BUILDING BETTER TOGETHER:

THE RELATIONSHIP BETWEEN ORGANISATIONAL CULTURE AND STAKEHOLDER CRITICAL SUCCESS FACTORS IN CONSTRUCTION PROJECTS

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Abstract

Introduction: The study initially identified a gap in extant literature illustrating a lack of systematic investigation assessing the relationship between organisational culture and stakeholder critical success.

Aim: The study investigates the relationship between organisational culture and stakeholder critical success factors (CSFs). It focuses on the relationships between key stakeholders working for the Ministry of Housing in Bahrain and its contractors.

Methodology: The study adopts a quantitative research methodology with a deductive approach, utilising an online survey questionnaire of 144 participants. The participants were selected census representatives of Bahrain's Ministry of Housing and its contractors, including project and construction managers. The questionnaire data were analysed quantitatively, using descriptive and inferential statistics, to identify the cultures and stakeholder CSFs in construction firms under Bahrain's Ministry of Housing, and to investigate their relationships.

Key Findings: A demographic analysis of the data revealed that males were dominant, occupying the highest positions and professional roles in the construction projects procured by Bahrain's Ministry of Housing. However, the data also indicated that Bahrain's culture towards male-biased seniority in construction firms is showing early signs of a mixed-gender distribution. Findings also indicate that the Bahrain Government preferred engagement with stakeholders with higher educational backgrounds and significant years of experience. Furthermore, the study highlighted Bahrain's cultural inclination towards a *control* type of culture, explaining the type of environment being male-dominated and managerial rules-driven. These observations help to explain the formal and structured working environment in Bahraini firms. However, this study identified the *compete* culture type as the most suitable culture for Bahrain stakeholders, which tends to increase the success rate in construction firms. Concerning the stakeholder CSFs, the findings indicate *project success* to be the most critical factor, which helps explain why *project success measure* (PSM) was the highest-ranked stakeholder CSF. Regarding the relationship between organisational culture and stakeholder CSFs, eight of the sixteen hypotheses were supported by the structural equation model (SEM), indicating a significant relationship and impact between organisational culture types and stakeholder CSFs.

Contributions to extant literature: This is the first study conducted that examines the relationship between organisational culture and stakeholder CSFs in the Middle East. Its findings provide further insights into Bahrain's best corporate *culture* type, which is critical to handling stakeholders engagement for successful construction firms. The study also proposes several recommendations for future research and practical implications for practitioners, such as using this study's scale as a model for conducting similar research in other countries sharing a similar culture as Bahrain

Acknowledgement

Praise is to Allah, the Almighty, who gave me the strength and ability to complete this doctoral thesis!

An impactful completion of a PhD thesis is not a personal and individual task. It is the focused vision of a team. The challenges I met within the course of this project were overwhelming. I am deeply aware it would have been almost impossible for me to complete my work without the help, encouragement, support and motivation I received from many wonderful and supportive people. Indeed, this achievement was made possible by collective effort.

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May you all be blessed.

Declaration

I declare that the work contained in this thesis is entirely mine and that no portion of it has been submitted in support of an application for another degree or qualification in this, or any other university, or institute of learning, or industrial organization.

Any ethical clearance for the research presented in this thesis has been approved.

Approval has been sought and granted by the Faculty Research Ethics Committee on 21 September 2017 [Submission Ref: 826].

I declare that the Word Count of this Thesis is (57,371) words.

Ahmed Mohamed Alhiddi

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List of Abbreviations

AMOS	Analysis of a Moment Structures
ANOVA	Analysis of Variance
AVE	Average Variance Extracted
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CPM	Construction Project Management
CPMSF	Construction Project Management Success Framework
CR	Construct Reliability
CSF	Critical Success Factor
CVF	Competing Value Framework
GCC	Gulf Cooperation Council
GOF	Goodness of Fit
MLE	Maximum Likelihood Estimation
NGOs	Non-Governmental Organisation
OCAI	Organisational Culture Assessment Instrument
OCP	Organisational Culture Profile
PMI	Project Management Institute

PS	Project Success
PSM	Project Success Measures
RMR	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
SA	Stakeholder Analysis
SCPC	Stakeholder Characteristics and Project Characteristics
SCPM	Successful Construction Project Management
SD	Stakeholder Dynamics
SE	Stakeholder Engagement/Empowerment
SEM	Structural Equation Modelling
SM	Stakeholder Management
SOC	Survey of Organisational Culture
SPC	Stakeholder and Project Characteristics
SPSS	Statistical Package for the Social Sciences
SRI	Stanford Research Institute
SS	Stakeholder Satisfaction
TLI	Tucker-Lewis Index

Chapter 1

Introduction

Construction project management has attracted enormous global interest recently, especially in organisational culture and stakeholder management. These two independent social constructs are crucial for successful construction project management, hence the need to explore their relationship.

In his often-cited textbook, Walker (2007) explains that construction project management (CPM) has long been recognised as a distinct profession. However, in the established context of natural and social scientific knowledge discovery, the study of how projects are organised and managed has relatively evaded academics' attention. Somewhat defiantly, Walker says that management is the dynamic input that makes the organisation work (Walker, 2007).

Aaltonen et al. (2008) further sharpened this focus by explaining that managing stakeholders' needs and requirements are an essential consideration for teams managing complex, global projects. More specifically, from the construction industry's perspective, several studies have pronounced that stakeholder involvement is an essential organisational component when realising successful project outcomes (Walker, 2007; Aaltonen et al., 2008; Meding et al., 2013). This recognition, that stakeholder management is a fundamental aspect of construction project success, has grown recently (Yang et al., 2011). Due to their considerable effect on project outcomes, there is an acknowledged need to manage stakeholder relationship successfully. This means considering common factors, such as stakeholders' characteristics and dynamics; relationship and communication with stakeholders; understanding engagement and needs; and defining the link between stakeholders and project success. Yang et al. (2014) observe that understanding stakeholders' related factors is essential during the project process to establish appropriate decision-making strategies. These perspectives highlight the importance of managers acknowledging stakeholder critical success factors (CSFs).

Ankrah and Proverbs (2004) have acknowledged that organisational culture is an inherent aspect of a project's environment and that an empirically-based interpretation of it is

currently lacking. Eberlein (2008) expands this position by explaining that culture is a critical factor that contributes to the realisation of successful project management outcomes. Because large projects typically involve many stakeholders, each with competing values and demands, Marrewijk and Smits (2016) have remarked that they are potentially conflict-ridden environments. Driven by the need to gain a deeper, more meaningful understanding of organisational culture, Hofstede et al. (2002) present five dimensions that can be used for exploring cultural awareness. They explained that managers could use these dimensions to regulate the social conflict within a project environment.

Borders no longer limit construction and infrastructure projects large-scale construction projects have increased the business opportunities available for global construction firms. These global construction projects involve managing culturally diverse and globally dispersed teams, international financing, and, more importantly, global stakeholders. This thesis describes the many methods and frameworks that have been designed to identify and measure organisational culture, ultimately focussing on the Competing Value Framework (CVF) as a model to explain and recognise the differences between organisational culture types (Cameron and Quinn, 2011). The significance of the CVF has been shown in numerous studies.

Additionally, Veser (2004) has suggested that a potential support study on the influences of cultural characteristics on implementing stakeholder management within an international environment is needed. Likewise, Mok et al. (2015) clarify that many studies focus on the impact of stakeholder management in large projects but neglect the influences of culture on stakeholder management in international projects.

1.1 The Rationale of the Study

It has been established (above and in Chapter Two) that there is a lack of systematic studies highlighting the influences of organisational culture on stakeholder engagement, especially among construction firms in the Middle East. Past research, including recommendations for future research by Veser (2004) and Mok et al. (2015), has underpinned the importance of investigating the relationship between organisational

culture and stakeholder engagement in construction firms. Notably, many scholars and studies in project management mention the importance of managing stakeholder engagement (Desmond, 2013; Meding, Kelly, Oyedele, & Spillane, 2012; Rowlinson & Cheung, 2008). Similarly, many scholars who have conducted construction industry studies have realised that stakeholder engagement is essential to project outcomes. It is also worth noting that numerous scholars and studies discuss the need to understand organisational culture (Eberlein, 2008; Marrewijk and Smits, 2016; Hofstede, 2002), and argue from the management point of view that understanding culture is a critical success factor in project management.

In addition, research by Mok, Shen and Yang (2015) on "stakeholder management studies in mega construction projects" fills a gap in previous studies in this field by analysing the latest research on stakeholder management and construction projects. They found a lack in identifying the impact of culture on stakeholder management in mega construction projects. Moreover, Veser (2004) has suggested the need for further research into the influences of cultural characteristics on implementing stakeholder management within an international environment.

This study addresses the shortcoming identified above in understanding the influence of organisational culture on stakeholder management. It fills this knowledge gap by building an empirical body of knowledge on the relationship between organisational cultures and stakeholders' success criteria in construction firms. Specifically, it investigates the relationship between organisational culture and stakeholder critical success factors in construction firms operating under the Ministry of Housing of the Kingdom of Bahrain.

1.2 Aim and objectives

This research aims to determine the extent to which organisational culture influences stakeholder engagement for construction firms in the context of Bahrain's Ministry of Housing. Complementary to this aim, the study will develop a SEM that will model the key cultural constructs of construction firms when assessing the possible outcomes of cultural engagement orientation.

To achieve the aim of this study, the objectives are:

1. To critically review previous studies on organisational culture and stakeholder engagement in construction firms, explore their impact, analyse their influences on each other, and identify the gap to formalise the research hypothesis.
2. To review previous studies on construction firms, to explore their culture and stakeholder engagement, and to discuss the Bahrain government's vision for construction projects, and relate these to the research hypothesis.
3. To determine the current organisational culture type and stakeholder CSFs within construction firms working for Bahrain's Ministry of Housing, using the Confirmatory Factor Analysis (CFA) approach.
4. To establish the relationship between organisational culture types and stakeholder CSFs within construction firms working for Bahrain's Ministry of Housing, using SEM.
5. To model the relationship between the organisational culture type and stakeholder CSFs in construction firms working for Bahrain's Ministry of Housing, using the SEM to explore the dominant culture type and its influences on stakeholder CSFs.
6. To validate the measurement model using CFA, the overall fit test, to analyse the reliability and validity of constructs and to measure the structural relationship between the constructs by representing the theory with SEM.

1.3 Scope of the study

This study will investigate the relationship between the organisational culture types on stakeholder CSFs in construction firms employed by Bahrain's Ministry of Housing. The construction firms will be central to this research. The investigation covers internal and external stakeholders' engagements, and types of organisational culture, to ensure that the findings reflect the relationship between organisational culture and stakeholder engagement in the construction firms.

1.4 Research Organisation

- Chapter One: Introduction – provides general information about this research, its rationale, aim and objectives, research questions, and research organisation.

- Chapter Two: Literature Review – provides a critical review of the academic literature of both organisational culture and stakeholder management, and provides some literature analysis to develop the theoretical background of this research.
- Chapter Three: Conceptual Framework – provides the findings from the literature review on organisational culture and stakeholder CSFs, to develop a conceptual framework for the relationship between these two topics' constructs and develop hypotheses for testing/validating.
- Chapter Four: Methodology – describes the research methodology and research design, particularly the questionnaire survey and SEM to examine/validate the research data.
- Chapter Five: Data analysis and Findings – provides the results from the empirical survey-based research and the accepted/rejected hypotheses.
- Chapter Six: Discussion - discusses the main findings from the literature review and survey data, as well as the results of the developed SEM framework.
- Chapter Seven: Conclusion and recommendations – presents conclusions from this research, derived from the empirical findings. Sets out the contributions of the study and its limitations, and recommends directions for future research.

1.5 List of Publications

This section includes the list of the published work related as follows (appendix 5):

ALHIDDI, A., OSBORNE, A., & MOEHLER, R. C. 2016. The influence of stakeholders culture on mega-projects in Bahrain. *Poster session presented at Annual Northumbria University Postgraduate Research Conference*, Faculty of Engineering and Environment, Ellison Building/Wynne Jones Centre, Northumbria University: Northumbria University.

ALHIDDI, A., OSBORNE, A., & MOEHLER, R. C. 2017. Organizational Culture & Stakeholder Success Criteria: A Structural Equation Model and Construction Project Management Success Framework. *Poster session presented at RESEARCH CONNECTS: Engineering & Environment Faculty PGR Conference,*. Faculty of Engineering and Environment, Ellison Building/Wynne Jones Centre, Northumbria University: Northumbria University.

ALHIDDI, A., OSBORNE, A. & ANYIGOR, K. 2018. Organizational culture and stakeholder success criteria in construction projects. *In: Creative Construction Conference 2018. Ljubljana, Slovenia: CCC2018, pp. 611 - 618.* https://doi.org/10.3311/CCC2018-081 [Accessed 2 September 2022].

ALHIDDI, A., OSBORNE, A. & ANYIGOR, K. 2019. Organizational Culture and Stakeholder Success Criteria in Construction Projects. *Periodica Polytechnica Architecture, 50(2), pp. 148–154*. https://doi.org/10.3311/PPar.12721 [Accessed 2 September 2022].

Note that full scripts are listed in Appendix 5

Chapter 2

Literature Review

2.1 Organisational Culture

2.1.1 Introduction

Marcoulides and Heck (1993) stated that organisational culture is a complex phenomenon, which is characterised by many aspects. In construction organisations, people work individually or in groups with different behaviours, values and attitudes (Munter, 1993). Organisational culture refers to commonly held attitudes, values and beliefs of organisational participants (Hofstede, 2001). Therefore, organisational culture plays an important role in construction projects, which can increase the project income and attain organisation goals without hindrance (Cameron and Freeman, 1991). Hence, one of the popular assumptions (arguments) about the interest of managers to manage organisational culture properly is that it leads to the delivery of successful outcomes and performance (Ogbonna and Harris, 2000).

Organisational culture is categorised into two main cultural aspects, both visible and invisible. The visible cultural aspect contains external things, for example, language, myths, rites and behaviour, whereas the invisible cultural aspect contains internal things, for example, faith, common values and norms (Hofstede, 2001). Therefore, organisational culture plays an important role in controlling and affecting individuals' beliefs, attitudes and behaviour within the performance and achievement of a construction organisation.

Moreover, construction projects, like any other project in an organisation, are affected by internal and external factors that result in different and complicated cultures. External factors can be recognised from the environment outside the organisation, while internal factors can be shown from inside the environment, like organisation leadership, teamwork, and individuals' behaviours and motivations (O'Donnell and Boyle, 2008). Construction managers must therefore be aware of an organisational culture's complexity in order to achieve project goals and outcomes.

This section of the thesis aims to cover the many aspects of organisational culture in a construction firm. The introduction section provides an overview of the critical area of concern for organisational culture, while the following sections will include conceptualisation of organisational culture, which will contain various definitions. Additionally, philosophies and theories of different types of organisational cultures include various instruments and methods to determine the cultural differences. One of the most recognised models to determine the profile of organisational culture is Competing Value Framework (CVF). This model, alongside the Organisational Culture Assessment Instrument (OCAI), will be used in this study to categorise and assess the types of cultures of the chosen project.

This section is vital in understanding the types of culture in construction organisations and their importance in delivering a successful project. These factors link with stakeholder success criteria in another chapter to determine the relationship between organisational culture and stakeholder management in a construction firm.

2.1.2 The Concept of Organisational Culture

The notion of organisational culture has attracted many scholars and professionals because of its complexity (Brown, 1998; O'Donnell and Boyle, 2008; Sharma and Sharma, 2010). Many researchers have attempted to study and understand the development of organisational culture from different perspectives, while others have tried to categorise organisational culture types and determine the differences. It is imperative to begin by identifying the concept and meaning of organisational culture, then discuss the numerous typologies and measurement of organisational culture.

Bearing in mind the cultural perspective and employee relationships in determining the orientation of trust in Bahrain, the following section addresses the conceptualisation of organisational culture.

2.1.2.1 Definition of Culture

O'Donnell and Boyle (2008) mentioned that the concept of culture is essential in order to understand the behaviours and attitudes of individuals and groups within organisations. Each organisation has a different leadership and management style, but most have one aim, which is to achieve outcomes and accomplish a successful project (O'Donnell and Boyle, 2008). Hence, the influence of culture, especially with leadership decision-making

in an organisation, can affect project process and make undesirable situations. Moreover, most of the conflicts that arise in organisations' relationships between individuals and groups are culture-related (O'Donnell and Boyle, 2008). Therefore, understanding culture and its influence can help us to understand the best management skills to achieve an organisation's outcomes. Understanding cultural influence can maintain an organisation's relationship with project stakeholders and reduce incidences of conflict and disagreement between them (Jungnitsch et al., 2016).

The Oxford English Dictionary (2010) defines culture as 'the ideas, customs, and social behaviour of a particular people or society and the attitudes and behaviour characteristic of a particular social group'. Igo and Skitmore (2006) and Munter (1993) provide similar definitions of culture as, respectively, a group's dominant values, attitudes and behaviours; and as people's usually accepted values, beliefs and attitudes. Hofstede (2005, p.400) added the idea that culture is 'the collective programming of the mind that distinguishes the members of one group or category of people from others'. In other words, the previous definitions of culture show that attitudes, values and beliefs are essential to understanding individuals' culture in organisations, but it is also important to distinguish the whole organisational culture from the collective of individual minds.

In the early 1970s, Geert Hofstede conducted in what is known today as a cross-cultural study (Hofstede and Bond, 1988). This research has helped organisational science address the key issues of the influence of national cultures on management. However, managing and organising individuals or groups, are culturally dependent activities, due to the fact that they do not consist of making or moving tangible objects, but of manipulating symbols that are meaningful to those managed or organised individuals or groups (Hofstede, 1983). This implies that managerial and organisational practices vary between countries depending on clusters with cultural similarities.

Moreover, in 1973, Hofstede gathered data from IBM employees, administering more than 116,000 questionnaires in 20 different languages from 72 countries. Based on this study, Hofstede identified four dimensions of culture: power distance, individualism versus collectivism, uncertainty avoidance, and masculinity versus femininity (Hofstede and Bond, 1988). Hofstede's (2005) research describes organisational culture as being holistic, establishing connections to anthropological science and links to social nature. He

goes on to define organisational culture as a "collective programming of the mind", capable of differentiating one organisational member from another (2005, p.400).

Schein (1985, p.9) defined organisational culture as "a pattern of basic assumptions, invented, discovered or developed by a given group as it learns to cope with its problem of external adoption and internal integration, that has worked well enough to be considered valid and therefore to be taught to new members as the correct way to perceive, think and feel in relation to those problems." Schein divides this into three layers: Surface Manifestation, Values, and Basic Assumption (Figure 2-1). The first layer is 'Artifacts', the surface appearance of culture. This layer of culture is the most accessible and visible form — visible and audible in behaviour patterns, such as building, songs, arts, heroes, language, jokes, and gestures. The second layer is 'Espoused Values'. This layer can be invisible, like the values and beliefs of a culture that have worth and meaning to individuals or groups, like religious precepts and societal norms. The third layer is the invisible one called 'Basic Assumption', which refers to the individual's pre-conscious and presupposed understandings of human nature and behaviour based on their environment.

On the other hand, Brown (1998, p.9) defined organisational culture as "the pattern of beliefs, values and learned ways of coping with experience that have developed during an organisation's history, and which tend to be manifested in its material arrangements and the behaviours of its members." Brown developed a more detailed framework for levels of cultures, intended to give more understanding of a particular organisational culture. He suggested that the organisational characteristics found in the inner layer relate to life and people, the middle layer beliefs, and the outer layer values and missions.

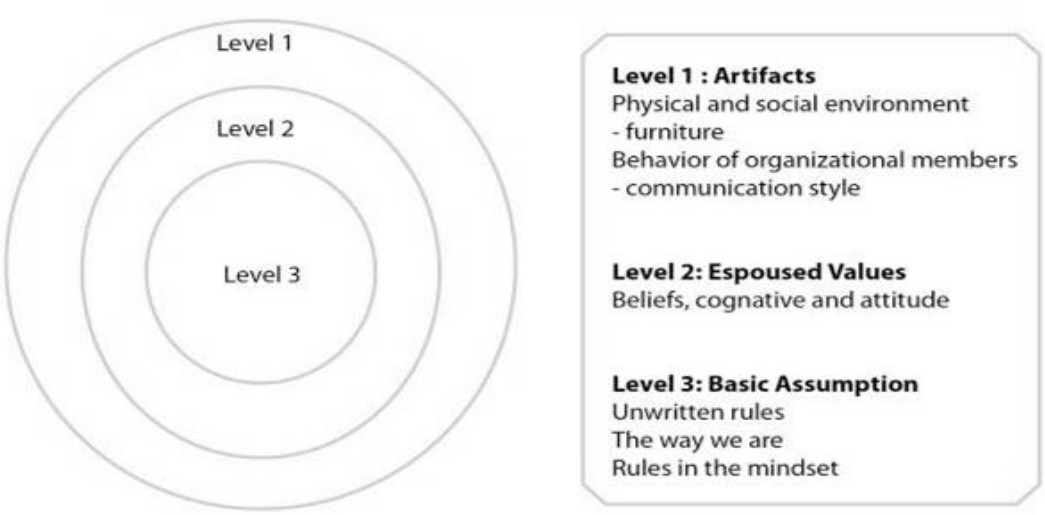

Figure 2-1 Schein's three cultural levels

Hofstede (2001) divided organisational culture into *four* layers (Figure 2-2), calling it an 'onion shape'. These four layers are: Values, Rituals, Heroes and Symbols. The author stressed that the deeper the layers are, the more difficult these layers are to change. In this context, it means that the core values of individuals are very difficult to manage or change, compared to other components, like symbol, which is easily managed and changed.

At the centre of the onion shape is Value, the core of a certain culture, defined by Hofstede (2005) as "broad tendencies to prefer a certain state of affairs over others". It is challenging to change Value, and usually, it remains the same for both individuals and groups. The second layer, Rituals, changes slowly with time and is more related to behaviours or actions that are considered essential in the social context. A classic example is hand shaking or religious practices in specific cultures. The third layer, Heroes, can be described as: active persons who have an enormous influence on the culture. A typical example includes any person who is considered a role model for a specific culture. The final layer is Symbols, which is the most changeable layer compared to the other layers. Symbols can be defined as: any visible objects that have meaning to a specific culture or organisation. In other words, Symbols refer to material things that can be easily found through words, pictures and signs, such as the logos of Apple or Samsung. The three outer layers of the 'onion shape' can be changed through time by learning and practicing, except the core (Hofstede, 2005).

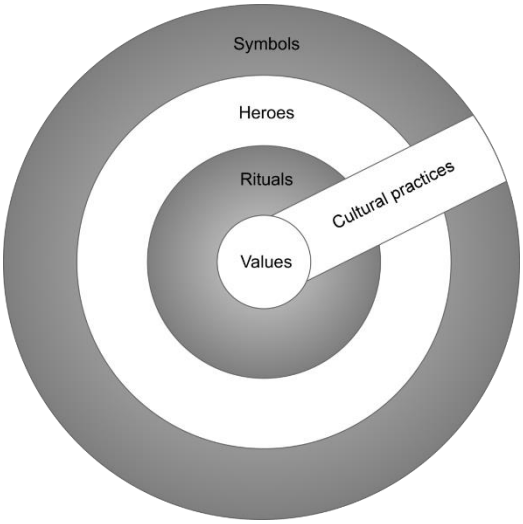

Figure 2-2 Onion shape (Hofstede, 2001)

This section discussed the concept of culture from different perspectives. Most definitions in the studies above agreed that attitudes, values, and beliefs are essential to understanding the culture of individuals and organisations. Hofstede (2001) added another element and divided culture into four layers, calling it "onion shape". However, in this study, Schein's (2017) definition of organisational culture will be adopted, since it is based on the standpoint of the observer and its explanation aligns with aspects of this study's chosen organisation's project (Kingdom of Bahrain – see section 3). The next section will discuss more the importance of culture.

2.1.2.2 The Importance of Organisational Culture

The previous section highlighted that values and beliefs are based on individuals' and groups' internal organisations. Cameron and Freeman (1991) mentioned that the correct management of organisational culture leads to successful projects. This viewpoint has guided scholars in the management field to conceptualise and improve different methods that will strengthen organisational culture management. Due to the abundance of research on organisational culture and its associated disciplines, numerous meanings and explanations of organisational culture and its relevance to other organisational parameters have been conceived (Ankrah & Proverbs, 2004; Smirch, 1983; Zu et al., 2010).

Rahman et al. (2003) considered that flexible organisational culture is an essential factor in achieving success in construction projects. A successful project requires a combination

of collaborative teamwork and behaviours, with flexible contract conditions from all project parties. Furthermore, some researchers have discussed the effect of organisational culture on project performance and effectiveness (Cameron & Quinn, 2011; Denison, 1990; O'Donnell & Boyle, 2008). Likewise, other researchers have suggested that having successful projects, high organisational performance, and organisational effectiveness of construction projects, is attributed to strong organisational culture management (Ankrah, Proverbs, & Debrah, 2009; Denison, 1990; Schein, 2017). The researchers' viewpoint on having a strong organisational culture management shows the positive effect of managing organisational culture correctly. Furthermore, it describes the influence of cultural elements on construction projects' performance and effectiveness.

According to Sharma and Sharma (2010), organisational culture is the association of some cultural values for each project environment. These aspects are: experimentation, autonomy, pro-action, trust, confrontation, openness, authenticity and collaboration. Moreover, a strong relationship between these aspects means a positive project environment. Consequently, a healthy relationship promotes a productive project culture and work environment, with positive behaviour and attitudes between individuals and groups or organisations. Likewise, the relationship between these aspects can influence project performance in terms of operational efficiency, employee participation, and profitability as a whole. The healthy environment brought about by the strong relationship between these aspects indicates the importance of organisational culture in motivating, supporting and focusing on individuals and groups within the project to accomplish target objectives and outcomes. Proper management of various aspects of organisational culture will provide more understanding of a favourable construction environment and thus lead to successful projects.

O'Donnell and Boyle (2008) concluded that understanding organisational culture and types of culture are helpful for managers to achieve a successful project. They further stated that organisational culture is a "*cold battleground"* in the context of management.

2.1.2.3 Summary

In business and management, culture in an organisation is viewed as a significant and prevalent concept in terms of its effects on change within an organisation's programmes. The studies mentioned above convey incomplete information about the connection with the organisation's outputs. O'Donnell and Boyle (2008) discovered that strong cultures

obstruct performance (non-adaptive) and detach the effects of corporate culture on the organisation's performance. The complications connected with the organisation's cultural performance include validation concerning measurement, because the impact of a specific cultural variable can influence all of the organisation's performance procedures in the same manner. Some authors consider it a socially constructed norm and not just a managerial control strategy — "caught not taught" (O'Donnell and Boyle, 2008). Hatch (1993) stated that the heads of organisations should aim to manage the organisation with a complete understanding of the culture and not simply try to manage the organisational culture. The next section will discuss theories of organisational culture.

Organisational culture influences an individual's and a group's performance and behaviour. Additionally, it has a strong relationship with the construction project and its achievements. The following sections in this chapter will discuss more organisational culture theories, types and models, to facilitate the acquisition of more knowledge on organisational culture and its relationship with stakeholders' critical success factors in a construction project.

2.1.3 Theories of Organisational Culture

Organisational culture has been a subject of debate among many researchers over the years. O'Donnell and Boyle (2008) considered organisational culture as a concept with a certain degree of ambiguity; Marcoulides and Heck (1993) recognised it as a complex phenomenon. Brown (1998) discussed organisational culture from the behavioural aspect, while Loosemore and Muslmani (1999) investigated culture from the angle of diversity and communication management. Ginevičius and Vaitkūnaite (2006) concentrated on the influence of organisational culture on project outcomes, and O'Reilly et al. (1991) categorically stated that every organisation has its own unique culture, which makes it different from other organisational cultures. In other words, every organisation has its own culture, similar to other cultures but different in terms of specific characteristics.

Despite all these conflicting and parallel views concerning the concept of organisational culture, Schein's 'onion shape' and Hofstede's 'dimensions of culture' are considered the bases of much organisational culture research, because they develop solid theoretical structures on the rationale (Hofstede, 2001), and levels of culture (Schein, 1985). Schein's theories focus on the levels of organisational culture from a structural view, while Hofstede's concentrate more on the influence of culture on organisations. The next

section will consider some prominent theories of culture to assist in assessing organisational culture, highlighting the theories' similarities and differences.

2.1.3.1 Denison's Theory

Denison (1990) attempted to establish the relationship between culture in an organisation and bottom-line performance measures such as profitability, growth, quality, innovation, customer and employee satisfaction. This generated the 'Denison's Model', which is designed to distinguish four significant attributes of organisations: Adaptability, Involvement, Consistency, and Mission (Figure 2-3).

In his model, the first quadrant, 'Adaptability', illustrates the processes of adapting crucial behaviours such as fully understanding the environment and customers, and efficiently reacting to them as needed. The first quadrant falls within the scope of Flexibility and an external focus. The second quadrant, 'Involvement', refers to the engagement and alignment of individuals involved, by making these individuals feel that they are responsible. Based on flexibility and an internal focus, this quadrant allows individuals to feel they belong, and have an obligation towards the organisation and independence. The third quadrant, 'Consistency', means the combination, management and control of activities, and establishing an internal governing system. It is grounded in stability and internal orientation. Finally, the fourth quadrant, 'Mission', is more involved in formulating a goal that aims to find solutions to the questions 'Why?' and 'How?' workers' routine tasks affect the goals and outputs of the organisation. It is based on stability and external orientation. The model's core, 'Beliefs and Assumptions', explains the beliefs and behaviours individuals hold about their organisation.

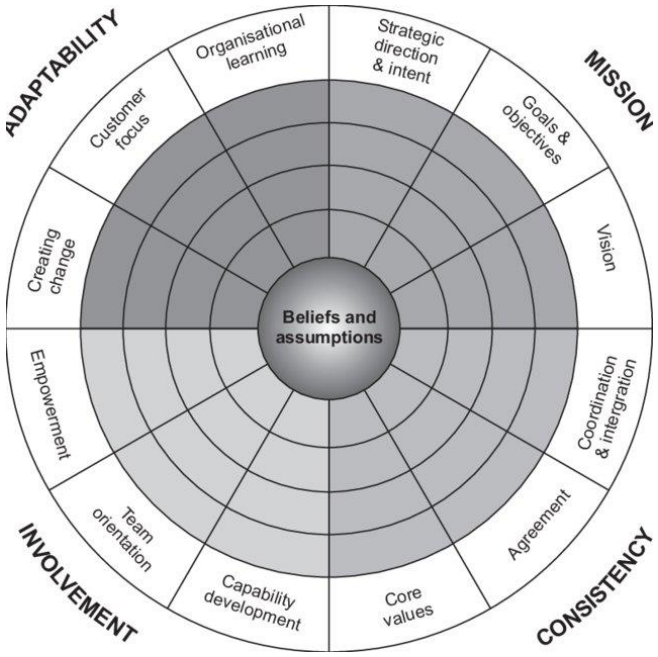

Figure 2-3 Denison's organisational culture model (Denison, 1990)

Kokina and Ostrovska (2013) apply Denison's model in exploring the effect of organisational culture at corporations in America. Likewise, Wahyuningsih et al. (2019) used this model in evaluating organisational culture in an international-scale hotel in Yogyakarta, Indonesia. This model proved a beneficial tool in measuring organisational culture performance.

2.1.3.2 Handy's Theory

In 1999, Charles Handy developed Harrison's 1972 model of organisational culture with more emphasis on organisational development and leadership. His theory had a powerful effect on modern organisational culture thinking. He suggested four types of culture: power, role, task and person culture, which he related to Greek gods (Figure 2-4):

- **The Power Culture**: Attributed to Zeus, this culture is centralised, or top-down, and symbolises power and influence.
- **The Role Culture**: Attributed to Apollo, this culture is bureaucratic. It is run by strict procedures, where roles are narrowly defined and powers are precisely delineated.

- **The Task Culture**: Attributed to Athena, this is a small-team-based culture that is results- and solutions-oriented and marked by flexibility, adaptability and empowerment.
- **The Person Culture**: This culture focuses on the individual, attributed to Dionysius. Such an organisation is values-oriented, people-focused and geared towards meeting individual employees' self-actualisation needs.

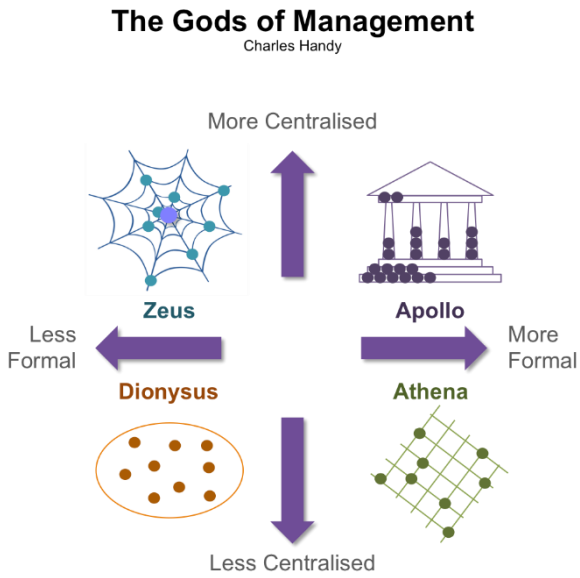

Figure 2-4 Handy model of organisational culture (Handy, 2011).

Handy's theory argues that organisational culture cannot be separated from other aspects of the organisation. This means that organisational culture and organisation structure are strongly connected. Moreover, his theory, which supports the concept of organisational culture as a 'set of roles', explains the importance of policies and rules to achieve effectiveness.

2.1.3.3 Cameron and Quinn's Theory

To understand what makes an organisation productive, two dimensions of effectiveness in organisations were identified in 1983. The first dimension, related to organisational focus, moves from an internal emphasis on people in the organisation towards an external

focus of the organisation itself. The second dimension represents the contrast between stability and control, and flexibility and change (Quinn and Rohrbaugh, 1983).

In 1999, Cameron and Quinn developed a theory resulting in the introduction of the Competing Value Framework (CVF), which has been used to identify and categorise types of organisational cultures (Figure 2-5). This theory describes organisational culture from its core values. Furthermore, it can assess organisations in terms of many aspects, like leadership, strategy, motivation, decision making and communication (Cameron and Quinn, 2011).

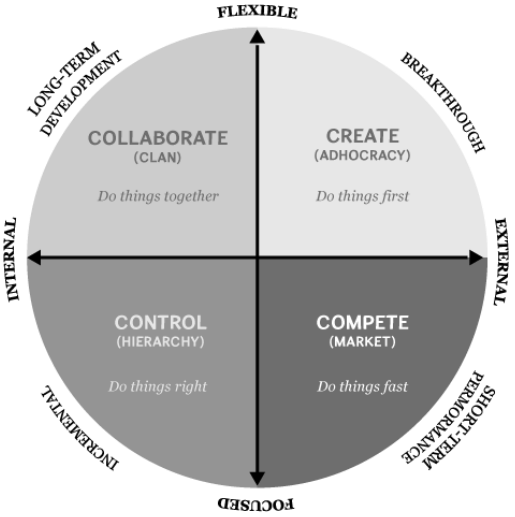

Figure 2-5 Competing value framework (Cameron and Quinn, 2011)

2.1.3.4 Summary

This section discusses some dominant theories of organisational culture and compares these in Table 2-1. Denison's theory proved to be more related to performance organisational culture studies. Handy's theory is more associated with the importance of policies and rules to achieve effective organisational culture. Cameron and Quinn's CVF is more related to identifying and categorising organisational cultures, and was adopted in this study to identify and characterise organisational culture types. The following section will discuss the approaches and instruments to measure organisational culture. In addition, it will clarify the justifications for the adoption of Cameron and Quinn's theory for this thesis.

No	Theory	Similarities	Differences	Notes
1	Denison's Theory	- Measure relationship between culture and organisation - Use two quadrants - Four types of cultures	- Measure and evaluate organisational culture performance - Four attributes of organisations namely: Adaptability, Involvement, Consistency, and Mission - Each of these traits is further broken down into three indices	Useful theory to measure organisational culture performance from internal and external factors
2	Handy's Theory	- Measure relationship between culture and organisation - Use two quadrants - Four types of cultures	- Measure and evaluate organisational culture development and leadership - Four types of culture namely: power, role, task, and person culture	Helpful theory to measure the leadership and to provide the importance of polices and rules in an organisational structure and hierarchy
3	Cameron and Quinn's Theory	- Measure relationship between culture and organisation - Use two quadrants - Four types of cultures	- Measure and evaluate organisational culture from its core values - Four types of culture namely: Collaborate, Create, Control, and Compete culture - Measure the characteristics of organisational culture	Very useful theory to compares these competing priorities that organizations can have Also, useful theory to measure organisational culture characteristics types

Table 2-1 Organisational culture theories

2.1.4 Organisational Culture Instruments

According to Cameron and Quinn (2011), many theories and approaches are used to evaluate organisational culture, but measuring them is extremely challenging. Previous sections discussed theories on how to recognise and categorise organisational culture. This section will discuss how to quantify and evaluate types of organisational cultures.

2.1.4.1 Hofstede's Five Dimensions of Organisational Culture Model

Hofstede's model is one of the early instruments used to measure organisational culture, based on human behaviour. Hofstede initially proposed four dimensions of culture in early 1980 (Hofstede, 2001). A fifth dimension was added in 1988. These dimensions are commonly used in organisation management to measure and assess various types of

human behaviour and cultural standards. The five dimensions named by Hofstede (2011) are as follows:

1. **Power Distance** - This is related to the different solutions to the basic problem of human inequality.
2. **Uncertainty Avoidance** - This is related to the level of stress in a society in the face of an unknown future.
3. **Individualism versus Collectivism** - This is related to the integration of individuals into primary groups.
4. **Masculinity versus Femininity** - This is related to the division of emotional roles between women and men.
5. **Long Term versus Short Term Orientation** - This is related to the choice of focus for people's efforts: the future or the present and past.

2.1.4.2 Organisational Culture Profile (OCP)

O'Reilly et al. (1991) introduced a model to measure organisational culture in terms of the relationship between individuals' values and organisational values. This tool is appropriate for measuring organisational culture growth. The model assumes that organisations' and individuals' values are related to project outcomes, and more achievements mean more matching values between the organisation and individuals. One of the drawbacks of this model is that it focuses more on organisational outcomes and does not concentrate on the effect of individuals' culture inside the organisations. In short, this model centres more on the influence of the organisation's external layer rather than its internal organisational culture.

2.1.4.3 Survey of Organisational Culture (SOC)

Tucker et al. (1990) developed a Survey of Organisational Culture model to define organisational differences within organisational similarities, using a one-way ANOVA method to calculate 55 items presented in the questionnaire measuring 13 culture scales. The dimensions under study include orientation to customers, orientation to employees, congruence among stakeholders, impact of mission, managerial depth/maturity, decision making/autonomy, communication/openness, human scale, incentive/motivation,

cooperation versus competition, organisational congruence, performance under pressure, and theory S/theory T (Tucker et al., 1990, p.9).

