks on-site, performed by two different sub-contractors. The first observation was as follows:

Severe delay in the construction process of a railway bridge section by non-specialised sub-contractor. Scheduled to be completed within six months. After nine months from the activity start date, the bridge piles have not been implanted yet. Therefore, a three month delay already and expectations of another six months required for construction (15 months in total) even if it starts at the observation date, which does not seem to be the case as the machineries onsite are broken and there is lack of manpower. There was 150% time-delay in this activity (best case scenario) – see Picture 1 (Observation 2).

Picture 1: Failed execution of a railway bridge by non-specialised subcontractor.

Then the researcher observed:

Clear good progress by another sub-contractor who is specialised in building bridges. The task is expected to be delivered ahead of schedule – see Picture 2 below (Observation 3).

Picture 2: Successful execution of a railway bridge by a specialised contractor.

It is apparent from the two observations above, that the contractor made decisions that caused failure to the project in order to reduce the costs of certain tasks. Since the main motive of the contractor was to reduce the losses by reducing the costs, **PCO-1R argued** that even after the opportunism was discovered "it was difficult to intervene and take clear measurements against the contractor. We cannot take part of the work away and give it to someone else, and we cannot throw him out of the job either. The contractual situation is not very strong for the client". PCO-1R added: "The only way I think to manage this problem and keep the work alive was by providing incentives to the contractor for the early completion, and the main motivator for a contractor is money"; but PC-1R admitted that "financial incentives are not existing in this project". For example, it is suggested here that the contractor was not suffering from delays in terms of its relationship with sub-contractors. PECO-1P explained that "the contractor negotiates the price with the subcontractor, [which doesn't change] even if the task delivery will take longer period".

Thus, the lack of financial incentive was seen as a major factor of the delay in this AP, which led the contractor to find an unethical way of reducing the project costs. This was said to have had a major impact on the project in terms of delays. Consequently, most interviewees indicated that this AP had a high level of importance – as shown in Table 25 below.

Table 25: Interviewees' rating for AP4.

Agency problem	Interviewee	Pre-intervention rating	Post-intervention rating
AP 4 *'Moral hazard'* Contractor 1 took over the project management after liquidation of qualified staff.	PC-1R	****	****
	PC-1P	****	****
	PECO-1R	****	****
	PCO-1R	***	***

In summary, therefore, PCO-1R scored the AP with "three stars" and said "the client could have provided financial incentives to push the contractor to work", but didn't so the score stayed at "three stars" after client intervention. Other interviewees such as PC-1R, PC-1P and PECO-1R totally criticised the contractor's behaviour and scored "four stars" for this AP, again with no reduction in the scoring after client intervention. So, as the majority of the interviewees scored, the researcher suggested four stars for this AP – a significant contributor to project failure. Furthermore, as seen below, decreasing the contractor's manpower resulted in other APs at a later stage of the project.

- *Agency Problem 5*

The fifth AP again concerned the contractor's manpower, or lack of it. PECO-1R argued that "the **main cause** of delay in P1P1 stage of the project was the shortage in the contractor's manpower". The issue arose due to a combination of two factors. First,

immigration law. PECO-1R explained: "At this time of the project, the Home Office officially prohibited illegal workers and other legal ones to work for anybody other than their guarantor". Second, the profile of the contractor's manpower. PECO-1P reported that "90% of the contractor's human resources are outsources" (PECO-1P). The result was, according to PC-1P, that "a large proportion of the contractor's outsourced labour was found to be illegal and unqualified to execute the project". PECO-1P believed that this situation was completely unacceptable: "A big contractor should have the skilled labour to execute the project and outsource additional manpower if he needed to; but, this percentage tells that the contractor had a problem and I would say it was a disaster".

The start of the **information asymmetry** was from the contractor side. PC-1R mentioned that "the client was not aware or informed by the contractor of any illegal or unqualified manpower". Despite the fact that "the contract between the client and the contractor is to employ legal workforce according to the government regulation" (PECO-1P), this consultant representative agreed that client was correct in saying that "the contractor did not inform the client of any illegal workforce". Interestingly, PECO-1P also said that "neither the client nor the consultant will act as a policing unit over the contractor for such a matter".

There is then evidence that the **contractor exploited** this situation by employing a largely illegal workforce which was unqualified to execute the project, but which, of course, incurred reduced costs. PECO-1R commented: "Some of the contractor's workforce do not have the capability to execute the specification of the project design; we have been in this problem for six months and it is causing major delay at this stage". PCO-1R agreed: "The contractor showed that he has the financial ability in his alliance but he does not have the manpower and staff who are skilled and qualified for this project".

It is apparent that **the outcome** of this moral hazard opportunism by the contractor, in order to reduce the project cost, made a considerable contribution to the project failure. After the Home Office prohibited the use of illegal workforce, the manpower problem became catastrophic. PCON-1P confirmed this commenting that "I used to have 600 manpower in this site, which dropped to 90 at the moment and that is a major cause of the delay". Similarly, PCON-1R admitted that "we did not have ready skilled labour", although he also claimed that "we have co-ordinators who are skilled to supervise unskilled labour and they move from one site to another to transfer their skills to labour in different locations".

According to PECO-1R, in order **to manage** the outcome of this problem the client intervened. He commented: "The client tried to support the contractor on the shortage of manpower, [which occurred] as a result of the new government legislation, by talking to the relevant [government] department". This intervention was said to have been successful. PECO-1R added: "Due to the importance of this project, an exemption from this legislation was issued to the contractors in this project". Despite this exemption, "it did not change the situation and the contractor still have the shortage in his labour" (PECO-1R).

Since there was no co-operation from the contractor, when PC-1P was asked if financial incentives would encourage the contractor to deliver, he responded: "Absolutely, for the contractor, the most important factor in trying to motivate him I would say is money". PC-1R agreed, saying that "giving incentives will encourage the contractor to finish early, save money and take the bonus". Furthermore, PCO-1R said that "you have to keep him motivated to complete the project and the main motivator for contractors is money".

However, PC-1R, PCON-1R and PECO-1R agreed that financial incentives do not exist in this project in terms of good performance and early project completion, which was described by PCO-1R when he said "this is very bad, it is important to implement the financial motivation". Contradicting this agreement, one interviewee argued that "the contract has penalty clauses in case of delay" (PC-1R). The IRGTPL document states that:

> "If the contractor delays completion and delivery of work on the specified date
> for delivery, he shall be subject to a delay penalty calculated on the basis of
> the average daily cost of the project by the value of the contract by its period
> in accordance with the following:
>
> a) A penalty for the first part of the delay period at the rate of one quarter of the
>   average daily cost for each day of delay until it mounts to fifteen days or 10% of
>   the contract term, whichever is longer.
> b) A penalty for the second part of the delay period at the rate of half the average
>   daily cost for each day of delay until the two parts amount to thirty days or 15%
>   of the contract term, whichever is longer.
> c) A penalty for the third part of the delay period at the rate of the full average daily
>   cost for each day of the delay following the longest of the two periods provided
>   for in paragraph (b) of this article.
>
> The sum of the penalties imposed may not exceed 10% of the contract value"
> (IRGTPL document, article 84, p.46).

Further exploration yielded a key factor that explained why the three former interviewees took the view they did that there were no financial incentives. PC-2R thought that "the penalty clauses in some cases could destroy and kill the contractor", adding that "when

you put penalty clauses of those rates on a project already lost SR100 millions, this finishes the contractor". In some tasks, PC-1P mentioned that "the penalties reached to the maximum and the client required the contractor to increase the resources to complete the task". PCON-1R admitted that "to deliver the project tasks in this period, we have to increase the manpower and the number of shifts of work to deliver". However, after the extensive penalties that were imposed on the contractor, PECO-1P believes that "the contractor is focusing to reduce the damage from the hefty penalties, instead of working hard to deliver the tasks". So, **despite** the client's attempts to intervene, the contractor's behaviour did not change. The contract penalties here were largely unenforceable.

There was widespread agreement, as suggested above, that financial incentives would have worked, i.e., changed the situation and minimised the delay, if they had been enforceable. PCON-1R described this as "excellent", and "it would have absolutely given a huge motivation to the contractor to produce and facilitate the work in a better rate". So, similarly to the previous AP, it is becoming apparent that the contractor's opportunism could have been altered if there was an enforceable financial incentive – however there was not.

As can be seen below (Table 26), therefore, there is agreement amongst the relevant interviewees that this AP was a significant factor in the project failure and that it remained so after client intervention.

Table 26: Interviewees' rating for AP5.

Agency problem	Interviewee	Pre-intervention rating	Post-intervention rating
AP 5 *'Moral hazard'* Contractor 1 employed illegal workforce to work for the project.	PC-1R	****	****
	PC-1P	****	****
	PECO-1R	****	****
	PCO-1R	****	****

PECO-1R commented on the frustration with the situation, AP saying: "We have been in this problem for six months". All interviewees considered this AP to have a high level of importance to the project failure – with the top score of "four stars". This AP's level of importance remained the same throughout the project execution because of the lack of meaningful client intervention and the continuing effect of the initial project cost underestimation, as can be also seen in the next AP.

- *Agency Problem 6*

The enduring impact of the pre-contractual underestimation of the project cost by the contractor can be observed on the post-contractual selection of the project designer (following the redundancies to some subcontractors – described above in AP4). The issue in this AP was as described by PC-1P: "This part of the project (P1P1) is a design and build package and the contractor here has a designer who is not capable to design such a project". PC-1P commented: "Accepting this designer at the first place should not have been agreed by the client".

In the view of the researcher, the process of the approving the designer by the client involved a clear **information asymmetry**. According to one interviewee: "This contractor has done construction project designs but never worked in railway project before. I think

the contractor did not provide right and complete information to the client about this designer's capability and ability to build this project" (PECO-1P). PECO-1R added: "Giving the railway design to be done by a designer who does not even have a railway line in his home country is a disaster for the project".

The contractor **used** this information asymmetry to reduce the project cost and employ a cheaper designer, despite the designer having no experience in this type of project. PCO-1P commented: "This designer is not capable to design this project but at this stage we cannot say anything - he is employed by the contractor and there is a contract in place".

The outcome of the contractor's opportunistic behaviour was seen by PECO-1P as "a major factor of project delay". PC-1R agreed that "the lack of experience by the designer is a major cause of the project failure". For example, it was reported by a client interviewee that "in the process of designing the track route, the designer decided to go through a newly developed residential area that had new infrastructure (this is a big job, it is like cutting an artery and stitching it back again), when they could have found an easier route that was agreed on a later stage" (PC-1P). PCO-1R thought that "the contractor's poor decision in employing this designer caused as much as about 30% of the project delay".

It is important to be clear here where the opportunism lay. PCO-1R made this clear by stating that "because the designer won the contract with no experience, he had no option but to learn on the back of this project". Therefore, the designer's own performance was perceived as "honest incompetence" not opportunism (Hendry, 2002). PC-1R agreed that "the designer is incompetent for this job", but no worse. The opportunism was on the part of the contractor that sought to save money by employing it.

The client's **formal intervention** in response to the consequent delays by the designer was directed to the contractor as there was no direct contract between the client and the designer. PECO-1P commented on this: "When the contractor is late on his deadline, then we issue penalties according to the contractual document". However, as the designer was incompetent, there was plenty of client-designer contact. According to PC-1R: "We always have meetings with the designer, we agree on a solution but the designer still fails to deliver". In some cases, however, PC-1R claimed that "to speed up the process of modifying some of the designs, the client did approve some of the technical decisions on changing the designs". In some occasions, as shown in Table 27 below, **this resulted** in a marginal change in the outcome of this AP (PC-1R, PC-1P, PECO-1R and PCO-1R).

Table 27: Interviewees' rating for AP6.

Agency problem	Interviewee	Pre-intervention rating	Post-intervention rating
AP 6 *'Moral hazard'* Contractor 1 misrepresented the designer capability to design this project.	PC-1R	***	*
	PC-1P	***	**
	PECO-1R	***	**
	PCO-1R	***	**

As mentioned earlier, PCO-1R thought that "the contractor's poor decision in employing this designer caused about 30% of the project delay". The other interviewees gave "three stars" to indicate the level of importance of this AP. This dropped to "two stars" following the client's intervention (PC-1P, PECO-1R and PCO-1R). PC-1R emphasised that "this problem caused some delay at the first stages of the project before the client was able

to intervene". Therefore, the researcher suggested that the client's intervention reduced the level of importance of this AP – similar to the case of the next AP.

7.3.3 Relationship 4 (R4): Client (principal) – Contractor 3 (agent)

- *Agency Problem 7*

Contractor 3 was executing the train station in the city of Makkah. Within this relationship, one AP emerged, which was pre-contractual (adverse selection) opportunism. **The problem** was that some of the sub-contractors who were employed by the main contractor had illegal field workers, although many such represented skilled labour. PC-3R stated: "The contract between the client and the contractor made it clear that the contractor should employ legal workforce". Despite this, PECO-3R commented: "To be honest, the illegal workforce issue has always been there for a long time within all local contractors", adding "it was never appropriately policed by the relevant department in the government", although, PC-3P asserted that "the client always expects the contractor to adhere to all contractual terms".

The **information asymmetry** between the two actors occurred when the contractor did not inform the client of the involvement of illegal workforce in the project (against the client's expectations and the contractual terms). According to PCO-3R, "because the government do not have a check list on the human and other resources before the project starts, contractors do **exploit** this point to reduce their costs by appointing cheaper sub-contractors with illegal workforce". It is apparent that the contractor took the risk by breaching the contract, assuming that the government was not in favour to impose some control to this issue. However, it would have been known by the contractor that this opportunistic behaviour may cause project failure if the government was to take corrective action.

When the contractor was asked about this issue, PCON-3R commented: "This behaviour is not unusual between all contractors here; and it was not causing any failure to the projects we were involved in". This was, however, as was always a possibility that there would be problems and sure enough there became such when the "Home Office officially prohibited illegal workers and other legal ones to work for anybody other than their guarantor" (PECO-1R). PECO-3P reported that "following the Home Office decision against illegal workforce, the number of its workers was reduced by more than 50%". PCON-3P commented: "According to the project plan, I have to have 5200 workers at this time, but now **it dropped** to 1000-1200 workers". PECO-3P added:

"If we talk about the skilled workers who operate the machineries and cranes, we had an unbelievable threat as most of them did not have visas to work in Saudi (most of them were employed by sub-contractors). On-site, I have 24 cranes which required skilled workers to operate and most of them disappeared at the time when the Home Office released the news. I mean, the unskilled labour can be recovered but, on the other hand, the machineries operators are the heart of the project and their absence will stop the project".

Moreover, the researcher carried out a site observation at this period of the project and noted that:

Due to the immigration rule that prohibited illegal workers; it was observed that due to short of labour (skilled and non-skilled), the cranes and heavy machineries on-site had no operators and the progress on the project field was very restricted – see Picture 3 (Observation 4).

Picture 3: Very limited movement on the project site as a result of the home office rule.

When the client was asked about their views on this problem, PC-3P commented: "If there was delay in delivering the project, there will be financial penalty and it is stated clearly in the contract. But, it was a matter of co-operating with the contractor and providing our support to avoid severe delays". Again, the contractual penalties were apparently unenforceable. **PC-3R added:** "After talking with the Home Office about the importance of this project, we managed to obtain an exemption from this rule to all the contractors in this project". **This was** followed by a good reaction from the contractor side. PECO-3P said: "The shortage of labour was there just for a month or two, but now it has been rectified and the contractor is bringing more skilled labour (even better than before) to recover and it was a success". Thus, with the client's support and the contractor's co-operation and capability, the impact of this AP was eliminated as shown in the Table 28, as follows.

Table 28: Interviewees' rating for AP7.

Agency problem	Interviewee	Pre-intervention rating	Post-intervention rating
AP 7 *'Adverse selection'* Contractor 3 employed illegal workforce.	PC-3R	***	-
	PC-3P	***	-
	PECO-3R	***	-
	PCO-3R	**	-

The researcher suggested that the average score of the importance of this AP was three stars, which was given by PC-3R, PC-3P and PECO-3R. PCO-1R rated the importance of this AP by giving "two stars" as he thought "this contractor is capable to deal with such situation. They are executing multiple projects for the government beside this project". As mentioned, however, the existence of a growing relationship that was cooperative and collaborative enhanced the way in which this AP was handled (Bhattacharya et al., 1998). As a result, this AP was eradicated and the client both essentially forgave the contractor and escaped the consequences of its own poor management. This moves the discussion to the last AP that was found in this mega-project.

7.3.4   Relationship 5 (R5): Consultant (principal) – Contractor 1 (agent)

- *Agency Problem 8*

There was not a contractual document between the two actors in this relationship. But, interestingly, moral hazard opportunism was identified, which was performed by the contractor. **The issue** here was the fact that the contractor was not submitting the right information to enable the project consultant to conduct the required supervision and monitoring of the contractor's work. **The asymmetry** of information between the two actors was mainly related to the project and activities plan. The contractor failed on numerous occasions to submit the project execution plan to the consultant. PECO-1P commented: "The contractor had a baseline plan, but it did not move to the next level as

in what PRIMIVERA software allows you to do, such as taking the plan into more detailed breakdown of the structure and activities", adding "the contractor does not have this document as we have requested a detailed plan and we never received it".

Further investigation was conducted by the researcher by asking the contractor's staff if they could show an example of the project plan document that demonstrates a detailed breakdown structure of some of the project activities. All responses were evasive and no documents were provided in any case. The researcher observation was that:

> Contractor 1 was not responsive to the researcher's request to show one of their planning documents, whereas the other two contractors had the initiative to offer and show the researcher their detailed planning documents as well as the software used in the project planning. Consequently, the researcher assumed that Contractor 1 may did not want to share this information or otherwise the document may never have existed as PECO-1P stated (Observation 5).

Therefore, **opportunistically**, the contractor pretended that the project progress was according to their plans, when it was actually not. PECO-1P took a clear view on the matter: "The contractor is trying to hide most of the information in order to escape from the consultant's monitoring and supervision. This was because the contractor was not confident that he can follow the actual project plan". This was said to be purely a result of the fact that "the contractor had an obvious shortage of resources (labour and machineries), as well as the existing unqualified workers" (PC-1P). The result of this opportunistic behaviour by the contractor, as PCO-1R commented, was to "exacerbate the difficulty of monitoring the contractor's progress". He added: "Without a planning document you cannot measure the progress; and things that cannot be measured,

cannot be managed". PC-1P confirmed that "this issue caused a major delay to the project mainly in Area 2 of P1P1 part of the project – throughout the first two years of the project execution".

Managing the delay caused by this AP required intensive work from the consultant. PECO-1R said: "Our role as a consultant was to assess, inspect and approve the contractor work, although as a result of the contractor's weak performance, we were deeply involved within the contractor's work, to [the point] where we knew more about the project than the contractor itself. I mean, in order to complete this part of the project, we had no option but to lead the contractor".

The researcher was present in a meeting between the consultant and the contractor at the client's office and observed that:

> A detailed WBS and activity planning document prepared by the consultant
> was handed in to Contractor 1 to execute activities in Area 2 of P1P1. As a
> result of the contractor's failure to produce the required information itself, the
> decision was made by the client, and agreed by the contractor, to use the
> new plan document for that part of the project (Observation 6).

Therefore, the researcher asked the interviewees to rate the importance from one to four. Table 29 shows the interviewee responses.

Table 29: Interviewees' rating for AP8.

Agency problem	Interviewee	Pre-intervention rating	Post-intervention rating
AP 8 *'Moral hazard'* Contractor 1 failed to submit project plans to the consultant.	PECO-1R	****	**
	PECO-1P	****	**
	PCO-1R	***	**
	PC-1R	****	**

PECO-1R, PECO-1P and PC-1R gave this AP the highest level of importance, "four stars". However, the **client's intervention** did result in a change in the outcome and the consultant was able to measure the contractor's progress. As a result, all interviewees suggested that the level of importance of this AP dropped to "two stars". But, the impact of the other APs discussed earlier (which were related to Contractor 1) still caused failure to achieve the plan document provided by the consultant to the contractor.

7.4 Summary of impact of agency issues

In line with the first stated objective of this research, the researcher identified specific APs which occurred within the HHR mega-project. This included multiple APs which have been identified from the HHR Project, as discussed above. These APs occurred at different stages of the project (see Figure 22 below).
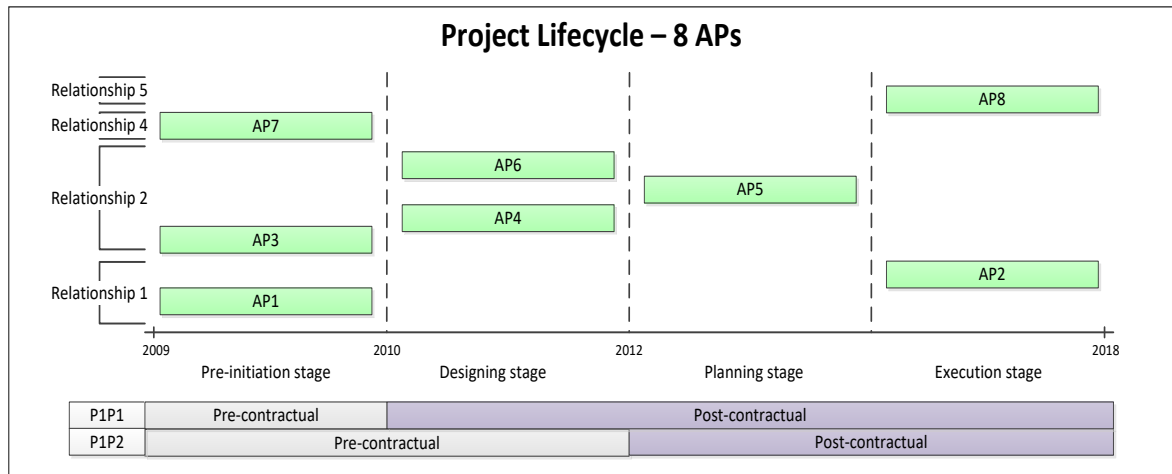
Figure 22: Project lifecycle – 8 APs.

The figure above can illustrate the project stages and the APs that occurred on each stage. As discussed earlier in this chapter, there were three adverse selection (pre-contractual) opportunistic behaviours which occurred in the project pre-initiation stage. The other five APs were moral hazard (post-contractual) opportunistic behaviours – two occurred at the designing stage, one at the project planning stage and two at the execution stage.

These eight APs, from four different relationships, were found to have a prominent role in the project failure, as described by a number of interviews. However, the severity of the impact of different APs did vary. Some APs had a high level of importance and caused a considerable project delay and failure; for example, and as described by PC-1R (in AP two), that "the consultant's performance caused major part of the project delay". Other APs had a lower level of importance toward the project failure, either because of the nature of the AP or because the principal (client) did manage, once the opportunism became apparent, to successfully or partially successfully intervene in an attempt to reduce the AP's impact.

This variation in the outcomes of the client interventions was, according to PECO-1R, a result of the existence of other factors causing the HHR project failure – these factors were said to have interrupted the principal's intervention. Some of these factors were found to be cultural factors. Further reflections on the AP within this project, therefore, are deferred, while the researcher proceeds to present those cultural factors, in the next chapter.

CHAPTER 8

FINDINGS – CULTURAL FACTORS

8.1 Brief re-cap of cultural theory

National culture has been widely defined. A recent definition was provided by Hofstede (2011), which stated that "culture is the collective programming of the mind that distinguishes the members of one group or category of people from others" (p. 3). Previously, it had been argued by Ferraro (1990) and Hofstede et al. (2010) that national culture is transmitted through the learning process in an environment from one person to another and not by the genetic process.

There were six national culture dimensions used in Hofstede et al.'s (2010) study – PD, UA, individualism/collectivism, masculinity/femininity, long-term vs. short-term orientation, and indulgence vs. restraint. Bjerke and Al-Meer (1993) used the first four dimensions to identify the nature of the Saudi culture. This classification broadly matched Hofstede's (1984) classifications. Saudi society was found to possess high PD, high UA and be collectivist and feminine in nature. Hofstede (1984) also considered the last two dimensions, describing Saudi national culture as short-term oriented and indulgent in nature.

8.2 Cultural causes of project failure

Hofstede's national culture dimensions and his classification of Saudi national culture were used in this research into the causes of failure on the HHR project. While the main theory accessed by the researcher was AT, he also wished to identify the extent (if any) of the impact of the Saudi national culture on mega-project performance. The reason why this was felt necessary was because the make-up of the project team is actually

largely homogenous – largely made up of Saudi organisations and management personnel. As such, the thesis assesses whether certain common cultural tendencies within Saudi Arabia provide an alternative or complementary explanation for the mega-project failure seen in the case study.

The findings, as presented here, show that there did seem to be something of a national cultural element to the project failure, with one dimension in particular, high PD, appearing to have played a significant role in the failure. Two other cultural dimensions, short-term orientation and indulgence, were also seen to have caused aspects of project failure, although to a lesser extent. UA, femininity and collectivism were found to have no relation to the identified causes of failure in this case of mega-project, which make them redundant dimensions in this context.

A minimum of two causes of project failure were related to each of the three national culture dimensions discussed in this chapter. Some of the dimensions include a larger number of causes of project failure, which occurred at different stages of the project. Therefore, as demonstrated in the following model (Figure 23), the cultural causes of failure are going to be presented in this chapter according to how they affected the different project stages, starting with the pre-initiation stage and finishing with the project execution stage. Where a cultural dimension does not affect a project stage it is omitted. The movement of the discussion to the next project stage will be indicated by a **bold** highlighted word.

| Pre-initiation stage | Designing stage | Planning stage | Execution stage |

Figure 23: Project lifecycle – cultural data presentation order.

To start the presentation of the evidence in this chapter, Table 30 summarises all the causes of project failure that are related to the cultural dimensions. It provides an indication of the impact of each cause that led the project to fail, as follows:

Table 30: Summary of cultural causes of project failure and their impact.

Cultural causes (CC)	National Culture dimension	Causes of project failure	Impact on project failure (****)
CC1	High PD (HPD)	The client's (project owner) underestimation of the project period and imposing that wrong decision in the contract.	***
CC2		Private lands were retained from the project's land acquisition committee, which required changing the design of the train route.	**
CC3		The first project director's decision not to use project management tools and techniques in monitoring and controlling the project from the client's side.	****
CC4		In Contractor 1, the project director has very limited authority in making financial decisions. All financial decisions have to come from the top management (away from the project site).	****
CC5	Short time orientation	Limited and short-term vision by the client to the project's milestones.	***
CC6		Contractor 1's short-term mentality in earning profit from this project and his failure in building a company that is capable to deliver this and future projects.	***
CC7	Indulgence	Low percentage of skilled manpower within the project team, including (engineers, consultants and PMO.	****
CC8		Lack of co-operation from utility companies in monitoring their infrastructure, and attempting to take advantage of the project.	**

Analysis of these cultural causes of project failure will follow. Starting with the first project stage (pre-initiation), the first cultural dimension (high PD) presents important causes of project failure as follows.

8.2.1 High power distance

The Saudi society was categorised as a high PD society, according to Hofstede's study (1984). In this research project, there were a number of issues attributed to this cultural dimension, which were found to be important causes of project failure. The **first** issue was related to the determination of the project duration by the project owner. The relationship to high PD was that those who had the power and authority in the client organisation were able to and decided to impose a particular period on the project contract without referring to a professional body. It proved to be a highly inaccurate imposition, as can be seen below.

PCON-3R clarified that "generally in Saudi projects and mega-projects, to be more specific, there is a serious issue that is related to underestimating the actual time required to complete a project". After investigating this issue, the researcher was told by PCON-2R that "our problem is the fast decision made by the project owners to initiate the projects – which you mainly find in government projects". The fast, authoritative decision to initiate a project by the owner was observed to have a direct negative impact, which resulted in project failure purely because "the project period has not been validated effectively and it was not realistic" (PCON-2P).

PCON-1R confirmed this and also argued that the national culture in Saudi meant that such hasty and ill-informed decisions were hard for experts lower down the power structure to challenge: "The client asks you to finish the project in two years when the project cannot be delivered in less than three years. We cannot challenge the client's decision on the project duration. All we can say is ok, we bid for the project according to the specified period and then deal with that during the execution stage". PCON-1R

added: "Let me tell you what is going on in another example. If this cup of water needs five minutes to be boiled; the client comes and says I want it in two minutes. Nobody will say it cannot be done, everyone say ok we will do it and then you end up with project delay".

The second critical factor in this dimension was related to the project **designing** stage. In P1P1, at the designing stage of the route of the train track, there were specific areas and private lands that were not possible to penetrate within the route design. PC-1R explained further: "The designer produced a design for the route of the train track. That design passed through private land, which was found to be un-practical for the project execution period". As a result, PC-1P admitted that "one of the major causes of delay in the project designing stage was the need to re-design the route of the train after the client found that the initial design penetrated certain areas. The designer had to redesign the route and this issue caused a large proportion of the delay in the designing stage".

There was evidence that this was due to the land belonging to people within Saudi society whose wishes overruled the powers of the land jurisdiction committee, powers that had been sufficient to effect the requisition of other land on the route. The researcher observed that:

> These areas are of high level of importance and some of them were privately owned. The owners have the authority and power to retain their property from the project's land acquisition committee (Observation 7).

PCO-1R commented on this saying: "the contractor of P1P1 should have studied the feasibility of the route design before the execution stage. This is to avoid the need of

changing that design of the track route because of practical difficulties on the acquisition process of private lands".

After the project designing stage, and during the project **execution**, there were two further causes in this cultural dimension that contributed to project failure. The first one was related to the client's internal project management; the second was from the contractor side.

The first issue was related to the project's director from the SRO and his management style. The director was making decisions paternalistically, which were not showing a positive impact on project monitoring and control from the client's side. For example, PCO-1R commented: "For instance, the first director we had in this project from SRO was not interested in any project management structure, responsibility matrix, incentive system or liquidated damage clauses", adding "if the project manager has a proposal, it was difficult for the project manager to approach the director in an effective manner". Furthermore, PCO-3R said: "For the last two and a half years, it was insisted internally that we should do risk assessment workshop. So all those uncertainty issues go on paper, which will allow the client to be aware of all the project risks, mitigate them and manage them more efficiently. This was not done until this moment".

Why such risk assessment started to be undertaken was due to the appointment of a new director from the SRO – who was aware of the importance of changing the project management style from the previous one. PC-1R confirmed that "now with the new director and for the first time, we are having a risk assessment workshop". The opportunity was provided to the researcher to attend this workshop.

The researcher observed that:

> During the workshop, the Client's management reviewed the project
> schedule in that workshop, identified the risk areas, identified the risk
> register, looked for mitigation actions and then assigned someone to own
> each risk. It was observed that this was done for the first time in this project
> as the workshop involved creating a new system of monitoring the risks.
> (Observation 8).

However, although the risk assessment practice is different with the new director, it only
changed because he made that decision – the project team is still expected to follow his
orders. Nevertheless, PCO-1R commented that the improvement in the risk assessment
taking place occurred as "the new project director has been requesting more frequent
meetings related to different areas within the project. This is actually helping him to make
decisions for the benefit of the project". PCON-3P agreed by saying: "Now, we are having
regular visits – every two weeks – from the project mainly to check on the project
progress". However, the resistance to bottom-up advice remains – it was just fortuitous
that the current director was well-informed. Despite the different personalities and
management styles of different project directors, this resistance illustrates the remaining
nature of the Saudi culture (high PD) and its potential impact on the project.

The second cause of project failure during the execution stage within this dimension was
related to Contractor 1's (P1P1) internal management. The issue was that the
contractor's financial decision-maker (top management) had a lack of awareness of all
the technical issues and decisions, yet the high PD in the organisation meant that only
he could make decisions. PC-1P commented on the consequences of this: "You find the
financial decision-maker is different from the technical decision-maker. So, to transfer
the technical picture to the financial decision maker or the financial situation to the

technical decision maker takes time. In other occasions, misunderstandings occur and this causes the work to stop completely".

For example, PECO-1P said: "I found that one of the subcontractors was not working for a period of time and, after investigating this issue, I found that they stopped working because they did not get paid by the main contractor. Then I went to the main contractor and tried to find out the reason of this late progress payment; after many attempts, I found that the amount they owed the subcontractor (SR 250,000 on this occasion) is more than what the contractor's project director can authorise. And the reason for the late payment was because of the late approval from the contractor's top management".

From this example, it is apparent that decision-making authority on the contractor side resided with a small number of people in the top management. The contractor's project director had no authority to approve more than SR 200,000 for any financial order, which is a very low amount for such a mega-project. PCON-1P admitted the limited authority within Contractor 1's project team by saying: "The financial authority within the project site is very limited. All decisions have to come from the top management in the head office". PECO-1R emphasised that "no one from the contractor side has the financial authority to facilitate the work. It is all in the hands of the chief finance officer in the company's headquarters, who is not an engineer". Consequently, PECO-1P said: "You find the contractor team on one island and the top management on another". PECO-1R added: "The site team members from the contractor side are living the reality of the project, whereas the top management are totally not aware of this reality. There is a huge gap especially in the decision-making process". This was perceived as a considerable cause of the project failure (PC-1P).

Thus, four causes were identified within this dimension. These causes were in line with the characteristics of high PD society, as Saudi Arabia culture was classified by Hofstede (1984) and Bjerke and Al-Meer (1993). However, while the researcher was conducting qualitative research, it was felt both useful and feasible to explore with the interviewees the importance of these causes of failure. There is a significant element of subjectivity here. However, in order to try to assist with interpretation, a 'star' rating was adopted. Throughout the five dimensions, the relevant interviewees were asked to rate the importance from one to four. Table 31 below shows the interviewee responses.

Table 31: Interviewees' rating for high power distance dimension causes of failure.

Code	Causes of project failure	Interviewee	Interviewees' rating on impact on project failure	Researcher suggestion of impact on project failure
CC1	The client's (project owner) underestimation of the project period and imposing that wrong decision in the contract.	PCON-3R	***	***
		PCON-2R	***	
		PCON-2P	***	
		PCON-1R	***	
CC2	Private lands were retained from the project's land acquisition committee, which required changing the design of the train route.	PC-1R	**	**
		PC-1P	**	
CC3	The first project director's decision not to use project management tools and techniques in monitoring and controlling the project from the client's side.	PC-1R	***	****
		PC-2P	****	
		PCO-1R	****	
		PCO-3R	****	
CC4	In Contractor 1, the project director has very limited authority in making financial decisions. All financial decisions have to come from the top management (away from the project site).	PC-1R	****	****
		PC-1P	****	
		PECO-1R	****	
		PECO-1P	****	

As the previous table indicates, different causes of failure had different levels of importance in relation to the project failure, but overall the issue of high PD within Saudi society was reported to have been significant in the overall project failure.

8.2.2 Short-term orientation

Scoring 36 in Hofstede's index, Saudi Arabia was viewed as a short-term oriented society (Hofstede et al., 2010). One of the key features of a short-term oriented society is that individuals consider what happened in the past, or what is occurring in the present, as the most important events – less attention is given for future events (Hofstede, 2001).

One of the causes of project failure (which was observed in the **planning** stage of the project) is directly related to what was described by Hofstede. PCO-2R described the client thus: "They do not want to look at issues too far ahead", adding: "For example, we are building a train right now; but if I say how about the ticketing system in four years when the project is finished, there is no reaction or serious thinking about such issues from the client side. I mean, this is serious and it needs to be addressed from now; but the horizon of thinking is rather short-term, to be honest".

Another example regarding the perspective of the client was given by PCO-1R: "I was discussing a long-term issue which was essential. One day, I received a response to postpone it as the minister is visiting the site which was claimed to be more important right now. It is important but still you cannot lose sight of the long-term issues as well".

Another factor that led to project failure concerned Contractor 1's short-term mentality. PECO-1P explained: "As the contractor won this size of project, I think he should build himself up for the purpose of this project and future projects through signing manpower,

training them, and keeping them for future projects. But the mentality of the contractor's top management is very short-term. They are not concerned about the project construction as much as they are concerned about their profit". PECO-1P described the contractor's mentality as "banking mentality". For example, PECO-1R said: "With the construction of a bridge, they think to hire cheaper manpower to reduce the cost and increase the profit. In construction, you cannot think only from this angle". PC-1P added: "Even if the contractor hired cheaper labour, we do not compromise on the quality of the final product. If the quality is below the specifications, we will ask the contractor to re-do the work". Thus, the contractor's "banking mentality" may not have done any good to the project or to the contractor himself. Various interviewees envisaged the Contractor 1's short-term mentality to be of high importance to the project failure as indicated in the following table.

Table 32: Interviewees' rating for short-term orientation dimension causes of failure.

Code	Causes of project failure	Interviewee	Interviewees' rating on impact on project failure	Researcher suggestion of impact on project failure
CC5	Limited and short-term vision by the client to the project's milestones.	PCO-1R	***	***
		PCO-2R	***	
		PECO-2R	***	
		PECO-3R	***	
CC6	Contractor 1's short term mentality in earning profit from this project and his failure in building a company that is capable to deliver this and future projects.	PC-1R	***	***
		PC-1P	***	
		PECO-1R	***	
		PECO-1P	***	

8.2.3 Indulgence

According to Hofstede et al. (2010), Saudi Arabia was categorised as an indulgent society, after scoring 52 in this dimension's index. Indulgent societies do not consider maintaining order within the society as of a high importance. In this project, this dimension was found to explain two factors of project failure.

One factor was at the project planning stage, and the second was during the project execution. During the project **planning** stage by the client, it appears that the client optimism affected the process of the project team selection. PCO-1R illustrated the issue of the project team in percentages; "Let's say the project host is 100%; right now, engineers/consultants and PMO are forming less than 5%, whereas in Europe they form a minimum of 10%. Let's talk about Saudi for an instance, in the Kingdom Tower (private project) which is being built in Jeddah. The PMO – made up of multinational organisations (not Saudi organisations) – on its own forms 5%".

From the previous example and this case of HHR mega-project, it can be observed that the low percentage of engineer/consultants and PMO (less than 5%) is mainly associated with three Saudi contractors who are largely made up of Saudi organisations and Saudi management personnel. The failure to form a team with the right percentage of expertise, and the failure to maintain the correct order of the common organisational formation structure within the project management field, is arguably, therefore, attributed to cultural factors.

PCO-3R illustrated the influence of this in another example by saying "the cost of the train station in the city of Makkah and the Kingdom Tower are almost the same. In the station in this project (Saudi contractor), there is one activity scheduler who is working as part-time, whereas in the Kingdom Tower (multinational organisation) they probably

have around ten schedulers working full time for the project". This indicated that the human resource infrastructure in this project is weak and given little attention by Saudi contractors (a result of the national culture). This can be used, partially, to explain the project failure.

Moving on to the **execution** stage, the second factor of project failure was the lack of co-operation from utility companies, following the provision of the wrong as built maps to the contractor. PC-1R commented that "utilities such as electricity and water companies wanted to take advantage of this project. They tried to renew part of their infrastructure on the back of this project". PC-2P agreed, saying "[it was] the same with Aramco, they tried to take advantage of this project". This issue, that the utility companies tried to take advantage of this project, was a result of the lack of their infrastructure records, which was tolerated by the project client as it was perceived as a cultural matter. PC-1R confirmed that by saying: "most of the utility companies in Saudi do not have as built maps for their infrastructure work". PECO-1P added: "even if they have the as built maps, they are mainly for the major lines and still not really accurate". Consequently, because this issue is conceived as cultural, the client was not in a position to enforce accountability on these utility companies after they refused to take accountability for the short and wrong information they had provided. The negotiation process between the client and utility companies to settle some risks related to this issue caused project delay at certain stages of the project execution.

Table 33 evaluates the importance of the two causes of failure within this dimension – based on the interviewees' responses.

Table 33: Interviewees' rating for indulgence dimension causes of failure.

Code	Causes of project failure	Interviewee	Interviewees' rating on impact on project failure	Researcher suggestion of impact on project failure
CC7	Low percentage of skilled manpower within the project team, including (engineers, consultants and PMO).	PC-1P	****	****
		PC-3P	***	
		PCO-1R	****	
		PCO-3R	****	
CC8	Lack of co-operation from utility companies in monitoring their infrastructure, and attempting to take advantage of the project.	PC-1R	**	**
		PC-2P	**	
		PCON-1R	**	
		PCON-1P	**	

8.3   Summary on cultural factors impact

Using the CT as a subsidiary theory in this research did help in understanding the causes of project failure for the HHR project case. Across three cultural dimensions, 8 causes of failure were identified and related to different cultural dimensions. These cultural causes occurred at different stages of the project. Figure 24 demonstrates this.
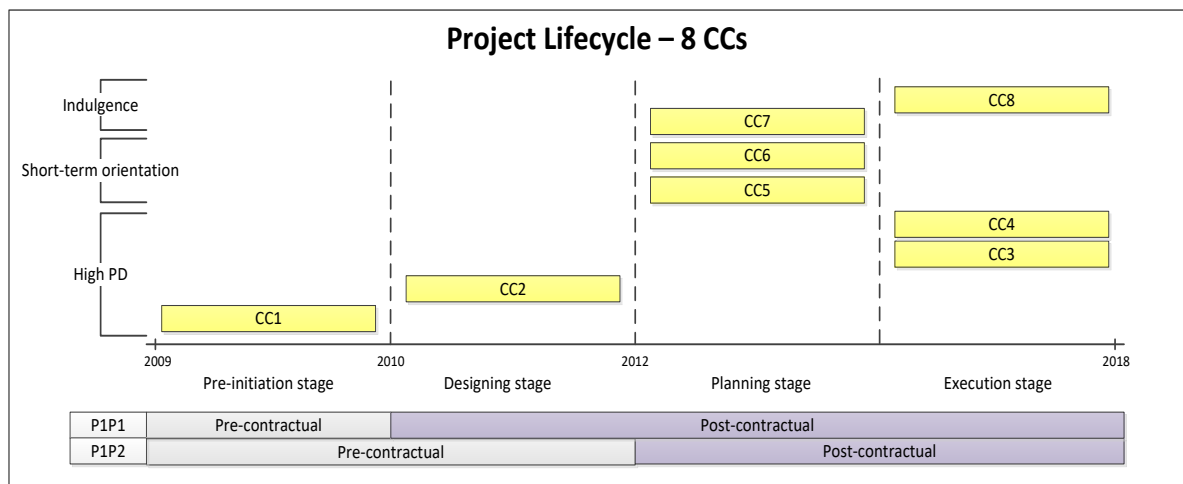
Figure 24: Project lifecycle – 8 CCs of project failure.

The level of importance of different cultural factors that caused the project to fail varied. However, all the aforementioned cultural causes of project failure were described to have less impact on the project failure in comparison with the eight APs discussed in Chapter 7. This indicates that the cultural causes of failure had lower importance and effects on the project failure. However, there were other causes of project failure which were considered to have more level of importance. These causes are related to project management factors, and will be discussed in the next chapter.

CHAPTER 9

FINDINGS – PROJECT MANAGEMENT FACTORS

9.1   Brief re-cap of project management perspectives

It is equally important to understand project management in theoretical terms as it is to understand it in practical terms (Söderlund, 2004). This is in order to route the findings into theoretical explanations. Therefore, Chapter 2 of this thesis looked at theoretical aspects of project management, where (effective) project management was defined by the APM (2016) as a process of applying certain methods, processes, skills and knowledge with previous experience in order to achieve project goals and objectives. Söderlund (2013) looked at a project as a temporary endeavour, undertaken to deliver a unique product or service. In order to deliver this product or service, Lundin and Söderholm (1995) explained that POs tend to create TOs, which contain personnel that are specialised in project management.

Lundin and Söderholm (1995) identified four concepts that differentiate temporary multi organization (TMO) from POs. These concepts are temporality, task, team and transition. In this case study, the four concepts were utilised as major categories to identify causes of project failure. In this chapter, findings are presented that are related to this project management perspective, which should help in providing further explanations for the failure of the HHR project.

9.2   Project management causes of project failure

In addition to the eight cultural causes and eight APs identified in Chapter 8 and Chapter 7 retrospectively, there were other causes of delay attributed to the concepts that differentiate TMO from POs. Three of the concepts were relevant here (temporality, task and team) and included at least one cause of failure that had a direct influence on the

HHR project failure. The forth concept (transition) was found to have no relation to the identified HHR project failure in this mega-project, which makes it a redundant concept within the analysis in this chapter. Figure 25 presents the order of the project stages that will be used in the presentation.

Figure 25: Project lifecycle – project management data presentation order.

Similar to the format adopted in the last chapter, where any TMO concept generates more than one cause of project failure, these causes will be presented starting from the pre-initiation stage, design stage, planning and finally the execution stage. The beginning of each stage will be indicated by a **bold** highlighted word. Table 34 summarises the ten causes of failure that are related to the project management perspective. It also provides an indication of the severity of their impact.

Table 34: Summary of project management causes of project failure and their impact.

Project management causes (PMC)	Project management concept	Causes of project failure	Impact on project failure (****)
PMC1	**Temporality**	Lack of time at the project pre-initiation stage to look for a capable, qualified and experienced project consultant.	****
PMC2		Lack of time to assess the project risks and uncertainties by the client and the contractor in order to achieve more effective project planning.	****
PMC3		Short time for the project stakeholders to integrate and establish shared knowledge about the project.	****

		Client fails to apply effective and efficient project requirements in planning for the project.	***
PMC4	**Task**		
PMC5		P1P1 Preliminary design failure by the contractor's unexperienced designer.	****
PMC6		Poor project planning by the project client.	****
PMC7		Poor project planning by Contractor 1 (P1P1).	****
PMC8	**Team**	Failure in the selection process of the project management team (PMT) (Consultants and PMO).	***
PMC9		Failure in selecting Contractor 1, who had failed to employ an experienced project designer.	****
PMC10		Lack of skilled labour in Contractor 1.	***

Following this table, this chapter will review the project management concept's factor of failure, starting with the first concept, which is temporality.

9.2.1 Temporality

The concept of temporality was interpreted by Söderlund (2013) as a limited or short length of time in which to achieve organisational goals, and to achieve the required integration and participation between the project actors (Lanzara, 1983). This concept helped in explaining some of the causes of the project failure of the HHR project in this research.

The project temporality (and misjudgements regarding it) was conceived as a major reason of the project failure by PECO-1P: "The initial project period which was decided by the client was very short in comparison with the work that had to be delivered". PCON-1P confirmed that "the client required the project to be delivered in the allocated deadline. This was not possible, that deadline is unrealistic; I mean, even the project scheduling software program did not provide us with that deadline".

So, it was agreed that the project had too short a length of time to achieve the project's deliverables. However, if there was positive side-effect of this misjudgement it was in increasing the focus of the project team toward the project execution. As PC-1R commented: "The short project period urged the project team to the execution of the project and try to recover the delay that had occurred already". Nevertheless, overall the misjudgement regarding time was a negative, promoting causes of failure at the pre-initiation, planning and execution stages, as follows.