2.1.4.4 Schwartz's Model

Anchored on Hofstede's organisational culture dimensions, Schwartz (1994) developed a cultural values and attitudes model. This model measures the relationship between cultural value orientations and personalities in different environments. The individual's psychological dynamics in his or her day-to-day life are reflected in the individual dimension. On the other hand, the cultural dimension mirrors the solutions for the society by which human actions can be regulated. There are seven cultural dimensions in this model: harmony, embeddedness, hierarchy, mastery, affective autonomy, intellectual autonomy and egalitarianism. Moreover, this model is essential in understanding the individual culture from different countries.

2.1.4.5 Organisational Culture Assessment Instrument (OCAI)

Cameron and Quinn (2011) developed a Competing Values Framework (CVF). Based on this model, the organisational culture assessment instrument (OCAI) is a tool recommended by Cameron and Quinn to measure organisational culture types. This study will adopt this model to quantify the organisational culture of the chosen project. The next section will discuss and explain of OCAI tool in more detail to explicate reasons behind choosing the competing values framework model.

2.1.5 Organisational Culture Assessment Instrument (OCAI) and Competing Values Framework (CVF)

Quinn and Rohrbaugh (1983) introduced the Competing Value Framework (CVF) theoretical model, which was later developed by Cameron and Quinn (2011) into the current model. Cameron and Quinn (2011) also recommended that the Organisational Culture Assessment Instrument (OCAI) is a valid instrument based on the CVF. This model is one of the most frequently used instruments for assessing organisational culture today because it has been found to be accurate in measuring organisational culture

characteristics and its relationship and effectiveness on each other (Berrio, 2003, Igo and Skitmore, 2006, Yeung et al., 1991, Zu et al., 2010).

This instrument can be used for various projects and organisations, such as healthcare, education, local governments, private sectors, etc. According to Cameron and Quinn (2011), this tool is designed to measure organisational culture, and the organisational culture should be developed or used to match project objectives and outcomes. This instrument, therefore, is vital in understanding aspects of current organisational culture and is also beneficial for managers who are inclined to change and develop organisational culture and keep it up to date.

The OCAI measures six key dimensions of organisational culture: Dominant Characteristics, Organisational Leadership, Management of Employees, Organisational Glue, Strategic Emphases, and Criteria of Success. It is considered an appropriate tool to quantify organisations and their values based on the CVF theoretical framework of four main culture types: clan culture, adhocracy culture, market culture, and hierarchy culture (Figure 2-6). The CVF is used to explain the underlying value orientations that characterise organisations.

The OCAI uses a questionnaire survey method to collect data and decide the placement of current organisational culture type from four main types. There are no right or wrong and best or worst culture types in the CVF. Cameron and Quinn (2011) note that an organisation rarely has one culture type. Usually, it has a concoction of four organisational culture types. The best organisational culture type is the one that performs best for the project environment and outcomes.

This research aims to empirically determine how organisational culture influences stakeholder engagement in construction firms working for Bahrain's Ministry of Housing. Complementary to this aim, this study needs to develop an SEM that will inform construction firms when assessing the possible outcomes of cultural engagement orientation. Therefore, this research will focus on the OCAI and CVF models to explain and recognise the differences in organisational culture types. Zu et al. (2010) have argued that the CVF explores the deep structures of organisational culture relating to compliance, motives, leadership, decision-making, effectiveness, and organisational forms in the organisation (Quinn and Rohrbaugh, 1983). Yeung et al. (1991) have added that it would

be both theoretically and psychometrically sound to integrate CVF into the organisational culture and other organisational components.

Furthermore, CVF is built on two axes to explain differences in value orientations. These are derived from the control-flexibility axis (vertical), which reflects how an organisation focuses on change and stability. Flexibility shows the organisation's desire for flexibility and spontaneity. On the other hand, control indicates a mutual desire to stay stable, controlled, and in order. As Denison (1990) explained, some organisations thrive when they are changing, organic and adaptable, while others prosper when they are predictable, stable and mechanical. In other words, organisational extents range from being versatile and adaptable at one end to steady and stable at the other.

The second axis, internal-external, describes two orientations. The first refers to the organisation's preference to maintain and improve, while the second is more directed towards adapting and interacting with its external setting. The difference between the two is that one is perceived to be more internal, integrative, and unifying than the other, which is more externally oriented, differentiated, and competitive. In other words, some organisations become more effective in having a harmonious internal setting, while others flourish when they interact and compete within their boundaries (Denison, 1990). This dimension can be described as harmonious and unifying at one end, to separate and independent at the other (see Figure 2-6 below). The following section will tackle more about each organisational culture type in terms of characteristics and flexibility levels.

2.1.5.1 Clan (Collaborate) Culture

Internally focused 'Clan Culture' has a high degree of flexibility. In this organisational culture type, the relationship between individuals and groups is central. It is characterised as a friendly working environment where employees share common values, attitudes and behaviours.

Clan Culture resembles a large family in which management is very cordial and approachable, and takes pleasure in educating and sharing ideas with individuals. Under this type of organisational culture, the organisation is kept intact by the value of loyalty and the spirit of tradition. Mutual commitment also serves as a strong foundation, while management operations are focused on human resources. In addition, good relationships, loyalty, trust and morality are an organisation's values that serve as indicators of success

in terms of customer satisfaction. To sum up, the organisation places great value on teamwork, participation, flexibility and consensus.

2.1.5.2 Adhocracy (Create) Culture

Adhocracy (Create) culture is externally focused and has a high degree of flexibility. Innovative culture plays an essential role in keeping the organisation constantly visible in the market. The work environment in this type of organisational culture is dynamic, enterprising and creative. Employees are encouraged to strive for innovation and use their fertile imagination to conceive new ideas. Viewed as risk-takers, the innovators and managers work hand in hand to achieve the goal of the management, which is the promotion of leadership and productivity translated into new products and services.

2.1.5.3 Market (Compete) Culture

Market culture has a high degree of controlling behaviour as it is externally focused. The results and the completion of the work are of primary concern to this type of organisational culture. In other words, because market culture is viewed as competitive and extremely goal-oriented, employees are closely monitored by demanding managers. Mutual competition is in the work environment as the company's reputation, success and victory are emphasised. The constant struggle to achieve the company's measurable goals and objectives is a prominent characteristic of this type of organisational culture, which defines success as market share and penetration.

2.1.5.4 Hierarchy (Control) Culture

Internally focused, this type of organisational culture has a high degree of controlling behaviour. Hierarchical cultures are extremely formal and have a structured working environment. Hierarchy Culture, which is centred on management and control systems, considers procedures as a mechanism to determine employee actions. As a result, clearly structured hierarchical layers are established in the organisation. All work processes are efficiently organised and expected to be under control and easily adjusted to ensure smooth organisational operations. The organisation is rules and policies-driven. It considers the idea that stability and positive results are associated with the efficient and smooth execution of tasks. With a reliable supply, tight scheduling and low costs, success is achieved.

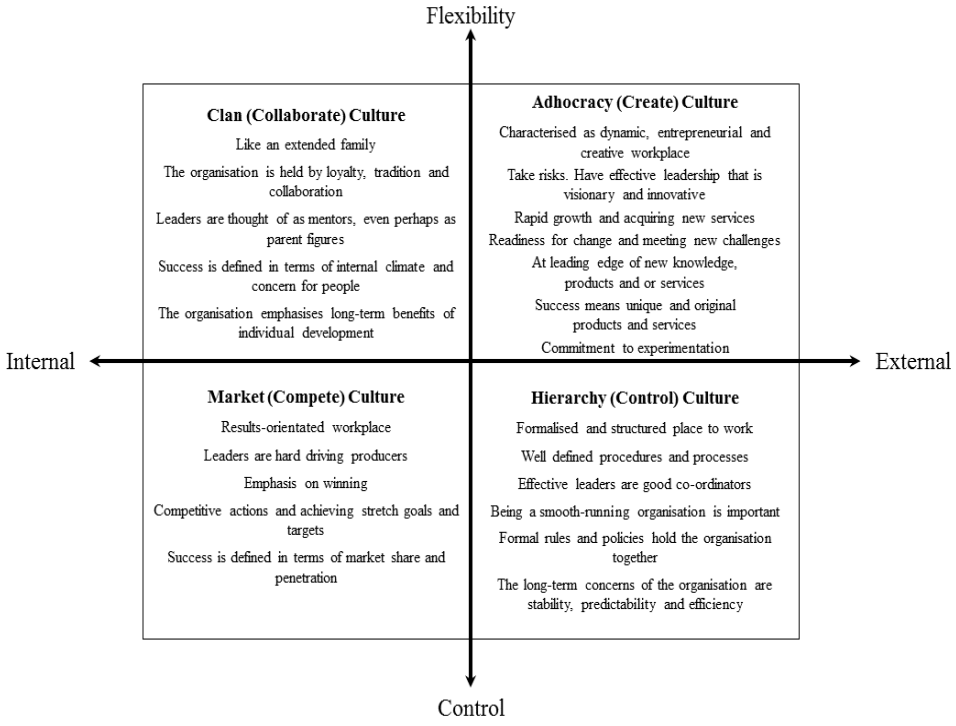

Figure 2-6 Competing values framework

2.1.5.5 Summary

Many tools and theories have been discussed in the literature above, which are presented in the summarized tabular form illustrated in Table 2-2. CVF has been a helpful theoretical framework for identifying and understanding organisational culture types, and OCAI is a useful tool to measure and recognise current organisational culture type and determine the suitability of type for the environment. Moreover, Cameron and Quinn (2011) discovered that the CVF could also be used in other aspects of organisations and culture, such as organisational leadership, organisational effectiveness, total quality management, human resource management roles, and corporate missions and visions.

This study adopted OCAI to aid in formulating a questionnaire survey and CFV in recognising the organisational culture types, for several significant reasons. First, the CVF and OCAI are the most frequently used tools in assessing organisational culture. Second, these tools were proven to be accurate and reliable in evaluating characteristics of organisational culture, including their relationship and effectiveness on each other. Third, these instruments can be utilised for various projects and organisations. Fourth, they can be applied to assess current organisational culture and effectively develop an organisational culture to match the project objectives and outcomes. Fifth, these are

appropriate tools to employ in quantifying organisations and their values based on the following: (1) the CVF theoretical framework of four main culture types; clan, adhocracy, market and hierarchy cultures, and (2) the organisational culture's six key dimensions; Dominant Characteristics, Organisational Leadership, Management of Employees, Organisational Glue, Strategic Emphases, and Criteria of Success. Sixth, they can explain the underlying value orientations that characterise organisations. Finally, these tools utilise a questionnaire survey method to collect data, which helps decide the placement of current organisational culture type from four main types.

No	Instrument	Similarities	Differences	Notes
1	Hofstede's Five Dimensions	- Proposed dimensions of cultures	- Focus more on values of a dominant culture within a nation	Useful instrument to measure human behaviours norms and cultural values
2	Organisational Culture Profile	- Measure a relationship between culture values	- Assume that organisations and individuals' values are related to project outcomes	- Appropriate for measuring organisational culture growth - Focuses more on the influence of the external layer of the organisation rather than internal organisational culture
3	Survey of Organisational Culture	- Measure culture dimensions	- Define organisation differences within organisational similarities - Using one-way ANOVAs method to calculate 55 items presented in the questionnaire to measure 13 culture scales	Reliable and meaningful information can be obtained that will be useful to managers
4	Schwartz's Model	- Measure culture dimensions	- To measure the relationship between cultural value orientations and personalities in different environments - Measure 7 dimensions	Useful to understand the individual culture from different countries
5	Organisational Culture Assessment Instrument	- Measure culture dimensions - Relationship between culture values	- to assess an organization's current and preferred organizational culture as well as its desire to change - - To measuring organisational culture characteristics and their relationship and effectiveness on each other	A valid instrument based on the Competing Values Framework (CVF)

Table 2-2 Organisational culture assessment instruments

2.1.6 Organisational Culture Summary

The literature review on organisational culture shows that studies concerning organisational culture began to be initiated around the early 1970s and, during the 1980s, the concept of culture in an organisation was widely accepted by management scholars (Hatch, 1993, p.657). Wallach (1983, p.29) stated that project outcomes are not the only criteria for judging performance effectiveness. How to achieve these results also counts. He added that combining the 'What' and the 'How' determines project success. The 'what' is 'meeting the project success', while the 'how' is 'understanding the organisation's culture'.

Aside from discussing its importance, this section explored the main definitions and theories of organisational culture. Schein's (2017) definition of organisational culture will be adopted in this study due to its views on organisational culture from the observer's standpoint and its explanation of the aspects of the chosen organisation's environment. Furthermore, the literature discussed the differences between the dominant organisational culture theories and the dominant organisational culture instruments. Cameron and Quinn's (2011) theory and instrument to measure and understand organisational culture will be adopted in this study because it has shown its significance in identifying the relationship between organisational culture characteristics and having its validity tested and verified from other studies.

2.2 Stakeholders

2.2.1 Introduction

This section will present findings of other studies on stakeholder engagement, covering stakeholder theories, stakeholder analysis, stakeholder objectives and interests, stakeholder influences, stakeholder and project success.

2.2.2 Definition

The term ‘stakeholder’ first appeared in the management domain in an internal memorandum at the Stanford Research Institute (now SRI International, Inc.) in 1963, where stakeholders were any important groups supporting the organisation (Freeman, 2010, p.31). Aaltonen et al. (2008) mentioned that many definitions of stakeholders have been discussed in the existing literature on project management. The classic definition of stakeholder, according to Friedman and Miles (2006, p.46), is “any group or individual who can affect or is affected by the achievement of the organization’s objectives”. Walker (2007) narrated how construction project management has been carried out for a long time and how such organised and managed projects have received attention recently. The author added that “management is the dynamic input that makes the organisation work”.

Likewise, Olander (2007) referred to a project’s stakeholders as an individual or group of people that possess an interest in the attainment of the organisation’s project's goals and the working environment where the project runs. Olander further considered the project’s stakeholders as representatives possessing numerous interests, which have a direct positive or negative impact on the different stages of the construction project from its inception until its final stages. Walker and Rowlinson (2008) similarly defined stakeholders as people or groups possessing varied interests and a sense of ownership in the project, who can contribute to or be affected by either the organisation’s performance or the outcomes of its project.

Furthermore, Takim (2009) referred to stakeholders as individuals who can impact the project's final results, whose life or environment are influenced positively or negatively by the project, and who receive rewards either directly or indirectly from it. He categorised these stakeholders into five groups: client, consultant, contractor, end-users, and the project's community. Winch (2010), however, defined stakeholders as those individuals that receive direct beneficial gains or losses depending on the success or failure of the project. Li et al. (2012, p.334) referred to stakeholders as “those who can influence the project process and final results, whose living environments are positively or negatively affected by the project and who receive associated direct and indirect benefits or losses”.

Some of the definitions above are broad because they consider everyone as a stakeholder (Freeman, 2010; Aaltonen et al., 2008; Friedman and Miles, 2006; PMI, 2013, Takim,

2009; Winch, 2010). Other definitions are narrow because they seem to eliminate some significant groups of individuals as stakeholders (Walker and Rowlinson (2008); Smith and Love, 2004; Olander, 2007). The narrow definition only identifies individuals or groups as stakeholders when they have direct stakes and possess economic relationships with the project, and excludes individuals who do not get economic benefits from the project even though these individuals can impact the implementation of the project (Chinyio and Olomolaiye, 2010). In other words, the broader definitions will identify all individuals even though these individuals do not really have any interest or benefit from the project. In contrast, the narrow definitions alone will result in the elimination of relevant individuals, both of which can threaten the success of the project.

With both views presenting advantages and disadvantages, this study needs to adopt a definition that will determine the most relevant stakeholders and a clear definition of stakeholder management. The following definition is therefore adapted from PMI (2017, p.723), which defines stakeholders as "an individual, group, or organisation that may affect, be affected by, or perceives itself to be affected by a decision, activity, or outcome of a project, program, or portfolio". Moreover, they include the processes required to identify stakeholders, analyse stakeholder expectations and their impact on the project and develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution, and define it as project stakeholder management (PMI, 2017, p.717).

2.2.3 Stakeholder Analysis

According to Aaltonen et al. (2008), understanding stakeholder analysis and identification helps manage stakeholders in changing unpredictable environments. PMI (2013) described stakeholder management as the systematic identification, analysis, and planning of actions to communicate with and affect stakeholders. Furthermore, Cleland and Ireland (2006) discussed the importance of identifying, classifying, analysing and managing stakeholders' approaches, which will influence project outcomes. In addition, Walker and Rowlinson (2008) explained the importance of using the 'stakeholder circle', which is both a methodology and software tool used to manage stakeholders, including five parts for stakeholder management: identifying, prioritising, visualising, engaging and monitoring stakeholders.

In their study of project stakeholder management, Aapaoja and Haapasalo (2014) stressed that project barriers prevent managers from involving all possible stakeholders equally. Razali and Anwar (2011) suggested a solution by developing the 'stakeholder selection framework', to identify, filter and prioritise stakeholders.

In addition, Song and Mu (2013, p.475) cited a stakeholder analysis definition from World Bank as "a methodology used to facilitate institutional and policy reform process by accounting for and often incorporating the needs of those who have a 'stake' or an interest in the reforms under consideration". This section will discuss the different classifications of stakeholder analysis.

2.2.3.1 The Basic Stakeholder Analysis Technique

In his study, Bryson (2004) discussed differences in stakeholder analysis techniques by pointing out some stakeholder identification and analysis techniques related to organisational development efforts and decision-making. Bryson and Alston (2011) described the stakeholder analysis technique, which provides more understanding about identifying the organisation's stakeholders – especially the important stakeholders – clarifying the mission and values of the organisation, and helping to develop some key strategic issues and a vision statement for the organisation's stakeholders, which Bryson (2004) called 'the basic stakeholder analysis technique'. This analysis technique involves several steps described in detail (Bryson, 2004, Bryson and Alston, 2011), as follows:

- Identifying stakeholders using the brainstorming method to categorise the potential list of stakeholders;
- Classifying the positive and negative impact of each stakeholder upon the organisation;
- Classifying the external and internal stakeholders;
- Creating a stakeholder worksheet and name it at the top under each stakeholder; and
- Ranking each stakeholder in the worksheet by explaining the type, power, importance, role, satisfaction, and short or long-term relationship.

The basic stakeholder analysis technique has been considered a good tool to analyse stakeholders, especially on the stages of the project life cycle (Bryson, 2004). Bryson (2004) described how this analysis technique was used to make a big change in a project

in the United States, where it was used to show participants how existing strategies ignored important stakeholders. While the technique can be good to use for any project life cycle stage, it ignores the relative power and interest of stakeholders, which can lead to inefficiencies within the analysis of stakeholder groups.

2.2.3.2 Stakeholders' Priorities (Power/Interest Matrix)

Mendelow (1981) mentioned the influences of stakeholder power on the project environment by describing the relationship between the organisation and its stakeholders, which he called 'the stakeholder model'. Olander (2007) described the need for managers to assess each stakeholder's interest and power to express his/her expectations and influences on project decisions. Eden and Ackermann (1998) explained the importance of identifying the stakeholder's power and interest to develop a successful organisation strategy in terms of the relationship between multi-stakeholders. They proposed a stakeholder analysis method which they called 'power/interest grid' (Figure 2-7).

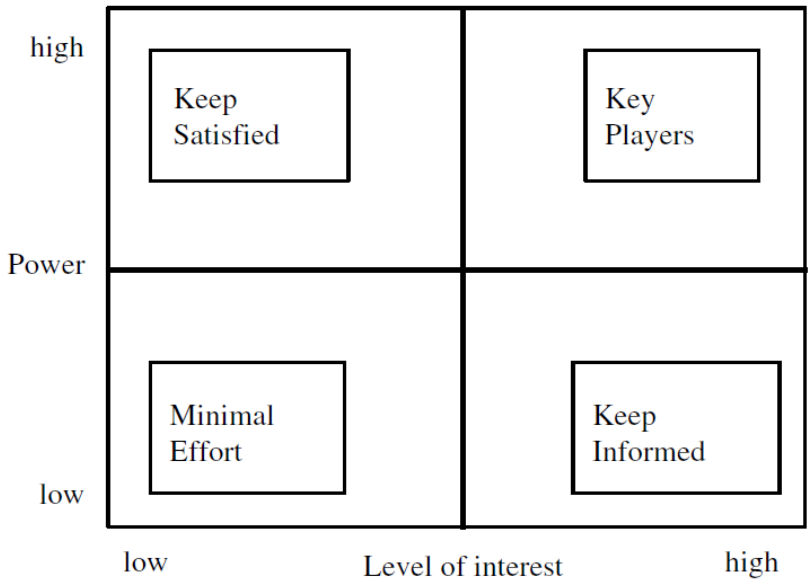

Figure 2-7 Stakeholders mapping (Olander and Landin, 2005)

In this approach (Olander and Landin, 2005; Bryson, 2004), stakeholders can be classified according to their level of power and interest in the project.

In their study, Aapaoja and Haapasalo (2014, p.45-46) utilised the following questions for analysis in the power/interest matrix:

- How enthusiastically (probability to impact) does each individual in the stakeholder group express his/her interest, expectations or contributions to the project?
- Do they have enough influence (level of impact) to impact the project?

Johnson et al. (2008) confirmed that the power/interest matrix aids in understanding the types of relationship that might usually be established in stakeholders management, while Aapaoja and Haapasalo (2014, p.46) divided these into the following categories:

a. 'Key players' refers to those that carry responsibilities for the project;
b. The 'keep informed' stakeholders represent different interest groups, such as local residents, non-governmental organisations or organisations with low impact;
c. The 'keep satisfied' stakeholders are often national government authorities or other similar organisations that have duties and even the power to stop the project but do not usually have a personal interest in it; and
d. 'Minimal effort' does not mean ignoring the stakeholders. It is just that the project management does not regard them as relevant and important. However, these stakeholders can be salient through other stakeholders if they have some obligations for the project.

The power/interest matrix can assist in determining who and where the real power is, to make efficient decisions for the project and help find the appropriate way of communicating with stakeholders. However, this method contains some weaknesses, such as being subjective. For this method to become beneficial, it must be performed regularly, but plotting a stakeholder on this matrix does not show hi/hers attitude towards a project initiative (Olander and Landin, 2005; Aapaoja and Haapasalo, 2014).

2.2.3.3 Stakeholders' attributes (Power, Legitimacy and Urgency)

Mitchell et al. (1997) stated that stakeholders used three characteristics that distinguish their relationship and impact on the project: power, legitimacy and urgency. They argued in their study of stakeholder theory that most scholars focused on the legitimacy of stakeholders and neglected the other attributes for stakeholder management, which included power and urgency (Mitchell et al., 1997).

Preble (2005) noted the significance for organisations of using some management mechanisms to determine the stakeholders and to be aware of their relevance. However, Mitchell et al. (1997) established a theory that identifies stakeholders and their importance based on three relationship attributes.

Freeman (2010) argued that stakeholder power, which may affect stakeholder performance, is based on three types: voting power, economic power and political power. Bourne and Walker (2005) believed that understanding the 'invisible power' among stakeholders is a skill for successful managers.

In a similar vein, Phillips (2003, p.10) discussed the notion of legitimacy in stakeholder theory by separating it into two varieties:

- **Normative legitimacy,** which is created from the principle of 'stakeholder fairness and the obligations' that arise, and
- **Derivative legitimacy,** which is derived from this prior moral obligation and gets its force from the ability of certain groups to affect the wellbeing of the organisation and its normative stakeholders.

However, Mitchell et al. (1997) defined the three attributes as follows:

- **Power** – The ability to control resources, create dependencies and support the interests of some organisation members or groups over others.
- **Legitimacy** – The perceived validity of stakeholders' claims. It also refers to the stakeholders bearing some risks in relation to the project, which could either be beneficial or detrimental to the project).
- **Urgency** – The degree to which stakeholder claims call for immediate attention.

On the other hand, Mitchell et al. (1997) categorised stakeholders (Table 2-3) into two major groups: Latent and Expectant stakeholders. These categories consist of seven minor groups (Table 2-3), arranged according to their relationship to the three attributes, namely: power to impact decision making and progress, legitimacy in relation to other stakeholders, and urgency of claim on the project (Table 2-4 and Figure 2-8).

Latent Stakeholders	**Expectant Stakeholders**
Dormant Stakeholder	Dominant Stakeholder
Discretionary Stakeholder	Dangerous Stakeholder
Demanding Stakeholder	Dependent Stakeholder
	Definitive Stakeholder

Table 2-3 The Latent and expectant stakeholders (Mitchell et al., 1997)

Stakeholders Groups	**Power**	**Legitimacy**	**Urgency**
Dormant Stakeholder	Yes	No	No
Discretionary Stakeholder	No	Yes	No
Demanding Stakeholder	No	No	Yes
Dominant Stakeholder	Yes	Yes	No
Dangerous Stakeholder	Yes	No	Yes
Dependent Stakeholder	No	Yes	Yes
Definitive Stakeholder	Yes	Yes	Yes
Non stakeholder	No	No	No

Table 2-4 Stakeholders groups analysis based on power, legitimacy and urgency.

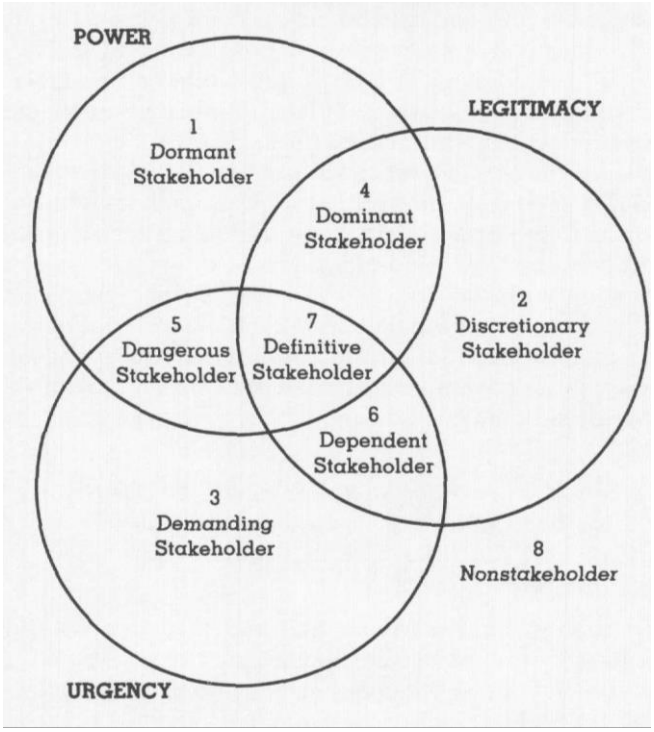

Figure 2-8 Stakeholder group analysis based on power, legitimacy and urgency (Mitchell et al., 1997, p.874)

Yang et al. (2009) claimed that the attribute 'legitimacy' is imprecise and hard to explain, so they suggested the use of the proximity attribute instead, as it is easier to operationalise and more helpful. On the contrary, Agle et al. (1999), in their empirical study on stakeholder attributes, found that these three attributes have a significant relationship among values, salience and corporate social performance, notwithstanding the absence of financial support for performance. In addition, Preble (2005) found a robust empirical basis for this approach and asserted that since organisations have limited resources, the stakeholder attribute findings provide additional sorting criteria for identifying and prioritizing stakeholders.

2.2.3.4 Internal and External Stakeholders

Winch (2010) analysed stakeholders from the client's point of view of construction projects and used the following two categories to classify stakeholders (Table 2-5):

- **Internal stakeholders** - have a legal contract with the project owner and are categorised as *Demand-side* and *Supply-side* stakeholders; and
- **External stakeholders** - have an indirect interest in the project and are categorised as *Private* and *Public* stakeholders.

Internal Stakeholders		**External Stakeholders**	
Demand Side	Supply Side	Private	Public
Client	Architects	Local residents	Regulatory agencies
Financiers	Engineers	Local landowners	Local governments
Client's employees	Principal contractors	Environmentalists	National governments
Client's customers	Trade contractors	Conservationists	
Client's tenants	Material suppliers	Archaeologists	
Clients suppliers		Non-governmental Organisations (NGOs)	

Table 2-5 Internal and external stakeholders groups (Winch, 2010)

Chinyio and Olomolaiye (2010) defined internal stakeholders as "those who are members of the project or financiers", and external stakeholders as "those who are affected by the project in a significant way".

Other classification approaches for stakeholders in construction projects, using different terms, have been argued, such as: *inside* and *outside* stakeholders (Newcombe, 2003), *primary* versus *secondary* stakeholders (Carroll and Buchholtz, 2009), and *direct* and *indirect* stakeholders (Smith and Love, 2004).

In summary, stakeholders can be analysed from several perspectives. However, using more than one method or multidimensional plots is more effective in capturing many stakeholders and their full complexity (Chinyio and Olomolaiye, 2010). Furthermore, the diversity of each classification method can be based on stakeholder objectives and interests. Bahadorestani et al. (2019) illustrated some typology models of collective stakeholders with their characteristics (Table 2-6). A stakeholder typology model aims to show who counts and what stakeholder attributes describe and distinguish stakeholders in managers' perceptions, to identify, analyse, communicate with, and manage (Bahadorestani et al., 2019). In management and social science, researchers try to present

the phenomenon in a model or framework; in this situation, the phenomenon is more understandable (Bahadorestani et al., 2019). Similarly, researchers have presented several models or frameworks for various specific purposes in stakeholder management. Table 2-6 shows the most acknowledged stakeholder typology models with their attributes.

Researcher(s)	**Stakeholder typology model**	**Description**
Polonsky (1996) and Wong et al. (2005)	Relative cooperative potential/ relative competitive threat matrix	The model evaluates each stakeholder on two dimensions: their potential to (1) cooperate with the project; and (2) threaten the project. Note that each stakeholder may have both abilities (dimensions).
Mitchell et al. (1997) and PMI (2017, p. 513)	The three-attribute model (TAM) of stakeholder typology	They believed that stakeholder identification and salience would be determined by Power, Legitimacy and Urgency. In addition, these attributes have reasonable empirical and social support. Although Power and Legitimacy may fluctuate, Urgency can provide a chronology that links one event of potential interest to a specific time. Mitchell et al. (1997) argued that Urgency consists of two attributes: Time sensitivity and Criticality. Based on these three attributes, they classified stakeholders into seven different types: dormant, discretionary, demanding, dominant, dangerous, dependent and definitive.
Manowong and Ogunlana (2010), Newcombe (2003), Olander and Landin (2005), and Yu and Leung (2018)	Power/interest matrix	They applied the Power/interest matrix for stakeholders' classification and identification. This model classified stakeholders into four groups based on their Power and Interest level.
Bourne (2005)	Stakeholder circle methodology	She studied the relative importance of stakeholders with the three attributes of Power, Proximity and Urgency, and introduced stakeholder circle methodology. Some researchers have since used Proximity instead of Legitimacy or both.
Bourne and Walker (2005) and El-Sayegh (2014)	Impact/probability of impact matrix	They believed it is not easy to assess stakeholder Power and Interest; therefore, they proposed using Impact instead of Power on a scale. Because the level of interest determines the probability of stakeholders influencing the project decisions, they introduced Probability of Impact instead of Interest (Olander 2007). Ward and Chapman (2003) believed that the use of Impact leads to more success because it provides an excellent method for risk assessment in construction projects.

Table 2-6 Stakeholder typology models

Molwus's (2014) study presented a concise stakeholder classification, as illustrated in Table 2-7. Their diversities notwithstanding, each classification is vital to stakeholder management, as they are primarily based on the stakeholders' interests and relationship with the project. The next section will present construction stakeholders and their objectives and interests.

According to	Categories	Defining Characteristics
Stakeholder attributes	• Dormant • Discretionary • Demanding • Dominant • Dangerous • Dependent • Definite	• Power only • Legitimacy only • Urgency only • Power and Legitimacy • Power and Urgency • Legitimacy and Urgency • All three attributes
Stakeholder vested interest-impact index (viii)	• Active opposition • Passive opposition • Not committed • Passive support • Active support	• Pos = - 1 • Pos = - 0.5 • Pos = 0 • Pos = 0.5 • Pos = 1
Contractual relationship on the project	• Internal • External	• Having a contractual link with the project • Having no contract but could affect or be affected by the project
Attitudes towards the project	• Proponent • Neutral • Opponent	• In support of the project • Indifferent • Against the project

Table 2-7 Summary of stakeholder classification (Molwus, 2014)

2.2.4 Stakeholder Objectives and Interests

Cleland and Ireland (2006) categorically stated that the complex nature of construction projects led to increasing stakeholders' interests. Additionally, Mok et al. (2015) argued the importance of studying stakeholders' interests and influences in a mega construction project, and thus revealed that many scholars have focused on the stakeholder management process but neglected stakeholders' interests and influences.

According to Chinyio and Olomolaiye (2010), construction projects usually involve various stakeholders, hence the need to use Winch's approach (Section 2.2.3.4) to categorise stakeholders into two groups: *internal stakeholders* (Table 2-8) and *external stakeholders* (Table 2-9), according to their relationship to the project.

Internal Stakeholders			
	Categories	**Individuals/groups**	**Objectives and Interests**
1	Clients	Private clients	Ensure the project will support the organisation's strategy
			Ensure the resources will be used effectively and economically
			Ensure the quality of the delivery of the project within the time and cost
			Provide financial support
			Purchase the construction products
		Public clients	Serve public interest based on the strategic objectives of the organisation
			Allocate funds and ensure that funds will be used properly on the project
			Ensure the quality of the delivery of the project within the time and cost
2	Project professionals (in-house/out-of-house)	Architect	Carry out their respective professional responsibilities to their employers
		Quantity surveyor	
		Structural engineer	
		Building service engineer	
		Other consultants	
3	Contractors/ Suppliers	Main contractors	Carry out and complete the work within time, cost and quality successfully as designed and achieve other contractual duties assigned to them in the contracts
		Sub-contractors	Carry out work assigned by main contractors
		Labourers	Accomplish jobs assigned, get paid, and learn new skills
		Suppliers	Supply and install the required materials, equipment and manufacturers from them

Table 2-8 Internal construction project stakeholders (Chinyio and Olomolaiye, 2010)

External Stakeholders			
	Categories	**Individuals/groups**	**Objectives and Interests**
1	External public parties	Government authorities	Ensure that the project abides by laws and regulations
		Consultation bodies such as district board	Ensure the local communities' requirements will be reflected in the project
		Town planning board	Ensure the project will be in line with district planning
		Labour union/employers' association	Influence the conduct of its members (privilege protection function)
		General public	Participate in and contribute to the government process
		Media	Influence project decision and company reputation
		Institutional forces/nationalised industries	Influence professional organisations upon the activities of their participants through conditions of engagement, fees, education and rules of conduct
2	External private parties	Local residents/ community	Be critical in terms of the project amenity
		Local landowners	Ensure that their interests will not be hurt by the project
		Archaeologists	Be concerned about the loss of historical artefacts
		Environmentalists/conservationists	Ensure the protection of the environment from destruction or pollution
		Competitors	Seek to gain competitive advantage
		Tourists	Enjoy the scene
		Others	Support the project for its success

Table 2-9 External construction project stakeholders (Chinyio and Olomolaiye, 2010)

The tables above show that several stakeholders with different interests and objectives are involved in construction projects in terms of project phases. These interests may

deliver conflicts and diversity within the project. Therefore, these stakeholders' interests can lead to the urgency for managers to focus more on stakeholder management. This section discussed the diversity and conflicts of stakeholders and the need for stakeholder management. The section below will focus on stakeholder engagement within construction projects and the need for stakeholder engagement.

2.2.5 Stakeholder Engagement

Olander and Landin (2005) mentioned, in their study about the evaluation of stakeholder influence on construction projects, that internal stakeholders are more demanding than external stakeholders as far as the project is concerned. In another comparative study, Olander and Landin (2008) discovered the influences of external stakeholders in two railway projects in Sweden, which led the authors to underscore the urgency for project managers in construction projects to analyse the needs and engagements of internal and external stakeholders to avoid unnecessary conflicts and controversies in the project.

Freeman's (2010) definition of stakeholder management, as cited above, confirms that stakeholder engagement can affect the achievement of project objectives. Furthermore, PMI (2013) defined project stakeholder management as "the systematic identification, analysis and planning of actions to communicate with and influence stakeholders". The PMI (2013) and Freeman (2010) definitions proved the importance of stakeholder engagement in a project life cycle.

Chinyio and Akintoye (2008) discovered that the influences of stakeholders in a construction project are not *static* but *dynamic,* and thus proposed the need for further studies on stakeholder engagement because it is a "web of complexity". Greenwood (2007) argued that stakeholder engagement could have various meanings depending on the perception of every manager. Therefore, stakeholder engagement is defined as "practices that the organisation undertakes to involve stakeholders positively in organisational activities" (Greenwood, 2007, p.316-317).

Most authors agreed on the need to manage stakeholder engagement across the whole project life cycle (Smith and Love, 2004, Aaltonen and Kujala, 2010). It is undeniable that the influences of stakeholders on the project are dynamic, which can lead to

complexity in the project if they are not managed and identified carefully (Freeman, 2010; Chinyio and Olomolaiye, 2010; Newcombe, 2003).

Furthermore, Winch (2010) claimed that managing stakeholder engagement in construction projects has become more challenging for managers for two reasons:

- External stakeholders now have more power in the project progression. This is established by way of expanding external stakeholder rights through the monitoring and controlling systems for the project environment.
- The change to concession contracting with finance secured the asset created by the project. The financiers are now giving more attention to the project mission to ensure their assets yield the promised investment return.

These two reasons provide more support in recognising the importance of engaging the stakeholders through the entire project life cycle, to ensure the achievement of project missions. Additionally, internal stakeholders comprising the project team will need to work together with the external stakeholders at any necessary stage, to ensure the accomplishment of the project goal. Prompted by this, Chinyio and Akintoye (2008) mentioned the need to identify and understand the expectation of stakeholders to manage their negative impact, which will help attain the project objectives successfully.

In addition, this researcher argues the need for stakeholder management in construction projects to exert its influence, intensify its engagement on the project from the early stages, and focus its attention on a wide range of stakeholders, then shift its negative influence to positive support to meet the project expectations.

This section focused on the importance of stakeholder engagement in construction projects. In addition, this section shows the importance of having an early plan to manage stakeholder engagement alongside careful management until the end of the project. However, the question that can arise after the above sections is the critical success factors for stakeholders' engagement that need to be managed effectively to ensure the achievement of successful construction projects. The next section will focus on identifying, from literature, the stakeholder engagement CSFs in construction projects.

2.2.6 Stakeholder Engagement Critical Success Factors (CSFs)

According to Rockart (1979, p.85), a critical factor for success for any business is attributed to the satisfactory results of a limited number of areas that ensure successful competitive performance for the organisation. These are the few key areas where “things must go right for the business to flourish. If results in these areas are not adequate, the organisation's efforts for the period will be less than desired”. Yang et al. (2014) pointed out that understanding stakeholder-related factors is essential to establish appropriate decision-making strategies during the project process. The above definitions show the importance for managers to pay attention to the critical success factors.