The first cause of failure was the lack of time – at the project **pre-initiation** stage – to look for a project consultant who was sufficiently capable, qualified and experienced to deliver such a unique project in the region. PC-3R admitted this, saying: "From the start of the project, we did not have the time to look for the experienced consultant" – at the time there was not an experienced consultant in the whole region, as this project is the first of its kind in the Middle East. PC-3R added: "We were so committed to operate the train by certain date as the client requested; and we had to catch up with the work we missed already". So, project temporality can be perceived as a reason behind choosing the inexperienced consultant for the project. PC-1R highlighted the importance of the consultant's role on the project failure: "From my experience in previous projects, if the project consultant is right for the project, then the project will progress well; but, if the consultant is weak, then the project will suffer from delay and maybe failure". Therefore, we can see both the cause and the impact of choosing the right consultant, which was found to be a major cause of project failure.

The second cause of failure was at the project **planning stage**. The project temporality prevented the contractor from assessing the project uncertainties to bring about more effective risk management and project planning. PC-1P commented: "[Many things were

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not clear at the beginning of the project. And the urgency of delivering the project by a certain date … distracted the contractor from delivering the project on-time". PCON-1P admitted that "the planning stage for this project was around six months only", adding "this is not enough time to plan for a normal mega-project".

Related, PECO-1R described the contract for this project as "abnormal". This was because of the sheer number of changes to the project scope. As PECO-1R said, "We had major changes to the scope of this project in which the contractor was not the party to blame. The change of scope was because of a number of reasons such as: difficulties in obtaining approvals from government committees, difficulties on performing land acquisition, redesigning the route of the train, and increasing the project scope". The project temporality simply did not provide enough time to clear all the project uncertainties, and that led to multiple changes in the project scope which eventually contributed to the project failure.

The last cause of failure from the project temporality perspective was during the **execution stage**. There was not enough time for the project stakeholders to integrate and establish shared knowledge about the project. The level of integration between the major stakeholders (client, consultant and contractors) and minor stakeholders (i.e. civil defence, utility companies and government authority) was not established effectively, which affected the level of co-operation between them in order to deliver a successful project. PC-2P said: "The lack of co-operation between stakeholders caused project delay; for example, when we request certain approvals, we get late responses from government authorities and civil defence, and sometimes we do not receive any response" PC2P believed that "this was due to the authorities' lack of knowledge on the importance of this project".

PCON-1P confirmed the impact of project temporality on establishing the utilities infrastructure knowledge by the contractor, saying "most of the as built maps we received from utility companies were incomplete or include wrong information. As the contractor, we had to figure out a solution for this problem ourselves in a very tight and unrealistic period of time". He added: "The utility companies were not collaborating with us and that increased the difficulties".

Thus, the major stakeholders did not have the time at the execution stage but had to deal with the situation and proceed with little or no co-operation from utility companies who actually "wanted to take advantage of this project" (PC-1R), for example, by replacing their worn-out infrastructure cables (PECO-1P). Such an issue can be seen, to a degree, to be a 'knock-on' result of the pre-execution stages' causes of failure within the temporality concept – the client signing a project consultant with more adequate experience and qualification could have resulted in reducing the level of the existing project uncertainties, and, therefore, such causes of failures could have been dealt with more efficiently at the execution stage.

Furthermore, while the researcher was conducting qualitative research, it was felt both useful and feasible to explore with the interviewees the importance of these causes of failure. There is a significant element of subjectivity here. However, in order to try to assist with interpretation a 'star' rating was adopted. Throughout the four concepts, the relevant interviewees were asked to rate the importance from one to four. The table below shows the interviewee responses.

Table 35: Interviewees' rating for causes of failure related to the concept of temporality.

Code	Causes of project failure	Interviewee	Interviewees' rating on impact on project failure	Researcher suggestion of impact on project failure
PMC1	Lack of time at the project pre-initiation stage to look for a capable, qualified and experienced project consultant.	PC-1R	****	****
		PC-3R	****	
PMC2	Lack of time to assess the project risks and uncertainties by the client and the contractor in order to achieve more effective project planning.	PC-1P	***	****
		PCON-1P	****	
		PECO-1R	****	
PMC3	Short time for the project stakeholders to integrate and establish shared knowledge about the project.	PC-1R	****	****
		PC-2P	****	
		PCON-1P	***	

Within this concept of temporality, the three factors of delay discussed above were found to be of a high level of importance for the project failure. Therefore, dealing with the project temporality was a major issue in the HHR project management practice. Other causes of failure of a similar importance were found in the next concept (task).

9.2.2 Task

By their very nature, tasks in mega-projects are complex and unique (Davies and Mackenzie, 2014). This complexity can be managerial and/or technical (Gidado, 1996). In relation to this, PCO-3R agreed that planning is a major project management element to mitigate project complexity. However, in the case of the HHR project, right back at the **pre-initiation stage**, PCON-1R clarified that "taking the time to prepare an effective planning was missing", adding that "this occurs mainly in government projects". PC-3R confirmed this: "Unfortunately, we are not applying the project requirements in planning

effectively and efficiently". PCO-1R commented: "The failure to plan for the project is one of the main factors that led the HHR to fail". Therefore, the client's failure to plan effectively for this unique project – in order to reduce the level of project complexity and to deal with the issue of task interdependencies – before the initiation stage is a major cause of failure in this project.

The next cause of project failure was related to the **designing stage** for the route of the train track (P1P1 design), which was given to the contractor as a design and build package. PC-1R highlighted a key reason for the project failure during the designing stage, by saying: "The delay in our project is a result of the preliminary design failure by the contractor. I mean it was obvious that there was not a comprehensive vision for the project by the contractor, which resulted in poor design". PC-2R added: "After the contractor produced the first project design, many issues appeared which were not taken into account. These issues caused major part of the project delay during the execution stage of the project and this is a large proportion of the delay".

The evidence collected suggests that the contractor underestimated the level of complexity that was associated with executing the first project design (including the interdependencies of the tasks associated with that first design). As PC-1P commented: "As you heard me speaking in the meeting, many changes are taking place within the project because of that weak preliminary design and the poor vision in conducting that design by the contractor". This confirms that the contractor did not effectively evaluate the project complexity. Furthermore, during the meeting that was referred to by PC-1P, the researcher observed that:

> A discussion between the client and the consultant was taking place with
> regards to changing the route of the train track that was provided in the initial
> design by the contractor. Mainly because the design of the route was

penetrating a residential area and it was a challenging job to disconnect and reconnect the complex utilities' lines and pipes in that area. This was at the time when a new possible route was an easier option. To execute that was not reviewed by the contractor's designer (Observation 9).

Following this observation, it was apparent that the designer of P1P1 underestimated the project task complexity of executing that design as he did not consider any other possible option for the route during the initial designing process, and the failure of this initial design was one reason of the project failure.

After the designing stage, the project did not go through an effective task **planning stage**. PC-2P highlighted that "to avoid the project failure, the project planning has to be effectively completed, clear and realistic". PC-1P confirmed that the task of project planning was given less than the required attention, which affected the quality and the outcome of the project planning stage.

Further examples of the client's and the contractor's poor planning will be categorised under the relevant project planning areas, which arose from Söderlund (2013) and which were discussed in Chapter Two, they are:

- Task and content.
- Task and process.
- Social organisation and content.
- Social organisation and process.

Starting with the client's side, the poor project planning was observed mainly on the P1P1 part of the project in the following areas:

In terms of task and content, after the project initiation and the project-designing phase, the client realised that there was a need to increase the scope of the design. PC-1R commented that "at a later stage in the project, we realised the need to expand the width of the area surrounding the track in order to add additional service lanes which were initially forgotten because of the poor planning for the project". Another example was given by PECO-1P: "The client had to increase the project scope when the contractor was asked to build ducts across the track line for future utility companies' infrastructure (which was not agreed at the initial project scope) and redesign some of the road bridges".

These examples of the incomplete project planning led to producing incomplete contracts between the client and Contractor 1 (PC-3R). The failure in the task and content area had a direct influence on the *task and process* area. The failure in planning the required task of the project resulted in the failure of using project management methods effectively to plan for the process of executing certain tasks. PC-2R admitted that, saying "unfortunately, we are not applying the project management tools and techniques effectively and efficiently". PC-3R agreed: "We are not applying the project requirements in planning effectively".

This failure extended to the area of *social organisation and content.* The failure in this area can be observed when the client failed to prepare the organisational responsibility plan internally, and plan the communication channels with external stakeholders, which increased the uncertainty level of who is doing what within the project team. PCO-1R highlighted that "under the first project director from the SRO, there was no responsibility matrix within the project team which slowed down the project progress as a result of the high ambiguity of the project team roles". PECO-1P added: "It was not clear who was

responsible to establish certain contacts and follow up with government authorities to obtain certain approvals". Therefore, because the first SRO director did not pay enough attention to this area, the hold-ups in obtaining approvals and permits from different government authorities were important factors that caused project delay (PECO-1P).

Next, the failure of planning from the contractor's side will be discussed. Out of the three contractors in this project, the failure in planning for the project complex tasks was mainly observed within Contractor 1, who was working on P1P1. Starting with the *task and content* area, the main factor that caused the project to overrun the initial period was related to the contractor's failure to minimise the uncertainty level and to prepare an effective plan that could have reduced the task complexity and led to a successful execution of the project tasks. PCON-1P commented: "If the project risks were allocated and the utilities' as built maps were tested before planning for the project, then we can say that the project could be delivered within the allocated period; but this did not happen. We just started working and designing the route without testing the as built maps or even checking if they were accurate or not, and I think this was a major cause of the project failure".

PECO-1R elaborated on the complexity related to testing the as built maps that was provided by the utility companies by saying: "It was not possible because the track of the train run within the city's ring road, and the police did not permit this task while the ring road was operating for health and safety issues, and closing the ring road to execute this task was not possible". So, the failure to plan for the actual tasks had a direct effect on planning for the process of execution. This takes the discussion into the next area, *task and process*. PECO-1P comment on shortcomings here: "The contractor should be blamed as he failed to submit a program for the execution of certain activities".

The last area which was found to have a direct effect on the project failure was *organisation and content* planning. The failure to plan for the project tasks and activities – due to the project's uniqueness and the contractor's underestimation of the project complexity – had a major influence on organising and planning the human resources required for the project execution. As a result of the high uncertainty level in this project, PCON-1R complained about "the amount of obstacles which had no instant solution". PCON-1P explained that "our manpower work for few days and then we have an obstacle and the work stops, and they are getting paid for doing nothing at this time". Therefore, these obstacles led the contractor management to consider manpower redundancy as a solution for a certain period of the project, as PCON-1R said: "We thought, is it worth having all this workforce financially to the contractor when they were not working? The answer was no. So, we tried to find a moderate solution and keep all workers who can work for all hours. I mean, I can increase the manpower in this area to a thousand; but we do not know what other obstacles we will face soon, which might cause loses to the contractor".

Thus, the failure of project planning by the contractor resulted in this poor project performance, which led to project failure (PC-1R). Furthermore, the four causes of failure appear to have a major contribution to the failure of this project. Table 36 shows the interviewees' rates for the causes of failure level of importance.

Table 36: Interviewees' rating for causes of failure related to the concept of task.

Code	Causes of project failure	Interviewee	Interviewees' rating on impact on project failure	Researcher suggestion of impact on project failure
PMC4	Client fails to apply effective and efficient project requirements in planning for the project.	PC-3R	***	***
		PCON-1R	***	
PMC5	P1P1 Preliminary design failure by the contractor's unexperienced designer.	PC-1R	****	****
		PC-2R	***	
		PC-1P	****	
PMC6	Poor project planning by the project client.	PC-1P	****	****
		PC-2P	****	
		PECO-1P	****	
		PCO-1R	****	
PMC7	Poor project planning by Contractor 1 (P1P1).	PC-1R	****	****
		PCON-1P	***	
		PECO-1P	****	

In addition to the aforementioned issues in relation to project planning, the project team selection process raised other important causes of the project failure. This will be discussed in the next project management concept.

9.2.3   Team

There were two causes of project failure that were found within the project team selection during the project **pre-initiation** stage. Firstly, the process of selecting the PMT (project consultants and PMO). Secondly, the selection of Contractor 1. Both were connected to some of the failures in executing P1P1 part of the project.

In relation to the selection process of the PMT prior to the project initiation, PCO-1R mentioned (as was noted in the previous chapter in relation to 'indulgence') that in this

project, the project team including "engineers/consultants and PMO are forming less than 5% of the project team. Whereas in Europe, they form a minimum of 10%". This was purely a result of the client's refusal to spend the required financial budget in the selection process to achieve the (10%). PCO-1R commented: "From the beginning of the project, I said: the project is costing around fifty billion; if we take 10% of that to employ PMO, architect, supervision consultants and quality control, then we need to spend five billion on this. The response I got was: that is too much".

In addition to the client's refusal to spend five billion, all three positions – including site supervision consultant, drawing review consultant and PMO – were given to one company (Dar-Alhandasa). This caused PCO-2R to question that saying:

"Why has the Kingdom Tower (in the private sector) ended up with the project management company who built the Shard in London, which was formed by the project manager (Mace), together with the best surveying company (EC Harris), working on the project of a total cost of SR4.6 billion; and this project which costed almost ten times was given to Dar-Alhandasa, who had no experience in similar projects and never done real project management before. That type of decision is crucial and important".

This decision, however, (as a public project) was ruled by the GTPL that states "Priority shall be given to national manufactured goods, products and services and to those treated as such" (GTPL document, article 5, p. 9).

The impact of this type of decision was observed in the consultant's performance. For example, as the consultant did not have any previous experience in similar types of projects. PC-1R commented that "when conflict happens, the consultant hardly differentiated the approach that they had to adopt between two different types of a project

P1P1 (design, build and transfer), and P1P2 (build and transfer)", adding: "I mean in P1P2, where the design was produced by the owner, the liability of the design remains with the client not with the contractor; whereas in P1P1 the contractor is required to design and deliver the project according to the client's specification and all liabilities go back to the contractor. The consultant should have adopted a different approach in dealing with the liable party in facilitating the work which was not done". PCO-2R argued that this indicates the consultant's manifest failure in understanding different types of projects and how to handle them to avoid project failure – mainly because the contractor's lack of experience in project management.

The client's selection of Contractor 1, who had no previous experience in similar types of projects, was another issue which caused the project to fail. This was a result of the following: firstly, the contractor's selection of the wrong project designer – who was unqualified and had no experience in similar projects – was critical to the project. As PC-1P highlighted: "One of the problems of the design and build projects is that as a result of any failure during the designing stage, the whole project will fail".

Furthermore, as a result of the ineffective selection of the field workers, the failure of the contractor's performance extended to the **execution** stage. For example, PECO-1P complained about the number of skilled labourers the contractor employed on-site saying "if you have five fieldworkers onsite, you need to have one of them who is skilled and understands the work to be done. I mean, on average skilled workers should be 1/5 or 1/10 at worst case scenario; but 1/30 is a disaster". PC-1R confirmed that "the lack of skilled labour in P1P1 was a major cause of project failure". The lack of skilled labour resulted in failure to deliver the task within the right specifications or at the right time. Collectively, the three causes of failure in this concept were observed to have a considerable impact on the project failure (Table 37 indicates the interviewees' scores

for these causes); but, they were found to have a lower level of importance in contrast to the previous two concepts (temporality and task).

Table 37: Interviewees' rating for causes of failure related to the concept of team.

Code	Causes of project failure	Interviewee	Interviewees' rating on impact on project failure	Researcher suggestion of impact on project failure
PMC8	Failure in the selection process of the PMT (Consultants and PMO).	PC-1R	***	***
		PCO-1R	***	
		PCO-2R	**	
PMC9	Failure in selecting Contractor 1, who had failed to employ an experienced project designer.	PC-1P	****	****
		PC-2R	***	
		PECO-1P	****	
PMC10	Lack of skilled labour in Contractor 1.	PC-1R	***	***
		PECO-1P	***	

9.3 Summary on project management factors and their impact on project failure

In addition to the eight APs and the 8 cultural factors which led to the HHR mega-project failure, as identified in previous chapters, there were more causes related to the inherent features of project management, which occurred at different stages of the project (see Figure 26 below).
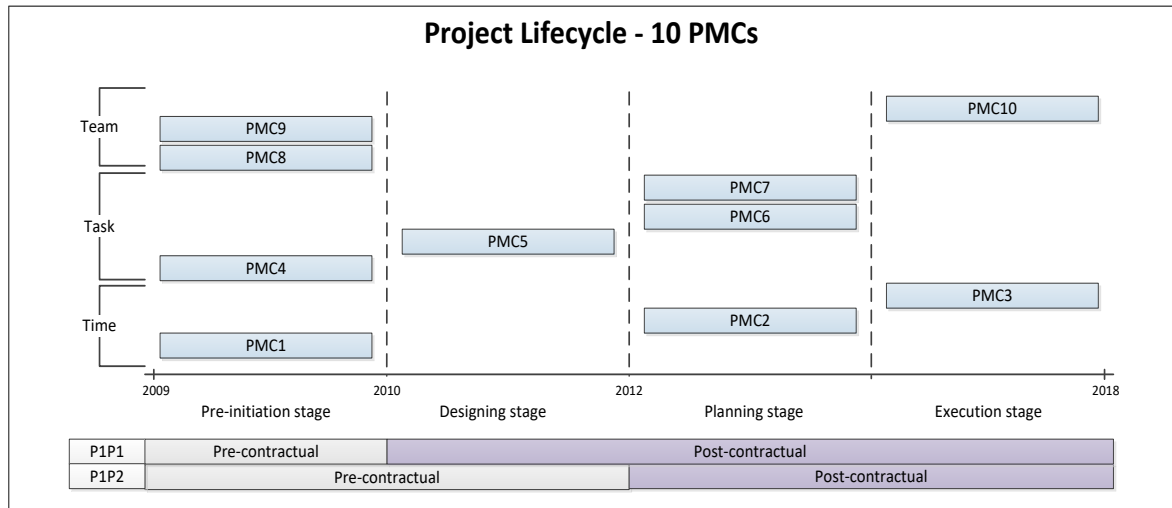
Figure 26: Project life cycle – 10 PMCs of failure.

Thus, across the three concepts (temporality, task, and team), 10 issues were found to be of high importance as causes of the HHR project failure. From the evidence above, the researcher can conclude that the importance of these ten causes which attributed to project management practices were found to be of higher influence toward the HHR mega-project failure than the cultural causes of failure. However, they were not as important as the eight APs, which were major causes of the HHR mega-project failure.

Having said this, PECO-1R emphasised an overlap between the three-fold (AT, CT and the '4Ts') causes of the HHR mega-project failure. This overlap will be discussed further in the following discussion chapter.

CHAPTER 10

DISCUSSION

10.1 Introduction

The previous three chapters have presented the findings, which included a range of factors that caused the HHR project to fail. This chapter aims to summarise the research framework, as well as discuss the links and overlaps discovered in the research between the three areas of literature used to explore the project failure – AT, CT and project management perspectives. This is achieved by presenting a model that was drawn by the researcher to illustrate this research.

To start with, by using this model, the researcher aims to discuss and summarise the literature review that was explored in this research. Following the same outline, the researcher then aims to discuss the importance of the findings from the three areas. Finally, the last section of this chapter presents a discussion of the overlap between these two aspects, and the overlap between the three areas.

10.2 Three perspectives of HHR project failure

In this thesis, the literature review has explored AT (primary theory), CT and PMT (subsidiary theories) in order to investigate their impact on mega-project failure in Saudi. The following model (Figure 27) is used to assist in explaining how the researcher has employed and managed the three areas of theory in reaching the findings of this study.
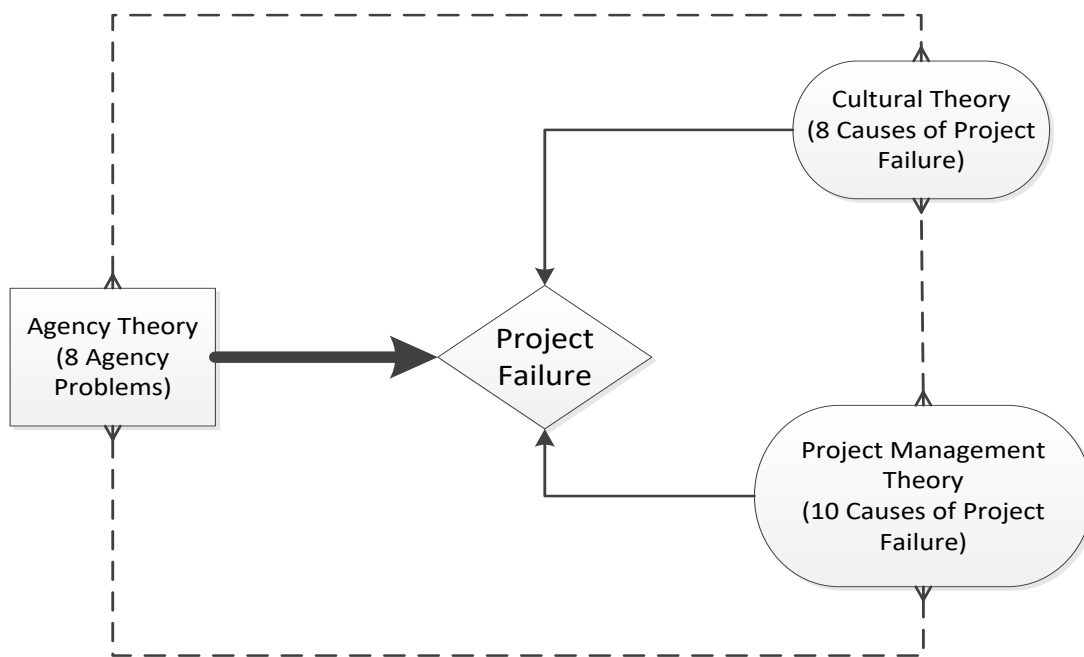
Figure 27: Three perspectives of HHR project failure.

In order to address the research question, AT (the first area) was considered as the primary theory of this research. This theory is concerned with the agent's opportunistic behaviours, and how to manage them (Mitnick, 2013; Steinle et al., 2014). The agent's opportunistic behaviour can occur mainly when the information asymmetry between the two actors (principal and agent) is high. Ceric (2014) suggested that part of the gap in AT literature as it is applied to projects concerns the issue of multiple principal-agent problems (from multiple principal-agent relationships within a project) and its impact on project failure. This highlights the importance of this research, which aims to fill the knowledge gap around AT and project failure by investigating a more complex set of relationships, as suggested by Ceric (2014). This includes the client, contractors, consultants and their project managers within the HHR project.

While it was felt that AT was an appropriate primary theory for the thesis, not least because of the numerous principal-agent relationships in the project, the researcher felt that the location of the case within Saudi Arabia should not be ignored, as previous studies have shown that certain aspects of Saudi national culture can inhibit the successful completion of projects (Hurn, 2007; Kardes et al., 2013). National CT, therefore, became a subsidiary theory. In order to explore the national cultural aspect of Saudi Arabia and how it can be distinguished from the Anglo-Saxon culture, Hofstede's (1984) six cultural dimensions were employed.

Furthermore, as part of the literature review, and in order to address the research question, as this research was conducted within a Saudi mega-project, it was also necessary to review the impact of project management factors on project failure. Therefore, PMT was the third and final area that was considered in the literature review (as shown in Figure 27). This area discussed the theory of TMO and the four concepts (temporality, task, team and transition) that differentiate it from POs (Lundin and Söderholm, 1995).

The findings of the research have revealed that all three of the theories and models discussed within the literature (and illustrated in Fig 15) played a role in the project failure. To a degree, these factors of project failure were also found to be interrelated in various ways to varying degrees. To state this in another way, the primary theory informing the research question, AT, was indeed seen to be an important factor in the project failure, justifying the decision to seek to expand the research that is based upon the theory in the project management literature. However, AT did not explain the whole of the project failure, there were other factors causing the failure as well. Furthermore, the different explanations of failure frequently overlapped. All this will be discussed next, as follows.

10.3 Summary of the findings

10.3.1 Agency theory and causes of failure

Table 38 shows the APs discovered to be causes of the HHR project failure.

Table 38: Eight APs description.

Relationship (R)	Agency problem (AP)	AP description
R1	**AP 1** 'Adverse selection'	The consultant misrepresented the qualification of his employees to win the tendering process.
R1	**AP 2** 'Moral hazard'	Late and wrong supervision approvals by the project consultant.
R2	**AP 3** 'Adverse selection'	Contractor 1 underestimated and misrepresented the project cost.
R2	**AP 4** 'Moral hazard'	Contractor 1 took over the project management after liquidation of qualified staff.
R2	**AP 5** 'Moral hazard'	Contractor 1 employed illegal workforce to work for the project.
R2	**AP 6** 'Moral hazard'	Contractor 1 misrepresented the designer capability to design this project.
R4	**AP 7** 'Adverse selection'	Contractor 3 employed illegal workforce.
R5	**AP 8** 'Moral hazard'	Contractor 1 failed to submit project plans to the consultant.

Toor and Ogunlana (2010) perceived the construction industry to be highly goal-conflicted, due to the large number of different stakeholders involved. Wu et al. (2010) speculated that APs may appear between every two parties within the same project (multiple APs). In this study, there were eight APs identified from the HHR project that contributed to the project failure (see Table 38). Three APs were difficult for the principal to detect at the critical time, which resulted in the principal's failure to intervene in those

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problems (AP1, AP3 and AP4). However, the principal eventually successfully intervened in the other five APs, by using several techniques such as establishing trust with the agent that led to a co-operative and collaborative relationship (Crosby et al., 1990; Coulter and Coulter, 2002), monitoring and a realignment of the contractual document (Steinle et al., 2014). The outcome of the intervention varied from one AP to another, which helped in identifying the main APs based on their impact after the client's intervention.

It was apparent that the main APs occurred between the client from one side and both the Consultant (R1) and Contractor 1 (R2) from the other side. In line with what Caers et al. (2006) suggested, there was a conflict of interest between the client and his agents in both relationships (R1 and R2). The client's main priority was the successful execution and delivery of the project within the allocated deadline. Whereas, firstly in R1, it was found that one of the consultant's interest was mainly to win the contract and increase the financial profitability (PC-3R). This caused the emergence of AP1 that also led to the occurrence of AP2, both of which were found to have high impact on the project failure. Secondly in R2, the contractor's main motivation and interest was the financial profit (PECO-1P). This conflict of interest between the client and the contractor resulted in a number of APs with high impact on the project failure; this included AP3, AP4 and AP5.

Thus, the consultant's and contractor's indifference towards the client's interest could be described as a selfish opportunistic behaviour, as defined by Lai et al. (2005). These opportunistic behaviours by the consultant and Contractor 1 had a major contribution to the project failure (as indicated in Figure 27). Moreover, there was evidence to suggest that these causes of project failure (APs) were substantial, with PECO-1R and PC-1R positing that APs were the major causes out of the overall identified causes of failure in the HHR mega-project.

10.3.2 Cultural theory and causes of failure

Table 39 outlines the national cultural causes of the HHR project.

Table 39: Eight cultural causes of failure.

code	National Culture dimension	Causes of project failure
CC1		The client's (project owner) underestimation of the project period and imposing that wrong decision in the contract.
CC2	High PD (HPD)	Private lands were retained from the project's land acquisition committee, which required changing the design of the train route.
CC3		The first project director's decision not to use project management tools and techniques in monitoring and controlling the project from the client's side.
CC4		In Contractor 1, the project director has very limited authority in making financial decisions. All financial decisions have to come from the top management (away from the project site).
CC5		Limited and short-term vision by the client to the project's milestones.
CC6	Short time orientation	Contractor 1's short-term mentality in earning profit from this project and his failure in building a company that is capable to deliver this and future projects.
CC7		Low percentage of skilled manpower within the project team, including (engineers, consultants and PMO).
CC8	Indulgence	Lack of co-operation from utility companies in monitoring their infrastructure, and attempting to take advantage of the project.

Throughout the analysis of the findings, the second group of causes of the HHR project failure was found to be cultural factors. Collectively, there were 8 cultural causes of failure found from this case study (see Table 39), all of which had different levels of importance. Three causes of failure, however, were found to have the highest level of importance. Furthermore, while this study utilized Hofstede's six cultural dimensions, the analysis identified variation in the importance of different dimensions. The most

prominent was PD, with the high PD of Saudi Arabian culture believed to be unhelpful to the quality of decision-making in key aspects of the project.

Hofstede (1984) and Bjerke and Al-Meer (1993) classified Saudi Arabia as high PD society. The analysis suggested that this had a negative impact on the HHR project. Four causes of failure were identified; two of them were given the highest score by the interviewees when they were asked to rate the causes of failure level of importance. The two causes were as follows: firstly, the client's project director's decision not to use project management tools and techniques in monitoring and controlling the project; secondly, Contractor 1's top management decision to restrict all financial decisions to one person – off the project site – who had no knowledge of the technical aspects of the project, which severely influenced the project execution stage. The client's project director was willing to listen to no counsel on the problems with these decisions for the project / believed his view to be impeccable and final.

Also worth noting is the indulgence dimension. Hofstede (2011) categorised Saudi as an indulgent society. Within this dimension, there was a third cultural cause of failure that scored the top level of importance, and that was the low percentage of skilled work force within the project team, including engineers, consultants and the PMO. This cause of failure as expressed by PCO-1R and, in line with the literature by Hofstede (2011), showed the low priority of maintaining order within the society.

Thus, there was evidence to suggest that these cultural causes of failure (CCs) were not as substantial as the APs toward the project failure, with PECO-1R and PC-1R positing that cultural factors were the least important out of the overall identified causes of failure in the HHR project.

10.3.3 Project management theory and causes of failure

Finally, Table 40 charts the project management-related causes of failure.

Table 40: Ten project management causes of failure.

Code	Project management concept	Causes of project failure
PMC1	**Temporality**	Lack of time at the project pre-initiation stage to look for a capable, qualified and experienced project consultant.
PMC2		Lack of time to assess the project risks and uncertainties by the client and the contractor in order to achieve more effective project planning.
PMC3		Short time for the project stakeholders to integrate and establish shared knowledge about the project.
PMC4	**Task**	Client fails to apply effective and efficient project requirements in planning for the project.
PMC5		P1P1 Preliminary design failure by the contractor's inexperienced designer.
PMC6		Poor project planning by the project client.
PMC7		Poor project planning by Contractor 1 (P1P1).
PMC8	**Team**	Failure in the selection process of the PMT (Consultants and PMO).
PMC9		Failure in selecting Contractor 1, who had failed to employ an experienced project designer.
PMC10		Lack of skilled labour in Contractor 1.

As Figure 27 demonstrated, the project management perspective yielded the final causes of failure that were found in the HHR project. While reviewing this literature, it was shown that Lundin and Söderholm (1995) identified four concepts that differentiated TMO from PO, and they are: project temporality, task, team and transition. These differentiating features of projects were used to explore the potential existence of project-related causes of HHR. In the event, 10 causes of failure were identified from the HHR project (see Table 40). Seven out of the 10 causes were given the top score for their

level of importance by the interviewees. The concept of task was the most prominent concept in this area, followed by the project temporality concept.

In line with arguments in the literature from Lundin and Söderholm (1995), Kardes et al. (2013) and Davies and Mackenzie (2014) the HHR project task involved a high level of complexity and uniqueness. This was because of the fact that it is the first railway mega-project of its kind in the Middle East (SRO-4, 2014), and because of the surrounding environment (the influence of private lands on the route design and the lack of information with regards to utilities' infrastructure) that was dealt with during the planning and execution stage. The high level of complexity and uniqueness exacerbated the difficulties of the planning stage for the project, as it was apparent from the findings that all four causes of failure related to this concept were associated with the complexity of project planning.

The second concept that was deemed to have an almost similar level of importance was project temporality. Within this concept, there were three causes of failure which scored the top level of importance. The first two causes of failure were related to the first dimension of temporality as identified by Bluedorn and Denhardt (1988), who emphasised the use of meaningful events and human activities as an indication of time. In line with this, the analysis indicated that there was a short period of time that was available prior to the start of the project, which contributed to the selection of the wrong consultant, and also during the execution stage, which led to the failure in reducing the uncertainty level in this project. The second dimension conceived temporality as a short length of time available to achieve the required integration and participation in between project actors (Lanzara, 1983; PMI, 2013), which explains the third cause of failure within this concept – that starting from the project initiation stage, there was not enough time to establish shared knowledge within the project team.

The last cause of failure (of a top level of importance) was related to the concept of team. Contrary to what was suggested by Pinto (2016) and Larson and Gray (2014) – that the selection of team members should be on the ground of competency – the main cause of project failure in this concept was related to an incompetent designer employed by Contractor 1.

Thus, this area involved seven causes that were classified as having the top level of importance. This means that project-related causes of failure were also an important aspect of the overall project failure, alongside agency and cultural factors. Indeed, according to PECO-1R, for example, all three areas of analysis (i.e. AT, CT, and project management perspective) played a significant role in the HHR failure.

What PECO-1R also argued, however, was that there was "overlap between different causes of failure". PC-1R, PC-1P and PCO-1R concurred with this. The possibility that there was some interrelation between the three sets of factors identified as causing the HHR project failure is explored below.

10.4   Interrelation between the three causes of failure

What has been set out in 10.3 is a summary of the findings in chapters 7, 8 and 9. What this section of the discussion chapter aims to do is to go beyond this and explore whether the three sets of causes of the project failure were interrelated in any way. By this we mean, first, whether an apparent cause of project failure was really a symptom of a different, deeper cause. Second, whether one type of cause might have facilitated another type of cause. Third, whether certain causes of project failure might have been 'masked' by other causes of failure. For example, PC-1R and PC-3R argued that the

APs (including the consultant's and the contractor's opportunistic behaviours) were the most prominent factors that caused the HHR Project failure. However, PECO-1R also remarked that:

> "[The agents] were lucky, because other factors were considered to be major causes of delay in the project. So, the delay that was caused by the contractor's opportunistic behaviour in certain situations was dissolved in between other external causes of delay".

Therefore, it is important to discuss the links between the three areas of findings. The following model (Figure 28) gives an illustration of the interrelation between each two of the three causes of failure.
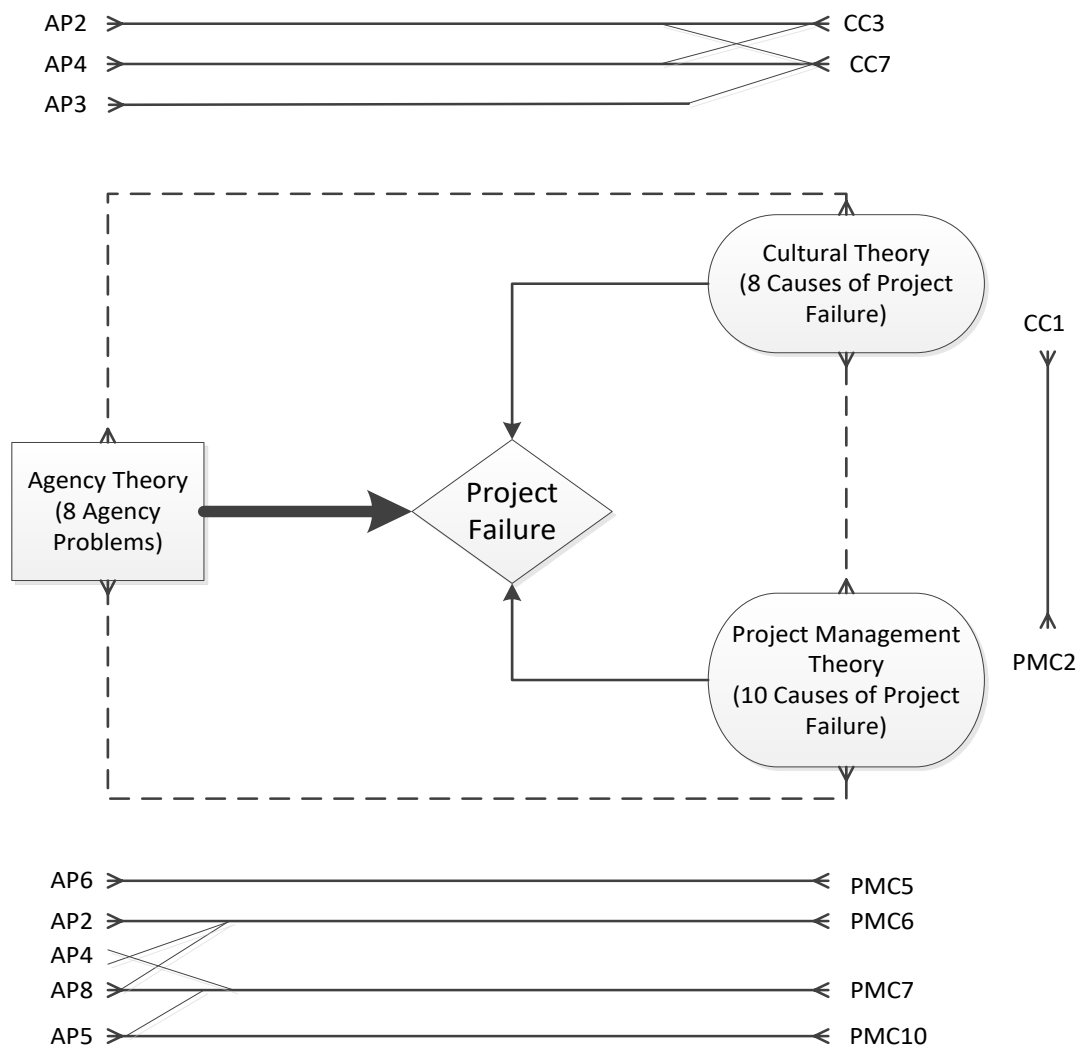
Figure 28: A model presenting the inter-relation between the three causes of failure.

10.4.1 Interrelation between agency problems and cultural factors

There did indeed appear to be an overlap between these two causes of failure. This was suggested by a number of the APs. Starting with AP2 (late and wrong supervision approvals by the project consultant), PC-2P stated:

"As far as the consultant is concerned, I do not think he is much affected by the project delay. The longest the project last, the consultant will get paid for that period".

This AP had a direct link with two cultural causes of failure, which facilitated its occurrence. Firstly, CC3, the decision not to use project management tools and techniques in monitoring the project (PD dimension); and secondly, CC7, the low percentage of skilled labour within the project team (indulgence dimension). These two outcomes of cultural factors reduced the client's ability to monitor and manage the consultant's behaviour and performance from the early stages of the project.

These two culturally-derived causes of failure (CC3 and CC7) also facilitated the opportunistic behaviour of Contractor 1 (in R2). Due to the lack of project management tools and lack of skills within the client's project management, the client was unable to conduct the required skilled analysis and monitoring of the project needs. Borisova and Yadav (2015) suggested that this is one of the scenarios where information asymmetry can emerge. Hence, it did exist between the client and Contractor 1. Contractor 1 then opportunistically exploited the existing information asymmetry by liquidating some of their skilled staff in the cause of reducing the project expenses - AP4. For example, PECO-1R explained:

> "The contractor's top management reduced the work scope from one of the subcontractors who was experienced in building bridges, and passed it over to the other sub-contractor (a sister company of the top management) who was not specialised in delivering that job".

This was while the client was disabled from effectively monitoring and managing the project.

Thus, due to the impact of the two cultural causes of failure, these two APs (AP2 and AP4) were not detected by the client. *Cultural characteristics facilitated opportunism*.

A further, similar, overlap was found between AP3 (Contractor 1 underestimating and misrepresenting the project cost) and the seventh cultural factor (CC7), the low percentage of skilled manpower employed within the client's project team including (engineers, consultants and PMO). In this situation, CC7 exacerbated the client's difficulty of assessing the contractor estimates' accuracy. The impact of this cultural cause of failure then increased when the contractor opportunistically used the existing information asymmetry – managerial and technical (Caers et al., 2006) – to underestimate and misrepresent the project costs to the client (AP3). This supports what was suggested by Provan (1991), that there is a positive relationship between the existence of information asymmetry and the likelihood of the agent's opportunistic decisions. *Once again, therefore, cultural characteristics facilitated opportunism.*

10.4.2 Interrelation between agency problems and project management factors

The relationship between AT and the four concepts arising out of the project management perspective (temporality, task, team and transition) presents an important discussion around the area of trust and its impact between project stakeholders during project execution. As discussed in Chapter 3, one way of managing the agent's opportunistic behaviour is via the establishment or strengthening of trust between the principal and the agent. Lamming (1996) suggested that when trust is the relationship's norm, problems that might occur are targeted for solution - opportunism is removed from the equation. This trust can exist from an on-going relationship, or otherwise the two actors can seek to establish trust in new relationship (Bhattacharya et al., 1998). A project's often short duration (temporality), however, can increase the complexity of building the required trust, as it can hinder the two actors in a relationship achieving the required integration (Lanzara, 1983) and sharing their knowledge to establish this trust.

One way round this has been described as the two parties developing 'swift trust' in the relationship (Bryman et al., 1987). The significance of the concept of 'swift trust', is explained by Meyerson et al. (1996), who state that 'swift trust' "is capable of managing issues of vulnerability, uncertainty, risk and expectations" (p. 167). The existence of swift trust between both actors is said to reduce the client's vulnerability from any information asymmetry, unify both actors' goals, which will help the agent to effectively execute the project and meet the client's expectations and mitigate the risk of any possible opportunistic behaviour by the agent. However, there is some scepticism about this concept – there is a sense that it is a contradiction in terms (Alsedairy, 1994).

Either way, the importance of establishing the trust factor in TMO, in order to avoid opportunistic behaviours, can be articulated from the findings of this study. Out of the seven relationships that were included in this research, according to PECO-1R, PC-1R, PECO-2R, PC-3R and PCO-3R, trust was said to have existed in four of them (R3, R4, R6 and R7) (see Figure 20). The findings also showed that none of the eight APs that had contributed to the project failure were within these four relationships. Instead, they were within the other three relationships (R1, R2 and R5).

Cox and Thompson's (1997) suggestion, in line with the issue of temporality, can help us understand this as they stated that "opportunism is curbed as the supplier is given the incentive of future work" (p. 134). In the HHR project, the agents from the four trust relationships (R3, R4, R6, and R7) were well established in the construction industry for a long duration, with trust existing with the client prior to this project, and thus were incentivised by the client to win future projects. By contrast, the agents from the other three relationships (R1, R2 and R5) were new to mega-projects of this scale and trust was yet to be established. The occurrence of opportunistic behaviours in R1, R2 and R5 is, therefore, arguably explained by the lack of trust (existing from previous projects or

new trust that was not established in this project due to the project temporality), and also by the agent's lack of incentive to take future projects. With respect to this latter point, Contractor 1's lack of incentive was explained by PECO-1P:

> "The mentality of the contractor's top management is very short-term. They are not concerned about the project construction as much as they are concerned about their profit".

PECO-1P also described this short-term mentality as a "banking mentality".

These findings, therefore, highlight the importance of trust, but also emphasise how trust requires certain conditions to be feasible, which the project environment, with its temporality, can make a challenge. The temporality of the HHR project did not prevent trust existing in four of the relationships, because the agents in those relationships had a past in the industry and a concern for the future. These agents' desire to win future projects influenced their behaviour, as suggested by Cox and Thompson (1997). The other three agents treated the project, however, as if it was a 'one shot game' and sought to maximise profitability in that game, including via acting opportunistically (causing the APs). *What we see here, therefore, is a link between the temporality characteristic of projects and opportunistic behaviour. The short duration, in part, encouraged opportunistic behaviour.*

There were also three other overlaps between APs and project management factors, this time relating to team and task. Firstly, within the concept of team, there was a lack of skilled labour in Contractor 1's project team. This can be linked directly to the employment of illegal workforce by Contractor 1 during the project execution (AP5), again a deliberate opportunistic act in the cause of reducing the project cost, which resulted in another cause of project failure (PMC10). This suggests that it would be a mistake to simply ascribe this matter as a problem of 'team', as the project management

perspective might be tempted to do. The team deficiencies were simply an outcome of a deeper cause of opportunistic intent. *Thus we seek a link between team and opportunism.*

Secondly, in relation to the concept of task, Contractor 1 opportunistically misrepresented the project designer's capability to design the project (AP6), an act aimed to reduce the project cost and which led to the failure of P1P1 preliminary project design (PMC5). PC-2R commented on the designer's work saying

> "After the contractor produced the first project design, many issues appeared which were not taken into account, these issues caused major part of the project delay during the execution stage of the project and this is a large proportion of the delay".

Therefore, PMC5 (as a cause of the project failure) was arguably a symptom of a deeper cause (AP6). *Again, there is arguably a link, this time between task and opportunism.*

Thirdly (within the task concept again), due to the high project complexity and uniqueness, the client and Contractor 1 failed to produce an effective planning document (PMC6 and PMC7). This failure was considered as a major reason for the project to fail. Furthermore, it contributed to the initiation of a number of APs, such as AP4, AP5 and AP8. The client's poor planning (PMC6) exacerbated the difficulties of tracking and monitoring the agents (contractors and consultants) in this project. This eased the process for the agents to act opportunistically. For example, late and wrong approvals by the consultant (AP2), and uncertainty in the quantity and quality of workforce required for the project execution (AP4 and AP5). Moreover, Contractor 1's poor planning (PMC7) clearly led to the contractor's failure to show and submit the required document to the

consultant (AP8) as well as (AP4 and AP5). *This is another situation where there was a link between task and opportunism.*

These failures in planning for the project can also be related to cultural factors, which will be discussed in the next section.

10.4.3 Interrelation between cultural and project management factors

Saudi national culture was found not have been the most significant contributor to the project failure. However, it did play something of a role and there was also one overlap between Hofstede's cultural dimensions and the concepts of project management in TMO, proposed by Lundin and Söderholm (1995). *The overlap existed between the concept of project temporality and high PD.* According to Söderlund (2013), projects have very limited and short length of time as it is. With HHR, this project's temporality factor was further exacerbated by the client's high PD-driven decision in relation to the wrong project duration period that was imposed in the contract.

Taking into account the fact that this project was defined as a unique mega-project with a high level of complexity, the client's erroneous decision (CC1) compelled the contractor to spend less than the required time for the planning stage (PMC2). As PCON-1P stated: "The planning stage for this project was around six months only", adding: "This is not enough time to plan for a normal mega-project". The cultural dimension of high PD resulted in the principal's attitude that he can make decisions without referring to the expert consultancy, and that these decisions were not allowed to be challenged (for example, the short and unrealistic duration for the project planning and execution). Thus, such decisions increased the complexity for the contractor to both plan and execute the project. Consequently, the project failed to be delivered on-time.

10.4.4 Interrelation between the three areas of findings

As well as the interrelations discussed above between 'pairs' of causes of failure, there were also aspects of the project where there appeared to be interrelations between all three causes. These were in R1 (interrelation A) and R2 (interrelation B & C), which were both found to be of high importance in relation to the project failure in this research. This can be explained as follows.