However, PMI (2013) believed that understanding stakeholders' influences, demands, needs and expectations led to a successful project. In their study, Jepsen and Eskerod (2009) discovered that stakeholder identification, classification, and analysis are essential factors for stakeholder management. Jugdev and Muller (2005) suggested a communication tool for managers to use for the stakeholders to achieve project success. Likewise, Olander and Landin (2008) recommended four critical success factors for stakeholder management: analysis of stakeholders, communication, evaluation and relationship. Similarly, Assudani and Kloppenborg (2010) asserted, in their study, that communication and relationship are essential factors to ensure project success. Chinyio and Akintoye (2008) suggested that stakeholder management can ensure project success by providing: high-level management support, handling power and interest carefully, being proactive, and communicating and negotiating with each other.

Many studies discussed stakeholder engagement as critical success factors in construction projects. However, these studies focused only on describing and recognising these factors without mentioning their priority ranks regarding construction projects (Yang et al., 2009). Consequently, Yang et al. (2009) identified and ranked 15 critical success factors according to their priority for construction projects using literature review, consolidated interviews, and pilot studies with professionals in construction projects (Table 2-10).

Rank	Critical Success Factors for Stakeholder Management	No
1	Managing stakeholders with social responsibilities (economic, legal, environmental and ethical)	C1
2	Exploring stakeholders' needs and constraints to projects	C5
3	Communicating with and engaging stakeholders properly and frequently	C15
4	Understanding the area of stakeholders' interests	C4
5	Identifying stakeholders properly	C3
6	Keeping and promoting a good relationship	C11
7	Analysing conflicts and coalitions among stakeholders	C9
8	Predicting the influence of stakeholders accurately	C7
9	Formulating appropriate strategies to manage stakeholders	C12
10	Assessing attributes (power, urgency, and proximity) of stakeholders	C8
11	Compromising conflicts among stakeholders effectively	C10
12	Formulating a clear statement of project missions	C2
13	Predicting stakeholders' reactions for implementing the strategies	C13
14	Analysing the change of stakeholders' influence and relationships during the project process	C14
15	Assessing stakeholders' behaviour	C6

Table 2-10 Critical success factors for stakeholder management (Yang et al., 2009)

These critical success factors will be explored in detail to find out the influences they each have on the stakeholder management/engagement process. An attempt has been made in the following points to identify these factors.

1. Effective formulation of project mission

   In a construction project, the importance of identifying and defining the project's mission from the very beginning is emphasised. Winch (2010) described how the project manager must fully understand and know the project cycle. The clear project

mission serves as the pre-requisite for the entire project management team's actions in delivering a successful project. Being aware of the joint project goals and objectives aids in executing effective stakeholder management (Jergeas et al., 2000; Chinyio and Akintoye, 2008).

2. Efficient use of procurement route

   A project is deemed successful when it is accomplished on time, accompanied by the right price and quality standards that stakeholders approve. Love et al. (1998) stressed that the procurement method employed is a factor necessary to ensure such success. The procurement system refers to delegating roles and responsibilities to relevant people and organisations, defining their respective relationships with various parties in a construction project. The choice of the procurement route is essential for the clients to make (Anumba and Evbuomwan, 1997). Ankrah et al. (2009) stated that the appropriate procurement route ensures more significant commitment because it identifies specifically the people working on a particular task and their involvement in the decision-making process. Love et al. (1998) explained that ineffective procurement practices such as ineffective communication, poor coordination, lack of integration and no encouragement bring negative consequences to the project.

3. Project stakeholder identification and listing

   Mathur et al. (2008) and Faniran et al. (2000) pointed out the imperativeness of carefully identifying project stakeholders at the project initiation stage, facing the challenge of dealing with numerous stakeholders. A scheme in the project identification process includes the decision maker's recognition of an appointed person's power to influence others and the urgency of a stakeholder's claim (Mitchell et al., 1997; Jepsen and Eskerod, 2009).

4. Employing a flexible project organisation

   The stakeholder management/engagement entails dynamic processes with a complex and unpredictable nature necessitating flexible project organisation (Olander and Landin, 2008). The flexibility will make adjustments when the project changes a stakeholder's decisions.

5. Identification and full comprehension of stakeholder's interest

   Identifying and evaluating stakeholders' diverse areas of interest in a construction project is essential (Jepsen and Eskerod, 2009; Karlsen, 2002; Freeman, 2010). A contractor's primary goal is quick project completion, employing methods that might affect members of the community that have very little or no interest in the project.

The appeal of the contractor to finish the project quickly is for them to deploy their resources, including the services of their staff on other projects. Hence, any diversion from the original orders of the client might not be positively accepted (Olander and Landin, 2008; Chinyio and Olomolaiye, 2010). Thomson et al. (2003) explained that communication between the stakeholders and contractors is essential to figure out stakeholders' needs from their products and their role in the project, including their values, as reflected in their beliefs and behaviours.

6. Determining and Assessing Stakeholder's attributes

   Stakeholders are believed to possess specific attributes that are important for project managers to consider. Mitchell et al. (1997) identified these as power, urgency and legitimacy, which impact the project, and which the stakeholders use to control the resources. Power refers to the influence of stakeholders on the actions of other stakeholders; urgency refers to the required immediate attention of the stakeholders, and legitimacy is the validity of the stakeholder's claim. Bourne (2005) and Aaltonen and Kujala (2010) added another essential attribute: proximity, referring to the stakeholder's connection to the project, i.e., directly working or remotely working on the project.

7. Classification of stakeholders based on attributes

   After determining and assessing stakeholders' attributes and areas of interest, it is necessary to classify them (Karlsen, 2002). Many scholars (Mitchell et al., 1997; Olander, 2007; Walker and Rowlinson, 2008; Winch, 2010) have discussed that the classification of project stakeholders is important, and have proposed a classification model discussed in Table 2-11 (Aaltonen et al., 2008).

Type of stakeholder strategy	**Description**
Direct withholding strategy	Stakeholders restrict project's access to critical resources, which are controlled by the stakeholder to increase their perceived power
Indirect withholding strategy	Stakeholders influence project's access to resources that are not directly controlled by the specific stakeholder to increase their perceived power
Resource building strategy	Stakeholders acquire and recruit critical and capable resources to their group to increase their perceived power
Coalition building strategy	Stakeholders build alliances with other project stakeholders to increase their perceived power or legitimacy
Conflict escalation strategy	Stakeholders attempt to escalate the conflict beyond initial project-related causes (e.g., political). Through this process, the project may become an arena for non-project-related battles. This may introduce a new institutional environment in which stakeholders' claims are perceived as more legitimate
Credibility building strategy	Stakeholders increase their perceived legitimacy by acquiring credible and capable resources, for example, capable individuals with good reputations or networks
Communication strategy	Stakeholders use different types of media to communicate and increase the perceived legitimacy and urgency of their claims
Direct action strategy	Stakeholders organize protests, road blockades, etc. to increase the perceived urgency of stakeholder claims

Table 2-11 Classification of stakeholder salience shaping strategies in projects (Aaltonen et al., 2008)

8. Predicting and mapping of stakeholder's behaviour

   Stakeholders' concerns and needs are expressed in different ways to assert their importance in the project. According to Freeman (2010), there are three classifications of stakeholder behaviour: (1) observed behaviour, (2) cooperative potentials, and (3) competitive threats. Based on behaviour, stakeholders can act as "proponents, neutral, or opponents to the project's objectives" (Molwus, 2014). In other words, stakeholders could express themselves by providing support, acting against, or being apathetic towards the project (Olander, 2007; Aaltonen et al., 2008). Moreover, according to Aaltonen et al. (2008), stakeholders assert their salient position in the project by doing the following strategies: (1) direct withholding, (2) indirect withholding, (3) resource building, (4) coalition building, (5) conflict escalation, (6) creditability building, (7) communication, and (8) direct action strategies. Freeman (2010) stated that project managers need to fully understand how stakeholders behave during different project stages.

9. Predicting stakeholders' influences on each other

   Stakeholders significantly impact the outcomes of any project, and past research indicates the importance of stakeholders' influence to plan and execute successfully stakeholder management/engagement (Karlsen, 2002; Olander and Landin, 2005; Chinyio and Akintoye, 2008).

10. Stakeholders' potential impact on the project

    Stakeholder analysis during the entire project is imperative to acquire knowledge of stakeholders' potential influence on the project (Jepsen and Eskerod, 2009). According to Olander and Landin (2005), a precursor of planning, implementation, and completion of the project lies in evaluating stakeholders' demands and their potential influence.

11. Possible conflicts and coalitions identification and analysis

    Another important factor to consider in the stakeholder management process is the analysis of conflicts and coalitions (Freeman, 1994). Some scholars discussed conflicts among stakeholders and project goals (Jepsen and Eskerod, 2009). Newcombe (2003) described that an influential individual stakeholder might influence the project, although the power of the group of stakeholders forms a coalition that can become the most influential. Yang et al. (2009) explained that the influential group of stakeholders has expectations that conflict with the expectations of other groups or individuals. For instance, the project construction methods may

not be acceptable to local residents, or the needs of local residents may conflict with the project's designs.

12. Providing effective resolutions to conflicts

    Based on overall outcomes, it is significant for the project managers to balance conflict resolution and stakeholders' satisfaction (Freeman, 2010). Several scholars, such as Yang et al. (2009) and Chinyio and Akintoye (2008), have encouraged the provision of incentives, creating a no-blame culture and practising trade-offs.

13. Management of stakeholders' interest

    Stakeholders' expectations and interests change during the course of the project execution, which makes it vital for the project manager to continuously engage with the stakeholders, as advocated by several researchers (Jergeas et al., 2000; Walker and Rowlinson, 2008; Newcombe, 2003; Chinyio and Akintoye, 2008). Freeman (1994) explained that managing stakeholders' interests is essential due to their dynamism and power to influence the project. It is recommended that project managers not make any assumptions about stakeholders' interests based on past and present projects (Jepsen and Eskerod, 2009; Chinyio and Olomolaiye, 2010). Moreover, project managers should develop the skills of being sensitive and responsive to stakeholders' interests and expectations, to achieve a successful project (Jergeas et al., 2000; Newcombe, 2003).

14. Management of stakeholders' influence

    Jergeas et al. (2000) discussed the dynamism of stakeholders' influence, explaining the potential change of interest, and with it, differences in stakeholders' influence and relationships to one another. Because of this, Olander and Landin (2005) and Olander (2007) stressed the need to conduct and constantly update the stakeholder analysis.

15. Management of change in stakeholder relationships

    Relationships among stakeholders can vary; stakeholders can either act against each other or act cooperatively (Freeman, 2010). Relationships can change; Chinyio and Akintoye (2008) stated that relationships among stakeholders and the project should be managed well. Eriksson and Westerberg (2011) say it is beneficial to ensure a collaborative climate relationship among stakeholders so that a cooperative relationship occurs between stakeholders and the project.

16. Managing the change of stakeholders' attributes

    Stakeholders' attributes change as project execution goes to different stages (Mitchell et al., 1997). Olander (2007) reiterated the changes and stated that the appropriate

stakeholder management process relies on the stakeholders' attributes. In fact, several researchers have advocated the need for continuous analysis of stakeholders' attributes to better understand the changes (Bourne and Walker, 2005; Mitchell et al., 1997; Olander, 2007; Yang et al., 2009). Furthermore, Chinyio and Olomolaiye (2010) explain that the assumption of stakeholders' attributes based on previous projects should never be considered; instead, characteristics are identified based on the assessment conducted on the current project.

17. Management of project decision impacts on stakeholders

    Aaltonen and Kujala (2010) stressed the importance of ensuring that all project decisions do not cause stakeholders to oppose the project. Chinyio and Akintoye (2008) provided an example of a stakeholder holding ill feelings towards other stakeholders because he is classified as having less influence, legitimacy and power; as a result, the stakeholder began forming coalitions with others to assert his influence. Construction methods can also have a negative impact on the project, which can result in bad publicity affecting the reputation of the project overall.

18. Prediction of stakeholders' reactions to the implementation of project decisions

    Yang et al. (2009) stated that project managers need to predict stakeholders' reactions to the formulated stakeholder management strategies, anticipating the protest of or reaction against the strategies' implementations. In this manner, project managers can mitigate negative impacts on the project, resulting in successful project completion (Chinyio and Akintoye, 2008; Chinyio and Olomolaiye, 2010).

19. Relevant stakeholders' involvement in redefining project mission

    It has been observed that early-stage good project management eliminates potential issues and prevents project failure. It is essential to comprehend stakeholders' interests, attributes, influence and behaviour, and to make these reflect on the project mission. Flexibility is also suggested to avoid hindrance to positive outcomes (Faniran et al., 2000; Jergeas et al., 2000). Project managers must ensure that the stakeholders' most important expectations are reflected in the project mission. To achieve this, stakeholder participation in the design process should be encouraged so that there will be no assumptions made (Thomson et al., 2003; Yang et al., 2009; Aaltonen and Kujala, 2010).

20. Formulation of strategies to manage/engage stakeholders

    Project stakeholder management is defined as "the systematic identifications, analysis and planning of action to communicate with and influence stakeholders" (PMI, 2017).

Formulating the appropriate management/engagement strategies is important (Chinyio and Akintoye, 2008; Karlsen, 2002; Yang et al., 2009; Aaltonen and Sivonen, 2009). According to Mathur et al. (2008), appropriate design of the stakeholder management process can produce different positive results.

21. Sustaining and promoting stakeholders' positive relationships

    Positive relationships among stakeholders ensure successful project delivery, specifically when stakeholders are given a part in the decision-making process (Eriksson and Westerberg, 2011). The achievement of positive relationships is through establishing and sustaining trust and commitment, and providing incentives when needed (Aaltonen and Kujala, 2010; Chinyio and Akintoye, 2008). In addition, the established trust and commitment resulting in loyalty can benefit in delivering the stakeholders' expectations by the project managers (Karlsen et al., 2008; Jergeas et al., 2000; Bourne and Walker, 2005).

22. Frequent communication with stakeholders

    Effective communication helps in building trust, commitment and loyalty among stakeholders. The project management team must establish an efficient feedback mechanism that will convey their differing demands even at an early stage, right after identifying all stakeholders involved in the project (Olander and Landin, 2008; Yang et al., 2009). Suitable feedback mechanisms can eliminate issues affecting project outcomes and prevent or minimise stakeholders' interest-related conflicts, which can be costly if not addressed and resolved (Faniran et al., 2000). Jergeas et al. (2000) explained that honesty in communication with both negative and positive stakeholders is paramount. Chinyio and Akintoye (2008) emphasised the importance of choosing the appropriate language in communication. The forms of communication can also vary, for example, newsletters, project websites, flyers, etc.

23. Corporate social responsibilities considerations

    Mathur et al. (2008) and Yang et al. (2009) explained that corporate social responsibilities, including economic, environmental, legal and ethical issues, should be part of project managers' management of stakeholders. Smyth's (2008) recommendation is for the project manager to abandon the power-based analysis approach and adopt the proactive management approach through prioritizing responsibilities for ethical care. Issues concerning corporate social responsibilities prompt competing demands by stakeholders on the project resources. For this reason,

Bourne (2005) explained that stakeholder management should balance the stakeholders' competition claims on the resources.

This section discussed the previous studies about stakeholder engagement CSFs, and pointed out the need for an additional in-depth understanding of the relationships between stakeholder engagement CSFs in construction projects. The next section will focus on stakeholder management approaches/frameworks and the relationships between critical success factors in construction projects.

2.2.7 Stakeholder Management Theories and Approaches

The previous sections outline the importance of understanding the relationships between stakeholder CSFs in construction projects. This section will review some of the theories of stakeholder management and stakeholder management approaches. This will help to understand stakeholder management weaknesses and strengths to suggest improvement if needed.

According to Friedman and Miles (2006), there are multiple theories of stakeholders. Phillips et al. (2003, p.479) added that "one of stakeholder theory's greatest strengths, is also one of its most prominent theoretical liabilities as a topic of reasoned discourse", where they identified the stakeholder theory as "a theory of organizational management and ethics" (Phillips et al., 2003, p.480). Likewise, Meding et al. (2013) mentioned the importance of fully embracing stakeholder theories in construction projects due to increased stakeholder diversity, power and influence.

Goodpaster (1991, p.69-70), on the one hand, argued that "managers have duties to all stakeholders, but a fiduciary duty only to shareholders", which he calls a stakeholder paradox. On the other hand, Freeman (1994) rejected the stakeholder paradox, which he labels as a separation theory, and considers the need for relationships between ethics and business to deliver project success. Cova and Salle (2005) support this theory by studying stakeholders from the marketing standpoint, where the relationship between the internal and external stakeholders is essential.

Harrison and Wicks (2013) studied stakeholder theory from the value perspective, which they believe has been neglected. As a result, they have developed four factors to define and understand stakeholder values. Smyth (2008), however, discussed the 'utilitarian

approach', which is concerned with maximising the value of a firm in terms of profit and growth. The author then suggested the need for ethics and relationship management principles to bridge the conceptual gap in this theory and help in the practical field.

Meding et al. (2013), formulated a 'diamond stakeholder approach' (Figure 2-9). This included four stakeholder approaches: ethical and social, positive utilitarian, negative utilitarian, and none present, where the company will see no value in stakeholders and use it to fill the gap of previous approaches and deliver an effective stakeholder management.

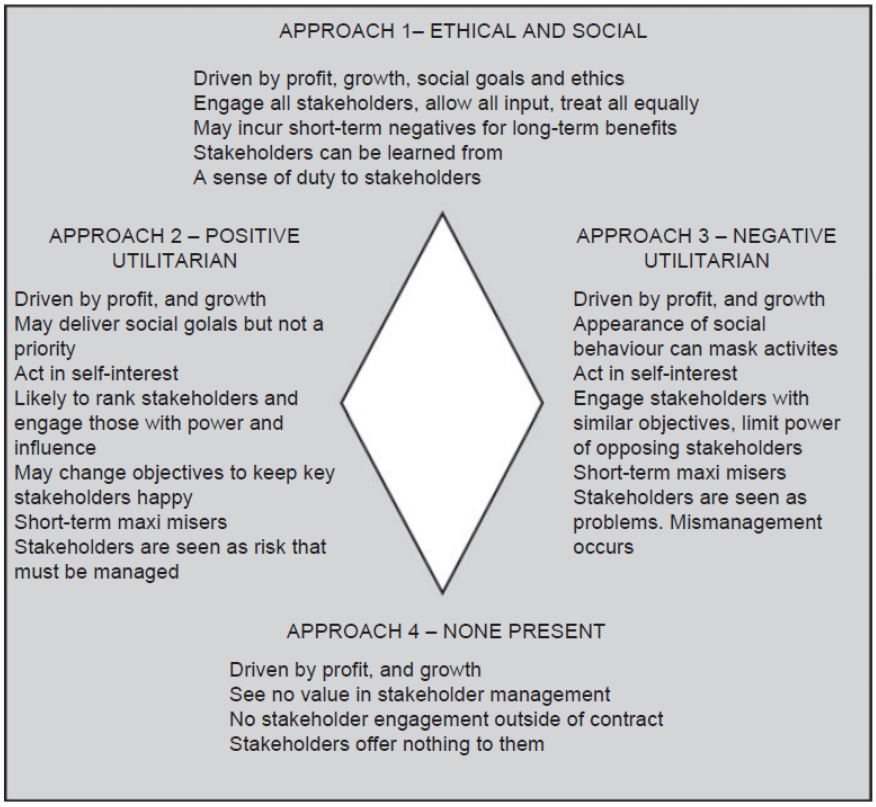

Figure 2-9 Stakeholder diamond approach (Meding et al., 2013)

In his study, Takim (2009) based on needs and expectations of managing stakeholders, found that the public sector focuses more on social and political matters when managing stakeholders, while the private sector focuses more on forming project coalitions and lobby tactics mechanisms in managing stakeholder needs and expectations. In addition, he suggested the importance of involving stakeholders through all project phases, particularly at the beginning and end of the project life cycle, and he mentioned that good

communication between stakeholders and project managers could lead to the achievement of project expectations and needs.

Similarly, Faniran et al. (2000) mentioned that the best management strategy for delivering a successful project is identifying all the problems and eliminating them from the early stages. In other words, identifying stakeholders during the early stages of a project is essential to avoid problems later on. On the other hand, Jepsen and Eskerod (2009) mentioned the challenges facing project managers in deciding/choosing a proper stakeholder management approach. Most of the scholars above mentioned the importance of stakeholder management, and focus on some challenges project managers could face. Still, these challenges could be related to the way of analysing stakeholders or could be related to the correct choice of stakeholder management approaches for particular projects. To overcome this challenge, it is necessary to investigate the differences between stakeholder management approaches and find out the differences between them.

Chinyio and Olomolaiye (2010) mentioned that project managers need to be aware of cultural, organisational and social environments, including project stakeholders surrounding the project if they want to achieve a successful outcome. Furthermore, they suggested the importance of using stakeholder management strategies to manage project stakeholders properly but mentioned the challenges of finding the best stakeholder management strategy for all project stakeholders. These challenges could be related to significant criteria like the stakeholder analysis, the relationship between stakeholders, communication between stakeholders, sustained stakeholder commitments, and stakeholders' needs and satisfaction (Chinyio and Olomolaiye, 2010).

Therefore, Chinyio and Olomolaiye (2010) developed a chart for strategic stakeholder management (see Table 2-12) to help managers manage stakeholders effectively. This chart categorises stakeholder management objectives to do a formalised stakeholder analysis (SA), strengthen stakeholders' relationships (SR), sustain stakeholders' commitment (SC) and increase stakeholders' satisfaction (SS). Moreover, alongside stakeholder management objectives, this strategic chart indicates types of stakeholders, needs/expectations, stakeholders' strategies and tactics, and some tips to use to achieve successful projects. However, most of these indications are strongly related to stakeholder CSFs in construction projects.

Core Objectives		Managing construction stakeholders effectively	
Stakeholder management objectives		• Formulise stakeholder analysis (SA) • Strengthen stakeholders' relationship (SR) • Sustain stakeholders' commitment (SC) • Increase stakeholders' satisfaction (SS)	
Stakeholders		Primary/internal	Secondary/external
Needs/expectations	SA	identified, classified and prioritised as key stakeholders	Be formally recognised by the project management
	SR	Relationship effectively managed	Formation of a network of relationship
	SC	Fully engaged and committed to project goals	Be concentrated for support at different stages of the project
	SS	Successful project completion with achieved targets of time, cost, and quality	Interests and expectations are considered and incorporated into project's decision
Strategies	SA	Clear identification and classification of stakeholder potentials and expectations	Investigating stakeholders' perceptions, expectations, and their potentials for 'support' or 'opposition' to the project
	SR	Building and maintaining good relationship through effective communication	Providing opportunity for two-way communications
	SC	Attain high affective commitment for high performance	Attaining stakeholders' support to execute the project
	SS	Assure maximum satisfaction with project management	Satisfying key external stakeholders according to their level of power/interest and importance/influence
Tactics	SA	Use power/interest and influence/importance matrices	Use power/interest and influence/importance matrices
	SR	Face-to-face meetings	Employ public participation techniques at stages of project
	SC	Use manager's social and political skills, create trust and creditability, provide active involvement, communicate early	Create sense of project ownership/partnership
	SS	Identify factors critical to satisfaction with project management process	Integrating stakeholders' interests into project management and keep them informed of project information and decision- making
Tips	SA	Do not exclude any stakeholders	Needs early recognition and attention
	SR	Proactive relationship development uses relationship matrices with clear communication plans and channels	Mutual respect and trust are crucial
	SC	Active response to stakeholders' requirement is essential	External feedback system is helpful
	SS	Satisfying one stakeholder may make others dissatisfied	Provide involvement programs at appropriate level throughout the project life cycle

Table 2-12 Chart of strategic stakeholder management (Chinyio and Olomolaiye, 2010, p135)

Yang et al. (2011) identified 15 stakeholder critical success factors, as mentioned in the previous section, and proposed a framework to manage stakeholders successfully, based on these factors. In this framework, Yang et al. (2009) used a factor analysis approach to group stakeholder CSFs into five main groups by identifying the relationship between these factors: precondition factor, information inputs, stakeholder estimation, decision making and sustainable support (see Figure 2-10). In addition, Yang and Shen (2015) developed the Yang et al. (2009) framework. They presented a "systematic framework for stakeholder management in construction", which included all five main groups with one other 'continuous support group'. This framework is more detailed than Yang et al.

(2009), but at the same time, fell short of considering the level of involvement of stakeholders in project stages. The project managers need to consider this shortcoming to avoid any problems or conflict with stakeholders, which may affect project outcomes.

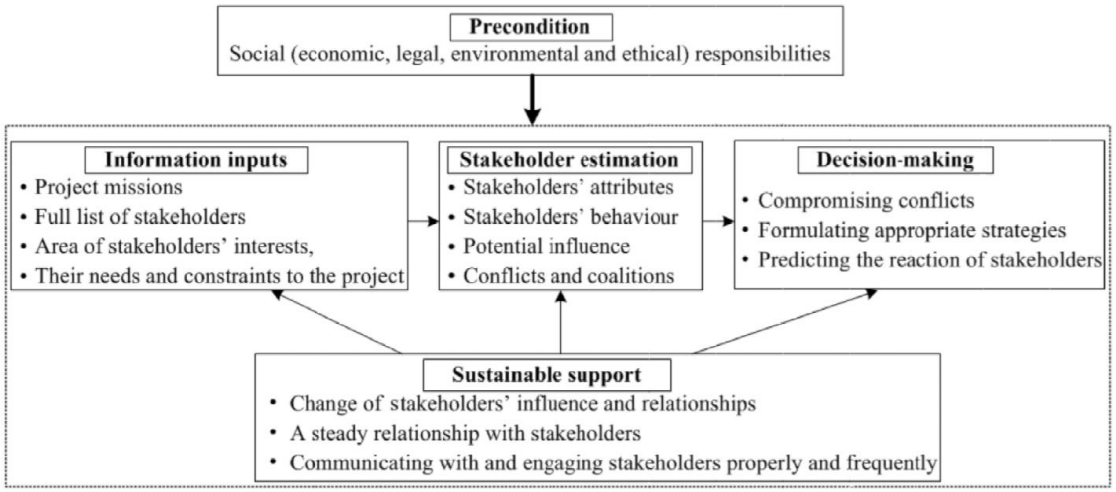

Figure 2-10 A framework for successful stakeholder management in construction projects (Yang et al., 2009, p.345)

Molwus (2014) developed a measurement model of stakeholder CSFs in construction projects to identify the interrelationship between stakeholder CSFs and project success, based on other theoretical studies on stakeholder management (Yang et al., 2009; Yang and Shen, 2015; Chinyio and Olomolaiye, 2010). This model includes five primary constructs representing stakeholder CSFs groups and their indicators (see Table 2-13). In this model, the stakeholder CSFs have been taken from models by Yang et al. (2009) and Li et al. (2011), but focus more on studying the interrelationship between these factors then grouping them according to the construction project lifecycle of stakeholder management. This study helps fill the gap of understanding the interrelationship between stakeholder CSFs and involving stakeholders throughout the project lifecycle in stakeholder management, as found in previous studies.

Furthermore, Molwus (2014) developed a conceptual measurement model for stakeholder CSFs interrelationship with their latent variable (constructs), drawn from the existing studies of stakeholder management. He then empirically investigated this conceptual model using SPSS and tested hypotheses using SEM. This conceptual model has been tested by SEM then modified to the stakeholder CSFs model with five main groups and their indicators, as shown in Table 2-13.

Constructs	Indicators
Stakeholder characteristics and project characteristics (SCPC)	• Ensure the use of favourable procurement route and flexible project organisation • Carefully identifying and listing the project stakeholders and their areas of interests from the onset • Determining and assessing the attributes (Power, Urgency, Legitimacy and Proximity) of stakeholders in/to the project • Appropriately classifying stakeholders according to their attributes • Involving relevant project stakeholders at the inception stage and whenever necessary to formulate and refine project mission
Stakeholder analysis (SA)	• Predicting and mapping stakeholders' behaviours (Supportive, Opposition, Neutral, etc) and reactions for implementing project decisions • Predicting stakeholders' potential influence on each other • Predicting stakeholders' potential influence on the project • Identifying, analysing and resolving possible conflicts and coalitions among stakeholders
Stakeholder dynamics (SD)	• Managing the change of stakeholders' interests • Managing the change of stakeholders' influence • Managing the change of relationship among stakeholders and how project decisions affect them • Managing change of stakeholders' attributes
Stakeholder engagement/empowerment (SE)	• Formulating appropriate communication strategies to manage/engage different stakeholders • Keeping and promoting positive relationships among the stakeholders • Considering corporate social responsibilities (paying attention to economic, legal, environmental and ethical issues)
Project Success (PS)	• Completion of project on time • Completion on budget • Completion to specified standards/qualities • Completion to the satisfaction of a majority of the project stakeholders

Table 2-13 Stakeholder CSFs interrelationship model (Molwus, 2014)

2.2.7.1 Stakeholder Characteristics and Project Characteristics (SCPC)

Project characteristics refer to the project's "size, location, type of client, funding source, procurement issues and objectives" (Molwus, 2014, p.83). Project managers' clear comprehension of the project and its characteristics avails the management team of all necessary details about the project and its stakeholders. Comprehending the characteristics allows the project manager to identify, assess, document and communicate these characteristics to appropriate stakeholders, to avoid conflict and set attainable expectations (Aaltonen et al., 2008; Jepsen & Eskerod, 2009; Olander & Landin, 2005). Mitchell et al. (1997) and Winch (2010) clarified further that the stakeholders' characteristics refer to the interests/expectations of stakeholders, their direct or indirect involvement in the project, the extent of their influence, etc. Mitchell et al. (1997) and Bourne and Walker (2005) elaborated that this essential information is crucial to obtain before proceeding with the stakeholder management process. According to the hypothesis of the conceptual measurement model, the stakeholders' attributes and project's characteristics rely greatly on the project management team's ability to: (1) list the project stakeholders, (2) identify and understand the stakeholders' interests, (3) formulate the mission of the project, (4) identify and implement a favourable procurement route, and (5) efficiently use the flexible project organisation.

2.2.7.2 Stakeholder Analysis (SA)

Project managers' analysis of the project is imperative; explicitly analysing the stakeholders' interests, influence, demands, expectations, and all other internal and external attributes of the project. Karlsen (2002) and Jepsen and Eskerod (2009) stated that stakeholder analysis refers to the identification of the stakeholders': (1) interests, (2) power or influence, and (3) importance. The consequences of faulty or failed stakeholder analysis include stakeholder conflicts, and issues and concerns that can hinder successful project delivery (Aaltonen et al., 2008; Li et al., 2012; Olander and Landin, 2008). In contrast, a good stakeholder analysis provides the project management team with the information to make good decisions for the project (Jepsen and Eskerod, 2009). Furthermore, a good stakeholder analysis depends on the ability of the project manager to: (1) assess stakeholders' characteristics, (2) classify stakeholders' attributes, (3) determine and predict stakeholders' attitudes, (4) predict the stakeholders' power on the project, and (5) analyse potential conflicts and issues that may arise.

2.2.7.3 Stakeholder Dynamics (SD)

The dynamic involvement of the construction stakeholders' interests in the project can be as diverse as the stakeholders' interests (Chinyio and Akintoye, 2008). To illustrate, Chinyio and Olomolaiye (2010) gave these examples of construction stakeholders' interests and concerns:

1. Local residents: the project's impact on their amenities as well as their surroundings
2. Local landowners: interest lies in ensuring that the project will not disturb or negatively affect their interest
3. Environmentalists: ensure the protection of the environment from pollution and destruction
4. Competitors: ensure obtaining an advantage by the project team's behaviour and decisions
5. Media: can directly affect how people perceive the reputation of the project
6. Others: connection to the project is not clear but can exert a certain extent of power or influence as to the project outcomes

It has already been mentioned that stakeholders' interests and expectations change as the project develops, mainly depending on their attributes and power. Chinyio and Olomolaiye (2010) explained that the changes could occur at different stages of the project or within the same stage of the project's delivery. Olander and Landin (2005) add that predicting and understanding these changes can prevent surprises or conflicts and confrontations as well as issues that may hinder a project's success. Hence, stakeholder management/engagement should be handled appropriately through effective strategies. Moreover, because of stakeholder dynamism, stakeholder management/engagement will not be effective if stakeholder analysis is not done correctly (Aaltonen et al., 2008). In other words, the success of project delivery largely depends on the project management team's ability to:

1. effectively find solutions to conflicts
2. efficiently manage stakeholders' changes of interests and influence
3. predict the change of stakeholders' attributes
4. manage the dynamic stakeholder relationships
5. predict stakeholders' stance on project decision implementations; and
6. have a complete comprehension of how project decisions impact on stakeholders

2.2.7.4 Stakeholder Engagement/Empowerment (SE)

Aaltonen et al. (2008) explained that, because of the dynamism of the project, specifically stakeholders' change of interest and expectations as the project progresses, it is imperative to prepare the effective implementation of appropriate strategies in engaging and managing stakeholders. Chinyio and Akintoye (2008) asserted that the project's success is using the appropriate engagement strategies with the stakeholders. An example of stakeholder engagement can be communication methods, like distributing flyers or sending letters to stakeholders about a project decision or conducting a meeting to obtain stakeholders' inputs. In other words, project managers should have the ability to:

1. involve stakeholders in defining and refining the project's mission
2. effectively formulate suitable strategies for stakeholder engagement
3. sustain and encourage a positive relationship with stakeholders
4. efficiently establish a feedback mechanism and communicate the feedback to stakeholders; and
5. consider all corporate social responsibility issues affecting the project.

2.2.8 Stakeholder Management Summary

This section has discussed stakeholder engagement in construction projects. Topics include definition, stakeholder analysis, stakeholder objectives and interest, stakeholder influences, stakeholder engagement CSFs, and stakeholder management theories and approaches.

The definition section shows various definitions for stakeholder management; it also shows that scholars define stakeholders relating to some characteristic aspects. Some define stakeholders from a broad perspective, and others from a narrow perspective. This study adopted the PMI (2017) definitions for stakeholders and stakeholder engagement.

The second section of this chapter discussed stakeholder analysis and classification, including stakeholder attributes and internal/external stakeholders. The conclusion of this section revealed that stakeholder objectives and interests are essential to the analysis/classification of stakeholders in construction projects. Therefore, the third section focused on reviewing the literature on stakeholder objectives and interests.

Chinyio and Olomolaiye (2010) categorise several stakeholders with their objectives and interests in construction projects. This section highlighted the need for stakeholder engagement to reduce stakeholder conflicts.

The stakeholder engagement section shows a variety of studies that argue the importance of stakeholder engagement, and explains the necessity for construction managers to have an early plan to manage stakeholder engagement for the whole project lifecycle. In addition, this section raises the question of stakeholder engagement's critical success factors. Therefore, the stakeholder CSFs section discussed the need for managers to identify and understand stakeholder engagement CSFs in construction projects. Likewise, this section presented the previous studies on stakeholder CSFs, focusing on Yang et al. (2009) identification and ranks for stakeholder CSFs in construction projects. Hence, this section shows the importance of understanding the interrelationship between stakeholder CSFs and project success.

2.3 Organisational culture in the context of the Bahrain government

Bahrain is a mixed cultural setting, indicating the existence of various stakeholders with diverse cultural backgrounds. Bahrain, a member of the Gulf Cooperation Council (GCC), is also one of the most modernised states in the Arabian Gulf, with massive investments in construction projects. Specifically, the collected data comes from Bahrain's Ministry of Housing, which manages all government housing infrastructures. The Ministry of Housing deals with numerous internal and external stakeholders from the public and private sectors, who possess different cultural orientations and diverse cultural beliefs. These are why Bahrain, particularly the Ministry of Housing, is an ideal subject for this research.

To discuss Bahraini culture and other factors influencing organisational cultures, such as the Bahrain Government's economic vision and Bahrain's Ministry of Housing, a literature review of these influencing factors is presented below.

2.3.1 Bahraini culture

The Kingdom of Bahrain is an archipelago in the Arabian Gulf consisting of 33 islands between Saudi Arabia and Qatar. It has a total land area of 780 km^2 (Bahrain Authority for Culture and Antiquities, 2021). Manama, the capital and largest city in Bahrain, has a distinct reputation as a cultural hub both regionally and internationally, as evidenced in its selection as the Capital of Arab Culture in 2012, the Capital of Arab Tourism in 2013, and the Capital of Asian Tourism in 2014 (Bahrain Authority for Culture and Antiquities, 2021).

Due to its strategic location, Bahrain has always been a centre of cultural pluralism, and its way of life is imbued with the acceptance of cultural diversity. It prides itself as the "melting pot" in the region, with thriving multicultural tolerance as evidenced by centuries-old temples, churches and synagogues. It welcomes people from all over the world. It also enjoys being a financial hub that shelters many global financial services companies (Bahrain Authority for Culture and Antiquities, 2021). More importantly, the country developed a comprehensive and integrated economic vision to achieve a more sustainable economy in 2030.

AlQahtani (2013) posited that Bahraini culture comes from a mixture of various Middle Eastern cultures, such as from neighbouring countries like the Kingdom of Saudi Arabia, the United Arab Emirates, Qatar and Oman, Syria, Lebanon, Jordan, and Iraq. One distinctive cultural feature of Bahrain is its Islamic culture; however, Bahrain is the only state in the Gulf that is popularly known as the home of many religions and cultural beliefs (Countries and their Cultures Forum, 2021). This feature is embedded in Bahrain's way of life, allowing people in the Kingdom to live peacefully and harmoniously. Numerous expatriates, such as Filipinos and Indians, consider the Kingdom a second home, being the friendliest and most hospitable country in the Middle East. It is evidenced in the 2021 InterNations Expat Insider survey that ranked Bahrain as the best place for ex-pats to live and work in the Gulf. Expatriates outnumbered Bahrainis in terms of the population percentage (54%), testament that Bahrain is the best place to live and work in the Gulf. The expatriates' population comes mainly from India, Pakistan, Southeast Asia, Europe and America. As these expatriates are temporary workers in the Kingdom, they constitute a transient population.

Al-Jalahma's (2012) study indicated that Bahraini culture is dominated by rationality and hierarchy. His study is supported by other studies that cover the cultures of some GCC and other Middle Eastern countries. Notably, Al-Jalahama pointed out the lack of extant literature discussing Bahraini culture in his research.

Similarly, Al-Khalifa and Aspinwall's (2000) research on company organisations in Qatar, a country near Bahrain with a similar culture, revealed that its culture has the same rational and hierarchical culture dominance. Dedoussis' (2004) study of the Middle Eastern countries' culture also indicated that their organisational culture includes trust, loyalty and strong teamwork.

In addition, Hofstede (1991) stated the unpredictability of culture, i.e., being different from place to place. Studies on Middle Eastern and GCC countries' cultures can be beneficial in comprehending the general cultural norms of Bahrain; however, it is not an objective basis for measuring the current Bahraini organisational culture. Schwartz (1994) and Hofstede (1991) argued the importance of assessing the research sample's culture and not merely basing its understanding on the findings of other studies, even if the subjects of the studies share similar cultural values. Therefore, based on these observations, there is a need for an empirical investigation to determine Bahrain's types of organisational culture.

2.3.2 The government of Bahrain economic vision

His Majesty King Hamad bin Isa Al Khalifa launched Bahrain's Economic Vision 2030 in October 2008, which aims to achieve continuous sustainable development and progress for Bahrain's economy, highlighting Bahrain's desire and plan to provide a quality of life for its citizens (eGovernment of Bahrain, 2021). Following the launch of the economic vision, points of view were provided through extensive discussions among leaders from both the public and private sectors, including international consultancies and agencies.

The Economic Vision 2030 aims to guide the government, society and the economy by following the three guiding principles of: sustainability, competitiveness and fairness. Immediately after the launch, the Economic Development Board (EDB) began economic and institutional reform programmes aligned with the Economic Vision 2030. EBD

facilitates the interagency and inter-ministry collaboration to create the first National Economic Strategy that would serve as the blueprint for achieving the goals of the vision.

The Economic Vision 2030 also deals with the Sustainable Development Goals 2030 (SDGs). The SDGs embody the Government's priorities that are connected to the Government Work Programme's executive actions.

Bahrain's Economic Vision 2030 provides a clearer picture and understanding of the Government's goals. Comprehending the Government's vision can provide stakeholders in Bahrain with a better understanding of Bahrain's organisational culture that would benefit stakeholders' engagement leading to a prosperous economy and investment in the Kingdom.

2.3.3 Ministry of Housing in Bahrain

Bahrain's Ministry of Housing's history can be traced back to its establishment in 1975. His Highness Sheikh Isa bin Salman Al Khalifa, the Prince of the State of Bahrain, issued a decree to create the Ministry of Housing. The main goal was to provide social housing for citizens with limited-income. Sheikh Khalid bin Abdulla Al Khalifa was appointed the First Minister for the Ministry of Housing (Ministry of Housing, 2021).

With the adoption of modern technical specifications and the help of extensive research, the Ministry of Housing was able to implement governmental policies that brought remarkable success in the construction of numerous housing projects across different governorates in the Kingdom. Notably, the most significant accomplishment of the Ministry of Housing is attributed to the construction of housing projects based on the needs of the citizens as well as the creation of new cities and towns. The most significant of which were Isa Town, established in 1968 and named after Sheikh Isa Bin Salman Al Khalifa, and Hamad Town, established in 1984 and named after His Majesty, King Hamad bin Isa Al Khalifa, the Crown Prince at that time (Ministry of Housing, 2021).

The Ministry of Housing has continued its housing project operations for 36 years now, building residential compounds across five governorates and continuing new city construction, such as Zayed City and, most recently, the Northern City, Sharq Al Hidd City, and Sharq Sitra City.

The Ministry of Housing's vision is to provide high-quality housing services, enhancing citizens' quality of life. Its vision is to ensure that citizens and residents of the Kingdom

receive a superior quality of life with a sustainable and comfortable living environment through the Ministry's provision of sufficient and quality housing, specifically catering to citizens under limited-income brackets. Furthermore, the Ministry of Housing aims to provide each Bahraini family with a "home", conducive to raising a family in a safe and secure setting (Ministry of Housing, 2021).

The Ministry of Housing's strategy aligns with Bahrain's Economic Vision 2030. It aims to raise the living standard of Bahraini citizens through providing and improving housing services. The strategy is closely connected to the National Economic Strategy's social support program. The Ministry of Housing's values include sustainability, learning and knowledge management, equality and justice, creativity and competitiveness, quality of life, and social stability. The Ministry operates under six key business factors: (1) create social and psychological stability, (2) maintain the social fabric, (3) sustain housing security, (4) ensure adequate and healthy housing, (5) maintain and develop urban environment, and (6) build responsibility for and take care of humanitarian cases.

In the Ministry of Housing operations, the following stakeholders are considered the most important: (1) the Ministry of Works, (2) Electricity and Water Authority, (3) the Central Planning Office (CPO), (4) the Ministry of Municipal Affairs and Urban Planning, and (5) the Municipal Councils. The Ministry of Housing also recognizes the significance of interagency coordination. Hence, there is also close overall coordination and a close follow-up with: (1) Council of Ministers, (2) Ministry of Finance, (3) Survey and Land Registration, (4) Tender Board, (5) House of Representatives, and (6) Economic Development Board. The Ministry works with the private sector, especially contractors and consultants. Other stakeholders of the Ministry include the citizens of the Kingdom, specifically those who are eligible applicants for housing services. The media is also one stakeholder that the Ministry acknowledges (Ministry of Housing, 2021).

Over the past 36 years of service to the citizens of the Kingdom, the Ministry of Housing has taken pride in its progress and achievements. The Ministry has announced more than 2,500 housing units across five governorates for eligible Bahraini citizens, and has also granted 527 housing loans to citizens amounting to 16,683,500 Bahraini dinars. The Ministry has also recently initiated the process of constructing various housing projects to include: (1) the 2011 approval of 22 tenders amounting to 64,495,882,500 Bahraini dinars, (2) the approval of three tenders to provide temporary housing apartment

maintenance, (3) the opportunity to design housing units for individuals with special needs, (4) the design change of frontispieces of housing units, (5) the establishment of women's accommodation building projects, (6) formation of the 'Equal Opportunities Unit' in cooperation with the Supreme Council for Women, (7) creation and inauguration of the Call Centre of the Ministry, (8) launching the Electronic Draw System project, (9) updating its Complaint System, (10) initiating the reclamation of the sea works to create the Sharq Al Hidd City housing project, (11) the signing of Public Private Partnership (PPP) between the Ministry and Naseej (a real estate company), aiming to build 4,157 social housing units in Northern City and the Bahir and Lozi areas, amounting to 205,000,000 Bahraini dinars, (12) garnering the 15th Gulf Engineering Forum prize for the 'Renovation of Halat Bu Maher' project, (13) Housing Directorates restructuring and organizing to simplify procedures for citizens, and (14) the announcement of a new system of housing allocation (Ministry of Housing, 2021).

The Ministry of Housing facilitates, coordinates and cooperates with various stakeholders from the public and private sectors. Notably, these individuals have diverse cultural orientations. As one of the biggest Ministries in the Kingdom, the Ministry also engages and manages mega-projects, involving a substantial amount of money dealing with various stakeholders. The Ministry of Housing deals with almost all government and private sectors in their daily operations among all the Ministries. Therefore, as the subject of this research, the Ministry of Housing qualifies and is appropriate to answer all the research questions set.

2.3.4 Summary

The discussion above provides insights into the studies on cultural implications in Middle Eastern settings. Although some Middle East countries, especially GCC states like Qatar and Bahrain, share a similar culture, studies conducted cannot accurately assess organisational culture. Hence, the discussion includes details on the Kingdom of Bahrain's culture, highlighting its diverse setting, and focusing on Bahrain's role as a cultural and financial hub in the region. Furthermore, the discussion also provides an overview of Bahrain's Economic Vision 2030, which may prove advantageous to understanding organisational culture in Bahrain based on understanding the government's priorities in shaping the society and nation's progress. The Economic Vision 2030 indicates the Government's interest in the continuous engagement of encouraging

international stakeholders to invest and increase their investments in the Kingdom. One of the Ministries responsible for handling and managing investment projects is the Ministry of Housing. Hence, the discussion emphasised the importance of the Ministry of Housing by providing details of its operations and the internal and external stakeholders it engages with, as well as its significance in interagency and inter-ministry collaboration.

2.4 Chapter Summary

This chapter identifies gaps in the literature around the relationship between organisational culture and stakeholder engagement in construction projects. These gaps motivate this research to develop a conceptual framework. Table 2-14 shows these gaps with some recommendations that have been considered.

In addition, this chapter discussed the theories and approaches of stakeholder management in construction projects, presenting previous studies of stakeholder management theories and their CSFs. Likewise, it offers a developed model by Molwus (2014) for stakeholder CSFs and their interrelationship, based on Yang et al. (2009) and Yang and Shen (2015). Therefore, this research will adopt the Molwus (2014) model to measure stakeholder CSFs, alongside the Cameron and Quinn (2011) model to measure organisational cultures, as discussed in Section 1, to explore the relationship between stakeholder CSFs and organisational culture in construction projects, and examine how they influence one another.

No	Authors/Year	Title	Outcome	Recommendations	Methodology
1	Li et al. (2011)	Hierarchical structuring success factors of project stakeholder management in the construction organization	Investigating the hierarchical structure and interrelationships of stakeholder critical success factors and construction projects by using Interpretive structural modelling (ISM) methodology	the findings are based on the Chinese case study; it is beneficial for investigating the hierarchical structure and interrelationship between success factors for stakeholder management in other countries	Interpretive structural modelling (ISM) methodology
2	Ankrah et al. (2009)	Factors influencing the culture of a construction project organisation: An empirical investigation	Explored several the hypothesised relationships between the cultural orientations of construction project organisations and a number of key project features empirically	the examination of whether conflicts exist between organisational and project cultures by exploring differences or similarities between individuals in different firms working on the same projects	Mixed method
3	Meding et al. (2013)	A framework for stakeholder management and corporate culture	The data suggest that stakeholder management and corporate culture are key areas of an organisation's success and that this importance will only grow in the future. A clearly identifiable relationship was established between the two theoretical areas and a framework was developed and quantified	The demands of corporate culture alongside consideration of stakeholder management approaches, given the identifiable relationships that have been established between the two	Mixed method
4	Veser (2004)	The Influence of Culture on Stakeholder Management: Social Policy Implementation in Multinational Corporations	A theoretical framework for stakeholder management in an international and multicultural environment	A potential support study on the influences of cultural characteristics on the implementation of stakeholder management within an international environment is needed	Qualitative
5	Mok et al. (2015)	Stakeholder management studies in mega construction projects: A review and future directions	A comprehensive SM model covering the entire project lifecycle can facilitate effective stakeholder communication and engagement in subsequent project stages.	The lack of identifying the impact of culture on stakeholder management in construction mega project.	Mixed method
6	Yang et al. (2009)	Exploring critical success factors for stakeholder management in construction projects	Identifying an ordered and grouped set of CSFs for stakeholder management in construction projects of Hong Kong	The same research procedure should be conducted in other locations which have different cultures from Hong Kong to seek the similarities and differences of the CSFs for stakeholder management in construction projects.	Quantitative
7	Cameron & Freeman (1991)	Cultural congruence, strength, and type: Relationships to effectiveness	To investigate the relationship between cultural congruence and strength of culture with the effectiveness of organisations	This research used cross-sectional data to address the relationship. Longitudinal data are necessary to investigate these relationship and their dynamic more fully.	Scenario methodology

Table 2-14 List of previous studies

Chapter 3

Conceptual Framework

3.1 Introduction

The literature review chapter has indicated that previous studies on organisational culture and stakeholder success criteria in construction-related projects have two findings to offer. First, the organisational culture and stakeholder management are related to project success; and second, the impact of organisational culture types on stakeholder success criteria is evident. Successful construction projects are influenced by organisational culture and stakeholder success criteria.

In this context, the author has developed a framework that interrelates and investigates the relationship between the two core elements of successful construction project management and determines which category of organisational culture is most relevant to the associated category of major project stakeholders. This framework includes the four organisational culture types conceptualised by Cameron and Quinn (2011) and five grouped stakeholder success criteria described in the literature review chapter.

In this section, key findings and concepts from Chapter Two have a bearing on determining the type of existing organisational culture and stakeholder success criteria in construction projects that are initially explored. Evidence from the literature on the proposed relationships between organisational culture and stakeholder success criteria is evaluated and presented. Based on this evidence, the conceptual framework is proposed, and the hypotheses are developed.

3.2 Key Concepts from the Literature Review

According to Boynton and Zmud (1984), a few things must go well to ensure the manager's or organisation's success. These 'Critical Success Factors' (CSF)s represent those managerial or enterprise areas that must be given special attention in order to generate high performance. From the stakeholder management standpoint, Cleland and

Ireland (2006) considered it essential for managers to be aware of whether they successfully manage stakeholders or not. According to many researchers in the construction project management field, managing stakeholders properly is essential to delivering a successful project. Moreover, several researchers have investigated CSFs for project stakeholder management in terms of identifying these factors, and some studies explored the relationships between them.

Smircich (1983) mentioned that the concept of culture had been linked strongly with the 1980 study of organisations in Fortune Magazine (published March 22, 1982), with the heading, 'Corporate Culture: the Hard-to-Change Values that Spell Success or Failure'. Ankrah and Proverbs (2004) considered cultural awareness an essential requirement to improve the successful delivery of construction projects. Therefore, if improvements and success are to be achieved, construction project organisations (CPOs) must be able to identify the key drivers of their culture, and the possible consequences of particular orientations so that strategies can be developed to diminish any negative orientations. Hence, many scholars have investigated culture and its forms (Igo and Skitmore, 2006), but the Competing Value Framework (CVF), proposed by Cameron and Quinn (2011), has been widely used for culture audit and comparison purposes.

In this context, and considering the literature on CSFs, stakeholder management SM and organisational culture, it seems many scholars have pointed out the importance of managers focusing on CSFs of stakeholders in construction projects to deliver a successful outcome. Likewise, many scholars have shown the significance of organisational culture awareness to achieve project success. However, no studies have examined the relationship between organisational culture and stakeholder success criteria in delivering successful construction project management (SCPM). For this reason, identifying variables of stakeholder success criteria and organisational culture, and establishing the relationship between these variables through empirical evidence is needed, to formulate frame models for a successful construction project and forming the specific rationale for this research.

3.3 Identifying Types of Existing Organisational Culture

Classifying types of organisational culture at the outset is essential in identifying the relationship between them within CSFs of stakeholders and SCPM. There is an indirect link based on the literature confirming that an appropriate culture is vital to the success of construction projects. In addition, selecting a suitable approach in identifying the organisational culture is necessary to examine the relationship between stakeholder CSFs and organisational culture. Therefore, in this research, the Competing Value Framework model (CVF) will be used to classify the types of organisational culture existing in the chosen project. According to Cameron and Quinn (2011), this model can provide understanding and measurement of the four types of cultures within organisations.

CVF has proven to be a trusted model for measuring and describing the dominant cultures of organisations and helpful in identifying the cultural characteristics that exist in organisations. Most of the researchers who adopted the CVF used a survey questionnaire to empirically measure and identify types of organisational cultures. Cameron and Quinn (2011) further developed an assessment instrument using the CVF as a means for determining the relative importance of cultural traits within an organisation and establishing the organisation's dominant culture type characteristics and overall culture profile. This instrument used four cultural forms: Clan Culture, Hierarchical Culture, Adhocracy Culture and Market Culture, and six critical dimensions of organisational culture: Dominant Characteristics, Organisational Leadership, Management of Employees, Organisational Glue, Strategic Emphasis, and Criteria for Success.

This research will use a survey questionnaire, incorporating those instruments developed by Cameron and Quinn (2011), to measure the types of organisational culture that exist within the chosen project.

3.4 Stakeholder Engagement Critical Success Factors CSFs

Yang et al. (2010) mentioned that many researchers had discussed a variety of stakeholder success factors that linked to successful projects, and indicated that identifying these factors and grouping them is an important step towards managing successful construction projects. Boynton & Zmud (1984) agreed that studying stakeholder success criteria is

essential for successful management. Aaltonen et al. (2008) stated that managing stakeholders' needs and requirements in a project is critical in ensuring project success.

There are several factors for managing stakeholders. Molwus (2014), in his research, 'Stakeholder Management in Construction Projects: A Life-Cycle Based Framework' built a model for CSFs groups for stakeholder management in construction projects based on combined theoretical relationships between stakeholder management theories. To examine the relationship between organisational culture types and stakeholder success criteria for a successful construction project, it is necessary to adopt both the Yang et al. (2009) and Molwus (2014) models and develop existing theories to classify the relationship between the two variants. The stakeholder success criteria factors identified in this research are shown in Table 3-1.

Constructs	Indicators	References
Stakeholder Characteristics and Project Characteristics (SCPC)	• Clearly formulating the project mission;	Jerges et al., (2000); Akintoye et al. (2003) Thomson et al., (2003); Chinyio and Akintoye, (2008); Molwus (2014)
	• Ensuring the use of a favourable procurement method;	Atkin and Skitmore, (2008); Rwelamila, (2010); Molwus (2014)
	• Carefully identifying and listing the project stakeholders;	Mathur *et al*., (2008); Jepsen and Eskerod, (2009); Molwus (2014)
	• Ensuring flexible project organisation;	Olander and Landin, (2008); Chinyio and Akintoye, (2008); Li *et al*., (2011); Molwus (2014)
	• Identifying and understanding stakeholders' areas of interests in the project.	Jepsen and Eskerod, (2009); Olander and Landin, (2008); Yang *et al*., (2009); Molwus (2014)
Stakeholder Analysis (SA)	• Determining and assessing the power (capacity to influence the actions of other stakeholders); urgency (degree to which stakeholders' claims requires immediate attention); legitimacy (perceived validity of claims); and proximity (level of association or closeness with the project) of stakeholders;	Mitchell *et al*., (1997); Yang *et al*., (2009); Aaltonen and Kujala, (2010); Molwus (2014)
	• Appropriately classifying stakeholders according to their attributes/characteristics;	Karlsen, (2002); Mitchell *et al*., (1997); Molwus (2014)
	• Predicting and mapping stakeholders' behaviours (supportive, opposition, neutral etc);	Freeman (1984)Yang *et al*., (2009); Aaltonen and Kujala, (2010); Molwus (2014)
	• Predicting stakeholders' potential influence on each other;	Pajunen, (2006); Molwus (2014); Jepsen and Eskerod, (2009)
	• Predicting stakeholders' potential influence on the project;	Pajunen, (2006); Molwus (2014); Jepsen and Eskerod, (2009)
	• Identifying and analysing possible conflicts and coalitions among stakeholders;	Jepsen and Eskerod, (2009); Yang *et al*., (2009); Molwus (2014)
Stakeholder Dynamics (SD)	• Resolving conflicts among stakeholders effectively;	Yang *et al*., (2009) Molwus (2014); Chinyio and Akintoye, (2008)
	• Managing the change of stakeholders' interests;	Jergeas *et al*., (2000); Molwus (2014); Jepsen and Eskerod, (2009)
	• Managing the change of stakeholders' influence;	Jergeas *et al*., (2000); Olander (2006)
	• Managing the change of relationship among stakeholders;	Pajunen, (2006); Molwus (2014); Chinyio and Akintoye, (2008)
	• Managing change of stakeholders' attributes;	Mitchell, *et al*., (1997) Olander (2006); Molwus (2014)
	• Managing how project decisions affect stakeholders;	Chinyio and Akintoye, (2008); Aaltonen and Kujala, (2010); Molwus (2014)
	• Predicting stakeholders' likely reactions for implementing project decisions.	Chinyio and Akintoye, (2008); Yang *et al*., (2009); Molwus (2014)
Stakeholder Engagement/ Empowerment (SE)	• Involving relevant stakeholders to redefine (refine) project mission;	Jerges *et al*., (2000); Yang *et al*., (2009); Aaltonen and Kujala, (2010); Molwus (2014)
	• Formulating appropriate strategies to manage/engage different stakeholders;	Chinyio and Akintoye, (2008); Yang *et al*., (2009); Molwus (2014)
	• Keeping and promoting positive relationships among the stakeholders;	Olander and Landin, (2008); Yang *et al*., (2009); Molwus (2014); Aaltonen and Kujala, (2010)
	• Communicating with stakeholders properly and frequently (instituting feedback mechanisms);	Jergeas *et al*., (2000); Molwus (2014); Olander and Landin, (2008); Chinyio and Akintoye, (2008); Yang *et al*., (2009);
	• Considering corporate social responsibilities (paying attention to economic, legal, environmental and ethical issues).	Mathur *et al*., (2008); Yang *et al*., (2009); Molwus (2014)
Project Success (PS)	• Completion of project on time;	Chan and Kumaraswami, (1997); Chan, et al., (2003); Winch, (2010); Yang *et al*., (2009); Molwus (2014)
	• Completion on budget;	
	• Completion to specified standards/qualities;	
	• Completion to the satisfaction of a majority of the project stakeholders.	

Table 3-1 The stakeholder success criteria factors

3.5 Developing Research Hypotheses

According to Hair (2010), a hypothesis is an explanation proposed to explain a phenomenon, or to explain a correlation between more than one phenomenon. In other words, it is a testable statement about the relationship between two or more variables or a proposed explanation for some observed phenomenon. Moreover, the hypothesis is a brief summation of the researcher's prediction of the study's findings, which may be supported or not by the outcome.

The hypotheses proposed in Table 3-2 were derived from Cameron and Quinn's (2011) CVF, and Molwus (2014) and Yang et al. (2009) stakeholder engagement CSFs models in Chapter Two. Table 3-2 will be discussed in detail in the following section, and the testing and validation of the hypotheses will be presented in the research methodology (Chapter Four).

List of Hypotheses	
H1	Collaborate culture has an influence on SPC
H2	Collaborate culture has an influence on SA
H3	Collaborate culture has an influence on SS
H4	Collaborate culture has an influence on PSM
H5	Create culture has an influence on SPC
H6	Create culture has an influence on SA
H7	Create culture has an influence on SD
H8	Create culture has an influence on PSM
H9	Compete culture has an influence on SPC
H10	Compete culture has an influence on SA
H11	Compete culture has an influence on SD
H12	Compete culture has an influence on SS
H13	Compete culture has an influence on PSM
H14	Control culture has an influence on SPC
H15	Control culture has an influence on SA
H16	Control culture has an influence on PSM

Table 3-2 List of hypotheses

3.6 Proposed Conceptual Framework and Hypotheses Development

This research discovered gaps and recommendations from previous studies on organisational culture and stakeholder engagement in construction-related projects. Two of these gaps are related to the thesis questions and objectives, which are:

1. Organisational culture and stakeholder engagement influence project success, and;
2. There are relationships between organisational culture types and stakeholder engagement critical success factors in a successful construction project.

These proposed hypotheses argued some of the relationships listed in Table 3-7. In this context, the author has developed a framework that interrelates and investigates the relationship between the two core elements of successful construction project management and thus determines which category of organisational culture is most relevant to the associated category of major project stakeholders (see Table 3-7). This framework (see Figure 3-1) includes four organisational culture types as conceptualised by Cameron and Quinn (2011) and five grouped stakeholder success criteria derived from models by Molwus (2014) and Yang et al. (2009). As stated earlier, each of the four organisational culture constructs comprises six measurement dimensions, with a total of 24 indicators. Each CSF for the stakeholder management construct has multiple measurement indicators with 21 indicators. To sum up, 12 relationships (regression paths) were recognised in the literature review and investigation.

	Organisational Cultures / **Stakeholder CSFs**	Clan (Collaborate) Culture	Adhocracy (Create) Culture	Market (Compete) Culture	Hierarchy (Control) Culture
Stakeholder and Project Characteristics (SPC)	Involves relevant stakeholders at project start-up and when making changes.	✓	✓	✓	✓
	Uses a favourable procurement method that includes stakeholders		✓	✓	
	Identifies and lists all project stakeholders			✓	✓
	Uses a flexible project organisation that includes stakeholders	✓	✓		
	Determines and assesses the attributes of stakeholders involved in the project, e.g., urgency, power, etc.	✓		✓	✓
Stakeholder analysis (SA)	Predicting and mapping stakeholders' behaviours and reactions	✓		✓	
	Predicting stakeholders' potential influence on each other	✓			
	Predicting stakeholders' potential influence on the project		✓		
	Predicting, analysing, and resolving possible conflicts and coalitions among stakeholders	✓	✓		
Stakeholder dynamics (SD)	Managing changes in the project that arise from changes to stakeholders' demands	✓		✓	
	Managing changes in the project that arise from changes to stakeholders' influence		✓		✓
	Managing changes in the project that arise from changes to the relationships among stakeholders	✓			
	Managing changes in the project that arise from changes to stakeholders' attributes, e.g., urgency, power		✓		✓
Stakeholder Satisfaction (SS)	Formulating appropriate communication strategies to manage different stakeholders	✓	✓		
	Keeping and promoting positive relationships among the stakeholders	✓	✓		
	Communicating with stakeholders and providing feedback when needed	✓	✓		
	Taking social responsibility for the project and stakeholders, e.g., paying attention to economic, legal, and environmental issues			✓	✓
Project Success Measures (PSM)	Completion of project on time				✓
	Completion of project on budget			✓	
	Completion of project to specified standards/quality		✓		
	Completion of the project to the satisfaction of stakeholders	✓			

Table 3-3 List of relationships between organisational culture types, based on Cameron and Quinn (2011), and stakeholder CSFs based on literature review (source: author)

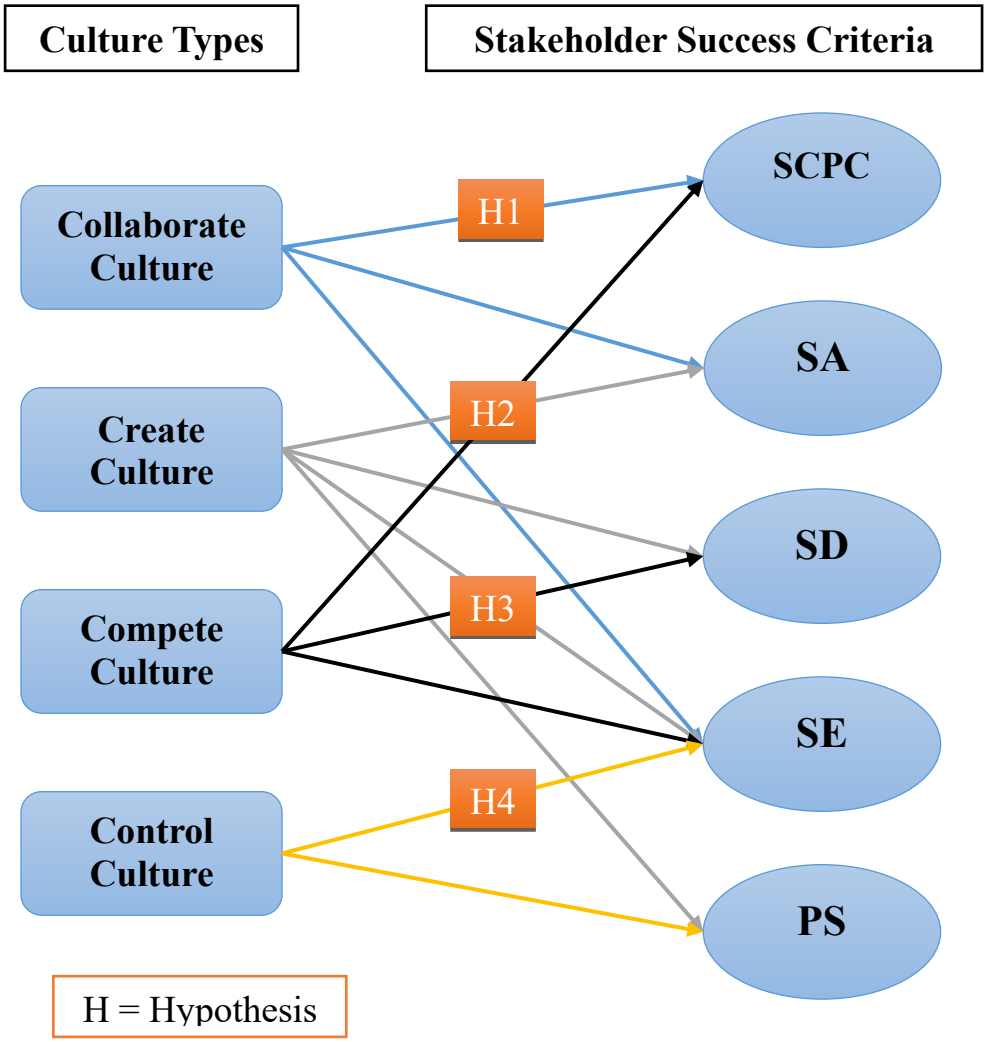

Figure 3-1 Developed framework of the relationship between organisational culture and stakeholder CSFs (source: author)

3.7 Lists of Hypotheses of Relationships Between Organisational Culture and Stakeholder CSFs

This section will discuss hypotheses that were developed based on relationships between constructs of organisational culture types and constructs of stakeholder critical success factor groups. Chapter Two outlined Cameron and Quinn's (2011) theory and instruments to identify and measure the four organisational culture types with their specific 6-dimensional sets associated with construction projects. In addition, they mentioned in their study that any project organisation environment could be ideal with one or a combination of more types of cultures. These four types of cultures can impact differently within any organisation.

Stakeholder management is defined by PMI (2017) as "an individual, group, or organisation that may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project, program, or portfolio". Stakeholder critical success factors are defined by Rockart (1979) as "attributed to the satisfactory results of a limited number of areas that ensure successful competitive performance for the organization". These two definitions show that any effect or influence on stakeholder management and, to be more specific, on project organisation, can affect the critical success factors of any project. For example, culture has an influence on organisations, and project organisation has an influence on project success. Likewise, an organisation has an influence on stakeholder management, and stakeholder CSFs have an influence on project outcomes. In other words, these definitions indirectly provided relationships between organisational culture and stakeholder CSFs.

Although many studies demonstrate the importance of organisational culture and stakeholder CSFs, none have measured or described the relationship between these two fields. Wacker (2004), in his study about a theory of formal conceptual definitions, suggested the need for conceptual definitions and measurement instruments of theory-building. He describes the importance of theoretical justifications for conceptual relationships when formulating hypotheses, categorised as:

- Interpretive properties - those that can be directly interpreted from the formal conceptual definition

- Logical properties - those that are analytically tied to other concepts; and
- Predictive properties - similar to the logical properties but give predictions if the theory conditions are fulfilled (Wacker, 2004, p.637-638).

The next sections will focus on all the associated hypotheses to explain the relationship between organisational culture types and stakeholder CSF characteristics, based on the literature review.

3.7.1 Impact of Collaborate Culture on Stakeholder CSFs

H#	Hypothesis Statement
H1	Collaborate culture has an influence on Stakeholder and Project Characteristics (SPC)
H2	Collaborate culture has an influence on Stakeholder Analysis (SA)
H3	Collaborate culture has an influence on Stakeholder Satisfaction (SS)
H4	Collaborate culture has an influence on Project Success Measures (PSM)

Table 3-4 Hypotheses related to collaborate culture

The literature review proposed that 'collaborate culture' focuses on shared values and goals, cohesion, participative-ness, individuality and a sense of "we-ness", permeating clan-type firms (Cameron and Quinn, 2011). The management style of collaborate culture emphasises teamwork and employee developments, and stakeholders are best thought of as partners. The environment of this organisation is full of collaboration with all stakeholders, learning from one another, and striving to improve with every production (Cameron and Quinn, 2011).

Collaboration means two or more stakeholders are working together on a venture to achieve a specific goal that will be difficult to achieve individually (Gray, 1985). Therefore, Jungnitsch et al. (2016), in their survey analysis of organisational culture from internal and external perspectives, found that collaborative and adhocracy cultures are more favourable and had higher scores than the other two cultures. Thus, it can be concluded that clan-type organisations have a strong homogeneous culture with an emphasis on family and adhocracy (see Table 3-3). From the family perspective, loyalty

and tradition are important, as well as teamwork and consensus. In this study, the four conceptual hypotheses that have been proposed, based on the literature review.

3.7.1.1 Collaborate Culture has an Influence on Stakeholder and Project Characteristics (SPC)

In hypothesis H1, it is proposed that collaborate culture strongly influences SPC. SPC includes five main indicators, which should be involved before engaging with stakeholders. These are: (1) involving relevant stakeholders at project start-up and when making changes; (2) identifying and listing all project stakeholders; (3) determining and assessing the attributes of stakeholders involved in the project, e.g., urgency and power; (4) using a favourable procurement method that includes stakeholders; and (5) using a flexible project organisation that includes stakeholders. Moreover, collaborative culture creates a familial and a loyal cultural environment with all stakeholders, which is one of the main reasons for suggesting that collaborative culture influences stakeholder involvement from early on in a project.

Mitchell et al. (1997) and Winch (2010) suggested that stakeholder characteristics refer to stakeholders' stakes and interests, bases of involvement (direct or indirect), sources of power, and other attributes on the project. In other words, the power of stakeholders and the project environment affect the SPC. According to Brouwer et al. (2013), there are two key types of stakeholder power: visible and hidden power. Furthermore, trust and willingness are both key in establishing a strong relationship with stakeholders that are available with collaborative culture. At the same time, skills and a good knowledge of culture are essential for managing stakeholders' hidden power (Brouwer et al., 2013). This could be one of the main reasons why collaborate culture influences SPC, because skills and good knowledge are aspects of teamwork and shared values.

3.7.1.2 Collaborate Culture has an Influence on Stakeholder Analysis (SA)

Hypothesis H2 proposes that collaborate culture strongly influences SA. The literature review discussed stakeholder management strategy when assessing stakeholders, explaining stakeholder analysis indicators in detail. These indicators include: (1) predicting and mapping stakeholders' behaviours and reactions; (2) predicting stakeholders' potential influence on each other; (3) predicting stakeholders' potential

influence on the project; and (4) predicting, analysing, and resolving possible conflicts and coalitions among stakeholders.

Jungnitsch et al. (2016) mentioned that collaborate culture highly values teamwork, long-term advantage, participation and consensus. Aaltonen et al. (2008) and Olander and Landin (2008) mentioned that it is important to analyse stakeholder powers, needs and concerns of all project stakeholders carefully, to avoid conflicts and confrontations between stakeholders, and Rowlinson and Cheung (2008) suggest that managers should develop good communication skills with stakeholders to facilitate strong analysis of stakeholder relationships and engagement.

In other words, communication, silence, and relationships between stakeholders are important for analysing stakeholders effectively. Moreover, Brown (2000) mentioned that the group process is about relationships within and between groups, which involve intra-group and inter-group actions that transform resources into a product. This means that there are differences between task and socio-emotional aspects of stakeholders, which can be explained more by "getting on with the job" or "getting on with people" (Brown, 2000). In other words, one of the aspects of collaborate culture is getting on with people, which is one of the main two aspects of stakeholder groups.

3.7.1.3 Collaborate Culture has an Influence on Stakeholder Satisfaction (SS)

Hypothesis H3 proposes that collaborate culture has a strong influence on SS. Studies highlighted in Chapter two emphasised the significant impact that collaborate culture can have on maintaining the relationship between stakeholders. The indicators of stakeholder satisfaction in this study are: (1) formulating appropriate communication strategies to manage different stakeholders, (2) keeping and promoting positive relationships among the stakeholders, (3) taking social responsibility for the project and stakeholders, e.g., paying attention to economic, legal, and environmental issues, and (4) communicating with stakeholders and providing feedback when needed.

Many scholars have discussed stakeholder satisfaction factors. The most common measures of these are: communication skills and response to complaints, participation, and commitment (Yang et al., 2011, Hongyang et al., 2013). Li et al. (2011) identified the weaknesses of stakeholder satisfaction factors, which are decision making and stakeholder group relationships. Collaborate culture covers most of the critical

satisfaction factors of stakeholders. Moreover, collaborate culture characteristics are the opposite of stakeholder satisfaction factors of sharing decision making and strong relationships. This means, collaborate culture is strongly linked with stakeholder satisfaction.

3.7.1.4 Collaborate Culture has an Influence on Project Success Measures (PSM)

Hypothesis H4 proposes that collaborate culture has a strong influence on PSM, indicators of which include: (1) completion of the project on time; (2) completion of the project on budget; (3) completion of a project to specified standards/qualities; and (4) completion of a project to the satisfaction of stakeholders.

The ultimate aim of stakeholder management is to deliver successful construction projects, but the meaning and measure of project success in construction have transformed over the years (Molwus, 2014). Furthermore, a project is usually regarded as successful if it is completed on time, within budget, with the specified standard of quality, and to the satisfaction of stakeholders (Winch, 2010, Rahman et al., 2003). However, Ojiako et al. (2008) and Molwus (2014) considered that if a project fails to deliver one of these indicators, it can still serve its intended purpose.

In addition, the previous hypotheses of collaborate culture and stakeholder CSFs show a strong link between collaborate culture type and stakeholder satisfaction. Collaborate culture is more related to the completion of the project on the satisfaction of stakeholders rather than other indicators.

3.7.2 Impact of Create Culture on Stakeholder CSFs

In Chapter 2, the literature suggested that 'create culture' has an influence on some stakeholder CSFs because of its dynamic, proactive and creative work factors. Create culture focuses on innovation and risk-taking, although the organisation environment emphasises growth and tapping into new sources (Jungnitsch et al., 2016). This culture type does not have centralised power or authority relationships, so power flows from stakeholder to stakeholder, depending on what problem is being addressed at the time. Thus, this culture can be described as proactive, creative, and risk-taking (Cameron and

Quinn, 2011). In the following sections, this study will discuss the four proposed hypotheses between create culture and stakeholder CSFs (see Table 3-4).

H#	Hypothesis Statement
H5	Create culture has an influence on Stakeholder and Project Characteristics (SPC)
H6	Create culture has an influence on Stakeholder Analysis (SA)
H7	Create culture has an influence on Stakeholder Dynamics (SD)
H8	Create culture has an influence on Project Success Measures (PSM)

Table 3-5 Hypothesis related to create culture

3.7.2.1 Create Culture has an Influence on Stakeholder and Project Characteristics (SPC)

In hypothesis H5, it was proposed that create culture has a strong influence on SPC. In the literature, create culture is creative and risk-taking. This means its characteristics flow between stakeholders depending on their power and creativity, influencing the project outcome. The SPC's five main indicators include: (1) involving relevant stakeholders at project start-up and when making changes; (2) identifying and listing all project stakeholders; (3) determining and assessing the attributes of stakeholders involved in the project, e.g., urgency and power; (4) using a favourable procurement method that includes stakeholders; and (5) using a flexible project organisation that includes stakeholders. This can explain the strong/weak link between some SPC indicators with the environment of create culture.

Yang et al. (2009) mentioned the importance of project managers' understanding of stakeholders, whose attributes, behaviour and potential influence need to be assessed and estimated. Conflicts and coalitions among stakeholders could also be analysed. Brouwer et al. (2013) discussed the visible and hidden power of stakeholders, as well as the difficulty for managers to predict the hidden power of stakeholders because of many aspects, including culture. On the other hand, create culture is known for its flexibility and creativity alongside risk-taking. In other words, this culture type supports using flexible project organisation, which can help manage stakeholder attributes, Also, the

management team with this culture can handle the visible and hidden power of stakeholders because of its creativity and risk-taking aspects.

3.7.2.2 Create Culture has an Influence on Stakeholder Analysis (SA)

In hypothesis H6, it was proposed that create culture has a strong influence on SA. In Chapter Two, the literature discussed the strategy of stakeholders on projects when assessing them, which some authors called information inputs (Yang et al., 2009). Some of the chosen critical factors of this group are: (1) predicting and mapping stakeholders' behaviours and reactions; (2) predicting stakeholders' potential influence on each other; (3) predicting stakeholders' potential influence on the project; and (4) predicting, analysing, and resolving possible conflicts and coalitions among stakeholders.