Firstly, one interrelation (interrelation A) between the causes of failure was identified in R1 (see Figure 29 below) – between the client and the consultant. In this interrelation, two APs had a major impact on the project failure. One was pre-contractual (AP1 - consultant misrepresented the qualification of his employees to win the tendering process) and one post-contractual (AP2 - late and wrong supervision approvals by the project consultant).
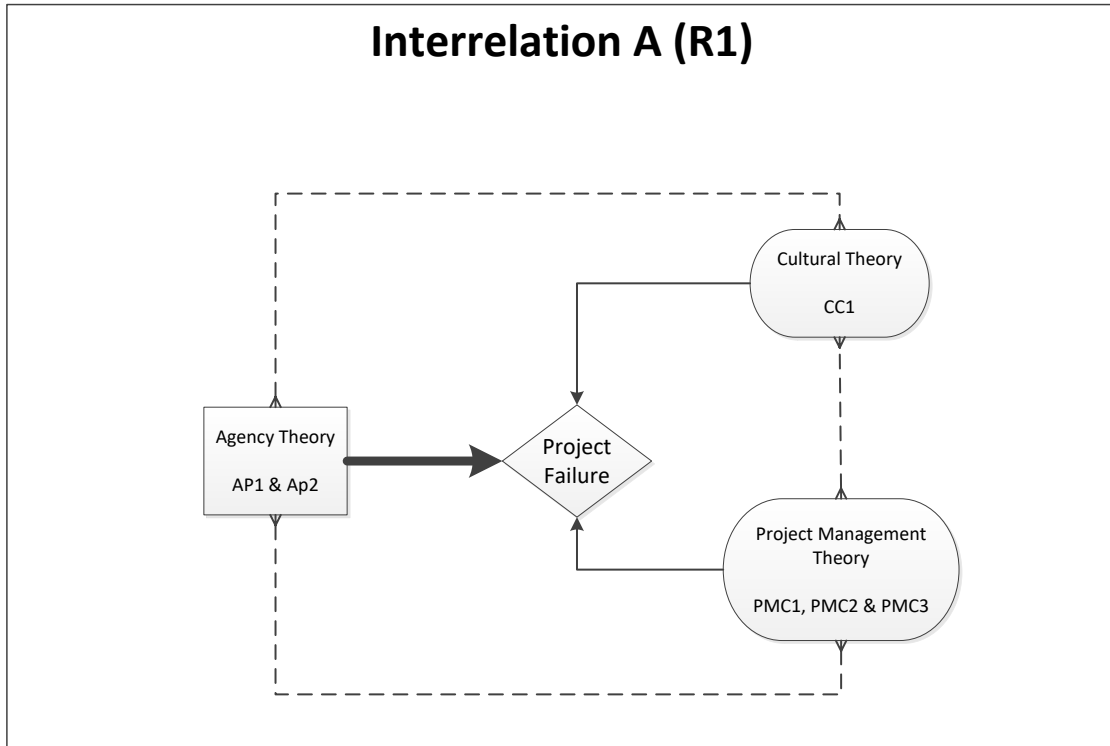
Figure 29: Three causes of failure interrelation A in R1.

As suggested by Lamming (1996), these APs can be a result of the lack of trust. However, as has been mentioned, it was challenging to establish the required level of trust due to the project temporality – which exists in every project executed by a TMO (Palisis and Bartolomeo, 1970) – at the project pre-initiation stage, planning and execution stage. The project temporality in these three stages was found to be a cause of the HHR mega-project failure, as illustrated in PMC1, PMC2 and PMC3. Now, interrelation A started from the high PD cultural norm in the client's attitude that made him make critical decisions (while nobody was expected to challenge them) in relation to the project duration (CC1) without taking into account the experts' consultancy. Such decisions urged the client representative to initiate and execute the project and that resulted in the following. Firstly, a lack of time at the pre-initiation stage to look for the right project consultant (PMC1); secondly, lack of time to assess the project uncertainties (PMC2); and thirdly, short time for the project actors to integrate and establish shared

knowledge (PMC3). It also required the consultant to deliver the project within a shorter

duration than the realistic period the project required, which increased the level of stress

(Turner and Müller, 2003) and distanced the two actors in this relationship from

establishing a trusting relationship. *Hence, we can see the three sets of causes of project*

failure working together.

Secondly, in R2 – between the client and Contractor 1 – two interrelations (interrelation

B and C) were identified (see Figure 30 below).
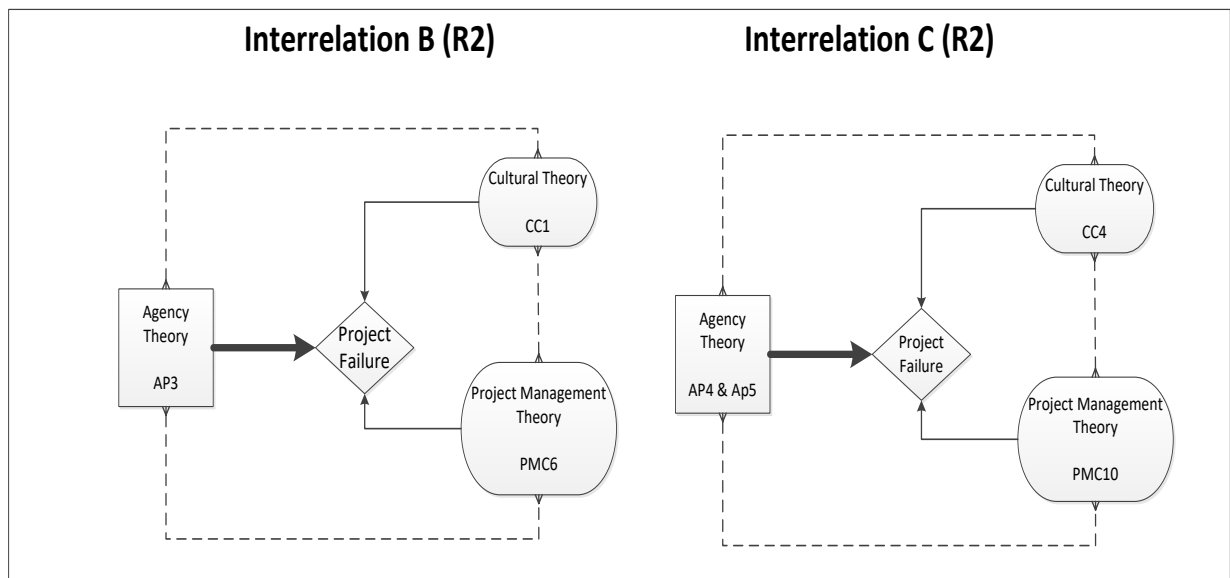
Figure 30: Three causes of failure interrelation B & interrelation C in R2.

In interrelation B, the interrelation occurred between AP3, CC1 and PMC6. The

connections can be explained as follows. Contractor 1 opportunistically underestimated

and misrepresented the project cost at the project pre-initiation stage (AP3). PECO-1R,

for example, commented that "the contractor provided wrong figures and underestimated

the project costs". Analysing AP3 in the context of this interrelation, it can be described

as a symptom of the underestimated project period the project client imposed on the

bidders for cultural reasons (CC1) in order to cope and address the bid requirements

(see Section 8.2.1). Contractor 1's opportunistic behaviour was not spotted nor intervened by the client, mainly because the client had no idea of what were the reasonable time and cost estimates as the client failed to produce effective project plan document (PMC6). The client's poor project planning lacked baseline estimates for the project costs. Consequently, the project client could not test the feasibility of Contractor 1's estimates. Hence, AP3 occurred. *Therefore, again, we see the three sets of causes combining.*

In interrelation C, the interrelation occurred between AP4, AP5, CC4 and PMC10. Contractor 1's opportunistic behaviour in AP4 (the liquidation of the qualified staff) in order to reduce the project cost occurred as a result of the lack of a trusting co-operative and collaborative approach in this relationship (R2) and the influence of restricting all critical decisions to the contractor's top management only (CC4) – high PD cultural norm. PCON-1P said that:

> "We thought, is it worth having all this workforce financially to the contractor when they were not working? The answer was no. So, we tried to find a moderate solution and keep all workers who can work for all hours".

The financial based decision from Contractor 1's top management to (CC4) to liquidate the qualified staff (AP4) resulted in the lack of skilled labour within the contractor's project team (PMC10). Furthermore, after the client's intervention to optimise the project execution process, Contractor 1 had to take an action and employ more staff to rectify the situation. However, another problem emerged and that was described by PCON-1R saying:

> "In some contracts, we could not increase the agreement budgets after the national increase in the labour fees. Therefore, we had to withdraw the task from

some subcontractors and we hand it in to other organisations for execution instead".

The attempt to find cheaper organisations to execute certain parts of the project, however, this led Contractor 1 to conduct another opportunistic behaviour by choosing subcontractors who employ illegal workforce (AP5) without informing the client, as PECO-1P confirmed that "the contractor did not inform the client of any illegal workforce". *Therefore, again, we see the three sets of causes combining.*

10.5   Summary

At the outset of this chapter, the researcher presented a model that re-capped the three perspectives of HHR project failure (Figure 27). The model illustrated the emergent themes from the literature which were then used throughout the analysis of the findings. Throughout the investigation in this research, AT was used as a primary theory. However, it was supplemented with national CT and PMT as subsidiary theories.

The research into the HHR project failure highlighted the importance of the prime theory of AT to mega-project management research. Multiple APs were seen to be an important factor in the HHR project failure. This is an important contribution to an under-developed part of the mega-project literature. However, the research also revealed that there were other factors behind the failure – 8 cultural and 10 project management factors. This reflects other parts of the project management literature.

As means of summary, Figure 31 below presents a comprehensive picture of the conceptual framework of this research study and the findings regarding the HHR project.

It shows both the causes of the HHR project failure that are attributed to individual factors (AT, CT or the 4Ts) and the discussed interrelations.
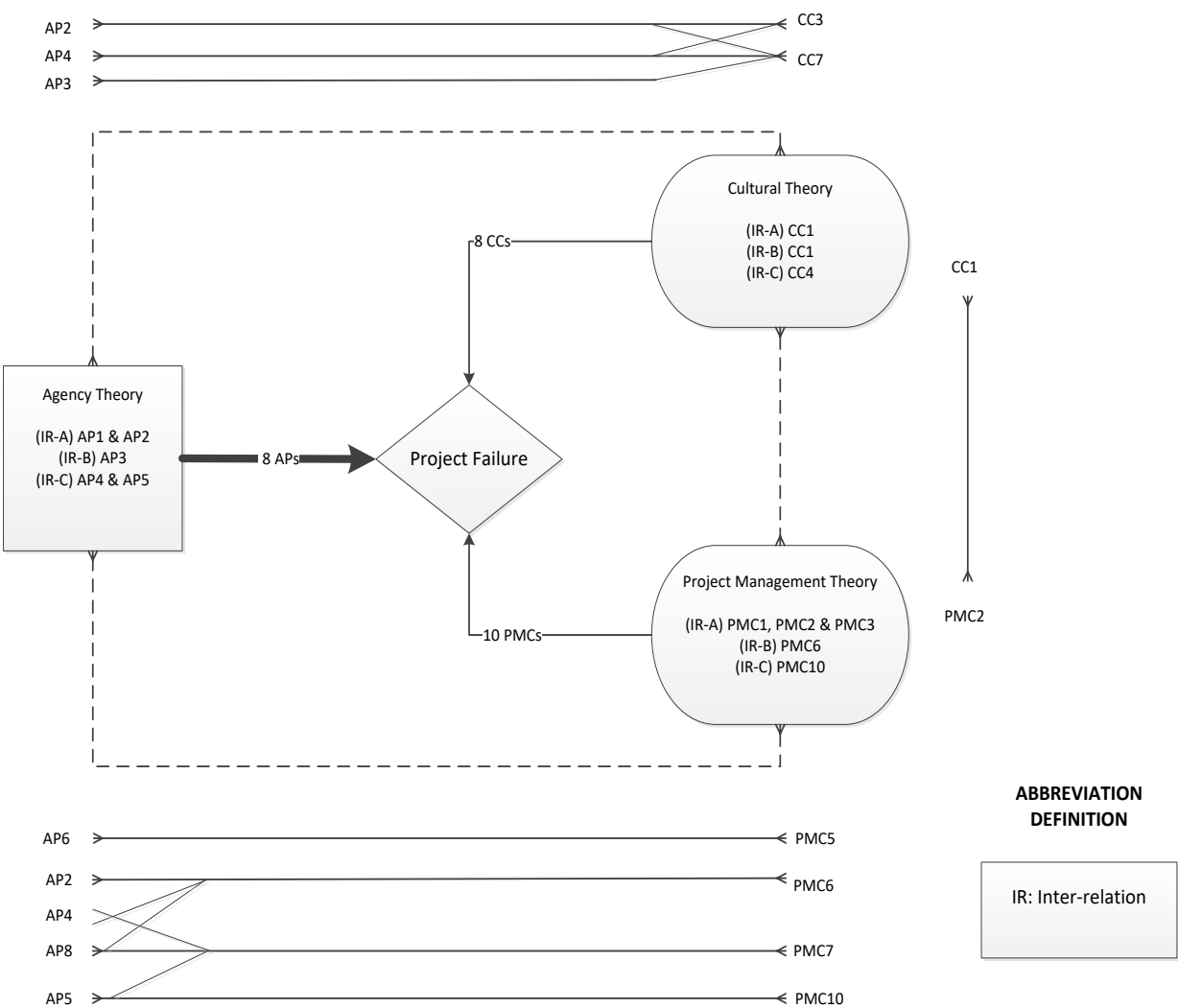
Figure 31: Finalised conceptual framework – Agency theory and project failure model.

The framework above articulates the three areas – explored in the literature – that were found to have major contribution to the failure of the HHR mega-project. The number of factors of mega-project failure varied with relation to each single area. As illustrated in the figure 31 above, the causes of failure can be explained in threefold. Firstly, APs, cultural factors and project management factors led to the HHR mega-project failure on

their own rights. Secondly, there were dual inter-relations between each two of the three areas that were found to have significant impact on the project failure. This can be observed on Figure 31 above as links between each two areas indicated the inter-relations. In this case, some factors were root cause of other factors, some were just a symptom of others and the importance of some factors was reduced as a result of the existence of other factors. Finally, three inter-relations between all three areas – which were referred to as IR-A, IR-B & IR-C as shown in Figure 31 – delivered the third form of causes of HHR mega-project failure.

Furthermore, this finalised framework captures how this research study has expanded the limited existing research applying AT to mega-projects in relation to construction infrastructure projects. It has, through the investigation of multiple relationships between the project client, its project manager, the project contractor, its project manager and the project consultant, examined the impact of multiple principal-agent problems in a construction mega-project. According to Ceric (2014), the context of this research may be considered as unprecedented. It has also provided the first research on mega-project failure in Saudi Arabia that has aimed to assess the extent to which project failure was caused by APs and/or Saudi national culture and project features. That APs have been seen to have played a prominent role in the HHR failure justifies the decision to include AT and adopt it as the prime theory.

The research has also provided a study that shows the relative contribution to mega-project failure of APs, national culture factors and project features. It has shown that in the HHR project the contribution has varied between the three. APs were judged to be major causes of HHR mega-project failure. Project features were also seen as significant causal factors, with national culture adding to the picture as well. This justifies the decision to expand the research beyond AT.

The research also revealed interrelations between different sets of causes of failure (see Figure 31 above). These interrelations were seen to have occurred at different stages of the project life cycle and across different groups, as will be illustrated in the next two figures (Figure 32 and Figure 33) below. The researcher has used colour coding to ease the recognition of different causes of failure. The green bars for APs, yellow bars for national culture and blue bars for project features causes of failure.
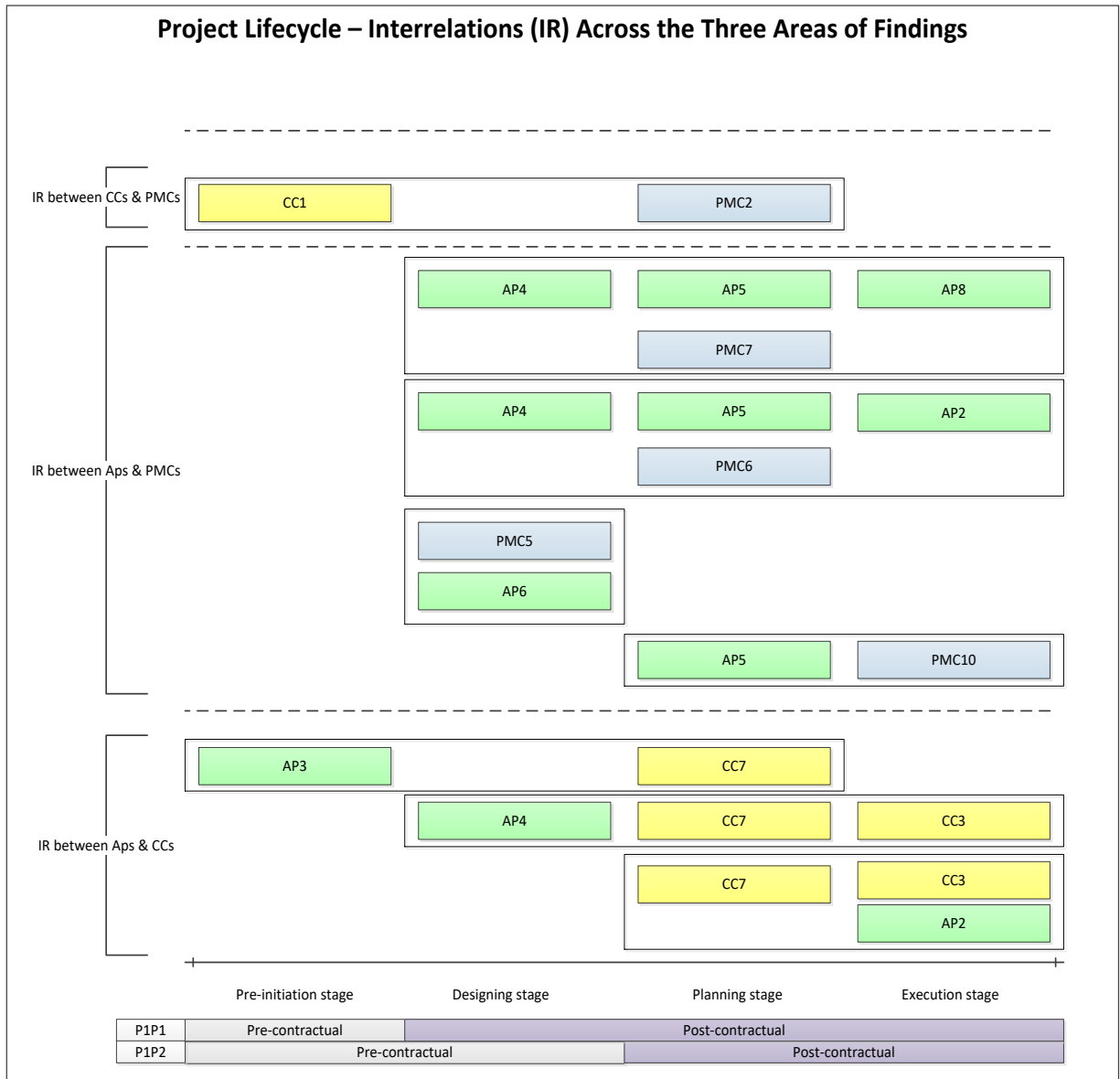
Figure 32: Project lifecycle – interrelations across the three areas of findings.

Figure 32 shows three groups of interrelations. Firstly, three interrelations between APs and national culture causes of failure (CCs). Secondly, four interrelations between APs and project features causes of failure (PMCs). Finally, one interrelation between national culture (CCs) and project feature (PMCs) causes of failure.

Further interesting interrelations were found between all three causes of project failure (APs, CCs and PMCs) – see Figure 33 below.
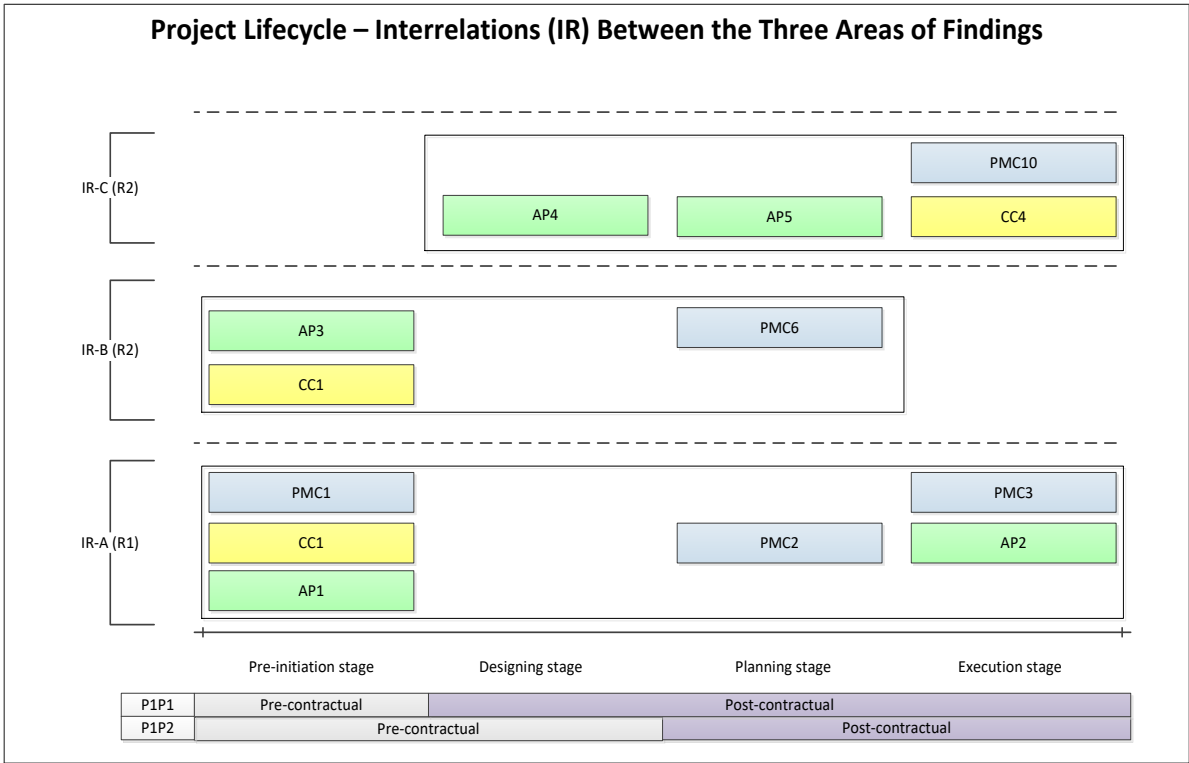
Figure 33: Project lifecycle – interrelations between the three areas of findings.

Figure 33 above demonstrates the three interrelations (A, B and C) that occurred between all three causes of failure throughout the project life cycle.

These findings of interrelations and their impact on the HHR mega-project failure promise a further contribution to the project management literature. This is because it has been shown that some problems with projects may well actually be a manifestation of other factors. For example, teams can be problematic, but this can actually be because of agent's opportunistic behaviour. This was seen in the HHR project. A similar situation was also seen in relation to the project concept of temporality. This case research has

shown, therefore, the need to look deeper into the root causes of project failure. Care needs to be taken in mega-project research to make sure that what you are looking at and recording as evidence is not simply a symptom of deeper causes.

It can be seen, therefore, that the contribution of this research has been multi-faceted.

PART V

CONCLUSION

CHAPTER 11

CONCLUSION

11.1   Introduction

The main aim of this chapter is to provide a summary of this research importance. This starts with a brief of the three areas that were reported in the literature, and the headline findings for each area. The second section outlines the contribution to the knowledge of this research, including both theoretical and practical recommendations. Then, the researcher aims to highlight the limitations of this research project and reflect upon the experience of conducting this research. Finally, the researcher will provide further directions of potential future research.

11.2   Synopsis

This thesis has reported three areas (theories) within the literature review, advanced as they were deemed to potentially explain the HHR project failure. It was established in section 6.7 that the HHR mega-project failed in two respects: firstly, the project failed to be delivered on-time (see Table 18). Secondly, the project failed to be delivered within the allocated budget (see Table 19).

The primary theory considered within this research was AT, which focuses on how some agents exploit the information asymmetry that occurs between them and their principal by behaving opportunistically. There were then two subsidiary theories in the review advanced as potential further contributors to project failure. First, national CT. Hofstede's six national cultural dimensions were utilised to identify and explain the Saudi national culture characteristics. These dimensions were used in the categorisation of the cultural causes of HHR mega-project failure. Second, the project characteristics. The theory of

project management suggested four major concepts (temporality, task, team and transition) to differentiate between PO and TMO. These four concepts were also advanced as potential causes of failure.

The key findings from the three areas of literature that were used to investigate the HHR project failure are as follows. There were the following causes of project failure in the HHR case:

11.2.1 Agency problems

Relationship 1: Client – Consultant

- Adverse selection (with additional moral hazard) – the project consultant misrepresented the qualifications of his employees in order to win the project tendering process.

- Moral hazard – the project consultant provided incorrect and late supervision approvals, which affected the work quality and delayed the financial payments to Contractor 1.

Relationship 2: Client – Contractor 1

- Adverse selection – the contractor underestimated and misrepresented the project cost to win the project contract.

- Moral hazard – Contractor 1 took over the project management role from the existing PMO after the liquidation of their qualified project management staff.

- Moral hazard – Contractor 1 employed illegal workforce to work for the project.

- Moral hazard – Contractor 1 misrepresented the designer's capability to design this project and employed an un-experienced designer.

Relationship 4: Client – Contractor 3

- Adverse selection – Contractor 3 employed illegal workforce to reduce the project costs.

Relationship 5: Project Consultant – Contractor 1

- Moral hazard – Contractor 1 failed to submit the project plan document to help him avoid the consultant's monitoring and control in the project execution stage.

11.2.2 Cultural causes of failure

High PD

- The project owner (client) imposed an unrealistically short project duration in the contract.
- Retaining some private lands from the land acquisition committee. This required changing the design of the train route.
- The first project director decided not to use project management tools and techniques in the project monitoring and control from the client's side.
- Contractor 1's top management did not delegate any financial authority to the site project director.

Short-term orientation

- Limited and short-term vision by the client to the project's milestones.
- Contractor 1's short-term mentality, which was described as a 'banking mentality'.

Indulgence

- Low percentage of skilled manpower within the project team.

- Lack of co-operation from utility companies in monitoring their infrastructure, and attempting to take advantage of the project.

11.2.3 Project management causes of failure

Temporality

- Lack of time at the project pre-initiation stage to look for a capable, qualified and experienced project consultant.
- Lack of time to assess the project risks and uncertainties by the client and the contractor in order to achieve more effective project planning.
- Short time for the project stakeholders to integrate and establish shared knowledge about the project.

Task

- Client fails to apply effective and efficient project requirements in planning for the project.
- P1P1 preliminary design failure by the contractor's inexperienced designer.
- Poor project planning by the project client.
- Poor project planning by Contractor 1 (P1P1).

Team

- Failure in the selection process of the PMT (consultants and PMO).
- Failure in selecting Contractor 1, who had failed to employ an experienced project designer.
- Lack of skilled labour in Contractor 1.

The findings chapters provided analysis and explanations of these contributors to the HHR project failure, with each one of the three areas was considered separately. In the discussion chapter, however, a discussion of the overlap between the three sets of causes of project failure was provided, which demonstrated the link of how each area influenced the others in certain instances, and how that also needed to be considered in an analysis of the HHR project failure (and in any reflection on the project management literature). Overall, the investigation throughout the three areas – to find the causes of the HHR project failure – worked well in understanding this case study, as well as in addressing the research question and achieving the research objectives. This will be discussed further, as follows.

11.3   Addressing the research question and objectives

The research question:

RQ.   To what extent can agency theory be utilised in the analysis and explanation of the mega-project failure of the Haramain High-Speed Railway (HHR) project within Saudi Arabia?

From the research question, it is apparent that AT was the primary theory of this research, in order to investigate the HHR railway mega-project failure. This was supported by two subsidiary theories relating to national culture and the inherent features of projects. In this context, the research objectives were established. Further discussion of how the researcher addressed each one of these research objectives and, therefore, answered the research question will follow.

Research Objective 1

- To identify the specific APs (if any) that occurred within the HHR mega-project.

In order to address the research question, it was imperative to identify APs which occurred within the HHR mega-project. The scope of investigating the APs included a complex and extensive range of relationships, as Ceric (2014) suggested was required in future research. In this research, seven relationships were investigated. These relationships involved the major project actors who were project client, consultant, three contractors and their project managers. Following the data collection and the analysis of the findings, eight APs were identified within four of the seven relationships. These APs, however, were found to have different levels of importance toward the HHR project failure, which leads the discussion into the next research objective.

Research Objective 2

- To investigate the extent to which these APs explain the HHR project failure.

The discussion around the level of importance of the APs findings can be explained two-fold, as follows. Firstly, the researcher – with the interviewees – aimed to assess the importance of each one of the APs separately. In order to assist with interpretation, a 'star' rating was adopted. Interestingly, there was variation in the extent to which different APs influenced the HHR project failure. As illustrated and explained in Chapter 7, relationships 1 and 2 were the main relationships containing the APs of most importance to the project failure (see Table 41 below).

Table 41: Agency problems impact, intervention and outcome.

Relationship (R)	Agency problem (AP)	Issue	Impact (****)	Intervention	Impact Post-Intervention (****)
R1	**AP 1** 'Adverse selection' (with additional moral hazard)	Consultant misrepresented the qualification of his employees to win the tendering process.	**** 'time & cost'	Adverse selection was harder to observe by the client in order to react.	**** 'time & cost'
R1	**AP 2** 'Moral hazard'	Late and wrong supervision approvals by the project consultant.	**** 'time & cost'	The client's intervention was by monitoring the performance of the consultant.	** 'time & cost'
R2	**AP 3** 'Adverse selection'	Contractor 1 underestimated and misrepresented the project cost.	**** 'time & cost'	Client had no chance to intervene as the tendering process was in accordance with the national law.	**** 'time & cost'
R2	**AP 4** 'Moral hazard'	Contractor 1 took over the project management after dismissal of qualified staff.	**** 'time & cost'	It was challenging for the client or the consultant to intervene due to lack of awareness of the issue at the time. Furthermore, the contractor's incentive was money, but financial incentives did not exist. Although, penalties were imposed for any delay.	**** 'time & cost'
R2	**AP 5** 'Moral hazard'	Contractor 1 employed illegal workforce to work for the project.	**** 'time & cost'	The client imposed penalty clauses for the delay and required the contractor to increase the project manpower but no result.	**** 'time & cost'

R2	**AP 6** 'Moral hazard'	Contractor 1 misrepresented the designer capability to design this project.	*** 'time & cost'	The client applied penalty clauses on the contractor if any delay occurred. Occasionally, the client issued technical approvals on modified designs.	** 'time & cost'
R4	**AP 7** 'Adverse selection'	Contractor 3 employed illegal workforce.	*** 'time'	The client obtained exemption for illegal workforce for this project; the contractor reacted accordingly.	-
R5	**AP 8** 'Moral hazard'	Contractor 1 failed to submit project plans to the consultant.	**** 'time & cost'	The consultant prepared a detailed project planning document and it was handed in to the contractor.	** 'time & cost'

Secondly, it was felt both useful and feasible by the researcher to explore with the interviewees the level of importance (prominence) of APs as a cause of the HHR project failure – that was, by asking the research participants about the relative importance of these APs (using a qualitative measure) by the number of stars (*= low severity; ****= high severity). It was, however, recognised that the participants come from different stand points. Therefore, the researcher has used his own knowledge and judgement – based on the participants rating – to score for the causes of failure. This rating process was applied on all three causes of failure (APs, CCs and Project feature factors).

It was concluded that the area of APs was a prominent area that led to the project failure. Some of these APs were actually causes of failure in their own right, for example AP1 and AP3. Others were seen to be the root cause of other causes of project failure, for example, Contractor 1's opportunistic behaviour to employ illegal workforce for the

project (AP5) resulted in the lack of skilled labour in Contractor 1 (PMC10), which was one of the important factors of the HHR project failure.

Research Objective 3

- To evaluate the influence of Saudi culture and the project management context on the HHR project failure.

Despite the fact that the identified APs were major causes of the HHR mega-project failure, there were other factors that contributed to the failure which were related to the Saudi culture and project features. In this case, eight cultural factors and ten project features causes of failure were identified, all of which varied in their level of importance to the failure. Generally, some of these factors were actually causes of failure in their own right. Others were found to be symptoms of some of the APs.

While delivering this research objective, the causes of failure attributed to the two subsidiary theories (national CT and PMT) provided a deeper insight into the HHR mega-project failure than could have been provided by AT alone. Indeed, they have supplemented the findings of the underlying issues of APs.

Research Objective 4

- To explore potential linkages between APs, cultural factors and the project management context.

Three causes of the HHR mega-project failure, including APs, national cultural causes and project features causes were identified. These causes had different levels of impact on the HHR project failure. Interestingly, during the analysis of these different causes in

Chapter 10 of this thesis, a number of interrelations emerged between the three causes of failure. This provided a critical insight of the analysis of the HHR mega-project failure and delivered a better understanding of the linkages between APs, national cultural factors and project features factors. Some of these causes were actually the root cause of other factors, some were just a symptom of others and the importance of some factors was reduced as a result of the existence of other factors.

Overall Meeting of the research Objectives

Thus, the successful completion of meeting these research objectives has allowed the researcher to answer the research question and conclude that AT explains, to a significant extent, the HHR mega-project failure. However, there were also other causes that were related to national CT and project management context. These causes were of a lower level of importance toward the project failure than the APs, and in some cases were the consequence of deeper APs.

11.4   Contribution to knowledge

The theoretical context of this research study aimed to fill the current gap in the literature with regards to AT and its relationship with mega-project failure. A number of researchers have used AT in looking at the issue of project failure in various project management sectors. For example, Wilhelm et al. (2016) in supply chain management; Clipsham et al. (2011) and Teo and Koh (2010) in IT; Bardsley (2001) in educational research project; and Ceric (2012 and 2014) in construction projects. Ceric (2014), however, confirmed that her research was the first to address four project actors in investigating the AP and its impact on project failure – no other research existed that addresses more than these four participants (project client, contractor and their project managers). Interestingly, there was also not any existing previous research that addressed the issue of multiple

principal-agent problems in Saudi Arabia and its effect on mega-project failures. Therefore, the theoretical context of this research is conducted in order to fill this theoretical gap.

11.4.1 Theoretical contribution

This research study expanded the current literature in its context as a result of the following three points.

- It is the first research study that utilised AT to investigate multiple principal-agent relationships to this degree, which included seven relationships composed of client and his project manager, contractors and their project managers, and project consultants – an even more complex set of relationships than those which were included in Ceric's study in (2014).

- The first research study in Saudi Arabia to investigate the AP and its impact on construction mega-project failure.

- The first research that added to the limited literature on AT in construction mega-projects – the impact of multiple APs as causes of infrastructure construction mega-project failure and/or national cultural factors and project features factors.

Following the expansion of the current literature discussed above, the core contribution to the knowledge can be linked to the research objectives as follows:

- Objective 1: in this research project, and through the analysis of the findings from the seven relationships, the researcher identified eight APs that resulted in the failure of the HHR mega-project. The successful achievement of this research objective demonstrated that multiple APs do exist within the mega-project context as a major cause of failure.

- Objective 2: this objective provided an insight into the level of importance of APs, and deeper understanding of the prominence of APs as a major cause of mega-project failure. The findings confirmed the following: firstly, different APs vary in their importance and impact on mega-project failure; secondly, APs make a significant contribution toward mega-project failure, albeit alongside other minor cultural and project features factors. Applying better project management practices by the client (such as sufficient project feasibility study duration) might minimise the occurrence of APs at the pre-contractual and post-contractual stage.

- Objective 3: the contribution to the knowledge derived from this research objective can be expressed as follows. Firstly, as claimed by PECO-1R and PC-1R, a minor part of the causes of construction mega-projects failure are attributed to national cultural dimensions – in this case of HHR mega-project high power PD, short-term orientation and indulgence. Secondly, other factors of HHR mega-project failure were attributed to the inherent features of projects (temporality, task, team and transition). Therefore, better project management skills (for example, project planning and better communication…etc.) are crucial in the reduction of the causes of megaproject failure.

- Objective 4: a further contribution to the literature derived from the emergent outcome of the analysis in this research. Firstly, multiple Principal-agent problems exist in mega-projects, this needs to be researched. Secondly, while there were cultural factors and project feature factors behind the failure, some of

these were actually symptoms of APs. This is something that needs to be better recognised in an often descriptive project management literature.

Finally, a contribution of the research is to emphasize that the project management literature needs to acknowledge the existence and significance of opportunism much more than is currently the case.

As well as more accurately identifying the underlying root causes of project and mega-project failure, it will also assist with theoretical generalisability – the lack of which is a frequent criticism of the project management literature in terms of it often being too descriptive (Dyer and Paulson, 1976; Packendorff, 1995; Thomas, 2000; Cooke-Davies and Arzymanow, 2003; Padalkar and Gopinath, 2016). It is argued that this makes such literature lacking in theoretical generalisability. In this thesis, the researcher has sought to identify the more fundamental, underlying causes of project failure, which are theoretically generalisable. It has been identified in Chapters 7-10 that a number of causes of the HHR failure are at root APs, problems of national culture or problems generated by the fundamental features of project (temporality, task, team and transition). Indeed, there were occasions in the HHR project that saw these underlying causes combining to generate a contributor to the overall project failure. This suggests theoretical generalisability.

11.4.2 Practical recommendations

The HHR mega-project was the first railway mega-project of its kind that was executed under the SRO management. According to the SRO master plan, there are many similar railway mega-projects to be initiated in the future in order to expand the railway lines in Saudi Arabia (SRO-2, 2014). Therefore, this section provides practical recommendations

for the client to take into account while making decisions that are related to the execution of similar type of railway projects in the future – while taking into account that an important feature of this type of project is the project temporality (Söderlund, 2013), which has an influence on every aspect of the project execution. This was articulated in the discussion on the overlap between project temporality and the client's high PD decisions (see Section 10.4.3). Therefore, it is suggested that the client addresses the negative impact of high PD decisions – related to the time factor – on the project performance, and take the following recommendations into consideration:

Project management and culture related recommendations

- Clients need to recognise the possibility of opportunistic agent behaviour.

- Provide the consultant with a reasonable time to study the project and measure the project uncertainty and complexity. Once the consultant is able to effectively assess the project in its early stages, then the client will be able to establish a plausible project time and cost estimates. This will result in a more realistic time scale for the project execution, and allow the consultant to establish the required knowledge to monitor and control the project in planning and execution stages. Establishing sufficient level of knowledge would enable the consultant to more efficiently monitor any potential opportunistic behaviour by the contractor that can cause the project to fail.

- Provide the contractor with adequate time to plan for such a unique and complex mega-project. This will enable the contractor to reduce the shortage of information (utilities infrastructure information), and the high level of uncertainty associated with such a complex and unique project. It will also help in exploring the unforeseen risks and allow the contractor to plan for mitigation and contingencies. This will result in a smoother execution stage for the project and eradicate the need of opportunistic

behaviours by the contractor which might be triggered due to the lack of sufficient knowledge held by the contractor to execute the project.

- The client may consider the segregation of the project design contract from the project execution contract, instead of combining both stages in design-build-transfer type of projects – specifically in railway projects; and allocating realistic project durations for each stage. This is because railway mega-project runs hundreds of kilometres through rural and urban areas; where in this case, utilities infrastructure maps were wrong and missing a lot of important information.

- The client should allocate the required time to choose the project agents before the project initiation. From this case study, choosing Contractor 1 and an unqualified and inexperienced project consultant were deemed as high level of importance causes of failure. In this scenario, the unqualified and inexperienced contractor and consultant may behave opportunistically to buy themselves some time to be able to learn at the back of the project, which occurred in the case of this study (HHR mega-project). Thus, the client's decisions for the agents' selection are crucial.

This latter recommendation emphasises the importance of the project team selection process. Selecting the right team for the project will ease the team's journey through Tuckman's four stages (1965), to reach to the required level of trust and integration where all team members share the same goals, which will allow the team members to perform. Lamming (1996) suggested that when trust is the relationship's norm, problems that may occur are targeted for solution. In this case, opportunism is removed from the equation. In this case study, and based on the consequences of lack of trust between the client, the project consultant and Contractor 1 (see Section 10.4.2), the following recommendations are forwarded to the client:

The lack of trust issue related recommendations

- Employ sufficient numbers of skilled engineers, consultants and project managers who are capable and qualified to plan and execute the required work.

- The client should spend the required time before the project initiation to choose the right consultant, who has the qualifications and experience of similar projects.

- It is recommended that the client should impose in the contractual document that the project consultant's staff should be selected based on their quality (qualification and experience) rather than quantity (as occurred in this project).

- It is suggested that the client should alter the bidding regulations in terms of the percentage of excluding a bid. The GTPL document states that "no bid may be excluded on grounds of its low prices unless it is less by 35% (thirty five percent)". This suggestion comes after PC-1R admitted that "the contracting and bidding system in Saudi needs to be revised"; he thought that "any contractor who provides estimated prices that lower than 10% should be investigated", adding "the current percentage of 35% cause a greater possibility of project failure".

The selection of the wrong project team based on the lowest cost appears to have affected the possibility of establishing the required level of trust with the client, which increased the occurrence of APs, as discussed in the overlap section between AT and cultural factors (see Section 10.4.1). Therefore, further recommendations emerge as follows:

Agency problem and culture related recommendations

- The client may impose additional penalties on the project consultant in the case of poor project performance. For example, the consultant should pay the cost of supervision if the consultant was found liable and accountable to certain delays (as

it is occurring with the contractor). In this case study (HHR mega-project), it was observed that the consultant had shared benefits with Contractor 1 in delaying the project where both of them acted opportunistically (see Section 10.4.1). Therefore, imposing additional penalties on the consultant would eradicate such an issue and the consultant would be in a position to resolve any project delay as a result.

- The client should review the financial incentive policy for the project agents (consultant and contractors). This is because the findings from this research demonstrated the importance of financial incentives where APs were a major part of the project failure and how this type of incentive could have changed some opportunistic behaviours.

Thus, the client taking the recommendations provided above into consideration, may result in more efficient project management execution through more effective project management practices, planning, monitoring, control and motivation for better performance by the consultant and contractors. These recommendations were provided within the context of mega-project to provide theoretical rationalisation to cut out the avenues for APs to appear and that should, theoretically, reduce the likelihood of mega-project failure.

11.5   Limitation and reflection (researcher's account for personal experience and learning)

This research has an unprecedented context. However, this gives rise to a number of limitations which have to be acknowledged. These limitations are as follows:

Firstly, the findings of this research emerged from a single case study within the construction industry. More specifically, an infrastructure public railway mega-project in Saudi Arabia. This begs the question as to what extent these findings are representative to other mega-projects in other sectors (for example, IT mega-projects, education meg-projects, etc.); and whether the findings would be the same if this research was carried out within a different sector. Furthermore, a wider study in other mega-project sectors could be beneficial in terms of the robustness of the findings of this research.

Secondly, the HHR mega-project was sponsored by the government (public project). However, the first phase of the project, including P1P1 and P1P2, were executed by three contractors and monitored and controlled by a consultant, all from the private sector. This brings to our attention another limitation of this case study research, which is the fact that the project client's voice which was heard throughout the clients' interviews was related to the public sector only. There was no client's voice from the private sector.

Thirdly, this research was keen to investigate multiple relationships and hear the voices of different actors within the project – who were considered mainly to be the top management (i.e. client representatives, contractors, consultants and their project managers). Due to lack of access, however, the researcher was unable to include other project actors such as sub-contractors, project designers, lower level stakeholders and potentially minor stakeholders, such as utility companies and other government bodies.

Fourthly, the Saudi cultural regulation allows only men to work in the construction infrastructure sector. As a result, all participants who were interviewed in this research project were men. A similar research in another country, where participants could be

from both genders, may demonstrate whether women would have reacted differently to similar causes of mega-project failure mentioned in this research.

The final limitation identified within this research concerns the qualitative methodological approach. This approach helped the researcher to identify and investigate different causes of failure in order to identify APs and achieve the research objective. However, it did not enable the researcher to identify specific and precise measurements in relation to the levels of importance of the causes of the HHR project failure – including APs, cultural causes and project management causes – individually or collectively per area.

Nonetheless, this research has provided in-depth analysis and insight to the HHR mega-project failure, while using AT as a primary theory, which has not previously been done in Saudi Arabia. Consequently, this research led the researcher to have a series of personal reflections. Firstly, the researcher had the prior perception that contractors were the major project actors causing project failure, mainly during the project execution stage, which was found to be untrue. This study also emphasised the major role of project consultants on mega-project failure. Secondly, it has become clear to the researcher from the discussion of this study that the existence of contractual penalties to the contractor – as a deterrent from any project delay or failure – is not enough for a successful project execution. It is essential to the contractors to have financial incentives in order to successfully deliver the project – mainly within projects that have high level of uncertainty. Thirdly, being a Saudi national was an essential factor while conducting this research (mainly during the data collection period) in understanding the views of Saudi participants, particularly when some information was related to the Saudi culture. Furthermore, being an English language speaker enabled the researcher to conduct this research in English, which provided the researcher with a broader database of literature

around the theories used in this research. This would also provide the researcher with better opportunities for future research.

11.6　Future research direction

This research has provided a starting point for future research. It has raised a number of debates, all of which require more research.

Firstly, looking at the current Saudi bidding system and its stipulations, the GTPL document states that "no bid may be excluded on grounds of its low prices unless it is less by 35% (thirty five percent)". This percentage was perceived to be rather high and it is one of the causes of choosing the wrong contractor and leading the project to fail. Therefore, interesting future research could be to investigate the current bidding regulations and their impact on construction mega-project failure.

Secondly, as this research heard the client's voice from the public sector only, there is an opportunity of future research that conducts a comparison case study between both public and private projects. The research may consider focusing on comparing the client's approach, attitude and project management practices between the two sectors, in order to conclude whether the nature of the sector influences the client to act in a certain way that has an impact on the project failure.

Thirdly, a continuing research that includes a larger sample size. Is it possible to find more APs when a higher number of relationships is included? Do culture and project management practices in that region influence the occurrence of APs? What are the levels of importance of these APs and other causes of failure? Are there further links and overlaps between these different variables?

Fourthly, another continuing research could use quantitative methodology to examine the level of importance of the causes of mega-project failure that were found in this research (HHR case study). Conducting this future research would require a larger sample size in order to investigate and find precise and measured figures in relation to the level of importance of the causes of failure, to find out the following: what are the precise measurements of the level of importance of APs, cultural causes and project management causes of failure? Which aspect between the three is the most prominent one? What are the numeric variations of the overlap between the three aspects?

Finally, the conclusion in this research study is derived from the construction infrastructure railways mega-project. An interesting further area of research could be looking at repeating this research study in other mega-project sectors, such as manufacturing, IT, education, etc. Would there be any similarities in the findings in comparison to this research? To what extent? Would other mega-project sectors come up with different APs, cultural factors and project management causes which can explain mega-project failures?

Examining the findings derived from this research – in the form of secondary data analysis – in future research conducted within construction infrastructure railway mega-projects would provide a great help in testing, as well as revising the outcome of this doctoral research.