Rowlinson and Cheung (2008) mentioned the importance of stakeholder analysis, especially for communication and the relationships between stakeholders to avoid conflicts. Likewise, Aaltonen et al. (2008) mentioned the importance of managers analysing the needs and concerns of project stakeholders to avoid conflicts and confrontations between stakeholders. The create culture is about a dynamic and creative work environment, as well as more long-term goals to grow and produce new services. Therefore, this culture can have an influence on stakeholder needs and concerns, so managers will consider stakeholder analysis for long-term project achievement.

3.7.2.3 Create culture has an influence on Stakeholder Dynamics (SD)

In hypothesis H7, it was proposed that create culture has a strong influence on SD. The previous studies highlighted the significant impact that create culture can have on taking risks and innovating new ideas. The indicators of stakeholder dynamics in this study are: (1) managing changes in the project that arise from changes to stakeholders' demands; (2) managing changes in the project that arise from changes to stakeholders' influence; (3) managing changes in the project that arise from changes to the relationships among stakeholders; and (4) managing changes in the project that arise from changes to stakeholders' attributes, e.g., urgency, and power.

Yang et al. (2009) explain stakeholder dynamics stage by stage in decision making. This can explain the strong influence of create culture on stakeholder analysis, especially while engaging in a project. In other words, create culture is recognised by its dynamic, risk-

taking, and creative characteristics. Managers in this type of culture are very flexible in dealing with any changes arising from stakeholders, especially if it is positive for the project outcome.

3.7.2.4 Create Culture has Influence on Project Success Measures (PSM)

In hypothesis H8, it was proposed that create culture has a strong influence on PSM. The indicators of PSM include: (1) completion of the project on time; (2) completion of the project on budget; (3) completion of the project to specified standards/qualities; and (4) completion of the project to the satisfaction of stakeholders.

Jungnitsch et al. (2016) mentioned that success for create culture is recognised by having a new product or service with new standards. Moreover, a project is usually regarded as successful if it is completed on time, within budget, with the specified standard of quality, and by the satisfaction of stakeholders (Winch, 2010, Rahman et al., 2003). However, (Ojiako et al., 2008) and Molwus (2014) considered that if a project fails to deliver one of these indicators, it can still serve its intended purpose. This can explain the reason for this culture to be more related to the completion of projects to specific standards/qualities rather than other indicators.

3.7.3 Impact of Compete Culture on Stakeholder CSFs

'Compete culture' has an influence on some stakeholder CSFs because of its natural focus on results and the completion of work; the leadership is a hard driver, as are competitors (Jungnitsch et al., 2016). This type of culture prefers creating external partnerships and involves different stakeholders in order to control the market and achieve an organisation's long-term goals (Cameron and Quinn, 2011). In the following sections, this study will discuss the five proposed hypotheses between compete culture and stakeholder CSFs (see Table 3-5).

H#	Hypothesis Statement
H9	Compete culture has an influence on Stakeholder and Project Characteristics (SPC)
H10	Compete culture has an influence on Stakeholder Analysis (SA)
H11	Compete culture has an influence on Stakeholder Dynamics (SD)
H12	Compete culture has an influence on Stakeholder Satisfaction (SS)
H13	Compete culture has an influence on Project Success Measures (PSM)

Table 3-6 Result of hypothesis test related to compete culture

3.7.3.1 Compete Culture has an Influence on Stakeholder and Project Characteristics (SPC)

Hypothesis H9 proposes that compete culture has an influence on SPC. Compete culture is considered as a results-oriented organisation that aims to get the job done (Cameron and Quinn, 2011). The five main SPC indicators are: (1) involving relevant stakeholders at project start-up and when making changes; (2) identifying and listing all project stakeholders; (3) determining and assessing the attributes of stakeholders involved in the project, e.g., urgency and power; (4) using a favourable procurement method that includes stakeholders; and (5) using a flexible project organisation that includes stakeholders.

Mathur et al. (2008) mentioned the importance of managers identifying and involving stakeholders from the beginning of the project. Likewise, Mitchell et al. (1997) considered that identifying and being aware of stakeholders' powers and attributes from the beginning of the project will increase the chance of achieving project goals. Ankrah et al. (2009) suggested procurement routes between stakeholders and project organisation to identify who is going to work on the project and how to involve them in the planning and decision-making process.

In addition, compete culture and SPC share some similarities, such as (1) identifying and involving specific stakeholders from the beginning of the project; and (2) delivering the project according to the plan.

3.7.3.2 Compete culture has an influence on Stakeholder Analysis (SA)

In hypothesis H10, it is proposed that competitive culture influences stakeholder analysis. The literature review showed that the chosen critical factors of the SA group are: (1) predicting and mapping stakeholders' behaviours and reactions; (2) predicting stakeholders' potential influence on each other; (3) predicting stakeholders' potential influence on the project; and (4) predicting, analysing and resolving possible conflicts and coalitions among stakeholders.

Aaltonen et al. (2008) mentioned the importance of managers analysing and managing stakeholder salience, and analysing the needs and concerns of project stakeholders to avoid conflicts and confrontations between stakeholders. Likewise, Freeman (2010) suggested stakeholder analysis to understand project stakeholders' behaviours and needs.

Rowlinson and Cheung (2008) recommended that managers have good communication and relationships with stakeholders to avoid conflicts. Competitive culture is about a well-organised environment, and results are the main target for this type of organisation. Therefore, leadership will focus on stakeholder analysis to achieve goals. Stakeholder conflict will be less in this type of organisation because of the excellent communication, especially with the competitive and winning style targets of this organisation.

3.7.3.3 Compete culture has an influence on Stakeholder Dynamics (SD)

Hypothesis, H11 proposes that competitive culture influences SD. The previous studies in stakeholder management show that stakeholder dynamic has some critical factors, which are: (1) managing changes in the project that arise from changes to stakeholders' demands; (2) managing changes in the project that arise from changes to stakeholders' influence; (3) managing changes in the project that arise from changes to the relationships among stakeholders; and (4) managing changes in the project that arise from changes to stakeholders' attributes, e.g., urgency and power.

Aaltonen et al. (2008) argued the necessity of recognising the changing nature of stakeholder attributes in the project, which is called stakeholder dynamics. They added that a strong stakeholder management strategy to manage stakeholder dynamics would decrease conflicts between stakeholders. Likewise, Olander and Landin (2005) suggested that an appropriate stakeholder strategy would help manage stakeholder dynamics to achieve organisation goals throughout the project lifecycle.

This can explain the strong influence of competitive culture on stakeholder dynamics, because of its results-oriented organisation. In other words, competitive culture is recognised by organisation reputation and success, long-term achievements, and getting the job done. Managers in this type of culture are keen to understand stakeholder dynamics throughout the project lifecycle to ensure the delivery of successful projects.

3.7.3.4 Compete culture influences Stakeholder Satisfaction (SS)

Hypothesis H12 proposes that compete culture influences stakeholder satisfaction. In the literature review, stakeholder satisfaction indicators include: (1) formulating appropriate communication strategies to manage different stakeholders; (2) keeping and promoting positive relationships among stakeholders; (3) taking social responsibility for the project

and stakeholders, e.g., paying attention to economic, legal and environmental issues; and (4) communicating with stakeholders and providing feedback when needed.

Yang et al. (2011) describe the importance of managing stakeholder satisfaction factors, especially with good project communication and present achievements. Li et al. (2011) mentioned the weakness of management strategy with stakeholder satisfaction: a lack of good relationships and decision-making. On the other hand, compete culture supports good relationships with stakeholders and provides clear goals. Consequently, this organisational culture type has an influence on stakeholder satisfaction.

3.7.3.5 Compete culture has an influence on project success measures (PSM)

This hypothesis, H13, considers compete culture to influence project success measures. The main critical success factors for the PSM group are: (1) completion of the project on time; (2) completion of the project on budget; (3) completion of the project to specified standards/qualities; and (4) completion of the project to the satisfaction of stakeholders.

Jungnitsch et al. (2016) note that the compete culture measure for success is to complete the job. Cameron and Quinn (2011) defined success for this culture in terms of market share and penetration. This means that compete culture strongly influences project success measures because the success standards for this culture are very high.

3.7.4 Impact of Control Culture on Stakeholder CSFs

In Chapter Two, the literature suggested that compete culture influences some stakeholder CSFs because of its formalised and structured environment. This organisation is recognised by its formal rules and policies, and leadership controls and monitors the whole project's process with responsibilities and tasks for employees (Cameron and Quinn, 2011; Jungnitsch et al., 2016). The following sections will discuss the three proposed hypotheses between control culture and stakeholder CSFs (see Table 3-6).

H#	Hypothesis Statement
H14	Control culture has an influence on Stakeholder and Project Characteristics (SPC)
H15	Control culture has an influence on Stakeholder Analysis (SA)
H16	Control culture has an influence on Project Success Measures (PSM)

Table 3-7 Result of hypothesis test related to control culture

3.7.4.1 Control Culture has an Influence on Stakeholder and Project Characteristics (SPC)

Hypothesis H14 proposes that control culture influences SPC. The literature review provides five main factors of SPC: (1) involving relevant stakeholders at project start-up and when making changes; (2) identifying and listing all project stakeholders; (3) determining and assessing the attributes of stakeholders involved in the project, e.g., urgency, power, etc.; (4) using a favourable procurement method that includes stakeholders; and (5) using a flexible project organisation that includes stakeholders.

Many scholars have mentioned the importance of identifying stakeholders and project characteristics (Mathur et al., 2008; Ankrah et al., 2009; Mitchell et al., 1997). Some scholars classify stakeholder characteristics to identify their attributes and power on a project (Mitchell et al., 1997; Mathur et al., 2008), while others classify the need to identify and document stakeholders as an important stage for project characteristics (Olander and Landin, 2005; Aaltonen et al., 2008).

However, control culture type is more about trusting leadership and following their rules and tasks. Moreover, leadership in this environment needs to study projects from different perspectives to ensure structured work procedures and smooth project delivery. Therefore, identifying project characteristics and stakeholders is an essential stage in this leadership strategy, where control culture influences SPC.

3.7.4.2 Control culture influences Stakeholder Analysis (SA)

Hypothesis H15 proposes that control culture influences stakeholder analysis, which combines some indicators, which are: (1) predicting and mapping stakeholders'

behaviours and reactions; (2) predicting stakeholders' potential influence on each other; (3) predicting stakeholders' potential influence on the project; and (4) predicting, analysing, and resolving possible conflicts and coalitions among stakeholders.

As mentioned in Chapter Two and previous hypotheses with SA, analysis is important for managers to manage stakeholders and avoid conflicts (Aaltonen et al., 2008; Rowlinson and Cheung, 2008). Therefore, some scholars suggested that managers should use good communication with stakeholders and analyse their needs and salience to increase project success (Aaltonen et al., 2008, Freeman, 2010). Control culture is about trustful project delivery with low costs and predictability. Therefore, the management style in this type of organisation will focus on stakeholder analysis to guarantee the delivery of a project.

3.7.4.3 Control culture has an influence on Project Success Measures (PSM)

Hypothesis H16 proposes that control culture has an influence on project success measures (PSM). The main critical success factors for the PSM group are: (1) completion of the project on time; (2) completion of the project on budget; (3) completion of the project to specified standards/qualities; and (4) completion of the project to the satisfaction of stakeholders.

Jungnitsch et al. (2016) mentioned that control culture measures of success are determined within the framework of reliable delivery, smooth planning and low costs. Similarly, Cameron and Quinn (2011) defined success for this culture in terms of dependable delivery, smooth scheduling and low cost. This means control culture strongly influences project success measures because the success standards for this culture depend on time and budget.

3.8 Chapter Summary

This chapter discussed the evidence from the literature review that suggests the relationship between organisational culture and stakeholder CSFs. Moreover, it identified critical concepts from the literature review about organisational culture and stakeholder management. It also focused on identifying existing organisational culture types, and identifying existing types of stakeholder critical success factors.

Therefore, a conceptual framework has been developed to present the relationship between the constructs of organisational culture and constructs of stakeholder critical success factors. This proposed framework comprises16 hypotheses from 20 possible relationships and is firmly based on the literature review. The framework needs to be tested empirically to identify the relationship between organisational culture types and stakeholder CSFs, in the hope of achieving this study's aim and objectives.

Chapter 4

Research Methodology

4.1 Introduction

This chapter covers the methodologies adopted in this study, which aims to investigate the relationship between organisational culture and stakeholder critical success factors in Bahrain's Ministry of Housing. The literature review has offered four main constructs for organisational cultures with six indicators for each construct and five constructs for stakeholder CSFs, with a total of 21 indicators for all constructs.

Some strategies have been suggested to determine the influence between organisational culture types and stakeholder CSFs. The relationship between these two topics has not been investigated systematically until now. The proposed framework integrates five constructs of stakeholder CSFs (Yang et al., 2009, Molwus, 2014) and four constructs of organisational culture types (Cameron and Quinn, 2011) derived from a systematic review of the literature.

This chapter will explain the methodology used to test and evaluate the proposed framework empirically, and will explain in detail how and why the research should be accomplished in this manner. The main topics covered in this chapter are:

- The research process
- Sampling method
- Survey instrument and measurement scale
- Data collection
- Data analysis

4.2 Selection and Rationalisation of the Research Process

Saunders et al. (2019) suggested the use of the research "onion" (Figure 4-1) to understand and discuss the selection and rationalisation of the research process, which includes the following:

- Research philosophy: specifically post-positivism
- Research approach: deduction or induction
- Research method: generally refers to quantitative or qualitative
- Research strategy: for example, survey or case study
- Data collection methods: including mono, mixed and, multi methods
- Time horizons: cross-sectional or longitudinal
- Techniques and procedures: data collection and data analysis

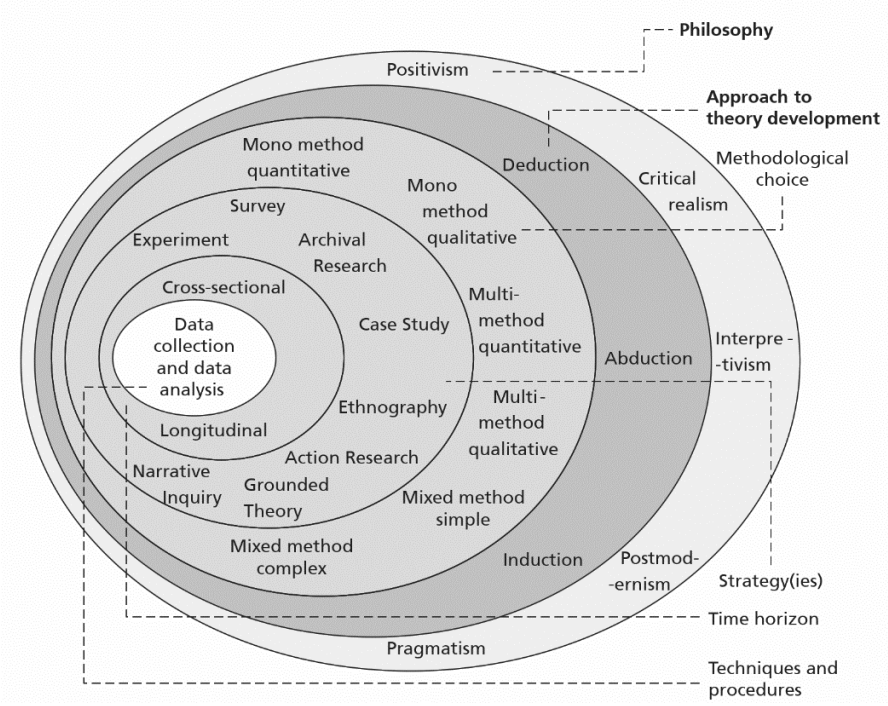

Figure 4-1 The research 'onion' Source: Saunders et al. (2019, p.130)

4.2.1 Research Philosophy

According to Saunders et al. (2019, p.130) 'research philosophy' refers to a system of beliefs and assumptions about the development of knowledge. In other words, research philosophy is about understanding some particular knowledge about research data from different aspects. For example: how to collect this data, how to use this data and how to analyse this data in particular phenomena. Moreover, it is about having strong beliefs and assumptions about how this research will be presented to the world (Saunders et al., 2019). These beliefs and assumptions will guide a researcher to choose the strategy and methods of the research through the objectives in the "'research onion' (Figure 4-1).

In addition, there are some hidden philosophical considerations worthy of identification by the researcher, to understand some of the factors influencing data analysis. Therefore, understanding the philosophy of research helps to gain full knowledge of the mechanisms and procedures of the research, and this will help in selecting the best research design for the study to answer all research questions and meet objectives (Easterby-Smith et al., 2012). Saunders et al. (2019) mentioned that there is no 'best' philosophy to be adopted for any management research, but there is something called "developing a best philosophy" according to a study of beliefs and assumptions. Research paradigm means "a philosophical framework which leads to a how scientific investigation should be carried out, based on people's philosophies and their assumptions about the world and the nature of knowledge" (Saunders et al., 2019, p.138).

Four major philosophies exist in business and management: (1) positivism, referring to reality, (2) realism referring to the independent existence of objects from our knowledge, (3) interpretivism, which is a comprehension of humans as social individuals, and (4) pragmatism, which claims the possibility of working within both positivism and interpretivism (Saunders et al., 2019, p.144). In the domain of business and management, two principal research philosophies are accepted, namely positivism and phenomenology (Hussey and Hussey, 1997; Easterby-Smith et al., 2012).

Positivism asserts that the only thing that is trustworthy is "factual" knowledge, acquired through the senses. The role of a positivist researcher is only conducting data collection and interpretation of the data in an objective manner. Findings in positivist research are based on observation, and data are quantifiable. Therefore, positivist methods employ

and rely mainly on measurable observations that can be assessed through statistical analysis (Saunders et al., 2019).

In other words, positivist philosophy employs quantitative research in the sense that it deals with a methodical, objective inquiry of quantifiable attributes and occurrences, and the relationships which form and utilise mathematical paradigms, propositions and/or hypotheses (Saunders et al., 2016). Positivism is based around the concept of scientific method, a body of strategies that explores observable facts or events. It promotes and generates new information and rectifies and assimilates previous knowledge. In an objective process, the data are gathered via monitoring, scientific test and hypothesis development and testing. Gilbert (2001) stated that the philosophy of positivism is employed to form rational and calculable approaches of gathering "facts" about people that can be statistically assessed to come up with interpretations concerning how the social world performs. Gill (2002) stated that the positivist researcher uses a well-defined methodical framework to promote response or feedback.

Moreover, positivist philosophy involves numerical data. This type of philosophy needs quantitative methods involving quantifiable measurement processes and statistical analysis to explain it. In this model, researchers need to apply theories and hypotheses. Conceptually defined, a theory is a thoroughly clarified set of notional connections, possibly employed for scientific examination. A theory, according to Wacker (2004), consists of four critical characteristics: formal conceptual definitions, theory domain, explained relationships, and predictions. Hypotheses in this type of research are prognosticative accounts of the relationships between variables in quantitative research.

Saunders et al. (2012), however, asserted that positivist research customarily uses a deductive approach, whereas phenomenology is usually associated with induction. This means that a positivism paradigm always adopts a deductive approach, which starts by developing the theory of the research and ends with supporting or revising the theory.

Lee and Lings (2008) explained both deduction and induction processes in a detailed manner, as illustrated in Figure 4-2.

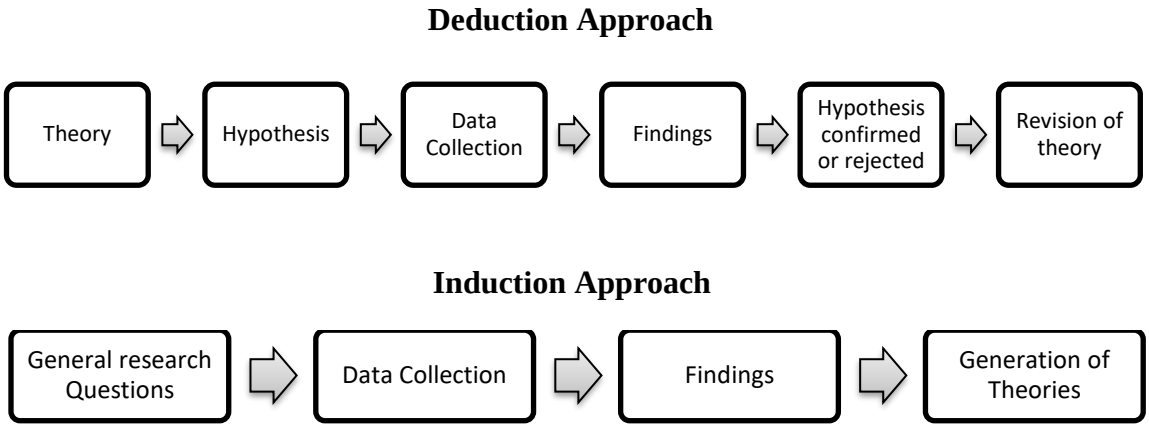

Figure 4-2 Induction and deduction approaches (Saunders et al., 2019)

In this research, the literature review of organisational culture and stakeholder engagement suggests an influence of organisational culture types on stakeholder critical success factors. Many studies of stakeholder management have discussed its critical success factors but neglect the influence of culture on these factors. Moreover, several research papers have reviewed the organisational culture types, but no study has addressed the impact of these types of stakeholder critical success factors in construction projects. This research has observed that some characteristics of organisational culture types might influence the stakeholder critical success factors. The research investigated the relationship between organisational culture and stakeholder CSFs in the Ministry of Housing in Bahrain, to investigate their influences. Thus, a conceptual framework that integrates organisational culture types and stakeholder critical success factors are developed then tested empirically, through testing the developed hypotheses. This requires a predetermined structured research approach.

In addition, this study considered the need to identify and assess the causes that influence outcomes of organisational culture characteristics and stakeholder CSFs, based on a hypothesis that could be supported/rejected according to the collected data. Furthermore, this research seeks to find and describe the relationship between organisational culture types and stakeholder CSFs in construction projects using SEM as a statistical analysis tool to examine and validate the developed hypothesis. Creswell (2018) called these key assumptions of this research 'post-positivist philosophy', which is not part of the research onion (Saunders et al., 2019). She added that post-positivist philosophy represents the

positivist assumptions but with more science methods by, challenging/changing the absolute truth of the knowledge of positivist philosophy to the knowledge of conjecture.

Therefore, this study utilises post-positivist philosophy through a quantitative methodology that includes theory development, formulation of hypotheses, collection and analysis of data, and finally, supporting or negating hypotheses (Saunders et al., 2019; Creswell, 2018). Collis and Hussey (2014, p.50) presented the features of the two main paradigms in Table 4-1. In other words, a deductive approach will be used in this research to represent the post-positivist paradigm (Saunders et al., 2019; Creswell, 2018).

Positivism paradigm	**Interpretivism paradigm**
Large samples	Small samples
Artificial location	Natural location
Hypothesis testing	Generating theories
Quantitative data	Qualitative data
Results with high reliability and low validity	Results with low reliability and high validity
Results to be generalised from the sample to the population	Findings to be generalised from one setting to another similar setting

Table 4-1 Features of the two main paradigms (Positivism and Interpretivism)

This deductive study was initiated with theories from a literature review, then developed hypotheses based on those theories. After that, the collection of data follows for hypothesis testing/validating. This study considers the post-positivist paradigm as the most appropriate method to address the research questions.

4.2.2 Research Approach

According to Saunders et al. (2019, p.815), a research approach is a general term that refers to three main approaches: inductive, deductive and abductive. An inductive approach means that the research initiates with data collection to discover the phenomenon, which is then followed by the formulation of the theory dependent upon the results of the collected data. A deductive approach starts with theory from literature, which in turn, becomes the focus of the scientific investigation. The findings of the data will then help in revising the theory. The abductive approach combines inductive and deductive processes; it will start with collecting data to ascertain the phenomena and then formulate or enhance a theory, which will then be followed by theory testing using another dataset.

Saunders et al. (2019) indicated that the nature of the research topic helps to recognise the best research approach. This research considers types of organisational culture as having an impact on stakeholder critical success factors. This means that to investigate the relationship between these two subject matters, it is essential to create a conceptual framework based on literature theories to define and test the proposed hypothesis. Thus, this research will use the deductive approach in answering the research questions and determining the links between organisational culture and stakeholder CSFs.

4.2.3 Research Strategy

Research strategy refers to the researcher's plan to answer the research questions (Saunders et al., 2019). Numerous strategies exist depending on the type of research and its objectives. Saunders et al. (2019) confirmed that there are many strategies to use separately or in combination with any research, depending on the research's aims and questions, knowledge from past research conducted, time limitations, resources available, and the researcher's philosophical position. Common research strategies include experimentation, survey, archival methods, case study, ethnography, action research, grounded theory, and narrative inquiry.

The processes of gathering information, testing the hypotheses, and generating findings required the adoption of a post-positivist research philosophy, employing a deductive approach. The survey research method is suitable for this type of research process, mainly due to the demand for the deductive approach.

In the business and management research domain, the survey strategy is widely accepted and practiced, and it is employed in descriptive as well as exploratory research. Moreover, this strategy helps gather large amounts of data at a low cost and is easy to compare (Saunders et al., 2019). In other words, this strategy is easy to use in gathering the needed amount of data to achieve the set objectives and answer the research questions. Saunders et al. (2019) said that the survey strategy allows the researcher quantitative data collection and to conduct analyses through descriptive and inferential statistics. This particular strategy also aids in finding the connection or link between or among variables, to develop models of these relationships.

Therefore, it is empirically applicable to employ the survey strategy for this research. According to Chang and Wiebe (1996), Al-Khalifa and Aspinwall (2000), and Dellana and Hauser (1999), the survey methodology has been deeply utilised in investigating characteristics of organisational culture types and stakeholder CSFs, and has also been applied to identify the correlations between various successful construction projects (Prajogo, 2005; Stock et al., 2007; Zu et al., 2010).

4.2.4 Research Method

Creswell (2009) describes three research methodologies: quantitative, qualitative and mixed methods, although he notes that all methods are qualitative to some extent, as they apply analysis and evaluation of non-numerical details. A qualitative method is about collecting textual data from a case study by doing interviews to gather evidence of intangible things, such as emotion and behaviour. A quantitative method, on the other hand, uses experimentation and surveys to collect numerical-related data, then applies statistical processes to generate results. One main benefit of quantitative methods is that the results are based on data gathered from larger populations. Mixed method, as the name suggests, combines the use of qualitative and quantitative data gathering in the same study. Numerous researchers perceive mixed methods as a new methodology, but researchers have been using this method for many years (Creswell, 2009; Saunders et al., 2016; Johnson and Onwuegbuzie, 2004).

Matveev (2002) discussed the benefits of both quantitative and qualitative approaches. He stated that the quantitative approach is useful in research requiring accuracy of data

measurement, data-backed by statistics, and data dependability. Moreover, the quantitative approach requires analysis of data through statistical quantitative analysis tools. A qualitative approach, on the other hand, is useful for providing in-depth information regarding the nature of data. In this research, the quantitative method will be adopted through a survey questionnaire, alongside quantitative data analysis tools.

In addition, this research will use a deductive study alongside a quantitative approach, to determine the connection between the organisational culture and stakeholder critical success factors.

4.2.5 Data Collection Method

As stated earlier, this study will use a quantitative approach via survey questionnaire, graph analysis and statistics to generate numeric data. Saunders et al. (2019) pointed out the two major questionnaire types in data collection: self-completed and researcher-completed questionnaire. A self-completed questionnaire is available and obtainable through the internet (web and mobile), SMS (text), postal (mail), and delivery and collection. On the other hand, the researcher-completed questionnaire is administered via telephone or face-to-face modes.

This research will use a self-completed approach through an internet questionnaire. It is advantageous to use web-based surveys, which are comparatively cost-effective. It also saves time, as the retrieval of survey data in an electronic format is done via an online mechanism (Cobanoglu et al., 2001). In a similar vein, Karakoyun and Kurt (2010) argued that online survey has benefits, such as speedy reply, the convenient transmission of communication to all individuals involved via group emails, an option of randomly placing survey questions, and the comfort of generating replies from database applications. In this research, the principal motive in choosing an online survey is the convenience of designing a survey questionnaire, smooth facilitation and direct implementation, and minimal cost with possibly speedy results. According to Dillman et al. (2009), this survey type is advantageous for studying populations that consist of regular internet users who are knowledgeable in internet browsing.

With a literacy rate of 91% and an internet usage rate of 52%, according to the 2008 World Bank Report, the Bahrain population is well-equipped and prepared for online surveys. The sample comprises highly-educated respondents, so issues regarding internet

access and expertise in online browsing have no bearing insofar as the web-based survey is concerned. Despite the strengths and benefits of online research mechanisms, some constraints and weaknesses might impact the web survey. These include SPAM/privacy of respondents, technical problems in multiple submissions, and no expert insight on hand to clarify questions. Nevertheless, this kind of survey contains multiple design options with response error choices (Dillman et al., 2009). Arguably, the most preferred aspect of a web survey is that data gathered in an electronic format can be analysed right away.

4.3 Research Design

Creswell (2009) pointed out that research design refers to the researcher's plan of procedures, which will be used in achieving research objectives and ensuring the quality and reliability of these procedures. The research design should provide the adopted methods and techniques used in this research to meet its objectives. This research design, therefore, will discuss first the quantitative approach, focusing on the questionnaire survey to guarantee the quality and validity of the research procedures.

4.3.1 Quantitative Method – Survey

The questionnaire survey is considered one of the most useful approaches in quantitative data collection, and is one of the most used techniques in business and management studies data collection. This method is usually used for either descriptive research, which aims to describe something, mainly functions and characteristics, or explanatory research, whose purpose is to provide insights into and an understanding of the problem faced by the researcher (Creswell, 2009).

Explanatory research usually uses a deductive approach, as it uses data to test theories. Here, the researcher must define the relationship between variables before designing the questionnaire. Thus, the analysis for this type of methodology is usually statistical (Saunders et al., 2019). Likewise, explanatory research aims to provide explanations of phenomena, answering critical questions within the relationship of these phenomena. Explanatory research can help the researcher to understand the reasons behind some theories and gain more knowledge about these theories (Saunders et al., 2019).

In this study, the adopted approach is quantitative explanatory research, using a deductive method to test the theories. The data will be collected through a questionnaire survey with the developed conceptual framework to describe the relationship between the variables – organisational culture and stakeholder critical success factor. The reason for choosing this approach is due to the lack of studies on the relationship between organisational culture and stakeholder critical success factors and its influences, especially in the Middle East context represented by Bahrain.

In investigative research, researchers typically use the questionnaire survey when employing quantitative methods. The questionnaire survey is best employed when a study requires collecting and analysing primary and secondary data respectively, as well as testing formulated hypotheses and presenting valid and reliable findings. Fraser and Zhu (2008) indicated that a questionnaire survey is beneficial in collecting large amounts of information in a small amount of time. Likewise, Brace (2008) supported using a questionnaire survey, rationalizing that this is the best method for cost-effectiveness, convenience of implementation, and gathering quality information.

4.3.2 Sampling Method

Saunders et al. (2019) mentioned the importance of sampling methods for questionnaire surveys. Zikmund, (2010) defined a sample as "a subset or relatively small fraction of the total elements in the population". Collecting elements from all populations in the world is impossible. Therefore, it is preferable to select a specific sample, to provide enough primary data for this research analysis, while also targeting the related sample to the research objectives. This study focuses on obtaining participants from many stakeholders and organisations in one of the biggest Bahraini firms to achieve the research aims and objectives. Saunders et al. (2019) enumerated the two main sampling designs:

- Probability sampling technique: a sampling design linked to survey-based research because it uses random sampling, providing equal chances; and
- Non-probability sampling technique: a sampling design that provides no equal chances in terms of its process and is beneficial in terms of cost-effectiveness and research with time limitations.

Zikmund, (2010) stressed that non-probability sampling is concerned with a process that generalises conclusions drawn from a limited number of people. Thus, it is rarely possible to have a sample having identical characteristics to the population it represents. In this research, the target respondents of the questionnaire survey are associate project managers, project coordinators, project managers, project schedulers, senior project managers, and team assistants who have leadership and teamwork qualities appropriate to all sectors (public and private), from a construction firm in Bahrain represented by the Ministry of Housing. Moreover, the respondents are chosen based on work experience, qualifications, and professional roles. Hence, the probability of specifying each sampling unit is not included. This research questionnaire sampling uses a non-probability approach.

Zikmund, (2010) clarified that large samples are preferable in collecting data, although if a proper small sample is applied, then a fraction of the entire population will provide a dependable assessment of the entire population.

Two main types of sample sizes must be identified. The first type is to have enough participants representing the population, and this is usually used for big organisations and research, like election polling, because it requires money, time, and energy (Dillman et al., 2009, p-56). The second type is to achieve a sample size for statistical power. The researcher, in this type of investigation, needs to consider which type of statistical analysis tools to use in the study. For example, the sample size for ANOVA tools is different from the sample size for a correlation or factor analysis.

In this study, the target for sample size will be large because the researcher will coordinate with the Ministry of Housing in Bahrain, which has the authority in managing all the government buildings and housing in the whole Kingdom of Bahrain. The Ministry deals with internal and external stakeholders, as well as public and private sectors. Furthermore, this research will use SEM for statistical power to analyse the data and validate it. With SEM, as recommended by Tabachnick (2014), the size of the sample is based on the number of independent variables available for testing in the proposed theoretical model that the researcher wishes to apply. This method is illustrated through the following equation: $n > 50+ (8 \times m)$; where m = number of independent variables and n = the size of the sample. With all the variables discussed in the theoretical framework in Chapter 3 being considered, this study requires more than $50+ (8x20) = 210$ respondents.

4.4 Data Collection

In this type of research, secondary data are required to obtain an initial plan of the research topic and problems, and to clarify the critical issues required to be solved. Therefore, this research intends to investigate general topics regarding stakeholder management, such as stakeholder origin and concept, stakeholder analysis, stakeholder theories, stakeholder objectives and interests, stakeholder engagement, stakeholder and cultural perspectives, and stakeholder critical success factors. This secondary data is acquired mostly from books, magazines, journals, periodicals, industry research papers and conference papers. Electronic online databases like Emerald, Elsevier Science and ABI Inform Global (ProQuest Direct), and internet sources will be analysed for relevant literature. The information from the stakeholder management literature review eventually led the researcher to develop the conceptual framework and hypotheses.

The primary data of this research was obtained from the selected 210 respondents (section 4.3.2) from the Ministry of Housing (see section 2.3.3 for more information about the Ministry). Overall, a total of 144 questionnaires were collected and analysed. The Dillman (2009) 'tailored design' approach was used when administering the survey. Four emails (pre-notice email, survey release email, reminder email, and follow-up survey email, thanking both respondents and non-respondents) were delivered at appropriate times. Before the survey was released to the target respondents, an email message seeking approval from the concerned authority had likewise been sent. Following approval, the survey questionnaire URL address was sent to participants. The researcher also travelled to Bahrain to meet with the undersecretary of the Ministry of Housing.

Voluntary participation is ensured through invitational and reminder emails given in Appendix 2. The target number of 395 (almost double the target in section 4.3.2) respondents completed the first part of the survey, but only 144 (68.5%) of the target respondents completed the whole survey questionnaire. Despite the target respondents' internet access and computer skills being satisfactory, as Dillman (2009) explained, widespread distrust in internet communication and the increased occurrence of cybercrimes might have hindered some respondents from completing the survey.

4.5 Survey Instrument and Measurement Scale

To identify the influence of organisational culture characteristics on stakeholder critical success factors, the research needs to collect specific data on the existing culture type of Bahrain and the significant stakeholder critical success factors in construction projects in Bahrain. This section will focus on explaining the survey instrument and measurement scales, and on discussing the survey questionnaire design, the survey measurement scales, and the pilot study to validate the survey instruments (Creswell, 2009).

Zikmund (2010) pointed out the benefits and drawbacks of the questionnaire survey. The advantages include:

- It incurs only a minimal cost in collecting data no matter how large and geographically wide the sample is
- It is free from the bias of the interviewer's partiality as the respondent answers questions using their own words
- Respondents have adequate time to contemplate and provide answers
- It gets through respondents who seem indifferent and unapproachable; and
- It yields trustworthy results.

Disadvantages include:

- Incidence of low rate of return of properly answered questionnaire caused by the respondents' subjective and unresponsive attitude is expected
- It is only applicable when respondents are educated and cooperative
- Once the questionnaire is sent, the researchers lose control over the research instrument
- Modifying the method is almost impossible once the questionnaire is dispatched
- Obscure answers or inadvertent replies are possible
- Cooperative respondents considered to be representative of the research population is difficult to determine; and
- It can be a sluggish method.

Bryman and Bell (2015) itemised the reasons behind the prominence of the questionnaire survey among the researchers:

- It takes less time to administer and is less expensive to carry out
- It enables researchers to quickly retrieve the replies from the respondents
- It allows adjustability of time and place arrangements when used online or in a mail survey
- Software tools are readily available for data analysis, for example, SPSS
- The internet accommodates large sampling frames; and
- The effects of impartiality, compared to observation and interviewing methods, can be minimised.

Saunders et al. (2019) clarified the importance of having a good questionnaire design to ensure the collection of good data, which helps in addressing research questions and hypotheses. The next section, therefore, will tackle the survey questionnaire design.

4.5.1 Survey Questionnaire Design

Based on the aforementioned research aims, objectives, and conceptual framework, this research questionnaire survey is designed with three main parts to provide empirical evidence and answers to the research questions and to test hypotheses. The full questionnaire survey is provided in Appendix 1. The following criteria have been considered in the process of designing the questionnaire:

- No negatively worded questions
- No jargon or double meaning words used
- No cultural or abbreviated words applied
- No emotionally loaded questions; and
- Straight to the point (Kline, 2005).

4.5.1.1 Part I – General and Background Information Survey

This part of the survey instrument consists of questions regarding personal and organisational profile information of the respondents, such as gender, work experience, professional role, project responsibilities and educational level. To clarify, the

professional role indicates the participant's position on the team or field of work. Project responsibilities on the other hand, refer to the assigned tasks as outlined in the role and responsibilities of the job description for a particular position in the project.

This type of data will be useful in terms of providing demographics, magnitude, and distribution data within the study samples. Also, it will be helpful in the analysis stage, especially for statistical comparison.

4.5.1.2 Part 2 – Organisational Culture Survey

This part of the survey is designed to identify the dominant culture type and its characteristics in the project organisations. As mentioned in Chapter 2, numerous instruments can be used to measure organisational culture types. In this study, Cameron and Quinn's (2011) organisational culture assessment instrument (OCAI) will be used to determine the existing type of culture in Bahrain construction projects. In this instrument, each cultural orientation is representative of one of the four models of organisational theory. It clearly and thoroughly defines the characteristics and principal assumptions of each culture type, such as motivation, leadership and effectiveness. The central premise in this model is the organisational description in terms of cultural attributes or dimensions. Al-Khalifa and Aspinwall (2000), Prajogo and McDermott (2005), Stock et al. (2007), and Zu et al. (2009) confirm that the Organisational Culture Instrument (OCAI) has been employed with confidence by numerous scholars and researchers.

Competing Value Framework (CVF) is used for evaluating and describing the organisation's dominant culture types, and it assists subjects in determining the existing fundamental cultural factors in their organisations. CVF measures four organisational culture types from six principal dimensions: (1) organisational character, (2) leadership character, (3) management style, (4) binding force, (5) emphasis of organisation, and (6) success criteria. In this research, questions 6-11 have been formulated to evaluate each of the four cultural types' scores. The respondents will be asked to rate the level of their agreement/disagreement in each given case. Inspired by the studies conducted by Chang and Wiebe (1996), and McDermott and Stock (1999), this study used a Likert scale of 1 (very low) to 6 (very high). The reason behind using a scale of 1 to 6 is to avoid neutral or undecided answers. Likewise, the six-Likert scale is appropriate for this research with several variables, and according to Chomeya (2010), provides better data. With the six-Likert scale, the numbers to choose from by the respondents are limited, and therefore

cause less of a burden. More importantly, its reliability is acceptable according to the standard of the psychology test (Chomeya, 2010).

4.5.1.3 Part 3 – Stakeholder Critical Success Factors Survey

This part of the survey determines the significant critical success factors for construction project stakeholders. As discussed in the previous sections, to develop the survey questionnaire, the researcher must identify and list all stakeholder critical success factors. This research lists these critical factors from good quality literature reviews and previous studies on this topic. From this list, the author selects the common critical success factors according to their nature and relationship with culture in the developed conceptual framework. This initiative ensures that stakeholder critical success factors are consistent with established stakeholder management theory and closely reflects the general taxonomy of the five main stakeholders CSF groups in the conceptual framework.

This study has deduced five stakeholders CSF constructs, comprising 21 factors and aiming to determine the extent of their presence in the target population. Five major questions from 12 to 16 are composed on stakeholder CSF constructs, in which participants are requested to place their reflection — "High/Low" on the existence of the stakeholder critical success factors in their organisations. A Likert-type (1 to 6) scale with endpoints of "very low'' and ''very high'' was used. To measure an overall score for each stakeholder CSF construct, each indicator's score will be added and averaged.

4.5.2 Summary of Measurement Scales

In this study, the independent and dependent variables were used to evaluate the organisational culture profile and stakeholder CSF profile respectively. To measure organisational culture profile, a 24-item validated scale was adopted. This survey instrument has been verified in the field of organisational culture (Al-Khalifa and Aspinwall, 2000; Prajogo and McDermott, 2005; Stock et al., 2007; and Zu et al. (2009). The other 21-item measurement scale used for quantifying the stakeholder CSF profile was originally developed from previous studies (Yang et al., 2009; Yang et al., 2011; Yang et al., 2010; Yang, 2014; Yang and Shen, 2015; Molwus, 2014). By means of structured interviews prior to the administration of the survey, both the scale of measurement and survey instrument will be validated for comprehensiveness.

4.5.3 Pilot Structured Interviews for Survey Instrument Validation

Saunders et al. (2019) considered a pilot as an important test, usually prepared before distributing the final survey questionnaire. The authors suggested that the pilot testing can help the researcher improve and ensure the quality of the survey questionnaires by administering the developed one with a small group of participants before the final distribution. This would prevent or minimise the critical problems of answering the survey questionnaire by participants. Likewise, Easterby-Smith et al. (2012) proposed two main critical issues regarding the survey questionnaire that the researcher must take care of before administering the final version. These issues referred to the questionnaires' language clarity and the existence of questions that might create negativity and miscomprehension.

Dillman et al. (2009) mentioned that pilot structured interviews are successful methods for testing the survey questionnaire and receiving valuable feedback on the questionnaire's content, clarity and style. As such, the adopted scales will be tested through structured interviews from quality practitioners and academics in the United Kingdom (the research location), then evolved and tested again in the Kingdom of Bahrain (the data collection location).

The structured interview aims to find out any deficiencies in the survey questionnaire. Developed by the author, the first part, demographic questions, related to the general and background information of the participants. This is standard in many surveys. The second part, questions about organisational culture profile, is adopted from other studies and thus has already been assessed for 'content validity, criterion-related validity and construct validity' (Blumberg, 2014). The third part, questions on stakeholder CSFs, has been formulated by the author and tested for its internal validity through a pilot structured interview. Suggestions on leading, offending, ambiguous or misunderstood questions will be sought. The following checklist has been adapted by Saunders et al. (2019) to help the academic and professional participants in their feedback.

Overall Questionnaire

- A set of instructions provided in the questionnaire is understood
- Questions are measurable
- The questionnaire should address areas for investigation
- Coding of the questionnaire is suitable
- The order and flow of questions is logical

- Format of the questionnaire is interesting and respondent-friendly
- Measurement scales are clear and acceptable
- Each scale properly captures the construct it intends to measure; and
- The questionnaire is well-structured.

Individual Questions

- The wording is simple, common and clear to the respondent
- Language and tone are not offensive and derogatory to the respondent
- Questions are not longer than necessary and easy to answer
- Questions are not 'double-barrelled' or double negative
- Questions are free from bias and not leading to correct answers or preventing certain answers; and
- Categories of options (where needed) are appropriate.

The feedback from academics and professionals helped to revise the questionnaire survey and confirm it is adequate from these experts' perspectives. The respondents offered helpful information on the questionnaire and suggested switching some indicators in the stakeholder CSF constructs that they considered essential for the targeted Bahraini population. They also suggested changing some wording according to meaning and usage in Bahrain. After discussions with academics and other qualified professionals, the suggestions were adopted into the survey instrument to make it more comprehendible.

4.6 Data Analysis

Details concerning data management, screening of data before analysing, the mechanism for handling missing data, outlier examination, normality test and dependability analysis tests, and selection of statistical analysis tools are provided in this section.

4.6.1 Data Management

With the University's approval and recommendation of the use of an online survey website (JISC) for the survey questionnaire, the data gathered from the 144 survey participants will automatically be downloaded from the website (JISC). The data is then converted to MS Excel (XLS) format and merged into an SPSS database for analysis. The

dataset exported to SPSS excludes any information (e.g., name, email address, home or office address) that can expose the identity of the respondents being the source and provider of information. Furthermore, all data will be reported in aggregate to avoid any identification of individual responses.

4.6.2 Data Management in SPSS

Following the required data formats, the configuration of the data file has been prepared first in SPSS. Completed data elements include: name of variable, data type (numeric, string), width (number of characters), decimals (decimal places), labels (short description of variables), values (descriptive value labels of numeric codes to represent non-numeric categories), missing data (question not applicable to the respondent), columns (width), alignment, and measures (scale, nominal, ordinal). The data file, which refers to the definition and labels of the variables and assigning numerical format to each of the questionnaire responses, such as short names to variables, descriptive labels to variables (descriptive labels are self-explanatory and act as codebook), numerical values to categorical variables (value label e.g., 0=No, 1=yes), and type of measures to each variable (scale, ordinal, nominal), will be prepared using the SPSS data editor. As soon as the layout of the data file structure is ready, the data will be copied from the Excel sheet and pasted into SPSS. A sampling process will then be undertaken to ensure that the data in the columns and rows are accurate during the transfer. This will confirm that all data are in the correct positions.

4.6.3 Data Screening Prior to Analysis

Data accuracy is paramount to successful analysis. Data inaccuracy can happen at the both participant and author levels; a participant may encode erroneous information such as encoding 10 instead of 1, or the author might enter invalid information, such as putting the information into the wrong column. Slight data entry errors are inevitable when employing the web-based survey method. Considering that any of these technical issues may affect the analysis and findings, such glitches are never ignored. Hence, data screening will be conducted comprehensively, including checking of errors, handling of missing data, outliers, and normality checking.

4.6.4 Checking Data for Errors

Error checking is made by searching for values that are beyond the range for an identified value of categorical variables. In error checking, descriptive statistics are essential. Using central tendency, distribution and dispersion methods, the frequency has been checked to make sure that no out-of-range values are present. Furthermore, descriptive statistics, distribution and dispersion methods will also be applied in finding the mean, minimum and maximum sum. This statistical initiative will also ensure that no out-of-range values exist. By choosing and showing particular pieces of information for each case via outlining the procedure, more errors will be discovered. In addition, by classifying cases according to variables in ascending or descending order of their data values, errors will also be found. Hence, accuracy will be ensured and duplicate cases can be avoided.

4.6.5 Missing Data

The second indispensable issue is 'lost data'. According to Tabachnick (2014), missing data is common in some areas of research, which can influence the findings. However, all questions on the existing survey questionnaire are selection type with a 1-6 Likert scale, and answers to these questions are required (see section 4.4.1). This means that participants will not move to the next page unless they have answered all questions. Hence, errors pertaining to missing data will not be present in these questions.

4.6.6 Checking for Outliers

Pallant (2016, p.62), defined outliers as "the cases with a value well over or under the majority of cases in the respondent sample". However, according to Tabachnick (2014), outliers happen with a maximum value on one variable or a combination of scores on two or more variables to deviate the statistics. Hair (2010, p.73) stated that an outlier is deemed to be "an unusually high or low value on a variable, or a particular combination of values across several variables that make the observation noticeable from the others". Considering that many statistical techniques are sensitive to outliers and the fact that an outlier is a score that is distinct from the rest of the data, the potential outliers must be scrutinised and evaluated.

Web survey software has the capability to retrieve compulsory responses. As a strategy, therefore, it avoids possible outliers to a great extent. Possible outliers are examined using descriptive statistics with the selection of histogram plots. With all relevant variables

properly examined, it is expected that the scores will be fairly normally distributed. This result will also be supported by normal probability plots.

In this research, descriptive statistics in SPSS are used to assess outliers. At the outset, all variables of organisational culture are chosen and evaluated for outliers. As shown in the histogram of each variable provided in Appendix 3, tails of distribution contain no data points sitting on extremes and score dropping in an even slope. The box plots in the appendix show that there are no extreme points. Hypothetically, if the boxes in box plots are stretched to more than 1.5 box lengths from the edge of the box, this is a clear indication of potential outliers. Identified as extreme points, extending more than three box lengths from the edge of the box, are seven of these outliers, four of which are marked with asterisks. With the data file being checked first, it is discovered that their scores are genuine and error-free. In addition, the scores are within the range of possible specified scores of the linked variables (mean value and 5% trimmed mean value are similar). As such, the results of the statistical operation are not distorted. All variables of stakeholder CSFs must undergo the same checking procedure. In the process of data checking, the data file has been found to have genuine scores with no errors detected. Besides, the scores are within the range of the specified scores of these variables.

To determine issues pertaining to outliers, descriptive statistics have been performed again, and a 5% trimmed mean has been checked. As observed, there is no noteworthy difference between the trimmed mean and means value of these variables. Consequently, the determined outlier cases are kept in the data file.

4.6.7 Normality Check

Another primary assumption in measuring variables is ‘normality’ in the distribution of scores. According to Tabachnick (2014), normality in the distribution of scores is not always needed. However, it is commonly considered and favoured, as long as the variables are regularly distributed. By means of a statistical process, the normality of data can be examined (Tabachnick, 2014; Hair, 2014). Using Kurtosis and Skewness test and Kolmogorov and the Shapiro method, normality data can be quantified (Field, 2018; Tabachnick, 2014; Hair, 2014). The difference between “skewness” and “kurtosis” is that the former provides a sign of distributing symmetry, while the latter demonstrates the distribution of “peakedness”. Positive skewness shows the scores being grouped on the graph’s left side, while a negative skewness demonstrates scores being clustered on the

graph's right side. Grouped in the centre will be the scores of positive kurtosis. The distribution is flat – having cases in the extremes if kurtosis values are marked below zero. Furthermore, since skewness and kurtosis tests are sensitive to the size of the sample, examining the distribution shape through a histogram has been suggested (Tabachnick, 2014). Even though all variables have been found to be negative, showing the grouping of the scores towards the graph's right side, these variables are accepted to be generally distributed. However, according to Tabachnick (2014), a large sample size like this study, skewness, will not make any applicable difference in the analysis. Kurtosis values are negative and positive combinations. Positive kurtosis indicates a distribution peak clustered at the centre, while negative kurtosis means many extreme cases where the distribution is flat. The common denominator between the two is that both can cause an underestimation of the variance; thus, the Kurtosis score grouped at the centre of the graph is desirable. Having a large sample size (N=210) for this study (see section 4.3.2), the risk is diminished with a recommendation of 200+ cases (Tabachnick, 2014). Moreover, to find the data normality, the Kolmogorov and Shapiro (KS) test has been used (Field, 2018). Outcomes of this test have been found to be important for all variables; hence the KS test shows no departure from normality of data (Field, 2018).

4.6.8 Main Analysis

The main analysis consists of two parts. The first highlights the analysis of personal and organisation demographics (profile of culture and profile of stakeholder CSFs). For this analysis, descriptive statistics in SPSS is used. The second part measures the relationships between culture in an organisation and stakeholder CSFs.

Regression analysis is commonly used by researchers to measure the link of one dependent variable with one or more independent variables. In particular, regression analysis is applicable in terms of understanding the connection of one independent variable to a dependent variable and exploring these relationship types.

Structural Equation Modelling (SEM) is used in this study to assess the connection between each of the constructs. SEM has become a widely accepted method in hypothesis evaluation as well as providing extra functionality and power on regression analysis. This study has adopted SEM as part of its analytical tool for two reasons: (1) Stakeholder CSF constructs are neither directly quantifiable nor representative of a single metric unit. The author believes that only SEM permits the obvious representation of the difference

between known and hidden variables. (2) SEM is potentially useful in examining a number of structural links between multiple dependent and independent variables (i.e., between the four measures of organisational culture and the five constructs of stakeholder CSFs). SEM has been considered by several experts as the best choice, owing to its ability to simultaneously handle multiple dependent variables. Furthermore, SEM objectively scrutinises the connection between many dependent and independent variables of a structural model by fusing both assessment models and structural models in a single analysis. Information concerning measurement, obtained while testing the structural relationships, has been taken into account. Considered to be the latest and most reliable technique, the design of the structural model develops from the measurement model (see Chapter 5 for more information about SEM).

4.7 Chapter Summary

This chapter describes the research methodology employed in this study, with special importance placed on the research philosophy, approach, strategy, design, data collection and analysis. The importance of the research aims and objectives serving as the basis of a suitable research methodology for this study is discussed herein.

The survey questionnaire has been adopted for collecting data and ensuring a carefully chosen population and sample, and has been designed with specific criteria to increase the maximum response rate from participants. This chapter has extensively discussed the chosen survey instruments and measurement scale, and provided some feedback, and reviewed studies tested through these research tools to ensure validity and reliability.

Anchored primarily on relevant studies and literature from an extensive review, the scales for this study have been developed. The item pool for stakeholder CSFs was subjected to quantitative refinement. Meanwhile, the content and face validity has been evaluated via organised interviews in which the respondents were requested to share their point of view regarding the items. Experts and academics who have had extensive experience in stakeholder management research constituted the research participants. The survey instrument was evaluated by participants through structured interviews. This initiative is made to generate feedbacks, thus ensuring scale items' clarity, extensiveness and significance. These data are the basis for the refinement of the instrument. Data error checking, treatment of missing data, outlier examination, normality test and reliability

analysis tests were conducted. For data analysis, appropriate statistical tools were considered and selected. Below is a brief overview of each research element chosen:

- Method: Quantitative approach, to measure the relationship between organisational culture and stakeholder CSFs in construction projects.
- Philosophy: Post-positivism, to accept or reject the hypothesis and find out the relationship between the two topics.
- Approach: Deductive, because the research begins with theory, developing hypotheses, collecting data, analyzing data, presenting findings, and drawing inferences for supporting a theory.
- Strategy: Survey, to allow quantitative data to be collected that can be analysed quantitatively using descriptive and inferential statistics.
- Time horizon: Cross-sectional, to use different samples but investigating these at one point in time.
- Sampling: Non-probability, to reduce the time and cost of gathering data
- Data Collection: Survey questionnaire, an online questionnaire was sent to selected participants, and data was collected online. Structured interviews were conducted with academics and professionals.
- Data Analysis: Quantitative, descriptive statistics were done in IBM SPSS Statistics 25.0.0.1. CFA, and SEM were undertaken using IBM SPSS Amos 25.

Inspired by the book, 'Internet, Mail and Mixed-Mode Survey - The Tailored Design Method' by Dillman et al. (2009), this study uses the web-based survey mode. This textbook has often been used by the author as an ideal resource in designing and administering web-based surveys, aiming for an increase in responses to the questionnaire. The research context and details of the analysis of data and the findings that resulted from the methodology described above will be presented in the succeeding chapter. Results from the analysis will be utilised in hypotheses testing, which will consequently answer the research questions.

Chapter 5

Data Analysis and Results

5.1 Introduction

This chapter will analyse collected data from the questionnaire and will be divided into three sections. The first section will be separated into two parts – the first will discuss the background and general information gathered from the questionnaire, while the second will summarise this data. The second section will cover the second and third part of the questionnaire, about organisational culture and stakeholder success criteria. This will also be divided into two parts – the first will be the analysis of the SEM model, and the second will summarise the section two analysis. The third section will discuss the findings and summary of the first and second sections of the data analysis.

5.2 Analysing Data by Descriptive and Inferential Statistics

This section discussed the findings of the questionnaire data using descriptive and inferential to demographics statistics.

5.2.1 Demographic of the Respondents

A participant's personal data, such as educational qualifications, job status and work experience fall into the category of demographic statistics. Organisational information, such as the number of employees, category of the company, type of production operation and process, could also be included in demographic statistics. During a research project, especially during regression analyses, multiple demographic variables, such as age, education level, marital status, and gender, have been employed as control variables.

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	102	70.8	70.8	70.8
Female	42	29.2	29.2	100.0
Total	144	100.0	100.0	

Table 5-1 Gender distribution of respondents

Table 5-1, which illustrates the data obtained from Question 1, shows that 70% of the respondents were male and 30% female. It is observed that males dominate construction projects included in this study, which raises questions about the implications of a male-dominated culture on culture-related projects.

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 1 year	37	25.7	25.7	25.7
1-3 years	11	7.6	7.6	33.3
3-5 years	13	9.0	9.0	42.4
5-8 years	20	13.9	13.9	56.3
Above 8 years	63	43.8	43.8	100.0
Total	144	100.0	100.0	

Table 5-2 Respondents' work experience

Table 5-2 shows that the majority of the respondents (43.8%) have more than 8 years of experience, followed by the experience range of less than 1 year with 25.7%, while 13.9% of respondents have 5 – 8 years' experience and the minority of respondents (7.6%) have 1-3 years' experience. The data can mean that the majority of participants have spent enough time within their construction organisation to understand its culture very well.

	Frequency	Percent	Valid Percent	Cumulative Percent
Architecture	14	9.7	9.7	9.7
Client	40	27.8	27.8	37.5
Mechanical and electrical (or services) engineer	20	13.9	13.9	51.4
Quantity surveyor or costs manager	13	9.0	9.0	60.4
Structural engineer	5	3.5	3.5	63.9
Other	52	36.1	36.1	100.0
Total	144	100.0	100.0	

Table 5-3 Professional role classification

Table 5-3 shows that the professional role classification of respondents with 'Other' got the highest response rate at 36.1%, which shows that most participants may work on construction projects but without specific job titles; or it raises the possibility that there are different job titles in Bahrain compared to the options provided in the questionnaire. 27.8% of the respondents were 'Clients', which indicates that over a quarter had an influence on the outcome of the construction project. Services engineers got 13.9%, while Architecture and Quantity surveyor have almost a similar range of percentages with 9.7% and 9% respectively. The minority of the respondents are structural engineers, with 3.5%.

	Frequency	Percent	Valid Percent	Cumulative Percent
Associate Project Manager	11	7.6	7.6	7.6
Project Coordinator	16	11.1	11.1	18.8
Project Manager	34	23.6	23.6	42.4
Project Scheduler	5	3.5	3.5	45.8
Senior Project Manager	16	11.1	11.1	56.9
Team Assistant	26	18.1	18.1	75.0
Other	36	25.0	25.0	100.0
Total	144	100.0	100.0	

Table 5-4 Classification of the level of workplace responsibility

Table 5-4 presents the data for the level of workplace responsibility, with 'Others' being the majority of respondents, with 25%. This is followed by project managers with 23.6%, then team assistants with 18.1%, while project coordinators and senior project managers

got the same percentages with 11.1%. The minority of respondents were associate project managers, with 7.6%, and project schedulers, with 3.5%.

Comparing the professional roles of participants and the level of workplace responsibilities shows that 'Others' got the highest percentage. This supports the argument that most respondents are without a job title, or have different job titles than those provided in the questionnaire options. Therefore, this data brings about the question of whether there are different job titles and responsibilities in Bahrain than the ones included in the questionnaire, or whether there is a language barrier hindering these respondents to understand the meaning of the titles and responsibilities provided in the questionnaire.

	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Level 8 - Doctoral Degree (e.g. PhD, DPhil, EdD)	9	6.3	6.3	6.3
Level 7 – Master's Degree	58	40.3	40.3	46.5
Level 6 – Bachelor's Degree	65	45.1	45.1	91.7
Level 5 - Higher National Diploma	8	5.6	5.6	97.2
Level 4 - Certificate of Higher Education	3	2.1	2.1	99.3
Others	1	.7	.7	100.0
Total	144	100.0	100.0	

Table 5-5 Level of educational qualification

On Educational Qualifications, Table 5-5 describes that 45% of participants have a level 6 degree while 40% of participants have a level 7 degree, which indicates that the level of education of the participants is very high. In addition, 6.3% of the respondents have a Ph.D. degree and 5.6% have a level 5. The minority of respondents have level 4 degrees with 2.1%, and only 0.7% have lower than level 4 degrees. The data in Tables 5-5 and 5-2 show that the participants have a high education level with good experience in the construction management field. This addresses the target of the researcher.

Moreover, from all the tables presented above, a question arises as to whether "gender affects the organisational culture." The answer to this question will demonstrate how culture can affect organisational management within the project and the impact of culture with stakeholder success criteria. Therefore, the data comparison method has been taken into consideration between gender and other background data to cover the relationship between all participants and their cultural background.

Gender	Work Experience	Frequency	Percent
Male	Less than 1 year	24	23.5
	1-3 years	7	6.9
	3-5 years	7	6.9
	5-8 years	13	12.7
	Above 8 years	51	50.0
	Total	102	100.0
Female	Less than 1 year	13	31.0
	1-3 years	4	9.5
	3-5 years	6	14.3
	5-8 years	7	16.7
	Above 8 years	12	28.6
	Total	42	100.0

Table 5-6 Work experience and gender

Table 1 shows that 70% of participants are male; Table 5-6 illustrates that 50% of these males have more than 8 years' work experience, and also presents that 24% of male participants have less than 1-year of experience. However, Table 5-6 also shows that 31% of females have less than 1-year experience in project organisation, and around 29% have above 8 years' work experience. On the other hand, Table 5-6 shows that the number of female recruits has been improving recently.

Therefore, the possible question from Table 5-6 would be whether education and work responsibilities affect the recruitment of new employees or if there is there a new vision from the country to recruit more females for construction. Another potential question would be whether culture would affect the recruitment of female workers in the construction field.

Gender	Professional roles	Frequency	Percent
Male	Architecture	7	6.9
	Client	35	34.3
	Mechanical and electrical (or services) engineer	18	17.6
	Quantity surveyor or costs manager	8	7.8
	Structural engineer	3	2.9
	Other	31	30.4
	Total	102	100.0
Female	Architecture	7	16.7
	Client	5	11.9
	Mechanical and electrical (or services) engineer	2	4.8
	Quantity surveyor or costs manager	5	11.9
	Structural engineer	2	4.8
	Other	21	50.0
	Total	42	100.0

Table 5-7 Professional role classification and gender

Table 5-7 presents that client and services engineers have the highest percentage for males, while other roles gain 21% for females. This shows that organisational projects tend to give more roles to males than females, raising a possible question of whether the culture of the chosen project prefers males than females to handle specific roles.

		Frequency	Percent	Valid Percent	Cumulative Percent
Male	Associate Project Manager	9	8.8	8.8	8.8
	Project Coordinator	10	9.8	9.8	18.6
	Project Manager	27	26.5	26.5	45.1
	Project Scheduler	5	4.9	4.9	50.0

	Senior Project Manager	12	11.8	11.8	61.8
	Team Assistant	15	14.7	14.7	76.5
	Other	24	23.5	23.5	100.0
	Total	102	100.0	100.0	
Female	Associate Project Manager	2	4.8	4.8	4.8
	Project Coordinator	6	14.3	14.3	19.0
	Project Manager	7	16.7	16.7	35.7
	Senior Project Manager	4	9.5	9.5	45.2
	Team Assistant	11	26.2	26.2	71.4
	Other	12	28.6	28.6	100.0
	Total	42	100.0	100.0	

Table 5-8 Classification of the level of workplace responsibility and gender

Table 5-8 shows that almost 27% of males are project managers, and 9% are associate project managers, while 27% of the females are team assistants, and none of the respondents is a project scheduler. Of those 30% of participants that are female, only 5% hold the responsibility of associate project manager. This raises the same question as before about females and males and the impact of culture.

Gender	**Level of education**	**Frequency**	**Percent**
Male	Level 8 - Doctoral Degree (e.g. PhD, DPhil, EdD)	9	8.8
	Level 7 – Master's Degree	38	37.3
	Level 6 - Bachelor's Degree	44	43.1
	Level 5 - Higher National Diploma	7	6.9
	Level 4 - Certificate of Higher Education	3	2.9
	Others	1	1.0
	Total	102	100.0
Female	Level 7 – Master's Degree	20	47.6
	Level 6 – Bachelor's Degree	21	50.0
	Level 5 - Higher National Diploma	1	2.4
	Total	42	100.0

Table 5-9 Level of education and gender

Table 5-9 discusses the level of education based on gender. The data show that many male participants have high-level qualifications – Bachelor's degree with 43%, Master's Degree with 37.3% and Doctoral degree with almost 9%. Only a few of the participating males have educational qualifications lower than Level 6 (Level 5 – 6.9%, Level 4 – 2.9%, and 1% for Others). However, females have nothing lower than level 5 education; 50% have Bachelor's degrees and 47.5% have Master's degrees. This table demonstrates that most females have higher educational degrees than males. Therefore, the possible questions that can be phrased here are: Do females have higher education levels than males and does organisational culture have any effect on employees?

5.2.2 Summary

Out of the 144 participants, Table 5-1 shows that 70% are males, indicating that the organisational culture prefers male workers more than female ones in a construction project, and many females in this country do not prefer this kind of job.

Table 5-2 shows that 44% of participants have more than 8 years' work experience, while 26% have less than 1 year of work experience. Table 5-3 shows that 36% of participants' professional roles are 'Others' and 28% are clients, and 3.5% structural engineers. Table 5-4 describes the workplace responsibilities of participants and the highest percentage were for 'Others' with 25%, and project managers coming second with 24%, followed by 8% for associate project managers, and project scheduler got the lowest with 3.5%. The final background and general information question concerned educational level. Table 5-5 shows that 85% of participants have Master's and Bachelor's degrees, while only 3% of participants have lower than the Higher National Diploma (HND) level.

5.3 Analysing Types of Organisational Cultures

This section analyses Part 2 of the data collected from the questionnaire survey. The data will examine the total mean scores for each organisational culture type. Table 5-10 shows the mean, standard deviation, variance and ranking of organisational culture types.

Types of organisational culture	**Mean**	**Std. Deviation**	**Variance**	**Ranking**
Control culture	4.0891	.92364	.853	1
Collaborate culture	4.0370	.96871	.938	2
Compete Culture	3.8079	.91145	.831	3
Create culture	3.6690	1.00870	1.017	4

Table 5-10 Mean, standard deviation and ranking of organisational culture

Control culture was ranked number 1, with a mean score of 4.0891, followed by Collaborate culture with a mean of 4.0370, then Compete culture with a mean of 3.8079, and finally the Create culture with a mean of 3.6690. All types of cultures got a similar score with a slight difference between them. Therefore, in the following section, an analysis between demographic variables and types of culture will be done to explore the interrelationship between them.

Demographic Respondents and Types of Culture Analysis

Table 5-11 compares gender with types of culture. It shows that Control culture got the highest score with 4.1438 from the 102 male participants. This was followed by Collaborate culture with 4.0964, then Compete culture with 3.8235, and finally Create culture with 3.7206. Female participants got similar results with Control culture ranking 1 with a score of 3.9563, followed by Collaborate culture ranking 2, then Compete culture ranking 3, and finally create culture ranking 4. This gives a general idea that both genders shared the same perception about the types of culture of the project.

What is your gender?		Means of Collaborate culture	Means of Create culture	Means of Compete culture	Means of Control culture
Male	Mean	4.0964	3.7206	3.8235	4.1438
	N	102	102	102	102
Female	Mean	3.8929	3.5437	3.7698	3.9563
	N	42	42	42	42
Total	Mean	4.0370	3.6690	3.8079	4.0891
	N	144	144	144	144

Table 5-11 Types of cultures and gender

Table 5-12 explains the relationship between work experience and types of culture. In this table, the results were identical; the data show that many of the respondents with work experience of above 8 years chose Control culture type as the highest culture with 4.1481; followed by the Collaborate culture with 4.1323, then Compete culture third and finally Create culture. In table 5-12 all the other work experience years got similar ranks of organisational culture types.

How much work experience do you have working in the construction industry?		Means of Collaborate culture	Means of Create culture	Means of Compete culture	Means of Control culture
Less than 1 year	Mean	3.7477	3.6396	3.6577	3.8649
	N	37	37	37	37
1-3 years	Mean	3.8939	2.9394	3.6818	3.9242
	N	11	11	11	11
3-5 years	Mean	4.2949	3.8718	3.9744	4.1923
	N	13	13	13	13
5-8 years	Mean	4.1833	3.6750	3.8750	4.3417
	N	20	20	20	20
Above 8 years	Mean	4.1323	3.7698	3.8624	4.1481
	N	63	63	63	63
Total	Mean	4.0370	3.6690	3.8079	4.0891
	N	144	144	144	144

Table 5-12 Types of cultures and working experience

Table 5-13 discusses the relationship between types of cultures and professional roles. Here, the majority of the participants with the professional role classified as 'Others' chose Collaborate culture, with 52 responses and a mean score of 4.1378. Control culture came in second with 4.0481, then Compete culture with 3.9455, and Create culture came in last with a mean of 3.7981. The second highest response was from the professional role classified as 'Clients', with 40 responses. Under this classification, many chose Control with a score of 4.0042, followed by Collaborate culture with 3.9417, then Compete culture with 3.6708, with a very slight difference from Create culture, with 3.6125. The rest of the professional roles preferred Control culture followed by Collaborate culture, then Compete culture, and finally Create culture as the least preferable type, except for the minority of participants, which were structural engineers, who gave the same score to Compete and Create cultures with a mean score of 4.0667.

These results show that two of the majority respondents agreed with rank 3 and 4 cultures with similar differences in scores, but gave different ranks for first and second cultures' scores, while the minority of participants gave the same score for rank 3 and 4 cultures. These data raise the question as to whether the professional roles have an effect on organisational culture type.

How would you classify your professional role?		**Means of Collaborate culture**	**Means of Create culture**	**Means of Compete culture**	**Means of Control culture**
Architecture	Mean	3.6429	3.0952	3.5000	4.1429
	N	14	14	14	14
Client	Mean	3.9417	3.6125	3.6708	4.0042
	N	40	40	40	40
Mechanical and electrical (or services) engineer	Mean	4.2917	3.8750	4.0000	4.4583
	N	20	20	20	20
Quantity surveyor or costs manager	Mean	3.8077	3.4744	3.6154	3.7051
	N	13	13	13	13

Structural engineer	Mean	4.4333	4.0667	4.0667	4.5667
	N	5	5	5	5
Other	Mean	4.1378	3.7981	3.9455	4.0481
	N	52	52	52	52
Total	Mean	4.0370	3.6690	3.8079	4.0891
	N	144	144	144	144

Table 5-13 Types of cultures and Professional roles

Table 5-14 presents the relationship between types of cultures and responsibilities. This table shows that respondents classified as 'Others' (36 respondents) preferred Control culture, with a mean score of 4.0, with minimal difference with Collaborate culture (3.9074); then Compete culture with 3.7361, and finally Create culture with a mean score of 3.5231. Project managers, the second-highest proportion of participants, having 34 respondents, ranked Collaborate culture first, with a mean of 3.9363, followed by Control culture with a score of 3.9069, then Compete culture with 3.7206, and Create culture with 3.6275. Team assistant, the third-highest proportion of participants with 26 responses, preferred Collaborate culture as rank 1, followed by Control culture, then Compete culture, and finally Create culture. Project coordinators and senior project managers, however (16 respondents each) preferred different types of cultures. Project coordinators chose Control culture, Collaborate culture, Compete culture and Create culture following the order of most preferred to the least. However, senior project managers preferred Collaborate culture, followed by Control culture, then Compete culture and finally Create culture. The minority of the participants, associate project managers and project schedulers, preferred Control culture, then Collaborate culture, Compete culture, and finally Create culture.

Table 5-14 shows a slight difference in ranking types of culture by participants classified based on responsibilities. This table gives rise to the question of whether work responsibilities have an effect on types of culture.

How would you classify your level of workplace responsibility?		**Means of Collaborate culture**	**Means of Create culture**	**Means of Compete culture**	**Means of Control culture**
Associate Project Manager	Mean	4.0000	3.6061	3.7727	4.3939
	N	11	11	11	11
Project Coordinator	Mean	4.3021	4.1042	4.2813	4.3229
	N	16	16	16	16
Project Manager	Mean	3.9363	3.6275	3.7206	3.9069
	N	34	34	34	34
Project Scheduler	Mean	4.0667	3.5000	3.7333	4.3667
	N	5	5	5	5
Senior Project Manager	Mean	4.2708	3.8854	4.0104	4.2396
	N	16	16	16	16
Team Assistant	Mean	4.0513	3.5833	3.6346	4.0321
	N	26	26	26	26
Other	Mean	3.9074	3.5231	3.7361	4.0000
	N	36	36	36	36
Total	Mean	4.0370	3.6690	3.8079	4.0891
	N	144	144	144	144

Table 5-14 Types of cultures and responsibilities

Table 5-15 explains the relationship between the highest level of education and types of culture. Education levels 6 and 7 got the highest number of respondents, with 123 participants in total. Respondents under these two classifications scored Control culture the highest, then Collaborate culture, followed by Compete culture, then Create culture last. Level 8 education got the same mean score for both Control and Collaborate cultures with 4.0185, but Create culture was ranked 3 with 3.8704, followed by Compete culture with 3.7222. Moreover, participants with level 5 education had equal results for Control and Collaborate cultures, with 3.8333, similar to participants with Level 8 education, but

ranked Compete culture third, with 3.8125, then Create culture with 3.7708. Furthermore, those under Level 4 education preferred Control culture, followed by Collaborate culture, then Compete culture, and finally Create culture. The minority of participants with other education levels gave equal scores for both Compete and Create cultures, with a mean of 4.5000, then Collaborate culture with 3.5000, and Control culture with 3.1667.

The differences in the culture-type preference of participants based on different education levels as projected in Table 5-15 brings forth the question of whether levels of education have an effect on the organisational culture types.

What is your highest level of educational qualification?		**Means of Collaborate culture**	**Means of Create culture**	**Means of Compete culture**	**Means of Control culture**
Level 8 - Doctoral Degree (e.g. PhD, DPhil, EdD)	Mean	4.0185	3.8704	3.7222	4.0185
	N	9	9	9	9
Level 7 – Master's Degree	Mean	4.1092	3.6667	3.7874	4.1351
	N	58	58	58	58
Level 6 – Bachelor's Degree	Mean	4.0103	3.6282	3.8282	4.1000
	N	65	65	65	65
Level 5 - Higher National Diploma	Mean	3.8333	3.7708	3.8125	3.8333
	N	8	8	8	8
Level 4 - Certificate of Higher Education	Mean	4.0000	3.4444	3.7778	4.1667
	N	3	3	3	3
Others	Mean	3.5000	4.5000	4.5000	3.1667
	N	1	1	1	1
Total	Mean	4.0370	3.6690	3.8079	4.0891
	N	144	144	144	144

Table 5-15 Types of cultures and education

5.3.1 Summary

Table 5-10 illustrates the mean and standard deviation of cultures, showing that the majority of respondents preferred Control culture, which has the highest mean, followed by Collaborate culture, then Compete culture, and finally Create culture. These data indicate that the majority of participants agreed that the dominant type of organisational culture in Bahrain is Control culture.

Furthermore, an internal variables comparative method has been used to find the relationship between participants and types of culture. Table 5-12 presenting work experience and Table 5-14 discussing work responsibilities raise the question of whether responsibilities of work or work experience can affect participants' understanding or preference of different types of culture to manage construction projects. Table 5-12 shows that participants with mid-range work experience, ranging from 3 to 5 years, feel that their organisation is more of a Collaborate culture than a Control culture. However, participants with more than 5 years and those with less than 3 years of work experience chose their organisational culture type to be more of a Control culture. Table 5-14 shows that project managers, senior project managers and team assistants chose organisational culture to be more Collaborate than Control, whereas all the other work responsibilities agreed that organisational culture should be Control type.

Table 5-15 shows that participants' responses varied according to their educational levels. Participants with educational levels below 4 indicated that their organisation was either a Create or a Compete culture, while participants with education levels ranging from 4 to 6 agreed that their organisational culture is more Control, but gave different responses when it came to other types of cultures. Participants with Level 8 education preferred either Control or Collaborate. In summary, the tables above, which focus on the relationship between organisational culture types and respondent demographics pose questions as to whether work experience and work responsibilities can affect organisational culture, and whether education plays a part in understanding organisation culture types.

5.4 Analysing Stakeholder Critical Success Factors

Part 3 of the questionnaire survey will be analysed in this section, which explores the total mean scores of each stakeholder's critical success factor group.

Stakeholder CSFs	Mean	Std. Deviation	Variance	Ranking
Project Success Measures (PSM)	4.3698	1.19986	1.440	1
Stakeholder Satisfaction (SS)	4.2135	1.10386	1.219	2
Stakeholder and Project Characteristics (SPC)	4.0667	1.01127	1.023	3
Stakeholder Dynamics (SD)	4.0486	1.07347	1.152	4
Stakeholder Analysis (SA)	3.8941	1.20154	1.444	5

Table 5-16 Mean, standard deviation and ranking of stakeholder CSFs groups

Table 5-16 shows the mean, standard deviation, and ranking of stakeholder critical success factor (CSF) groups. It shows that PSM scored the highest with 4.3698, followed by the SS group with a 4.2135 mean. SPC ranked third, with 4.0667, with a slight difference with SD, ranked 4, and finally, SA ranked 5 with a mean of 3.8941. Table 5-16 explains that PSM is the highest rank CSF for participants to use within the organisation to manage stakeholders, followed by SS. The following sections will try to discuss the individual critical success factors of each group with the explanation of the inter-relationship between stakeholder CSFs and participants' backgrounds.

5.4.1 Individual Stakeholder Critical Success Factors of Each Group

For completeness in explaining stakeholder critical success factors, Tables 5-17 to 5-21 show the mean scores of the individual stakeholder critical success factors for each of the five stakeholder CSF groups.