APPENDICES

APPENDIX 1: RESEARCH VARIABLES AND MEASURES

Literature review section	Area Of research (Section title)	Variables (Section components – description)	Measures (Sub-section components – description)	Areas for exploration
Section 1	Project management	**Temporality**: Starting and finishing point is the major factor that differentiates project organisations from normal business organisations (Hanniff et al., 2015). Time restrictions create difficulties to establish co-operation, collaboration and shared knowledge, which may affect the project performance (Morley et al., 1977).	Objective time (quantitative): short quantified duration to achieve organisational goals – based on the clock (Palisis and Bartolomeo, 1970). Subjective time: qualitative time (Starkey, 1989). Short time to establish team integration and shared knowledge among project actors (Lanzara, 1983).	The impact of short project duration on team integration performing complex tasks. Impact of time temporality on actors' level of urgency, stress and project performance.
		Task: Project organisation exists as a result of task complexity (Goodman et al., 1976). Task complexity can be managerial and/or technical (Gidado, 1996). The complex task may have occurred before, or otherwise it would be unique for a certain project (El-Rayes and Moselhi, 1998). Task management component has two distinctions identified by Söderlund (2013) and they are as follows: firstly, project activities was divided into actual tasks and actor's social perspectives. Secondly, this distinction is between content and	Task and content: much research has paid attention to the content of project tasks, which covers areas like scope management and WBS. Task and process: similarly, research in project management has addressed processes related to tasks, which can be seen through Gantt charts and planning techniques. Social organisation and content: this element of the project organisation has been implemented through project documentation, which shows the distribution of responsibilities, interdependencies between project actors and cross-functional teams and so on.	The first three areas have been much considered in the literature of project management. Whereas, the last area, which is social organisation and process, was given very little attention in project management research (Söderlund, 2013). Therefore, project management tools and techniques including WBS, critical path, earned value techniques are important, but it is necessary to supplement them with project management soft skills (that includes issues, such as feeling, emotions, trust,

		process. These two distinctions result in four measures sub-sections.	Social organisation and process: this includes a number of examples, such as team temporary relationship, team dynamics, timing norms and deadlines.	conflict, power and learning) and leadership, in order to achieve task completion effectively. Furthermore, all four measures are explored through various methods.
	Project management	**Team:** this variable concern with team selection and operation. A number of authors suggest to select a project team based on their technical skills and competency (Pinto, 2016; Larson et al., 2014). Another suggestion added the importance of interpersonal skills (Bryman et al.,1987). However, Baykasoglu et al., (2007) highlighted the critical importance of team members' capability and eligibility in achieving effective project outcome. Furthermore, there are three measures that can influence team effectiveness (diversity, size and organisational team functionality)	Diversity: can push team effectiveness either way. It can create a supportive dynamic among team members (Larson and Gray, 2014; Pinto, 2016), or otherwise create a level of ambiguity, uncertainty and conflict within the team members (McGrath, 1991).	The impact of team size and diversity on the team effectiveness are measurable factors which were addressed in previous researches. Although, they will be explored in relevant situation throughout this study. On the other hand, organisational functionality cannot be measured. Bennis et al. (2005) stated "the things routinely ignored by academics on the grounds that they cannot be measured" (p. 3). Therefore, organisational team functionality will be explored and identified if it is an area leading to AP.
			Size: Baykasoglu et al., (2007) debated that once the number of team member exceeds (12-14) members, the performance will drop. Organisational team functionality: this measure is about project actors' ethics, morals and behavioural aspects. A clear organisation culture and structure is necessary, which defines the employees position, roles and responsibilities within the organisation (Trompenaars, 1993) to avoid the risk of project employees finding themselves in the middle between employing and project organisation and to whom they should be giving loyalty (Hall and Kutsch, 2007)	

		Transition: Lundin and Söderholm (1995) identified two meanings for transition. Firstly, the practical transformative transition for the permanent organisation, in terms of the change which occurred to the organisation from before to after conducting certain projects. The second definition is concerned with the changes during the project execution, including operational and functional aspects within the TO. Within this component, there are two sub-sections that present two different measures of transition.	Permanent to TO transition: this transition occurs once per project where the permanent organisation finds the importance to form and delegate the project to a TO due to the complexity and the need for certain expertise to conduct the project.	Bakker (2010) argued that little research has been done in the area of transition. However, Burstrom and Jacobsson (2012) argued that transition process is associated with operational complexities (e.g. functional, strategic and operational). This study aimed to explore these complexities within the two positions of transition.
			Operational multiple-transitions within TMO: this position occurs within the project execution stage where certain expertise is required for limited period only. This creates multiple transition points that might add tension and conflict within the project team (Hall and Kutsch, 2007).	
Section 2	Agency theory	**Principal-agent division:** This component was the initial reason for the manifestation of AT. This division existed as a result of the separation between ownership and control (Charreaux, 2004)		
		Information asymmetry: its origin comes from the information advantage the agent has over the principal (Provan, 1991). With less information, it is difficult for the principal to assess the agents' decisions. There are two types of information asymmetry: the first one occurs within public information when the principal fail to interpret them in the right way, and the second one is through private information that is difficult to be obtained by the principal. These two types will be assessed through the	Pre-contractual: this study is dealing with the information asymmetry that occurs between principal and his agent based on the contractual status between the two actors. The first measure was related to information asymmetry that occurred before signing the contract (pre-contractual).	This study has explored the pre-contractual information asymmetry from public and private information the agent holds in relation to issues that may assist the principal in making critical decision (e.g. assessing and selecting contractors)
			Post-contractual: the second measure was related to post-contractual information asymmetry. This started from the moment of signing the contract and continued throughout the project execution stage.	Post-contractual information asymmetry is another area which was explored. This area is concerned with managerial and technical information the

		following measures (pre-contractual, and post-contractual).		agent had during the execution stage.
	Agency theory	**Opportunism:** this component is a result of the information asymmetry that existed between the actors. Williamson (1979) defined it as a seeking process for self-interest that is associated with guile. It occurs after the agent exploits the advantageous position they are in by withholding additional information (Lai et al., 2005). Opportunism has many forms which was described as weak or strong, and subtle or blatant (Anderson, 1988). Two types have been identified for opportunism, based on the contractual stage between the two actors (Ceric, 2012; Caers et al., 2006). These two types are used as the measures of this variable in this study.	Adverse selection is the type of opportunism that occurs before signing a contract. At this stage of a project, the principal may not have sufficient information about the agents before setting up the contract. Which can allow the agents pre-contractual opportunism (Caers et al., 2006).	This study aimed to investigate on the impact of this type of opportunism (adverse selection) on the principal's decisions before the project is actually initiated and before the contractual document is prepared to be signed.
			Moral hazard (post-contractual opportunism) can occur once the contract is signed. The agents' actions and intention, which are difficult to detect by the principal, can lead to this type of opportunism (Alparslan, (2006).	This area of opportunism was explored in this research in order to identify specific APs in the Saudi context and their effect on project failure was analysed.
		Opportunism management: there are two possible outcomes once there is division between 'principal and agent', and the information asymmetry exists. Firstly, when trust is the moral norm between the two actors, then the potential of opportunism is excluded. The second outcome is where there is lack of trust between the two actors and that is when the notion of opportunism needs to be addressed.	Relationship nature: this approach deals with opportunism by changing the agent's attitude toward dealing with the project principal – mainly by establishing trust between the two actors and creating a co-operative collaborative relationship (Bhattacharya et al., 1998).	After identifying specific APs from the case of this study, the researcher's aim was to explore the mechanisms used by the actors to establish trust and increase the level of co-operation and collaboration and reduce the potential of the APs affecting the project outcome.

		There are two mechanisms to manage opportunistic behaviours (presented as sub-sections in this table). Failure in executing these two mechanisms leaves no option but to accept opportunism – and this is the third sub-section under this component.	Contractual nature: this approach aim to change the agent's behaviour through certain mechanisms such as realignment of the incentives for the agent. Steinle et al., (2014) suggested other mechanisms such as monitoring, signalling and screening.	This is the second area to explore in this study, whether the method of re-setting incentives, signalling and monitoring were followed to deal with opportunistic behaviours or otherwise not and why?
			Opportunism acceptance: is when the principal fail to use the opportunism management mechanisms. There are several explanations for not dealing with the risk of opportunism and they are: risk refusal, avoidance, delay or risk ignorance (Kutsch and Hall, 2005).	In the situation where principals have produced no actions to deal with the agents' opportunism, this study aimed to explore the reasons behind accepting this behaviour from the agent.
		Multiple principal-agent problem: AP occurs when a principal delegates a task to an agent (Wu et al., 2014). Certain industries involve more than one party to take the principal role, as well as the agent role, and these industries are perceived to be 'highly goal conflicted' – such as the construction industry (Toor and Ogunlana, 2010) because of the involvement of numerous stakeholders.	Ceric (2014) demonstrated multiple APs in his research by including the project owner, contractor and their project managers. Ceric (2014) proposed that future researches should enlarge the scope and include more project stakeholders to investigate the multiple agency issue	This study considered Ceric's proposal and included more stakeholders to explore the effect of multiple APs on the project performance. In addition to the stakeholders involved in Ceric's research, this study added further stakeholders for the investigation and that is the project consultant.
		Power Distance (PD): is "the extent to which the less powerful members of organisations and institutions (like	High (PD): high PD societies have opposite certain characteristics such as inequality between members in	AT originated from America and developed in Europe. As this study used the AT components

Section 3	Cultural aspect – Hofstede's dimensions of culture	the family) accept and expect that power is distributed unequally" (Hofstede, 2011, p. 9). The notion of PD does not exist only in the work place, it extends further to other institutions (for example, family and whole society). So, because there are different levels of PD, societies can be described as high or low PD. These two types are used as sub-sections in this table.	organisations, authority and power are for certain people, etc. Saudi Arabia was classified in this type of power resistance (Bjerke and Al-Meer, 1993). Low (PD): this type has opposite characteristics, for example equality between members in organisation and managers make decisions after consulting with subordinates, etc. American (USA and Canada) and most European countries were listed in this category by Hofstede (1984).	to analyse project failures in Saudi, the researcher aimed to find the impact of the Saudi culture (as High PD society) on the use of AT, which was originated and developed in an opposite cultural type (Low PD society).
		Uncertainty avoidance (UA): is related to the amount of stress a society may suffer from uncertain future. This dimension identified two types of UA societies and they are high UA society and low UA society.	High (UA): Hofstede (2001) observed that in this type, managers are been given a lot of power and authority to maintain more control on others behaviours. As a result, managers may exploit the authority and power to make decisions for their own interests. Bjerke et al., (1993) in their research presented Saudi Arabia in the category of high UA with a score of (73).	Similar to the (PD) variable, in this variable (UA), Saudi cultural type was classified opposite to the cultural type of AT's place of origin and development. Thus, this study will consider the cultural differences in the analysis of Saudi project failure.
			Low (UA): less power and authority are given to managers in these categories. American (USA and Canada) and most European countries were listed in this category by Hofstede (1984).	
		Individualism/collectivism: is related to the level of integration of individuals into a group or a society. This dimension describes "the	Individualism: an example of the characteristics of this type of society is that managers do rate autonomy as more important in their job. American	This study aimed to explore if there was an impact of different type of societies (individualist and collectivist) on utilising AT

		relationship between the individual and the collectivity" (Hofstede, 2001, p. 209), in more particular terms the "extent to which people are autonomous individuals or embedded in their groups" (Triandis and Gelfand, 2012, p. 499). Two types of society identified in this dimension and they are individualism and collectivism.	(USA and Canada) and most European countries are listed in this category by Hofstede (1984). Collectivism: this type of society is the opposite (i.e. managers consider job security and job positions as more important). Bjerke and Al-Meer (1993) presented Saudi Arabia as a collectivist society.	to analyse project failures. Certainly in a society where people tend to avoid taking accountability for their decision and the smallest unit of survival is groups instead of individuals as it is the case in Saudi.
		Masculinity/femininity: is related to the level of division between the roles of men and women. This the fourth dimension of Hofstede's cultural dimensions. It discussed the masculinity versus femininity across the whole society, not per individual's characteristics. Two types were identified as follows: the assertive side has been described as 'masculine' and the caring and modest 'feminine' (Hofstede, 2001).	Feminine society finds that men and women must be caring and modest, both should balance between work and family, give sympathy for the weak and others (Hofstede,1984). Saudi Arabia was considered as a feminine society (Bjerke and Al-Meer, 1993). Masculinity society finds that men must be assertive and women may be as well, work is prevailed over family, admiration for the strong and so on. American (Canada and USA) and most European societies were found to be masculine.	This study aimed to explore whether Saudi Arabia being a feminine society (with all the society's characteristics) influences the use of AT in the analysis of project failure. The reason behind this is the fact that the AT was created and developed in a masculine society.
		Time orientation is related to the option to focus on people's effort whether in the (past, present or future). This dimension is the only one out of the five that is connected to economic growth (Hofstede & Bond, 1988).	Short-term: short-term oriented societies are stuck with their social obligations, respect their traditions and care about personal stability and steadiness at work (Hofstede, 2011). Examples of short-term oriented societies are USA, Latin America, Muslim and African countries.	In this variable, Saudi was classified the same as some American societies (USA and Latin America) to be short-term oriented societies. Although, the long-term oriented societies included other European countries. As long-term oriented societies are characterised with better economic growth, this study will explore the impact of

			Long-term: Long-term oriented society is said to result with better economic growth; this society is characterized with perseverance, ordering relationships based on status, and have a sense of shame (Hofstede, 2011). Examples for long oriented countries are East Asia, Central and Eastern Europe.	short-term oriented societies on AP.
		Indulgence/Restraint	Indulgent society: "Indulgence stands for a society that allows relatively free gratification of basic and natural human desires related to enjoying life and having fun" (Hofstede, 2011, p. 15)	Hofstede (2011) claimed that this dimension complements the previous one – time orientation. Saudi Arabia was classified to be an indulgent society, where population have less controlled gratification to their natural human desires in contrast with their work life.
			Restraint society: "Restraint stands for a society that control gratification of needs and regulates it by means of strict social norms" (Hofstede, 2011, p. 15).	

APPENDIX 2: INTERVIEW QUESTIONNAIRE

University of Birmingham

Haramain High-Speed Railway project

Interview

The conduct of the interview is for the purpose to investigate in the HHR project failure.

Personal Details

Name (optional): . . . .

Position: . . . .

Email: . . . .

Contact Telephone: . . . .

Semi- Structure Interview Questionnaire

Q1:   How effective the agent is in providing information that will help the client in evaluating the agent's competency to execute this project before the project starts?

Q2:   what is the nature of the relationship between principal and agent? And how does that nature help in avoiding factors that may cause project failure?

Q3:   what the principal does to measure the agent's eligibility and capability to execute the project?

Q4:   Do you think that the agent's knowledge about project complexity can affect his behaviour towards moral hazard opportunism? And how?

Q5:   How would you describe that changing the agents' attitude to be more co-operative and collaborative can decrease the opportunistic behaviours?

Q6:   Describe the importance of financially incentivising the contractors for project completion and apply penalties for failure of completion?

Q7:   Mega-projects has a complex structure, do you think that multiple agency problem increase the likelihood of project failure? And how?

APPENDIX 3: INTERVIEWS SCHEDULE TABLE

No.	Project Section	Interviewee position	Code	First data collection schedule		Follow up data collection schedule	
				Interview date	Interview duration	Interview date	Interview duration
1		Client representative	PC – 1R	10/11/2013	90 Minutes	09/04/2017	40 Minutes
2		Client project manager	PC – 1P	10/11/2013	50 Minutes	09/04/2017	45 Minutes
3		Contractor representative	PCON – 1R	10/11/2013	70 Minutes	10/04/2017	60 Minutes
4	P1P1	Contractor project manager	PCON – 1P	01/12/2013	66 Minutes	-	-
5		Consultant representative	PECO – 1R	25/11/2013	70 Minutes	11/04/2017	55 Minutes
6		Consultant project manager	PECO – 1P	17/11/2013	65 Minutes	10/04/2017	50 Minutes

7		Consultant representative	**PCO – 1R**	12/11/2013	90 Minutes	10/04/2017	35 Minutes
8		Client representative	**PC – 2R**	18/11/2013	72 Minutes	11/04/2017	47 Minutes
9		Client project manager	**PC – 2P**	18/11/2013	50 Minutes	-	-
10		Contractor representative	**PCON – 2R**	10/12/2013	45 Minutes	13/04/2017	31 Minutes
11	**P1P2 – Station 1**	Contractor project manager	**PCON – 2P**	10/12/2013	65 Minutes	-	-
12		Consultant representative	**PECO – 2R**	27/11/2013	65 Minutes	12/04/2017	40 Minutes
13		Consultant project manager	**PECO – 2P**	26/11/2013	65 Minutes	13/04/2017	25 Minutes
14		Consultant representative	**PCO – 2R**	1/12/2013	50 Minutes	12/04/2017	30 Minutes

15		Client representative	PC – 3R	18/11/2013	70 Minutes	17/04/2017	60 Minutes
16		Client project manager	PC – 3P	05/12/2013	55 Minutes	-	-
17	**P1P2 – station 2**	Contractor representative	PCON – 3R	20/12/2013	45 Minutes	18/04/2017	35 Minutes
18		Contractor project manager	PCON – 3P	19/12/2013	45 Minutes	19/04/2017	40 Minutes
19		Consultant representative	PECO – 3R	11/12/2013	65 Minutes	19/04/2017	45 Minutes
20		Consultant Project manager	PECO – 3P	19/12/2013	65 Minutes	18/04/2017	50 Minutes
21		Consultant representative	PCO – 3R	12/12/2013	65 Minutes	18/04/2017	40 Minutes

APPENDIX 4: SAMPLE OF FIELD OBSERVATIONS NOTES

Observation No.	Location	Date/ Time	Comments
1			
2			
3			
4			
5			

APPENDIX 5: LIST OF DOCUMENTS REVIEWED

Document No. (Reference name)	Title	Reference	Publisher	Date of publication	Paragraph	Page number
Document 1						
Document 2						
Document 3						
Document 4						
Document 5						

Reviewer's comments

No	Document Number	Page No	Reviewer's comment	Additional comments
1				
2				
3				

APPENDIX 6: ETHICAL APPROVAL

Ethical approval for data collection (first trip)

FW: Ethical statement

Christopher Lonsdale
Sent: 27 March 2017   16:11
To: Abdullah Alsabban; Mark Alexander Hall
Cc: Christopher Lonsdale

Statement Regarding Research Ethics

The research data collected in January 2014 (phase 1 of the data collection undertaken by the candidate) has been subjected to a University management review. This review concluded that there had not been any significant ethical breach in the conduct of the research and that the data collected in this period could be used in the thesis 'Mega-projects in Saudi Arabia: an agency theory perspective'. On this basis I am happy to support the submission of this work for examination.

Professor Glyn Watson
Dean, Business School
23rd March 2017

Ethical Approval for data collection (second trip)

UNIVERSITY OF BIRMINGHAM

APPLICATION FOR ETHICAL REVIEW

Who should use this form:

This form is to be completed by PIs or supervisors (for PGR student research) who have completed the University of Birmingham's Ethical Review of Research Self Assessment Form (SAF) and have decided that further ethical review and approval is required before the commencement of a given Research Project.

Please be aware that all new research projects undertaken by postgraduate research (PGR) students <u>first registered as from 1st September 2008</u> will be subject to the University's Ethical Review Process. PGR students first registered before 1st September 2008 should refer to their Department/School/College for further advice.

Researchers in the following categories are to use this form:

1. The project is to be conducted by:
   - staff of the University of Birmingham; or
   - postgraduate research (PGR) students enrolled at the University of Birmingham (to be completed by the student's supervisor);
2. The project is to be conducted at the University of Birmingham by visiting   researchers.

Students undertaking undergraduate projects and taught postgraduate (PGT) students should refer to their Department/School for advice.

NOTES:

➢ An electronic version of the completed form should be submitted to the Research Ethics Officer, at the following email address: aer-ethics@contacts.bham.ac.uk. Please **do not** submit paper copies.

➢ If, in any section, you find that you have insufficient space, or you wish to supply additional material not specifically requested by the form, please it in a separate file, clearly marked and attached to the submission email.

➢ If you have any queries about the form, please address them to the Research Ethics Team.

⊠ **Before submitting, please tick this box to confirm that you have consulted and understood the following information and guidance and that you have taken it into account when completing your application:**

- **The information and guidance provided on the University's ethics webpages (https://intranet.birmingham.ac.uk/finance/accounting/Research-Support-Group/Research-Ethics/Ethical-Review-of-Research.aspx)**

- **The University's Code of Practice for Research (http://www.as.bham.ac.uk/legislation/docs/COP_Research.pdf)**

<table>
<tr><td rowspan="4">UNIVERSITY OF BIRMINGHAM

APPLICATION FOR ETHICAL REVIEW</td><td>OFFICE USE ONLY:</td></tr>
<tr><td>Application No:</td></tr>
<tr><td>Date Received:</td></tr>
</table>

1. TITLE OF PROJECT

A study on analysing project failures in Saudi Arabia by using agency theory.

2. THIS PROJECT IS:

University of Birmingham Staff Research project ☐

University of Birmingham Postgraduate Research (PGR) Student project ☒

Other ☐ (Please specify):

3. INVESTIGATORS

    a) PLEASE GIVE DETAILS OF THE PRINCIPAL INVESTIGATORS OR SUPERVISORS (FOR PGR STUDENT PROJECTS)

Name: Title / first name / family name	Mark Hall
Highest qualification & position	PhD Senior Lecturer
School/Department	Birmingham Business School
Telephone:	0121 4148577
Email address:	m.a.hall.1@bham.ac.uk

Name: Title / first name / family name	
Highest qualification & position	
School/Department	
Telephone:	
Email address:	

    b) PLEASE GIVE DETAILS OF ANY CO-INVESTIGATORS OR CO-SUPERVISORS (FOR PGR STUDENT PROJECTS)

Name: Title / first name / family	Chris Lonsdale
Highest qualification & position	PhD Reader
School/Department	Birmingham Business School
Telephone:	0121 414 7593
Email address:	c.m.lonsdale.ieb@bham.ac.uk

    c) In the case of PGR student projects, please give details of the student

Name of	Abdullah	Student	

Course of Principal	PHD Management Mark Hall	Email	

Name of student:		Student No:	
Course of study:		Email	
Principal			

4. ESTIMATED START OF   Date: 05/04/2017   **PROJECT**

ESTIMATED END OF   Date: 27/04/2017   **PROJECT**

FUNDING

List the funding sources (including internal sources) and give the status of each source.

Funding Body	Approved/Pending /To be submitted
Government of Saudi Arabia (King Abdul Aziz University)	Approved

If you are requesting a quick turnaround on your application, please explain the reasons below (including funding-related deadlines). You should be aware that whilst effort will be made in cases of genuine urgency, it will not always be possible for the Ethics Committees to meet such requests.

I request a quick turnaround on this application for the following reasons:

- At this stage of my research, further follow up data collection is required for the benefit of the research. And the time is strictly limited to be at beginning of April.
- The limited time available to incorporate the previously collected data with the required follow up data, and conduct a full analysis and then starting to write up the findings, analysis and discussion chapter. (N.B. the deadline for my submission is this summer - August 2017)

5. SUMMARY OF PROJECT

Describe the purpose, background rationale for the proposed project, as well as the hypotheses/research questions to be examined and expected outcomes. This description should be in everyday language that is free from jargon. Please explain any technical terms or discipline-specific phrases.

The research is looking at project management field. The case study of this research is looking at the Harmain High Speed Railway Project in Saudi Arabia.

Project failure is an issue affecting a large percentage of projects that has been executed and under construction around the world. This failure can be seen in forms such as delivering the project within the allocated budget, within the allocated deadlines and/or the required specifications. Furthermore, the failure can be in other areas as well, such as health and safety, ethical behaviours...etc. This research aims to investigate in the problem of project failure in Saudi Arabia and find issues that are causing these failures and analyse them with the primary theory of this research.