Stakeholder CSFs of PSM	Mean	Std. Deviation	Variance	Ranking
Completion of project to specified standards/quality	4.46	1.327	1.760	1
Completion of the project to the satisfaction of stakeholders	4.37	1.337	1.787	2
Completion of the project on time	4.35	1.426	2.032	3
Completion of project on budget	4.31	1.478	2.186	4
Overall mean	4.3698			

Table 5-17 Individual stakeholder CSFs of project success measures

Table 5-17 illustrates the individual stakeholder CSFs of PSM. It shows that completion of the project to specified standards/quality was ranked 1; completion of the project to the satisfaction of stakeholders got rank 2, followed by completion of the project on time as rank 3, while rank 4 was the completion of the project on budget. This table shows that most of the means are similar, which means that most factors are important. By comparing the literature review and Table 5-17, it shows that rank 1 factor from participants of the organisation is more related to create culture, which got rank 4 in the Table 5-10 means score. These data raise the question of whether the completion of a project to specific standards/qualities is an important factor of Control culture type of organisations.

Stakeholder CSFs of SS	**Mean**	**Std. Deviation**	**Variance**	**Ranking**
Communicating with stakeholders and providing feedback when needed	4.33	1.285	1.650	1
Keeping and promoting positive relationships among the stakeholders	4.23	1.210	1.465	2
Taking social responsibility for the project and stakeholders, e.g., paying attention to economic, legal, and environmental issues	4.17	1.389	1.930	3
Formulating appropriate communication strategies to manage different stakeholders	4.13	1.262	1.593	4
Overall mean	4.2135			

Table 5-18 Individual stakeholder CSFs of stakeholder satisfaction

Table 5-18 shows that communication with stakeholders and providing feedback when needed was ranked as the number 1 factor for the SS group, and the other factors for this group got almost similar scores. This gives a general idea that these factors are important and needed to manage stakeholders within construction projects. Comparing the number 1 ranking factor in Table 5-18 with the literature review in shows that this factor supports Collaborate culture type.

Stakeholder CSFs of SPC	Mean	Std. Deviation	Variance	Ranking
Involves relevant stakeholders at project start-up and when making changes.	4.24	1.286	1.654	1
Identifies and lists all project stakeholders	4.06	1.286	1.653	2
Determines and assesses the attributes of stakeholders involved in the project, e.g. urgency, power, etc.	4.06	1.233	1.521	3
Uses a favourable procurement method that includes stakeholders	4.02	1.226	1.503	4
Uses a flexible project organisation that includes stakeholders	3.95	1.143	1.305	5
Overall mean	4.0667			

Table 5-19 Individual stakeholder CSFs of stakeholder and project characteristics

Table 5-19 describes stakeholder and project characteristics and their relation to individual stakeholder CSFs. Involving relevant stakeholders at project start-up and when making changes got high scores from participants, while the rest of the factors in Table 5-19 got almost similar scores. Factor number 5, referring to using a flexible project organisation that includes stakeholders, indicates that participants agreed with the fact that the type of organisation used was Control culture type.

Stakeholder CSFs of SD	Mean	Std. Deviation	Variance	Ranking
Managing changes in the project that arise from changes to stakeholders' attributes, e.g., urgency, power	4.20	1.180	1.393	1
Managing changes in the project that arise from changes to stakeholders' demands	4.04	1.337	1.788	2

Managing changes in the project that arise from changes to stakeholders' influence	4.04	1.256	1.579	3
Managing changes in the project that arise from changes to the relationships among stakeholders	3.91	1.257	1.579	4
Overall mean	4.0486			

Table 5-20 Individual stakeholder CSFs of stakeholder dynamics

Table 5-20 shows the ranks of the SD group. Here, managing changes in the project that arise from changes to stakeholders' attributes, e.g., urgency and power, got the highest score from participants. When compared with the literature review, it shows that the majority of participants agreed that the type of organisation was Control culture.

Stakeholder CSFs of SA	**Mean**	**Std. Deviation**	**Variance**	**Ranking**
Predicting, analysing, and resolving possible conflicts and coalitions among stakeholders	4.08	1.349	1.819	1
Predicting stakeholders' potential influence on the project	3.92	1.287	1.657	2
Predicting stakeholders' potential influence on each other	3.82	1.357	1.841	3
Predicting and mapping stakeholders' behaviours and reactions	3.76	1.505	2.266	4
Overall mean	3.8941			

Table 5-21 Individual stakeholder CSFs of stakeholder analysis

Table 5-21 shows the ranks of the SA group, and shows that most factors got almost similar scores, but predicting, analysing and resolving possible conflict and coalitions among stakeholders was ranked number 1. This shows similar characteristics with collaborate culture type.

5.4.2 Summary

The section of analysing stakeholder critical success factors shows that project success measures got the highest rank among all the other factors, although the other factors within the groups have similar scores. Therefore, as a summary of this section, the researcher will focus on explaining the ranking of stakeholders' group factors rather than explaining the inter-relationship between each factor.

Table 5-16 shows that the high priority factor for participants' organisations is to measure project success after engaging with stakeholders. Furthermore, stakeholder satisfaction got ranked 2, showing that maintaining stakeholder relationships is an important factor for this organisation. Moreover, stakeholder and project characteristics got ranked 3, to show that before engaging with stakeholders, the organisation needs to manage a strategy for it. Stakeholder dynamics got ranked 4, which explains that this type of culture is less interested in adopting or changing a strategy while engaging with stakeholders. Finally, stakeholder analysis got the lowest rank, and this supports the literature review finding about Control culture being less interested in assessing stakeholders.

Furthermore, Table 5-17 shows that completion of the project to specified standards/quality factor got the highest score in this group, while the other factors got similar scores. This raises some critical questions about whether the organisation type is Control culture as shown in Table 5-10 or a Create culture. Another possible question is whether this factor is very critical to a Control culture type.

5.5 Data analysis of the proposed Conceptual Framework using Structural Equation Modelling (SEM)

Chapters two and three specified the types of organisational group cultures and stakeholder critical success factors on the basis of the extant literature review, and identified that many researchers have previously validated the four types of organisational cultures. On the one hand, the framework has independent variables of four constructs, which are the types of organisational culture (collaborate, create, compete, and control). On the other, it has another dependent variable set of five constructed stakeholder CSFs

(stakeholder and project characteristics, stakeholder analysis, stakeholder dynamics, stakeholder satisfaction, and project success measures). The hypothesised relationship between the independent and dependent variables between the two sets of the models was developed and discussed in Chapter three based on the theory from Chapter two. In order to examine the relationship between organisational culture types and stakeholder CSFs, the researcher used the 'IBM SPSS Amos 25 Graphics' software to analyse questionnaire data and followed Hair's (2010) two-step process to validate and evaluate/examine structural equation modelling.

5.5.1 Validate the Measurement Model

Hair (2010) mentioned that confirmatory factor analysis (CFA) is one of the trusted tools to assess construct validity. Moreover, to evaluate the hypothesised relationship between organisational culture type constructs and stakeholder CSF constructs, it is necessary to use a suitable tool to measure construct validity and construct reliability by a theoretical model. The CFA tool is recommended by many authors and provides the necessary measures.

To validate the model before evaluating/examining structural equation modelling, Hair (2010) used the following points as guidelines: (1) measurement theory specifications, (2) constructions of the measurement model for two-dimensional measurement structure having four sets of types of culture and five sets of constructs for stakeholder CSFs, (3) Assessment performance of the measurement model for overall fit using CFA, and (4) analysis of the reliability and validity of the constructs using CFA.

5.5.1.1 Measurement theory

Hair (2010) mentioned that reflective measures theory and formative measures theory were used as measurement theories to design a confirmatory factor analysis (CFA) and structural equation modelling (SEM). Reflective measures theory can be described as indicators that are interchangeable, while formative measures theory can be described as indicators that are not interchangeable. The items in the reflective model are influenced by the constructs, which are outcomes of latent constructs. These items do not only vary in correlation but should also have conceptual linkages. Formative constructs, on the other hand, are regarded as indices, since they are unobservable when defined (Hair, 2010).

Hair (2010) also explained that "in this model, two sets of latent constructs have path estimates that represent the relationships between constructs, similar to beta weights in regression analysis". Loadings represent measured variables, which correspond to construct-variable relationships like in factor analysis.

Reflective theory is the measurement theory applied in this model because all indicators: (1) reflect the constructs, (2) reflect common conceptual bases, (3) highly covary with each other, (4) similarly relate to each other, and (5) direct construct-variable relationship that causes an error term, which is a direct result of a construct's inability to explain the indicator (Hair, 2010).

5.5.1.2 Constructing the model

Figure 5-1 shows the nine-construct measurement model of organisational culture types and stakeholder CSFs. The labelled boxes are linked with the survey questionnaire and are measured variables (see Appendix 3 for variables names). The small circles labelled with the letter E and numbers refer to an error term for each measured variable.

Hair (2010) expounded that all connectors between the constructs in this type of measurement model have two-headed covariance/correlations. Two-headed connectors indicate constructs correlations, while a one-headed connector merely indicates a causal path without cross-loading of a construct to an indicator. No cross-loading is assumed based on evidence of the lack of discriminant validity due to the lack of unidimensionality.

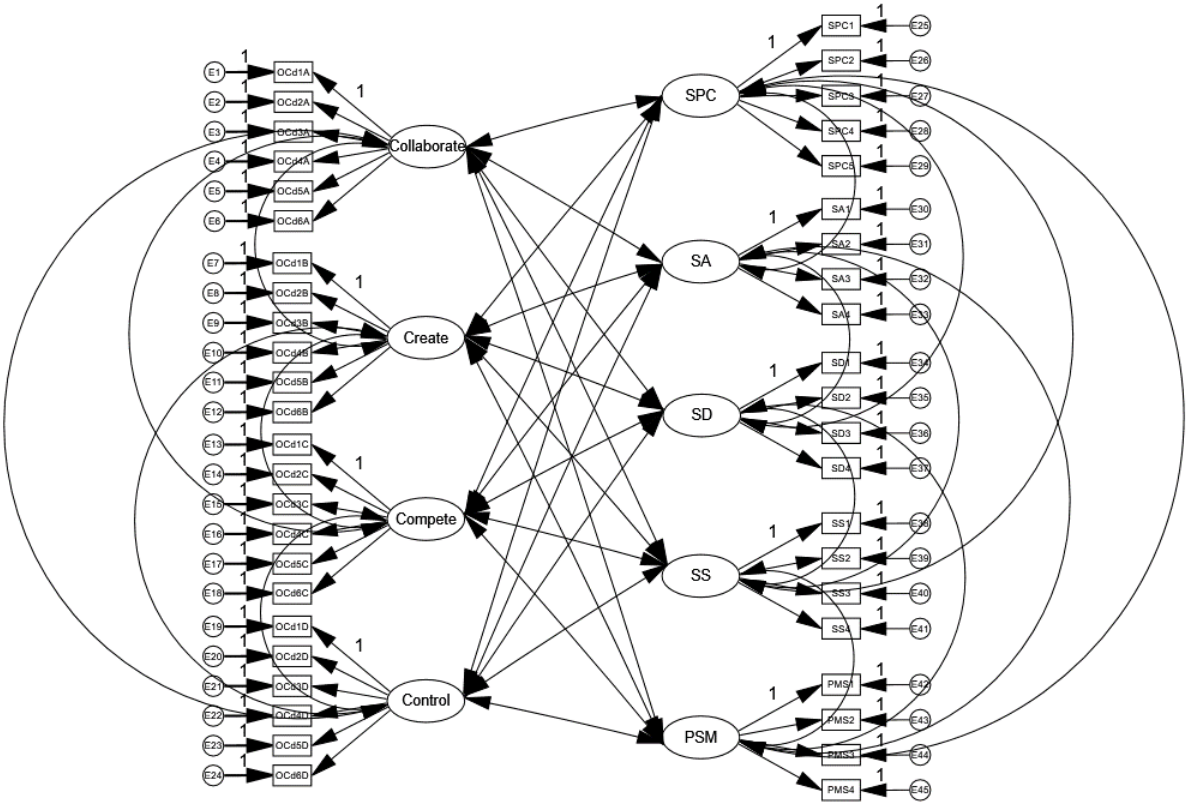

Figure 5-1 Graphical display of the nine-construct measurement model

Figure 5-2 shows the model with Maximum Likelihood Estimation (MLE) after running the test on AMOS software, using: (1) output minimisation history, (2) standardised estimates, (3) squared multiple correlations, and (4) modification indices. Appendix 4 provides the full AMOS CFA output. Figure 5-2 explains the connection between observed and unobserved variables. Latent variables are represented by ovals and circles, whereas measured variables are depicted by rectangles and squares. Therefore, Figure 5-2 shows standardised regression weights between the nine-construct measurements, in addition to the factor loading. According to Hair (2010, p.725), factor loading should be evaluated for deletion when it is below 0.5, which is the suggested cut-off value, as long as the deletion is supported by other diagnostic measures. "The sum of their modification indices and residual terms also indicated to make these paths free for testing CFA" (Al-Jalahma, 2012, p.172). Hair (2010) further stated that the assumption in any reflective construct is that the same latent constructs are the cause of all indicator variables and that these variables are highly connected to each other. It is also stated that in theory, a construct will not be changed even though there can be interchangeability of individual items as well as any single item being left out as long as these two conditions are met: (1)

construct's sufficient reliability, and (2) specification of at least three items to avoid model identification problem. As a result, low factor loading items can be deleted in a reflective model without any serious issues, provided that the construct maintains a sufficient number of indicators.

Figure 5-2 show that most of the measured variables are above the cut-off value of 0.5 except SPC3 (with 0.49). In this research, it has been rounded to its nearest number, 0.5, so has been retained. It is also related to the theories in Chapter 3. On the other hand, Figure 5-2 shows that the data do not have offending variables with a high modification index and residual error to be removed. Besides, the results from running the model test by AMOS show that the constructing measurements of this model fit, and most of its results are acceptable.

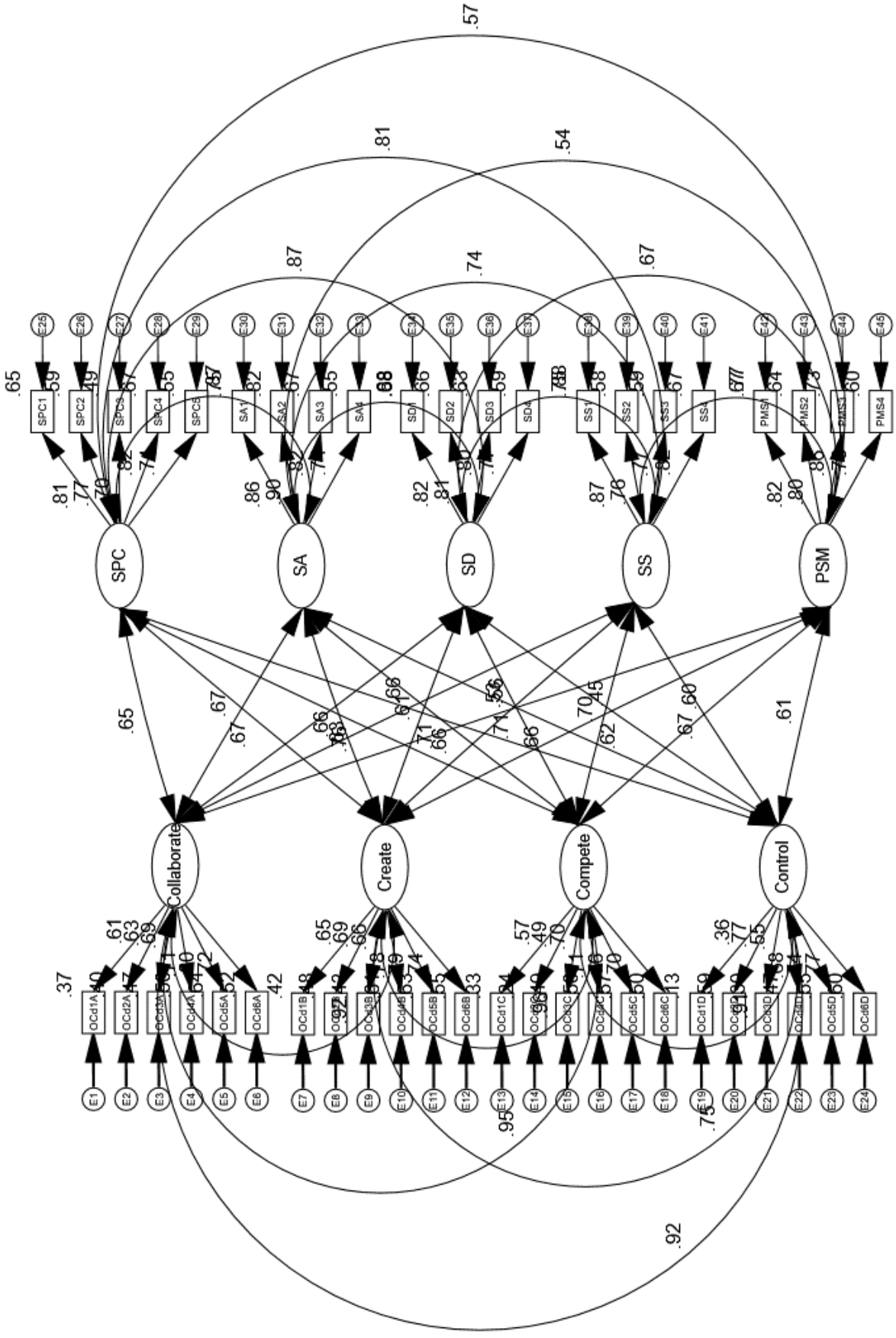

Figure 5-2 Test results of graphical display of nine-construct measurement model

5.5.1.3 Overall fit test

Hair (2010) suggested that the Goodness of Fit (GOF) measure is considered the best among numerous researchers' attempts to develop a new measurement tool. Hair further explained that GOF is classified into three general groups: (1) absolute measures, (2) incremental measures, and (3) parsimony fit measures. Hair pointed out that it is best to use "at least one absolute index, one incremental index, with the χ 2 value and the associated degree of freedom for GOF test" (Hair, 2010, p.665).

Normed Chi-square (χ 2) test: In this model, there are 1035 distinct sample moments (or the number of pieces of information provided by the data). The number of distinct parameters to be estimated is 126. A Chi-square value of 1641.138 has 909 degrees of freedom based on an overidentified model. The Chi-square (χ 2) is the fundamental measure of differences between the observed and estimated covariance matrices. Normed chi-square (χ 2/df) is a simple ratio of χ 2 to the degree of freedom for a model, and it is widely used because it is not provided directly by AMOS, but is easily calculated from the model results and helps to test the model. Furthermore, normed chi-square ratios in the range of 3:1 or less are associated with better-fitting models. In this model, the normed chi-square is (1641.138/909=1.805), which is considered a very good fit.

Absolute fit indices are a direct measure of how well the model specified by the researcher reproduces the observed data (Hair, 2010). One of the most widely used measures in terms of absolute fit indices is the root mean square error of approximation (RMSEA). Awang (2012) suggested that if the value of RMSEA is above 0.08, then it is not accepted. In this model, the RMSEA value is 0.075, which is considered within the range of acceptance to be a fit model. Another test to check absolute fit indices is the root mean square residual (RMR), which is the difference between the observed correlation and the predicted correlation. According to Hair (2010), a lower RMR value means a better fit, and higher values mean a worse fit. In this model, the RMR value is 0.98, which is considered a little high.

Incremental fit indices assess how well the estimated model fits relative to some alternative baseline model (Hair, 2010). One of the commonly used tests is the comparative fit index (CFI). It is the norm, so the value ranges between 0 and 1. The

higher values, which are above 0.90, are considered a better model fit. In this model, CFI is 0.84, which is above 0, and therefore considered an acceptable value.

Another test is the Tucker-Lewis Index (TLI), which is considered a comparison of the normed chi-square values for the null and specified model. The range value for TLI is between 0 to 1, and the nearer the value to 1, the better the fit. In this model, the TLI value is 0.825, and it is considered acceptable. According to Hair (2010), there is no single "magic" value that always distinguishes good models from bad models. In this research, however, the results show that the model is considered to be an acceptable fit.

5.5.1.4 Construct Validity

According to Hair (2010), one of the primary objectives of CFA and SEM is to assess the construct validity of the proposed measurement theory. Therefore, construct validity is the best measurement to test the theoretical latent construct, and it deals with the accuracy measurement. Construct validity has four components: convergent validity, discriminant validity, nomological validity and face validity (Hair, 2010). The following sections will describe the meaning and the best-estimated value of each test and model. Results are shown in Figure 5-22 (with further statistical information in Appendix 4).

	CR	AVE	Control	Collaborate	Create	Compete	SPC	SA	SD	SS	PSM
Control	0.816	0.438	0.662								
Collaborate	0.848	0.483	0.923	0.695							
Create	0.866	0.521	0.750	0.917	0.722						
Compete	0.821	0.438	0.913	0.950	0.960	0.662					
SPC	0.877	0.590	0.657	0.654	0.666	0.759	0.768				
SA	0.901	0.696	0.658	0.673	0.661	0.709	0.874	0.834			
SD	0.876	0.639	0.618	0.632	0.607	0.710	0.872	0.875	0.800		
SS	0.879	0.646	0.666	0.658	0.531	0.700	0.807	0.736	0.883	0.804	
PSM	0.886	0.660	0.613	0.555	0.445	0.603	0.574	0.540	0.673	0.774	0.813

Table 5-22 Convergent validity and discriminant validity results

Convergent validity: this test guarantees that the specific construct indicators should congregate or share a high proportion of variance in common (Hair, 2010). Common tests to estimate the relative amount of convergent validity among item measures include: factor loading, average variance extracted (AVE) and construct reliability (CR).

- **Factor loading:** the size of the factor loading that converges on a latent construct is considered to be important in convergent validity. Moreover, the standardised parameter estimate should be a minimum of 0.5, and ideally 0.7 or higher. In other words, a high factor loading value means better convergent validity (Hair, 2010). In this model, all the factor loadings are above 0.5 except for factor loading between Compete and OCd2C with 0.49, and between Control and OCd1D with 0.36. According to Hair (2010), if the factor loading falls below the average standard, it can still be considered acceptable, but more of the variance in the measure is error variance than an explained variance. In this model, the low value of factor loading is related to the four groups of cultures that have been theoretically validated and used by other researchers, hence, deleting any factor that may affect the analysis.
- **The average variance extracted (AVE):** in CFA, the average variance extracted is calculated as the mean-variance extracted for the item loading on a construct and is a summary indicator of convergence (Hair, 2010). An AVE with a value above 0.5 is considered a good rule of thumb, suggesting adequate convergence. In this model, AVE for six out of nine constructs are above 0.5 (see Table 5-22). The other three constructs are all slightly below 0.5: control has 0.438, collaborate has 0.483,

and compete has 0.438, which means that they are on average AVE value (Hair, 2010). Based on the results of AVE, the model seems acceptable.

- **Construct reliability (CR)**: CR is also an indicator of convergent validity (Hair, 2010). The rule of thumb for either reliability estimate is that 0.7 or higher is considered to be good reliability, and reliability between 0.6 and 0.7 is considered to be acceptable (Hair, 2010). In this model, all constructs are higher than 0.7, which means that they have strong reliability.

In general, the results demonstrate that convergent validity shows the construct measurement validity in this model is acceptable, and the low values are all related to the four types of culture. These types of culture have been theoretically validated by other researchers, and it is a trusted model, as mentioned in Chapter two.

Discriminant validity is the extent to which a construct is truly distinct from other constructs (Hair, 2010). For a construct to be unique and to capture distinct phenomena, the discriminant validity should be 1 or higher. To measure the discriminant validity, the CFA model proposes two common methods: (1) a correlation between any two constructs can be fixed or 1, and (2) a comparison of the variance-extracted values for any two constructs with the square-correlation estimate between the two constructs.

The second method was used to determine the discriminant validity in this model because it is a more rigorous test (Hair, 2010). Table 5-22 shows the discriminant validity between nine constructs, and that the variance-extracted estimates are slightly lower than the square correlation estimate. In this model, there are nine constructs, divided into two sets. The first set has four constructs, representing types of organisational cultures, and the second set has five constructs representing stakeholders CSFs. Some of the factor loadings of the four construct sets are slightly lower than the standard value, but they have not been deleted, as explained above. Hence, in Table 5-22, the variance-extracted estimates are slightly lower but above 0.6, which can be considered acceptable.

Nomological validity is a test to measure whether the correlations among the constructs in a measurement theory make sense (Hair, 2010). If construct correlations are highly related, this means that the measurement model ensures nomological validity. To ensure nomological validity, Awang (2012) recommended some tests. Tables 5-23 and 5-24

explain reliability test results using Cronbach Alpha to get the reliability, CR test, and AVE test from AMOS software, while Table 5-24 uses SPSS software for the inter-correlation matrix to explain reliability between all constructs.

Construct	**Cronbach Alpha (Above 0.7)**	**CR (Above 0.6)**	**AVE (Above 0.5)**
Control	.928	0.816	0.438
Collaborate	.925	0.848	0.483
Create	.928	0.866	0.521
Compete	.923	0.821	0.438
SPC	.923	0.877	0.590
SA	.923	0.901	0.696
SD	.922	0.876	0.639
SS	.924	0.879	0.646
PSM	.934	0.886	0.660

Table 5-23 Cronbach alpha, CR, and AVE reliability results

Table 5-23 shows that in all constructs, the Cronbach Alpha reliability is above 0.7, which is considered very good, while CR and AVE have been described in the sections above.

	Collaborate	**Create**	**Compete**	**Control**	**SPC**	**SA**	**SD**	**SS**	**PSM**
Collaborate	1.000								
Create	.773	1.000							
Compete	.781	.813	1.000						
Control	.743	.593	.760	1.000					
SPC	.559	.582	.642	.543	1.000				
SA	.600	.604	.628	.553	.791	1.000			
SD	.545	.533	.606	.508	.765	.791	1.000		
SS	.576	.468	.587	.542	.700	.672	.775	1.000	
PSM	.486	.387	.516	.514	.506	.506	.601	.677	1.000

Table 5-24 Inter-Constructs correlation matrix

Table 5-24 shows the inter-correlation between constructs. This explain the strength of the relationship between every construct; the closer number to 1.0, the more reliability.

Face validity is one of the most important tests, and must be established prior to any theoretical testing when using CFA (Hair, 2010). In other words, every measure in CFA should have content and meaning, and have been theoretically described well to establish a test. In this model, there are two sets of measurements. One set contains four constructs and is called organisational culture types, while the other set contains five constructs, and is called stakeholder CSFs. The organisational culture has been validated and used by many researchers and proven to be reliable, as mentioned in Chapter two. The stakeholder CSFs set has also been validated through the literature review. Both organisational culture and stakeholder CSFs have been further validated through the questionnaire survey pilot by taking feedback from field experts and qualified professionals.

5.5.2 Summary

This section discussed the analysis of the data by confirming the measurement model of the nine constructs (four independent variables for organisational culture types and five dependent variables for stakeholder CSFs) using the confirmatory factor analysis (CFA) model. The beginning of this section specified the measurement theory by choosing reflective theory measurement for this model. The researcher then tested the model through AMOS software by performing CFA on the data and analysing overall fit and construct validity. Furthermore, the results from the overall fit test and construct validity supported that this model was acceptable and suitable for all subsequent analysis and testing of hypotheses.

Hair (2010) mentioned that if all the model measurements are completed and CFA results are valid and accepted, the next stage is to measure the structural relationship between the constructs by representing the theory with structural equation modelling (SEM).

5.6 Data analysis of Structural model

This section discusses the change from the CFA measurement model to a structural model by using SEM to evaluate structural theory to determine the correlation among constructs. Using SEM, the researcher has the ability to simultaneously pattern and analyse constructs' multi-relationship (Awang, 2012). The direction of the hypotheses determines the arrow linking the constructs. Causal effects are determined by a single-headed arrow, but for the constructs' correlational effects, a double-headed arrow is used.

Figure 5-3 depicts the structural model with structural equations. The structural parameter estimates empirically denote the structural connections of any two constructs. The structural model applies structural theory by identifying the constructs that are connected to each other, including their relationship characteristics. These relationships are considered regression coefficients. SEM is used to make an approximation of the empirical measurement of the connections between both sets of constructs to measure the efficacy of the theory fitting the data (Hair, 2010). The results provide an opportunity to compare theory and reality based on the data collected from the target population.

For the testing of the structural theory, structural parameter estimates should be statistically significant in the predicted direction (Hair, 2014, Tabachnick, 2014). To guarantee a positive relationship, the structural parameter should be greater than zero. If it results in less than zero, then it guarantees a negative relationship. Based on the theory used in this study (see the conceptual framework in Section 3.4), each type of organisational culture (group, developmental, rational and hierarchical) present in an organisation has an impact on certain stakeholder CSFs.

Adopting the guidelines of Hair (2010), the following stages of structural model validation were performed in subsequent order:

1. Constructing a structural model,
2. Validating the structural model for overall fit using CFA/SEM, and
3. Investigating hypothesised relationships between two sets of constructs using SEM.

5.6.1 Constructing the Model

Hair, (2014) argued that the focal point when testing a structural model would be the correlation of constructs. He further elaborated that "SEM empirically examines the structural model by combining both the measurement model and structural model in one analysis" (Al-Jalahma, 2012, p.183). SEM takes information about the measurement model while assessing the structural model. In other words, the design of the structural model comes from the measurement model. Figure 5-3 illustrates the path diagram that represents the two sets of the constructs' theoretical relationship. The exogenous and endogenous constructs are the two types of free parameter connections. Under exogenous constructs, Collaborate, Create, Compete and Control are four types of organisational cultures, considered as independent variables (Figure 5-3, left-hand side). Endogenous constructs, however, refer to the outcomes of the hypothesised exogenous constructs. There are five endogenous constructs of Stakeholders CSFs, which are: (1) Project Success Measures (PSM), (2) Stakeholder Satisfaction (SS), (3) Stakeholder and Project Characteristics (SPC), (4) Stakeholder Dynamics (SD), and (5) Stakeholder Analysis (SA), which appear on the right-hand side of Figure 5-3.

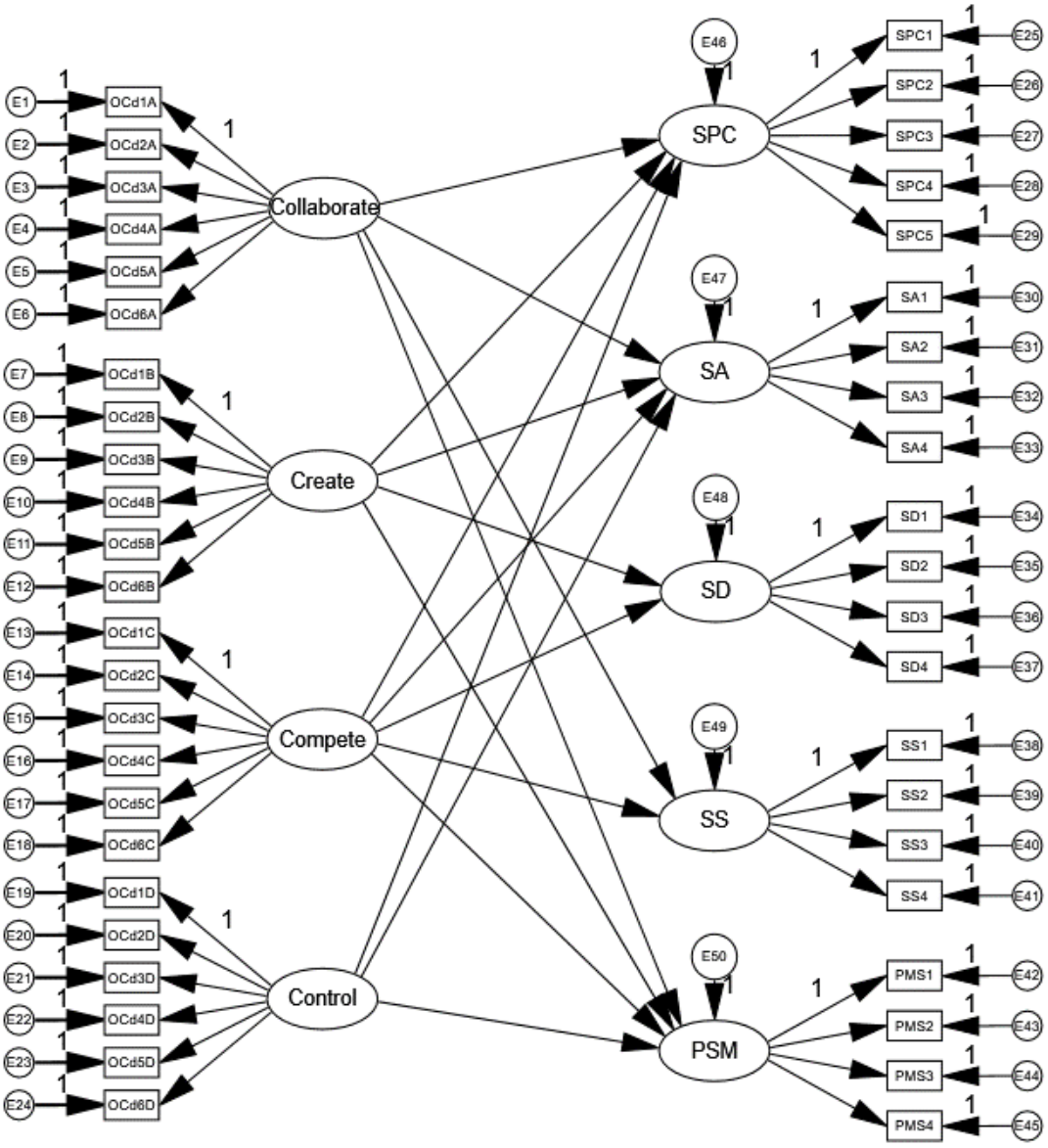

Figure 5-3 Graphical display of hypothised nine-construct model

5.6.2 Assessing Overall Structural Model fit

The structural model was tested similarly to the CFA model, using more than one fit indices. In the assessment of the structural model, the researcher used one absolute fit index, one incremental index, and $\chi 2$ was used as a minimum.

Name of Index	CFA	SEM
Chi square (χ 2)	1641.138	1701.285
Normed chi-square (χ 2/df)	1.805	1.843
RMSEA	0.075	0.077
RMR	0.98	0.103
CFI	0.84	0.83
TLI	0.825	0.817

Table 5-25 Comparison of results of CFA and SEM

Table 5-25 shows that both models have a similar range of results, which means zero significance in fit statistics. The comparison, made of loading estimates, provided no issues on the structural model, as shown in Appendix 4 (to show standardised Regression Weights of all variables in terms of CFA and SEM having no significant difference in output). In summary, the overall fit statistics, which include Chi-square, CFI, TLI, IFI, and factor loading, are in the acceptable range. Similarly, the badness of fit (BOF) measures, Normed Chi-Square, and RMSEA are also acceptable. Consequently, the results of the SEM model indicate that this structural model is suited to undergo a further assessment of relationships since it is a good fit.

5.6.3 Examining Hypothesised Relationship with SEM

After evaluating the structural model above, the next step is to examine hypotheses and analyse the relationship between two sets of constructs. Figure 5-4 shows the standardised estimate for the SEM. In this model, the researcher added more paths between organisational culture types and stakeholder CSFs, to analyse the literature hypotheses and output from the data.

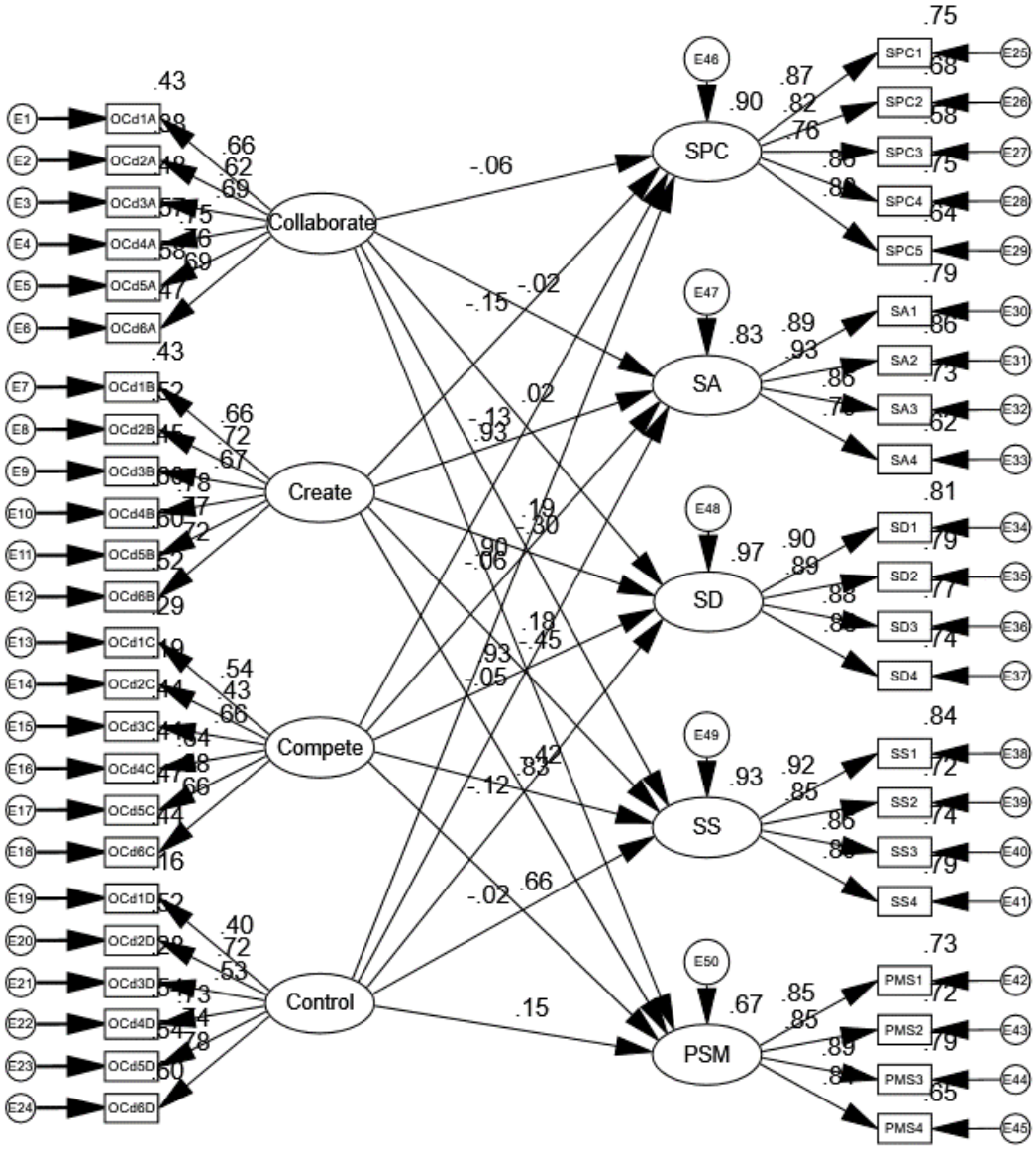

Figure 5-4 the standardised regression weights of SEM

Figure 5-4 shows that the highest standardised beta estimate for the effect of the latent exogenous on the latent endogenous is 0.93 between Compete culture to stakeholder dynamics group SD and same value with Compete culture and SPC. However, the lowest standardised beta estimate is between Create culture and stakeholder satisfaction SS, with -0.45. Table 5-26 below explains the regression weights between the main two sets of constructs (for all constructs, please see Appendix 4).