Researchers in the area of project management have looked at this problem of project failure by using a number of theories such as: optimism bias, governance theory, risk theory, and others. This research is focusing on using agency theory as the primary theory of the research. Throughout the literature review stage, it has been recognised that agency theory was originated in North America, and developed in Europe. As this research is studying project failure in Saudi Arabia, where a country with different culture to where agency theory started and developed; the cultural theory is considered as the subsidiary theory in this research.

Thus, the problem this research is trying to address is looking at the extent agency theory can be applied in a country with different culture of its origin.

Furthermore, Agency theory is looking at the agent's opportunism toward the principal as result of information asymmetry between the two actors. Previously, researchers looked at the issue of multiple agency problems which can occur. Previous research addressed Client, contractor and their project managers in the studies. Ceric, (2014) suggested that further research may look into more complex relationships within projects. This research is aiming to include additional project actors (i.e. Client, Contractor, Consultant and their project managers).

Therefore, The research question that will be addressed in this investigation is:
RQ. To what extent can agency theory be utilised in the analysis and explanation of mega-project failure of the Haramain High-Speed Railway (HHR) project within Saudi Arabia?

Research Objectives:
1. To identify the specific APs (if any) that occurred within the HHR mega-project.
2. To investigate the extent to which these APs explain the HHR project failure.
3. To evaluate the influence of Saudi culture and the project management context on the HHR project failure.
4. To explore potential linkages between APs, cultural factors and the project management context.
5. To develop a new framework that illustrates factors of mega-project failure, and any potential linkages between the three factors (APs, cultural factors and project management factors).

The expected outcome of this research is one of the following three:
Agency theory cannot be used in analysing project failure in Saudi Arabia.
Agency theory can be used in analysing project failure in Saudi Arabia.
Agency theory can be used **partially** in analysing project failures in Saudi Arabia.

6. CONDUCT OF PROJECT

Please give a description of the research methodology that will be used

This research will be conducted in Saudi Arabia, in the Haramain High Speed Railway Project. This research will be a case study research Employing a qualitative data. The data collection methods will include: semi-structured interviews, field notes (observation), Document review (notes taking). This data collection is a follow up to the collected data previously.

The methodology will consist of the following steps:
Semi-structured interviews:
- The participants will be interviewed individually.
- The semi-structured interviews will be voice recorded to be used for the purpose of this research only.
- All interviewees are English speakers. Therefore, all interviews will be conducted in English language.
- The semi-structured interviews will be transcribed and analysed within the research themes.
- The analysis will include the gathered noted from the observation and document review.
- All notes to be taken by the researcher will be noted in English language.
- Field notes and document review data collection methods will be conducted to collect data that will substantiate the data analysis from the semi-structured interviews to answers the research question.
- Observation notes will include: notes from construction sites, general practices and from general meetings.
- Document review will include: reviewing planning documents, project management software and general project document – in areas and themes required for this study.
- This study is investigating in stakeholders relationships (agency theory); the participants are not required to have any previous knowledge about agency theory. All terms will be used in the process of data collection (including the consent form) are general managerial terms that are understandable and do not require previous knowledge from participants.

7. DOES THE PROJECT INVOLVE PARTICIPATION OF PEOPLE OTHER THAN THE RESEARCHERS AND SUPERVISORS?

Yes ☒ No ☐

Note: 'Participation' includes both active participation (such as when participants take part in an interview) and cases where participants take part in the study without their knowledge and consent at the time (for example, in crowd behaviour research).

If you have answered NO please go to Section 18. If you have answered YES to this question please complete all the following sections.

8. PARTICIPANTS AS THE SUBJECTS OF THE RESEARCH
Describe the number of participants and important characteristics (such as age, gender, location, affiliation, level of fitness, intellectual ability etc.). Specify any inclusion/exclusion criteria to be used.

21 Participants:

The semi-structured interview sample will comprise 21 participants in three different locations within the project; Three administration consultants (employed by the client), client representative and his project manager * 3 locations, contractor and his project manager *3 locations, and executive consultant and his project manager *3 locations.

- The gender of all participants is male – due to cultural and traditional principals in this field of work.
- All participants are aged over 18.
- All participants are located within the area of the project and physically fit.
- All participants are intellectually able to contribute to the research and specialised in their area of work.

9. RECRUITMENT

Please state clearly how the participants will be identified, approached and recruited. Include any relationship between the investigator(s) and participant(s) (e.g. instructor-student).

Note: Attach a copy of any poster(s), advertisement(s) or letter(s) to be used for recruitment.

The researcher has been given a written permission from the President of the project (Harmain Project President – Saudi Railway Organisation) to conduct the data collection within the Harmain High-speed Railway Project for the purpose of this research. This permission has been obtained after an official request has been submitted from the researcher's sponsor (King Abdul Aziz University).

Both letters Attached.

10. CONSENT

a) Describe the process that the investigator(s) will be using to obtain valid consent. If consent is not to be obtained explain why**.** If the participants are minors or for other reasons are not competent to consent, describe the proposed alternate source of consent, including any permission / information letter to be provided to the person(s) providing the consent.

A signed consent form (Copy attached) will be obtained from the participants who agree to participate in the research. This is in order to work with and voice-record the semi-structured interview.

Note: Attach a copy of the Participant Information Sheet (if applicable), the Consent Form (if applicable), the content of any telephone script (if applicable) and any other material that will be used in the consent process.

b) Will the participants be deceived in any way about the purpose of the study?
Yes ☐ **No** ☒

If yes, please describe the nature and extent of the deception involved. Include how and when the deception will be revealed, and who will administer this feedback.

11. PARTICIPANT FEEDBACK

Explain what feedback/ information will be provided to the participants after participation in the research. (For example, a more complete description of the purpose of the research, or access to the results of the research).

> After the completion of this project, I will provide the Saudi Railway organisation with a written report of my findings. Also, the participants may receive a copy as well. My contact details will be on the consent form for any feedback.

12. PARTICIPANT WITHDRAWAL

a) Describe how the participants will be informed of their right to withdraw from the project.

> The right to withdraw from participating in the semi-structured interview will be explained in the consent form. If for any reason, any participants prefer not participate after the interview has started, I will remind them of their right to withdraw.
>
> N.B. The last date (deadline) for participants to wish to withdraw the data they have provided for the purpose of this research is the date of the thesis submission (31/08/2017).

b) Explain any consequences for the participant of withdrawing from the study and indicate what will be done with the participant's data if they withdraw.

> There will be no consequences for the participants; their opportunity to withdraw will be mentioned in the research report. The collected data from those participants will not be used.

13. COMPENSATION

Will participants receive compensation for participation?

      i) Financial

        Yes ☐ **No** ☒

ii) Non-financial   **Yes** ☐ **No**

      ☒

If **Yes** to **either** i) or ii) above, please provide details.

If participants choose to withdraw, how will you deal with compensation?

14. CONFIDENTIALITY

a)   Will all participants be anonymous?
        Yes ☒**No** ☐

b)   Will all data be treated as confidential?   **Yes**
        ☒ **No** ☐

Note: Participants' identity/data will be confidential if an assigned ID code or number is used, but it will not be anonymous. Anonymous data cannot be traced back to an individual participant.

Describe the procedures to be used to ensure anonymity of participants and/or confidentiality of data both during the conduct of the research and in the release of its findings.

I will allocate numbered labels to all participants (e.g. PC – Staff 1; PCO – Staff 1; PCON – Staff 1). These numbered labels will be used throughout the research (collecting and presenting the data). A list with the participants' names and labels will be kept in a secure, locked location. The list will be kept for 10 years after the project completion. The list will be accessible only to the researcher. Nothing will be included in the report, which might identify any of the participants.

Although there is a low number of participants involved in this study, it is impossible that participants will be identifiable to other participants in the study for the following reasons:
  - The organisation which is targeted for the data collection is a very large organisation, composed of multiple number of contractors and field sub-contractors who are allocated in multiple locations (field sites and offices), and performing different tasks.
  - This is the second stage of data collection trip for the purpose of this research.
  - The selected sample does not involved two participants from the same department.
  - The researcher will keep the confidentiality and anonymity of participants thoroughly during data collection, analysis and results presentation in the final thesis.

If participant anonymity or confidentiality is not appropriate to this research project, explain, providing details of how all participants will be advised of the fact that data will not be anonymous or confidential.

15. STORAGE, ACCESS AND DISPOSAL OF DATA

Describe what research data will be stored, where, for what period of time, the measures that will be put in place to ensure security of the data, who will have access to the data, and the method and timing of disposal of the data.

In accordance with the university's code of practice for research all data collected will be preserved and accessible for ten years after the completion of the project. All forms of data (notes, voice records, correspondence and list of participants) will be preserved in a secure location. The researcher will be the only person having access to these forms of data. After ten years, the documents will be destroyed.

Any data provided by participants will not be held against them, or shared with any third party within their organisation in any circumstances. The researcher will keep all participants' information anonymously. Therefore, there are no negative consequences for any of the participants or anybody included in this study.

16. OTHER APPROVALS REQUIRED? e.g. Criminal Records Bureau (CRB) checks or NHS R&D
approvals.

☐ YES   ☐ NO   ☒ NOT APPLICABLE

If yes, please specify.

```
┌─────────────────────────────────────────────────────────────┐
│                                                             │
│                                                             │
│                                                             │
└─────────────────────────────────────────────────────────────┘
```

17. SIGNIFICANCE/BENEFITS
Outline the potential significance and/or benefits of the research

```
┌─────────────────────────────────────────────────────────────┐
│                                                             │
│   - To identify areas, where agent's opportunistic behaviour │
│     lead to project failure.                                │
│                                                             │
│   - To identify week project management practices, which     │
│     increase the potential of agent's opportunism.           │
│                                                             │
│                                                             │
│   - To find out if agency theory addresses the identified    │
│     agency problems in Saudi Arabia.                        │
│                                                             │
│                                                             │
│   - To find out if agency theory takes into account the      │
│     Saudi project management cultural practices.            │
│                                                             │
└─────────────────────────────────────────────────────────────┘
```

18. RISKS

a) Outline any potential risks to **INDIVIDUALS**, including <u>research staff, research participants, other individuals not involved in the research</u> and the measures that will be taken to <u>minimise</u> any risks and the procedures to be adopted in the event of mishap

> Some participants may feel concerned or uncomfortable of being voice recorded while being interviewed. The researcher will take steps to allay any concerns by stating clearly the purpose of the research, by assuring confidentiality, anonymity, by telling them that the researcher is the only person to review the data, and by allowing the interviewee to withdraw at any time.

b) Outline any potential risks to **THE ENVIRONMENT and/or SOCIETY** and the measures that will be taken to <u>minimise</u> any risks and the procedures to be adopted in the event of mishap.

> None Foreseen

19. ARE THERE ANY OTHER ETHICAL ISSUES RAISED BY THE RESEARCH?

Yes ☒ **No** ☐

If yes, please specify

Saudi Arabia is a country with strict social codes that include privacy and confidentiality. The researcher is a Saudi citizen and will ensure that all approvals from the relevant authority will be obtained prior to commencement.

20. EXPERT REVIEWER/OPINION

You may be asked to nominate an expert reviewer for certain types of project, including those of an interventional nature or those involving significant risks. If you anticipate that this may apply to your work and you would like to nominate an expert reviewer at this stage, please provide details below.

Name
N/A
Contact details (including email address)
Brief explanation of reasons for nominating and/or nominee's suitability

21. CHECKLIST

Please mark if the study involves any of the following:

- Vulnerable groups, such as children and young people aged under 18 years, those with learning disability, or cognitive impairments ☐

- Research that induces or results in or causes anxiety, stress, pain or physical discomfort, or poses a risk of harm to participants (which is more than is expected from everyday life) ☐

- Risk to the personal safety of the researcher ☐

- Deception or research that is conducted without full and informed consent of the participants at time study is carried out ☐

- Administration of a chemical agent or vaccines or other substances (including vitamins or food substances) to human participants. ☐

- Production and/or use of genetically modified plants or microbes ☐

- Results that may have an adverse impact on the environment or food safety ☐

- Results that may be used to develop chemical or biological weapons ☐

Please check that the following documents are attached to your application.

	ATTACHED	NOT APPLICABLE
Recruitment advertisement	☒	☐
Participant information sheet	☐	☒
Consent form	☒	☐
Questionnaire	☒	☐
Interview Schedule	☒	☐

22. DECLARATION BY APPLICANTS

I submit this application on the basis that the information it contains is confidential and will be used by the

University of Birmingham for the purposes of ethical review and monitoring of the research project described

herein, and to satisfy reporting requirements to regulatory bodies. The information will not be used for any

other purpose without my prior consent.

I declare that:

- The information in this form together with any accompanying information is complete and correct to the best of my knowledge and belief and I take full responsibility for it.
- I undertake to abide by University Code of Practice for Research (http://www.as.bham.ac.uk/legislation/docs/COP_Research.pdf) alongside any other relevant professional bodies' codes of conduct and/or ethical guidelines.
- I will report any changes affecting the ethical aspects of the project to the University of Birmingham Research Ethics Officer.
- I will report any adverse or unforeseen events which occur to the relevant Ethics Committee via the University of Birmingham Research Ethics Officer.

Name of principal investigator/project supervisor:	Mark Hall
Date:	20/02/17

Please now save your completed form, print a copy for your records, and then email a copy to the Research Ethics Officer, at aer-ethics@contacts.bham.ac.uk. As noted above, please do not submit a paper copy.

APPENDIX 7: KING ABDUL-AZIZ UNIVERSITY REQUEST FOR
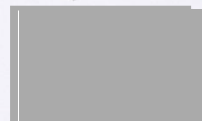
DATA COLLECTION

ek TRANSLATIONS

ONE STOP TRANSLATION SOLUTIONS

Address: Lonsdale House,
52 Blucher Street,
Birmingham, B1 1QU
Tel: 0845 303 8681
Fax: 0845 303 8691
Email: info@ektranslations.co.uk
Website: www.ektranslations.co.uk

DECLARATION

EK Translations Ltd hereby certifies that the documents in the **English** language hereunto annexed are to the best of our professional knowledge and belief, a true and faithful rendering of the enclosed documents relating to **Abdullah Sahl Alsabban** and written in the **Arabic** language.

Copies of the source documents are identified herewith as EKT5428/ARA and their respective English translation as EKT5428/ENG.

07.03.2017

Eid Khashan *BA,MA,MCIL,DPSI*
(Member of The Chartered Institute of Linguists)

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Registered Office: 52 Blucher Street, Birmingham, B1 1QU **Company Registration No:** 06909397 **VAT Registration No:** 106407152

To;

H.E. Director General of Roads and Transport in Makkah   The Esq.

General Supervisor of Haramain High-Speed Rail Project

May Allah's peace, mercy and blessings be upon you

Greetings,

It gives the Faculty of Economics & Administration, King Abdul Aziz University, a great pleasure to present you its warmest compliments, kindly be informed that Mr. Abdullah Sahl Alsabban; who is a lecturer at the Department of Business Administration in the Faculty has applied to us to collect some information and data in order to complete his research on Haramain High-Speed Rail Project. From the principle of cooperation among different government sectors, we hope you would make it easyfor him to collect data necessary to complete his scientific research, bearing in mind that the data and information to be collected by him will only be used for the purpose of scientific research and will be kept strictly confidential, thanking you for your kind cooperation in this regard and your support of such studies.

This statement was issued at the researcher's request without any responsibility towards the faculty or University.

With the utmost respect and duly appreciation

Dean of Faculty of Economics & Administration
<Signed: 26/12/1434 AH > (30/10/2013 AD*)
Dr. Ayman bin SalehFadil

- Any scrape or changein the statement renders it void and null.
  Eng. Al Qahtani

Handwritten: Eng. Ali Al kari, Kindly serve a letter to the consulting contractor along with an application to the in-charge organization to cooperate with the researcher <Signed: 26/12/1434 AH> (30/10/2013 AD*)

Number: **47414/X**   Date:**26/12/1434 AH(30/10/2013 AD*)**   Attachments:

*Dates converted by the translator

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبد العزيز
كلية الاقتصاد و الإدارة

☎ ٦٩٥٢٠٠٠ - ٦٤٠٠٠٠٠ فاكس ٦٤٠١٦٦٧
✉ ص ب ٨٠٢٠١ جدة ٢١٥٨٩

سعادة مدير عام الطرق والنقل بمنطقة مكة المكرمة   الموقر

المشرف العام على قطار الحرمين السريع

السلام عليكم ورحمة الله وبركاته وبعد

تهدي كلية الاقتصاد والإدارة بجامعة الملك عبدالعزيز لسعادتكم أطيب تحياتها
وتقديرها وتشير في هذا الصدد بأنه تقدم إلينا سعادة الأستاذ / عبدالله بن سهل الصبان
وهو أحد منسوبي الكلية المحاضرين بقسم ادارة الاعمال ويرغب بجمع معلومات وبيانات لإتمام
بحثه العلمي عن "مشروع قطار الحرمين"، وانطلاقا من مبدأ التعاون بين القطاعات الحكومية
المختلفة نأمل من سعادتكم التكرم بالموافقة وتسهيل مهمة سعادته لجمع البيانات اللازمة
لإتمام بحثه العلمي ونفيدكم بأن البيانات والمعلومات التي سيحصل عليها ستستخدم لغرض
البحث العلمي وبسرية تامة وأنتم خير من يدعم هذه الدراسات شاكرين لسعادتكم كريم
تعاونكم وبناء على طلبه تم إصدار هذه الإفادة دون أدنى مسئولية على الكلية أو الجامعة.

وتقبلوا تحياتي وتقديري ،،،

عميد كلية الاقتصاد والإدارة

د. ايمن بن صالح فاصل

• أي كشط أو تعديل يلغي الإفادة
خ/م/ القحطاني

Attachment: .... : المرفقات   Date: ١٤٣٤/١٢/٦ : التاريخ   Number: ٤/٤٧٤١٤ : الرقم

APPENDIX 8: SRO PERMISSION FOR DATA COLLECTION

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DECLARATION

EK Translations Ltd hereby certifies that the documents in the **English** language hereunto annexed are to the best of our professional knowledge and belief, a true and faithful rendering of the enclosed documents relating to **Abdullah Sahl Alsabban** and written in the **Arabic** language.

Copies of the source documents are identified herewith as EKT5428/ARA and their respective English translation as EKT5428/ENG.

07.03.2017

Eid Khashan *BA,MA,MCIL,DPSI*
(Member of The Chartered Institute of Linguists)

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Saudi Railways Organization
Code (226)
Haramain High-Speed Rail Project

P.O. Box: 56000
Jeddah: 21544
Kingdom of Saudi Arabia
Tel: 009662 2643677
Fax: 009662 2643632
www.saudirialways.org

Sub.: Regarding Mr. Abdullah Sahl Alsabban's research on
Haramain High-Speed Rail Project

To;

Dar AlHandasah (Shair and Partners)   The Esq.

 Al-Rajhi Alliance   The Esq.

Contractor of phase (1) of Haramain High-Speed Rail Project

May Allah's peace, mercy and blessings be upon you

In reference to the letter issued by Faculty of Economics and Administration, King Abdul Aziz University regarding the desire of one of its lecturer of the Department of Business Administration to collect information and data necessary to complete his research on Haramain High-Speed Rail Project. The Faculty asked to make it easy for the lecturer to collect the sought information, which will be used only for the said scientific research.

Consequently, kindly give a hand to the researcher and provide him with the required information in cooperation with the management of Haramain High-Speed Rail Project.

With the utmost respect and dully appreciation

Director General of Roads and Transport in Makkah
Project Director General
<Singed: 2/1/1435AH> (5/11/2013 AD)*
Eng. Mohammad Tawfeeqbin Mustafa Madani

Number: Date: Attachments:

*Dates converted by the translator

ص.ب ٥٦٠٠٠
جدة ٢١٥٤٤
المملكة العربية السعودية
هاتف : ٢١٤٣١٧٧ (٩٦١٢+)
فاكس : ٢١٤٣١٣٢ (٩٦١٢+)
www.saudirailways.org

المؤسسة العامة للخطوط الحديدية
SAUDI RAILWAYS ORGANIZATION
الرمز (٢٢٦)
مشروع قطار الحرمين السريع

الموضوع: بشأن بحث الأستاذ / عبدالله بن سهل الصبان عن مشروع قطار الحرمين ا لسريع.

السادة دار الهندسة للإستشارات الفنية (شاعر ومشاركوه) المحترمين

السادة إئتلاف الراجحي المحترمين

مقاول مشروع قطار الحرمين المرحلة الأولى

السلام عليكم ورحمة الله وبركاته، ، ،

إشارة لخطاب كلية الاقتصاد والإدارة بجامعة الملك عبدالعزيز وإفادتهم برغبة أحد منسوبيها المحاضرين بقسم إدارة الأعمال جمع معلومات وبيانات لإتمام بحثه العلمي عن مشروع قطار الحرمين وطلبهم الموافقة على تسهيل مهمته لجمع البيانات اللازمة وأنها ستستخدم لغرض البحث العلمي فقط .

عليه آمل منكم التعاون مع الباحث ودعمه بالعلومات اللازمة بالتعاون مع إدارة مشروع قطار الحرمين السريع.

وتقبلوا تحياتي وتقديري، ، ،

مدير عام الطرق والنقل بمنطقة مكة المكرمة

مدير عام المشروع

م. محمد توفيق بن مصطفى مدني

الرقم : التاريخ : المرفقات :

APPENDIX 9: CONSENT FORM FOR INTERVIEWEE

CONSENT FORM FOR INTERVIEWEE

UNIVERSITY OF BIRMINGHAM

STUDY ON PROJECT MANAGEMENT

Dear Mr/Mrs

My name is Abdullah Alsabban and I am a Researcher in the area of project management. I am currently conducting research for a PhD degree at the University of Birmingham Business School.

The subject of my research is to identify causes of project failure that is related to Stakeholder relationship. As you know, project failure can be caused by many factors. My study will identify the factors that concern with Stakeholder relationship. To do this work, it will be necessary to voice record (for later reference) the interview. As the researcher, my role will be collecting the required data for the research only. I will not have any communication or interaction with any other department of your organisation referring to your interview.

I am writing to you now to request permission to accept the interview invitation. If your permission is granted I would like to voice-record the interview.

As required by the University's 'Code of Practice for Research', confidentiality and anonymity will be strictly observed. The names of the interviewee will not be divulged to anyone. Pseudonyms will be used in the final report, and there will not be anything which might identify the individuals who participated in this investigation. To ensure confidentiality and anonymity all voice-records, notes, or other written material which I might make in the course of this work will be stored in a secure, locked location and used solely for this research. I will be the only person with access to the storage. As required by the University's 'Code of Practice for Research', all voice records and notes will be destroyed after ten years.

If, after initially agreeing, you later wish to withdraw from the study you may do so at any point. If you withdraw you can still be informed about the findings when the research is completed. I will be writing my observations and findings in the thesis for my PhD degree.

N.B. The last date (deadline) for participants to wish to withdraw the data they have provided for the purpose of this research is the date of the thesis submission (31/08/2017).

Please tick the box below to indicate whether you/are not willing to be involved in the study.

I am willing to participate in the study ☐

I will not participate in the study ☐

Name: _____

Qualification: …………………………..

Signed: _____

Date: _____

Should you require any further information about the study please contact me by email on �████████████████ Or you may call me; my phone number is �████████████

�████████████

Academic supervisor details:

Dr. Mark Hall

PHD Senior Lecturer

Birmingham Business School

Tel: +44 (0) 1214748577

Email: m.a.hall.1@bham.ac.uk

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