			Estimate	S.E.	C.R.	P	Label
SPC	<---	Collaborate	-.091	.086	-1.054	.292	
SA	<---	Collaborate	-.028	.104	-.269	.788	
PSM	<---	Collaborate	.296	.113	2.634	.008	
SS	<---	Collaborate	.337	.097	3.469	***	
SPC	<---	Create	-.242	.091	-2.647	.008	
SA	<---	Create	-.250	.109	-2.285	.022	
SD	<---	Create	-.576	.112	-5.122	***	
PSM	<---	Create	-.713	.135	-5.273	***	
SPC	<---	Compete	1.763	.260	6.793	***	
SA	<---	Compete	1.977	.292	6.760	***	
SD	<---	Compete	2.137	.305	7.007	***	
SS	<---	Compete	1.818	.263	6.916	***	
PSM	<---	Compete	1.316	.220	5.983	***	
PSM	<---	Control	.379	.189	2.008	.045	
SA	<---	Control	-.139	.167	-.831	.406	
SPC	<---	Control	-.138	.139	-.992	.321	
SD	<---	Collaborate	.045	.093	.483	.629	
SS	<---	Create	-.830	.126	-6.563	***	
SS	<---	Control	-.070	.144	-.484	.628	
SD	<---	Control	-.353	.165	-2.145	.032	

Table 5-26 Regression weights for two sets of constructs
***Significant at 0.001 level, ** Significant at 0.01 level, * Significant at 0.05 level

By comparing Table 5-27 and Figure 5-3, Graphical display of hypothesised nine-construct model of the literature hypothesis, the table below explains the acceptance of the hypothesis.

Hypothesis Testing		
H1	Collaborate culture has an influence on SPC	Not Supported
H2	Collaborate culture has an influence on SA	Not Supported
H3	Collaborate culture has an influence on SS	Supported
H4	Collaborate culture has an influence on PSM	Not Supported
H5	Create culture has an influence on SPC	Not Supported
H6	Create culture has an influence on SA	Not Supported
H7	Create culture has an influence on SD	Supported
H8	Create culture has an influence on PSM	Supported
H9	Compete culture has an influence on SPC	Supported
H10	Compete culture has an influence on SA	Supported
H11	Compete culture has an influence on SD	Supported
H12	Compete culture has an influence on SS	Supported
H13	Compete culture has an influence on PSM	Supported
H14	Control culture has an influence on SPC	Not Supported
H15	Control culture has an influence on SA	Not Supported
H16	Control culture has an influence on PSM	Not Supported

Table 5-27 Hypothesis testing

Table 5-28 explains that nine out of 20 hypotheses are supported, and one of the significantly supported was not a hypothesis in the theoretical framework, as shown in Table 5-27, which is that Create culture has an influence on stakeholder satisfaction. Table 5-26 shows some positive numbers but still not significantly related. For example, Collaborate culture and stakeholder dynamics SD were found to be positively and significantly related to the dependent variable with a value of 0.045, but still not supported because the regression path is positive (+.045), but SD value is 0.094. This means that when Collaborate goes up by 1 standard deviation, SD also goes up by 0.045 standard deviations, showing a positive relationship, contrary to the hypothesised direction. Therefore, this hypothesis was not supported.

Table 5-28 combines Table 5-26, which has been taken from SEM, and Table 5-27, which shows the hypothesis discussed in the literature review, to discuss the relationship between organisational culture and stakeholder CSFs, from both literature and data. This

will provide more understanding of organisational culture and stakeholder CSF relationships, and discover a new framework for this relationship.

Hypothesis Testing		
H1	Collaborate culture has an influence on SPC	Not Supported
H2	Collaborate culture has an influence on SA	Not Supported
H3	Collaborate culture has an influence on SS	Supported
H4	Collaborate culture has an influence on PSM	Not Supported
H5	Collaborate culture has an influence on SD	Not Supported
H6	Create culture has an influence on SPC	Not Supported
H7	Create culture has an influence on SA	Not Supported
H8	Create culture has an influence on SD	Supported
H9	Create culture has an influence on PSM	Supported
H10	Create culture has an influence on SS	Supported
H11	Compete culture has an influence on SPC	Supported
H12	Compete culture has an influence on SA	Supported
H13	Compete culture has an influence on SD	Supported
H14	Compete culture has an influence on SS	Supported
H15	Compete culture has an influence on PSM	Supported
H16	Control culture has an influence on SPC	Not Supported
H17	Control culture has an influence on SA	Not Supported
H18	Control culture has an influence on PSM	Not Supported
H19	Control culture has an influence on SS	Not Supported
H20	Control culture has an influence on SD	Not Supported

Table 5-28 All Hypothesis testing

5.7 Analysis Summary

This chapter discussed the data analysis collected from the survey questionnaire. The first section showed the participants' personal/general data analysis. Out of the 144 participants, the data showed that 70% of the participants were males. The argument that arose from this data was that the organisational culture in the selected project preferred male workers more than females. Moreover, the first section illustrated that most of the participants had high levels of education and work experience. Likewise, this section showed that most participants were project managers.

This second section covered the analysis of organisational culture types in the second part of the survey questionnaire, and presented the summary of data collected pertaining to types of cultures. This section showed the relationship between organisational culture types and the demographics of the respondents as to whether work experience and work responsibilities could affect organisational culture, and whether education plays a part in understanding organisation culture types. It showed that most respondents preferred Control culture, which had the highest mean, followed by Collaborate culture, then Compete culture, and finally Create culture. These data indicated that most participants agreed that the type of organisational culture in Bahrain is Control culture.

The third section focused on analysing stakeholder critical success factor constructs. It demonstrated that project success measures got the highest rank among all the other factors, although it showed that the other factors within the groups had similar scores. Therefore, this research focused on explaining the ranking of stakeholders' group factors rather than explaining the inter-relationship between each factor.

The final section centred on the analysis of the developed conceptual framework by using structural equation modelling (SEM). The first part of this section focused on confirming the measurement model for the nine constructs (four independent variables for organisational culture types and five dependent variables for stakeholder CSFs) using the confirmatory factor analysis (CFA) model. The beginning of this section specified the measurement theory by choosing reflective theory measurement for this model. The model was tested through SPSS AMOS software by performing CFA on the data and

analysing overall fit and construct validity. The results from the overall fit test and construct validity supported that this model was acceptable and suitable for subsequent analysis and testing of hypotheses. The second part of the final section was to measure the structural relationship between the two constructs (organisational culture types and stakeholder critical success factors), by representing the theory with structural equation modelling (SEM). Eight out of 16 hypotheses are supported, and one of the significant cultural types supported in SEM was not one of the hypothesis types in the conceptual framework.

For comparative data purposes, no other studies were found to measure types of culture in the Middle East in the field of construction projects. Hence, this research uses the SEM method to validate the data collected from the survey and compare it with the literature alongside the questionnaire survey.

Chapter 6

Findings and Discussion

This chapter discusses the findings in Chapters four and five, and relates them to the research scope and objectives developed in chapter one, which are:

- To review previous studies on organisational culture and stakeholder engagement in construction firms
- To determine the current organisational culture type and stakeholder CSFs within construction firms under Bahrain's Ministry of Housing, and examine their relationship
- To establish the relationship between organisational culture types and stakeholder CSFs within construction firms under Bahrain's Ministry of Housing; SEM and estimate their influences on each other; determine the dominant type of culture in MOH and its influences on stakeholder CSFs; and
- To model the relationship between the organisational culture type and stakeholder CSFs in construction firms under Bahrain's Ministry of Housing, using the SEM by exploring the dominant culture type and its influences on stakeholder CSFs.

The research methodology adopted a post-positivist, deductive approach using an online survey questionnaire from 144 participants to obtain quantitative data for hypothesis testing, and a statistical approach to analyse the data. IBM SPSS Analysis of Moment Structure (AMOS) was used to test the measurement model using Confirmatory Factor Analysis (CFA) and to test the structural model using Structural Equation Modelling (SEM).

This method helped achieve the research objectives by identifying the type of culture and stakeholder engagement critical success factors in Bahrain and finding the relationship between them. The findings and discussion chapter will focus on the three main phases of the research objectives to discuss stakeholder CSFs, organisational culture type in Bahraini firms, and the relationship between them.

6.1 Stakeholder critical success factors in construction projects

The first phase was to determine what stakeholder critical success factors are used in Bahraini construction firms, based on stakeholder engagement, to identify which Stakeholder CSFs have high priority for managing stakeholders. To achieve this, a comparison between stakeholder CSFs from a literature review and data analysis was undertaken.

The researcher has developed five groups of stakeholder engagement CSFs (see chapters two and three) based on combined theoretical relationships between stakeholder engagement theories (table 6-2); to test this model with organisational culture types and validate it with SEM and answer the research objectives.

Stakeholder engagement levels	**Constructs**	**Indicators**
Before engaging with stakeholders	Stakeholder and project characteristics (SPC)	• Identifying and listing all project stakeholders • Using a flexible project organization that includes stakeholders • Using a favourable procurement method that includes stakeholders • Determining and assessing the attributes of stakeholders involved in the project, e.g., urgency, power, etc.; • Involving relevant stakeholders at project start-up and when making changes.
When assessing stakeholders	Stakeholder analysis (SA)	• Predicting and mapping stakeholders' behaviours and reactions • Predicting stakeholders' potential influence on each other • Predicting stakeholders' potential influence on the project • Predicting, analysing, and resolving possible conflicts and coalitions among stakeholders
While engaging with stakeholders	Stakeholder dynamics (SD)	• Managing changes in the project that arise from changes to stakeholders' demands • Managing changes in the project that arise from changes to stakeholders' influence • Managing changes in the project that arise from changes to the relationships among stakeholders

		• Managing changes in the project that arise from changes to stakeholders' attributes, e.g., urgency, power, etc.
To maintain stakeholder relationship	Stakeholder Satisfaction (SS)	• Formulating appropriate communication strategies to manage different stakeholders • Keeping and promoting positive relationships among the stakeholders • Taking social responsibility for the project and stakeholders, e.g., paying attention to economic, legal, and environmental issues • Communicating with stakeholders and providing feedback when needed.
After engaging with stakeholders	Project Success Measures (PSM)	• Completion of project on time • Completion of project on budget • Completion of project to specified standards/quality • Completion of project to the satisfaction of stakeholders.

Table 6-1 Stakeholder engagement CSFs groups

Based on the analysis of the questionnaire survey, Table 6-3 shows the ranks of stakeholder CSF groups, and shows that for stakeholder engagement, the most important phase is after engaging with stakeholders, which gave the highest results. This also shows that the critical success factors of completing the project on time, on budget, to specified standards/qualities, and to the satisfaction of stakeholders, are the most important factors for managing construction projects. Moreover, these results show that the project management team should clearly focus on the project outcomes to ensure the happiness of stakeholders. This result is confirmed by a literature review of the importance of project success measures (Winch, 2010). Although this research shows which indicators under this group were the most important to stakeholders and the project management team, the reason for this can be linked with a particular type of project culture – the collaborative type. The analysis chapter showed that the second-highest score for this project culture was collaborative types. The collaborative type of culture stands more for finishing the project with specific standards and quality (Cameron & Quinn, 2011).

Stakeholder CSFs	**Mean**	**Std. Deviation**	**Variance**	**Ranking**
Project Success Measures (PSM)	4.3698	1.19986	1.440	1
Stakeholder Satisfaction (SS)	4.2135	1.10386	1.219	2

Stakeholder and Project Characteristics (SPC)	4.0667	1.01127	1.023	3
Stakeholder Dynamics (SD)	4.0486	1.07347	1.152	4
Stakeholder Analysis (SA)	3.8941	1.20154	1.444	5

Table 6-2 Mean, Std. Deviation and Ranks of stakeholder CSFs construct groups

Stakeholder satisfaction (SS), to sustain and maintain good relationships with stakeholders, received the second-highest mean value. Yang et al. (2009) mentioned the importance of the project team in terms of having a good strategy for sustaining relationships with construction stakeholders. In this research, communication with stakeholders and providing feedback when needed were shown to be one of the best strategies to sustain and keep the relationship with stakeholders. Communication is important to manage the support, commitment, and loyalty of the project stakeholders, although good communication means eliminating problems and conflicts with stakeholders to provide a successful project (Chinyio & Akintoye, 2008; Olander & Landin, 2008; Yang et al., 2009). One of the reasons behind this indicator achieving the highest score is the influence of the type of culture of the project, as this indicator is considered to be more affected by collaborative and creative cultures, which this data illustrates are the second and third highest scoring project cultures.

The third stakeholder CSF group is the stakeholder and project characteristics group (SPC). The strategy behind this group is to be prepared for stakeholders before engaging with them. This study's data shows that involving relevant stakeholders at project start-up and when making changes gained the highest score. These data indicate the importance of involving stakeholders from the beginning of any construction project, especially with a redefined (refined) project mission. Moreover, involving and managing stakeholders at the early stages of a project has been found to provide potentially significant opportunities for eliminating several problems that prevent the achievement of project success. Also, it will help to understand the requirements and expectations of construction project stakeholders (Aaltonen & Kujala, 2010; Thomson, Austin, Devine-Wright, & Mills, 2003; Yang et al., 2009). Most culture types give this indicator a high priority, explaining why it has a high score in project data.

However, stakeholder dynamics (SD) had the fourth rank, with a slight difference from the third group factor. In this group factor, managing changes in the project that arise from changes to stakeholders' attributes, e.g., urgency, power, etc., gained the highest score. Overall, the stakeholder dynamics (SD) group contains important strategies to manage stakeholders while engaging with them, and obtains a high score for managing changes in stakeholders' attributes, which agrees with literature on the effects of controlling, collaborative and creative culture types. However, deciding on an appropriate management strategy while engaging with stakeholders, depending on their attributes, could really affect the project's achievement (Mitchell, Agle, & Wood, 1997; Olander, 2007; Yang et al., 2009).

The last group factor is stakeholder analysis (SA), with the lowest mean value. This group shows the strategy of assessing the stakeholders of a construction project. Predicting, analysing, and resolving possible conflicts and coalitions among stakeholders has the highest results as an indicator. Freeman (2010) mentions the importance of analysing the conflicts and coalitions that exist or are likely to occur among the project stakeholders. Other scholars mention that individual stakeholders can influence the project decisions, but groups of stakeholders usually can influence and change the strategy and objectives of the project (Jepsen & Eskerod, 2009; Newcombe, 2003; Yang et al., 2009).

Chapter two discussed the importance and meaning of stakeholder critical success factors for any project. For example, Rockart (1979, p. 85) defines critical success factors, and Yang, Wang, and Jin (2014) mention the importance of these factors for project management. However, most authors agree on the importance of managers being aware of stakeholder CSFs and managing them well. Yang, Shen, Ho, Drew, and Chan (2009) were among the first authors to create a model that helps managers identify and manage stakeholders CSFs, and ranked 15 CSFs according to priority, adopted from the literature review in their study. They used interviews and pilot studies with professionals working on construction projects to rank the CSFs (chapter 2, table 2-6). Table 6-1 shows the common stakeholder critical success factors discussed by authors from the managerial point of view, including Yang et al. (2009)'s stakeholder CSFs.

No.	Stakeholder critical success factors	Source
1	Clearly formulating the project mission	Jerges *et al*., (2000); Akintoye *et al*. (2003) Thomson *et al*., (2003); Chinyio and Akintoye, (2008)
2	Ensuring the use of a favourable procurement method	Atkin and Skitmore, (2008); Rwelamila, (2010)
3	Carefully identifying and listing the project stakeholders	Mathur *et al*., (2008); Jepsen and Eskerod, (2009)
4	Ensuring flexible project organisation	Olander and Landin, (2008); Chinyio and Akintoye, (2008); Li *et al*., (2011)
5	Identifying and understanding stakeholders' areas of interest in the project	Jepsen and Eskerod, (2009); Olander and Landin, (2008); Yang *et al*., (2009)
6	Determining and assessing the power (capacity to influence the actions of other stakeholders); urgency (degree to which stakeholders' claims require immediate attention); legitimacy (perceived validity of claims); and proximity (level of association or closeness with the project) of stakeholders	Mitchell *et al*., (1997); Yang *et al*., (2009); Aaltonen and Kujala, (2010)
7	Appropriately classifying stakeholders according to their attributes/characteristics	Karlsen, (2002); Mitchell *et al*., (1997)
8	Predicting and mapping stakeholders' behaviours (supportive, opposition, neutral, etc.)	Freeman (1984)Yang *et al*., (2009); Aaltonen and Kujala, (2010)
9	Predicting stakeholders' potential influence on each other	Pajunen, (2006); Jepsen and Eskerod, (2009)
10	Predicting stakeholders' potential influence on the project	Pajunen, (2006); Jepsen and Eskerod, (2009)
11	Identifying and analysing possible conflicts and coalitions among stakeholders	Jepsen and Eskerod, (2009); Yang *et al*., (2009)
12	Resolving conflicts among stakeholders effectively	Yang *et al*., (2009) Chinyio and Akintoye, (2008)
13	Managing the change of stakeholders' interests	Jergeas *et al*., (2000); Jepsen and Eskerod, (2009)
14	Managing the change of stakeholders' influence	Jergeas *et al*., (2000); Olander (2006)
15	Managing the change of relationship among stakeholders	Pajunen, (2006); Chinyio and Akintoye, (2008)
16	Managing change of stakeholders' attributes	Mitchell, *et al*., (1997) Olander (2006)
17	Managing how project decisions affect stakeholders	Chinyio and Akintoye, (2008); Aaltonen and Kujala, (2010)
18	Predicting stakeholders' likely reactions to implementing project decisions	Chinyio and Akintoye, (2008); Yang *et al*., (2009)
19	Involving relevant stakeholders to redefine (refine) project mission	Jerges *et al*., (2000); Yang *et al*., (2009); Aaltonen and Kujala, (2010)
20	Formulating appropriate strategies to manage/engage different stakeholders	Chinyio and Akintoye, (2008); Yang *et al*., (2009)
21	Keeping and promoting positive relationships among the stakeholders	Olander and Landin, (2008); Yang *et al*., (2009); Aaltonen and Kujala, (2010)
22	Communicating with stakeholders properly and frequently (instituting feedback mechanisms)	Jergeas *et al*., (2000); Olander and Landin, (2008); Chinyio and

		Akintoye, (2008); Yang *et al*., (2009)
23	Considering corporate social responsibilities (paying attention to economic, legal, environmental and ethical issues)	Mathur *et al*., (2008); Yang *et al*., (2009)

Table 6-3 Stakeholder critical success factors (J. Yang et al., 2009)

However, Since few studies appear to have undertaken a comparative analysis of stakeholder CSFs on construction projects (Jing Yang, Shen, Drew, & Ho, 2010), and the research objective is about finding the best stakeholder engagement CSFs for construction projects, this research compares its results with both literature review and questionnaire data analysis. The literature shows that all stakeholder CSFs are important. Yang et al. (2010) ranked CSFs on the basis of their mean value, similar to this research rank. In addition, this research data shows that in managing stakeholders' engagement in a construction firm, it is important to have a strong and clear strategy for what the project team will provide for stakeholders after engaging with them, especially with project success measures. Table 6-4 below shows the ranks of successful strategies for managing stakeholders' engagement, including constructs and indicators observed from the data analysis in chapter 5.

Ranks	**Stakeholder management strategy**	**Constructs**	**Ranks/Indicators**
1	After engaging with stakeholders	Project Success Measures (PSM)	1. Completion of project to specified standards/qualities 2. Completion of project to the satisfaction of stakeholders 3. Completion of project on time 4. Completion of project on budget.
2	To maintain stakeholder relationship	Stakeholder Satisfaction (SS)	1. Communicating with stakeholders and providing feedback when needed 2. Keeping and promoting positive relationships among the stakeholders 3. Taking social responsibility for the project and stakeholders, e.g., paying attention to economic, legal, and environmental issues 4. Formulating appropriate communication strategies to manage different stakeholders.

3	Before engaging with stakeholders	Stakeholder and project characteristics (SPC)	1. Involving relevant stakeholders at project start-up and when making changes 2. Identifying and listing all project stakeholders 3. Determining and assessing the attributes of stakeholders involved in the project, e.g., urgency, power, etc. 4. Using a favourable procurement method that includes stakeholders 5. Using a flexible project organization that includes stakeholders.
4	While engaging with stakeholders	Stakeholder dynamics (SD)	1. Managing changes in the project that arise from changes to stakeholders' attributes, e.g., urgency, power, etc. 2. Managing changes in the project that arise from changes to stakeholders' demands 3. Managing changes in the project that arise from changes to stakeholders' influence 4. Managing changes in the project that arise from changes to the relationships among stakeholders.
5	When assessing stakeholders	Stakeholder analysis (SA)	1. Predicting, analysing, and resolving possible conflicts and coalitions among stakeholders 2. Predicting stakeholders' potential influence on the project 3. Predicting stakeholders' potential influence on each other 4. Predicting and mapping stakeholders' behaviours and reactions.

Table 6-4 Ranks of stakeholder engagement CSFs groups

6.2 Organisational culture type in Bahrain

The second phase in the research objectives was to determine the organisational culture type that exists in Bahrain construction firms. To do this, a comparison between organisational culture types from the literature review and data analysis was required. Table 6-5 shows that the dominant organisational culture type that exists in Bahrain construction firms is control culture. The data analysis (chapter five) shows that gender and work experience, alongside educational background, illustrates that the current culture of Bahrain construction projects is not stable. However, it can be observed that the controlling system of culture is still apparent, especially with female participants. At the same time, change is happening within the organisation. The current culture in Bahrain is a control culture, but it is in the initial stages of changing to be more

collaborative. This can be seen from the discussion above, especially with people who are in middle-age by work experience and higher education levels, as they begin to feel the difference between the old and new culture types in construction projects in Bahrain.

Types of organisational culture	Mean	Std. Deviation	Variance	Ranking
Control culture	4.0891	.92364	.853	1
Collaborate culture	4.0370	.96871	.938	2
Compete Culture	3.8079	.91145	.831	3
Create culture	3.6690	1.00870	1.017	4

Table 6-5 Mean, standard deviation and ranking of organisational culture

On the other hand, the data analysis chapter shows that Bahraini construction firms prefer to hire male more than female employees, even though the data shows that the female employees have the same educational background as male employees but with different/lower job titles and leadership/decision-making authorities. This inequality of male and female employees in Bahraini construction firms may be a result of different aspects, such as cultural norms and expectations, discrimination in the legal system and in economic opportunities, little political representation in legislation and conflict resolution, and the effects of conflict, displacement, and individual beliefs and religions.

Nevertheless, the literature review shows the importance of understanding the influences of organisational culture on projects (Cameron & Freeman, 1991) and how organisational culture can play an important role in controlling and affecting individuals' beliefs, attitudes and behaviours within the performance and achievement of a construction organisation (Hofstede, 2001). However, Schein (1985) defines organisational culture as "a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems." Schein (1985) developed a framework to describe the level of organisational culture characteristics related to individuals' and groups' beliefs and values. Likewise, Hofstede (2001) divides organisational culture into four layers: Values, Rituals, Heroes and Symbols. Both authors argue that every organisation

has its unique culture, with the possibility of sharing some aspects with other organisations – but identifying and selecting the best culture for the organisation needs some measurements and instruments. In addition, Hatch (1993) states that the aim of the heads of organisations is to manage the organisation with a full understanding of the culture and not simply try to manage the organisational culture.

However, the similarities in educational backgrounds and job titles between male and female employees in Bahrain, based on this data analysis, can describe the improvements and legal rights for gender equality in Bahraini construction firms. As a result, the organisational culture in Bahraini firms is changing from male dominant to gender equality dominant. Moreover, the data agreed with the literature review on the dominance of control culture in Bahrain. Al-Jalahma (2012) argued in his study that Bahraini culture seems dominated by rational and hierarchical cultures; similarly, Al-Khalifa and Aspinwall (2000), in their research on company organisation in Qatar (a neighbouring country of Bahrain, sharing a similar culture), find that the culture is dominated by rational and hierarchical cultures. Meanwhile, Dedoussis (2004), in his study, finds that organisations in Middle Eastern countries share trust, loyalty, and strong teamwork. It was found in Chapter two that not many studies explore Bahraini culture.

This thesis uses Cameron and Quinn's (2011) Organisational Culture Assessment Instrument (OCAI) and Competing Values Framework (CVF) to measure and understand organisational culture, because it has shown its significance in identifying the relationship between organisational culture characteristics, as well as having its validity tested and verified in other studies (see chapters two and three).

6.3 The relationship between organisational culture and stakeholder engagement

The third phase of this research is to find out the relationship between organisational culture and stakeholder engagement critical success factors (CSFs) in construction firms in Bahrain, using SEM. The findings show that there is a relationship between organisational culture and stakeholder engagement: control culture is the dominant type

that represents Bahraini firms currently, but the findings suggest that the best culture of the current stakeholder engagement in Bahraini firms is compete culture. Likewise, the SEM shows that all stakeholder CSFs are important for the Bahraini firms, but the most important construct is 'project success measures' (PSM).

Chapters one and two discussed both topics from different perspectives. On the one hand, previous studies, for example, Veser (2004), have recommended the need for a potential supporting study on the influences of cultural characteristics on the implementation of stakeholder engagement within an international environment. Likewise, Mok, Shen, and Yang (2015) clarified that many studies focus on the impact of stakeholder engagement in large projects but neglect the influences of culture on stakeholder engagement in international projects. Meding et al. (2013) recommended taking consideration of the demands of corporate culture alongside stakeholder engagement approaches, given the identifiable relationships that are established between the two.

Chapters two and three discussed that many tools and instruments were used to measure organisational culture types, as well as to measure stakeholder engagement CSFs. However, no study has systematically examined the relationship between organisational culture and stakeholder engagement CSFs. The dearth of research in these two areas was one of the main motivators for this research. Therefore, SEM was used in this study, to assess the relationship between each of the constructs (chapter three). SEM has become a widely accepted method in hypothesis evaluation, as well as providing extra functionality and power in regression analysis. Furthermore, SEM objectively scrutinises the connection between many dependent and independent variables of a structural model by fusing both assessment models and structural models in a single analysis.

In conclusion, the analysed SEM data showed that the best culture for current stakeholders in Bahrain is compete culture. This can be supported by the strong relationship between compete culture type and stakeholder CSFs. In addition, this study illustrates that each organisational culture has an influence on stakeholder CSFs. These findings will help increase the possibility of delivering successful construction projects and answer this research's third question.

Chapter 7

Conclusion and Recommendations

7.1 Introduction

This research focused on finding the relationship/influences between organisational culture and stakeholder engagement, especially in stakeholders' critical success factors in construction firms. This summary and conclusion evaluates the study's specific research objectives and questions. Therefore, this chapter will present the conclusion reached by this research and its limitations, as well as recommendations for further studies.

7.2 Summary of the Overall Research

The main aim of this research is to investigate the relationship between organisational culture and stakeholder critical success factors in construction firms. To achieve this research aim, it was necessary to address the following specific research objectives (more details in Chapter one):

1. To critically review previous studies on organisational culture and stakeholder engagement in construction firms.
2. To investigate the current organisational culture and stakeholder CSFs within construction firms.
3. To assess the relationship between organisational culture and stakeholder CSFs within construction firms.
4. To model the relationship between the organisational culture and stakeholder CSFs in construction firms.
5. To develop a comprehensive framework for stakeholder engagement in construction firms.

These objectives inspired by Bahrain's Economic Vision 2030, issued by the government of Bahrain to shift the income from oil wealth to global production. In this context, Bahrain has considered the need to increase the investment of the country by supporting multi-industry global contenders and cultural improvement. In other words, Bahrain will focus more on improving/changing its organisational culture to attract more stakeholders. The literature review shows that there is much research covering the area of organisational culture types and their characteristics. Likewise, it shows that much research discusses stakeholder engagement and identifies and ranks stakeholder critical success factors. Despite an extensive recognition of the relevance of culture in construction firms, as well as widespread acceptance of the presence of stakeholder CSFs in construction firms, the existing literature reveals the lack of systematic study to assess the relationship between organisational culture and stakeholder CSFs in construction firms. Recognising this gap, this thesis focuses on evaluating the attributes of organisational culture and stakeholder CSFs, to ultimately aid in providing a fuller understanding of the relationship/influence of the above-mentioned topics. In addition, this thesis creates awareness regarding the development of improved models of organisational culture and stakeholder CSFs, which can be used by individuals in the field with the aim of assisting them in establishing successful and sustainable construction project management. This study has also empirically evaluated evidence on the impact of organisational culture on stakeholder CSFs to better understand how different culture types can possibly affect stakeholder engagement in construction firms.

A framework has been developed to identify the relationship between organisational culture and stakeholder CSFs. This combined four independent variables and five dependent variables, including constructs for each variable. The five dependent variables described represent the stakeholder critical success factor groups (SPC, SA, SS, SE, PSM), while the four independent variables represent the organisational culture types (control culture, collaborate culture, create culture and compete culture). Moreover, the literature review shows that understanding stakeholder critical success factors in construction is an essential step for managers to manage stakeholders properly. Finding out the influence of culture on each organisation is important to delivering a successful construction project. Therefore, it would be assumed that stakeholder CSFs and culture largely influence the successful delivery of construction projects.

This study applied a quantitative approach by using an online questionnaire survey to collect data and test the hypotheses. The online questionnaire survey was sent to the Ministry of Housing in Bahrain, to distribute to its stakeholders, targeting construction project managers and contractors. The sample consisted of 144 usable responses. A quantitative statistical approach was used to analyse the collected data. IBM SPSS statistics 25.0.0.1 software was used to analyse demographic statistics, and IBM SPSS Amos 25 software was used to test the hypothesised relationship and develop the final framework through the SEM (Structural Equation Modelling) technique.

7.3 Key Findings

The literature review discussed many studies and theories regarding organisational culture and stakeholder engagement. Here, the definition of organisational culture was discussed in the field of construction project management. Based on these discussions, this study adopted Schein's (2017) definition of organisational culture. Chapter two also shows some scholars' points of view on major organisational culture theories. Cameron and Quinn's (2011) Competing Value Framework was adopted as a model to test and evaluate organisational cultures within the selected project. This model has proved a valuable tool to measure and recognise the current organisational culture type and to determine the suitability type for the current environment of the chosen project. This study adopted the model to measure the current organisational culture in Bahrain, and to determine the suitable type for the current environment.

The second section of the literature review focused on stakeholder engagement, in particular its critical success factors in construction firms. The study shows the common stakeholder analysis theories and methods for classifying stakeholders, as well as stakeholder objectives and interests, alongside engagement/empowerment of construction firms. From these theories, the study identifies stakeholder critical success factor characteristics categorised into five main groups. Therefore, a conceptual framework has been developed from the key concept of stakeholder engagement and the organisational culture literature review. This framework was developed to present the relationship between the constructs of organisational culture and the constructs of stakeholder CSFs.

The methodology was designed to test and empirically examine this framework. A quantitative approach with the deductive method has been chosen to measure the relationship between stakeholder and organisational culture variables. A post-positivist philosophy is initiated to accept or reject study hypotheses, and cross-sectional design is used to collect single data. This study used a survey questionnaire with quantitative statistical methods to collect and analyse the data. The questionnaire survey contains three main parts: general background, organisational culture type, and stakeholder CSFs. 144 participants, from stakeholders and construction project managerial levels in the Kingdom of Bahrain, were surveyed. The statistical analysis of this data is divided into three main parts. The first part analyses data through descriptive and inferential statistics, showing that the dominant gender in construction projects in Bahrain is male, and that most high positions and professional roles were given to male employees. Likewise, the data shows the Bahraini government also supports a high-level education background, as most of the participants have Master's and Bachelor's degrees, with high levels of experience. In addition, the data in the first part of the questionnaire suggested that the current culture in Bahrain is slightly changing from male dominant to mixed gender.

The second part discussed the type of organisational culture in Bahrain, which was found to be dominated by a control culture, and is the dominant type of environment for construction projects in Bahrain. Control culture has many characteristics. One of the most fundamental characteristics is a highly formal and structured working environment. This can explain why Bahraini culture is male-dominated, because it is managerial rules-driven. In this type of culture, rules and structured hierarchical managerial layers are essential elements to achieving project success. However, the literature review also identified that there is no 'right culture'. The right culture for a construction project is the type that addresses the challenges and difficulties that the organisation or project faces, which, when solved, can lead the organisation's right direction and strategy. Nor is there a 'best practice'; it is a matter of having a culture type that will align and fits the organisation's existing and future goals, its history, and the type of business that the organisation engages in. Notably, this study identified that 'compete culture' is the most suitable culture for Bahrain stakeholders to increase the success rates of construction projects. Likewise, a *cooperation* culture between control (current culture) and compete

(suggested best culture) is recommended in the meantime, to increase the project success measures construct of stakeholders CSFs in Bahraini construction firms.

Part three of the questionnaire focused on stakeholder critical success factors. Here, the data identified the highest measure ranking of CSFs construct and its characteristics. The highest ranked stakeholder CSF construct in this study is project success measure (PSM) after engaging with stakeholders. This shows that project success is the most important factor for stakeholders in Bahrain, although all construct factors are essential and needed.

This study used structural equation modelling (SEM) to estimate an empirical measure of the relationships between the organisational culture and stakeholder CSFs, to assess how well the theory fits the data and investigate the hypothesised relationship between both sets of constructs. This study identified that eight out of 16 hypotheses are supported by the SEM method, and identified some significant relationships and influences between organisational culture types and stakeholder critical success factors. In addition, this study identified that 'compete culture' is the most suitable culture for Bahrain stakeholders to increase the success rates of construction projects.

In conclusion, this study discovered sets of constructs for stakeholder critical success factors in most construction firms, and ranks them in order of priority: project success measures (PSM), stakeholder satisfaction (SS), stakeholder and project characteristics (SPC), stakeholder dynamics (SD), and stakeholder analysis (SA). Likewise, this study identified the highest characteristics of each CSF set of constructs. Moreover, it also identified the organisational culture type currently used in Bahrain and its individual characteristics. Finally, the study used SEM to measure the relationship between organisational culture types and stakeholder CSF constructs and their influences.

7.4 Contribution to Knowledge

The findings and discussion in this research add to the existing knowledge on both organisational culture and stakeholder engagement with critical success factors. This is the first study in the Middle East that has evaluated the connection between organisational culture and stakeholder CSFs for construction firms. Likewise, it is the first study in the

Middle East to provide the influences of each type of culture on stakeholder CSFs in construction firms.

Second, the findings and discussion provide a significant comprehension of the current culture type for construction firms in Bahrain, and indicate the best type of culture that can be implemented in Bahrain to increase the influence of stakeholders and CSFs. Thus, this study indicates the best organisational culture for Bahrain to manage its stakeholders and support delivering successful construction projects. Moreover, the findings and discussion provide valuable data and scale on organisational culture and stakeholder CSFs that can be used by practitioners and researchers to measure the relationship between organisational culture and stakeholder CSFs in other countries, especially those similar to Bahrain.

7.5 Significance of the Study

This study is the first of its kind to investigate explicitly and empirically the relationship between organisational culture and stakeholder critical success factors for construction firms in the Middle East. Therefore, the findings of this thesis provide a deeper understanding of the current culture type for construction firms in Bahrain, including its stakeholder CSFs, and the best organisational culture for Bahrain to manage its stakeholder CSFs and support delivering successful construction projects. In addition, the significance of the study consists of both theoretical and practical perspectives.

7.5.1 Theoretical Perspectives

None of the initial objectives of this research aimed to develop or revise models of organisational culture types and stakeholder critical success factors. Nevertheless, this study has contributed to a new model for successful construction projects. The research shows that organisational culture type has an influence on stakeholder critical success factors, and that three (collaborate, create, and compete) out of four types of culture have been shown to have an influence on stakeholder CSFs in construction firms in Bahrain.

Stakeholder critical success factors have been found in much research, but it is hard to find any research that attempts to study the influence of culture types on these factors. In

addition, no theoretical framework would rank stakeholder CSFs according to the effect of culture types. The quantitative methodology for both collecting and analysing data used in this study allowed the researcher to assess the relationship between organisational culture and stakeholder CSFs by targeting the managerial level.

This study identified the types of organisational culture that exist in construction firms and identified the influence of their characteristics on stakeholder CSFs, using CVF and SEM. Likewise, this study revalidates and examines the significant use of the CVF model of organisational culture type in the context of construction firms. This study is the first research of its kind in the Middle East to measure the influence and relationship of organisational culture and stakeholder critical success factors in construction projects by using the structural equation modelling (SEM) technique. To conduct the SEM, the author used IBM SPSS Amos 25 to measure the relationship between organisational culture and stakeholder CSFs. One of the specialist features of SPSS Amos is an intuitive graphical interface to test and validate the hypotheses' relationship between both sets of constructs and analyse it.

The online questionnaire proved to be a successful tool for gathering data from a country like Bahrain. Therefore, this study could lead future researchers to use online survey questionnaires to benefit from their advantages of collecting data.

7.5.2 Practical Perspectives

This study raises awareness of the influence of culture on stakeholder critical success factors and the relationship between organisational culture and stakeholder engagement in construction firms.

Second, this study helps deepen the understanding of stakeholder critical success factor characteristics and improve understanding of their effect on stakeholder engagement in construction firms.

Third, the study identifies the importance of measuring organisational culture in construction firms, and the findings show how culture plays a big part in dealing with

stakeholders. The framework identified the dominant culture type in Bahrain as being the most suitable one for influencing stakeholder CSFs. Likewise, it shows the influence of gender in adopting the best organisational culture for construction firms.

Finally, this study established a new understanding of the relationship between organisational culture and stakeholder critical success factors to build better construction project management.

7.6 Study Limitations

One of the possible limitations of this study is 'self-reporting bias'. When data has been collected from participants representing their own organisation, especially at a managerial level, this could cause self-reporting bias (Ahire and Golhar, 1996). To avoid this, it was suggested to obtain multiple responses from each organisation. Therefore, the target was to collect data from managerial level participants from major stakeholders dealing with the government of Bahrain. Nevertheless, the potential for avoiding self-reporting bias is not guaranteed.

Another limitation, which could arise from the first limitation is 'social desirability bias', which happens when some participants try to answer the survey questionnaire with a socially desirable response, rather than saying the reality facing their organisation, especially relating to cultural aspects. Therefore, in this research, the author tried to avoid social desirability bias in the questionnaire survey by clarifying some questions to reduce the likelihood of this happening. Furthermore, the constructs of the hypotheses of this study questionnaire and the relationships among its variables were taken carefully from the literature review and validated before submitting the survey, to mitigate against social desirability bias. Moreover, this study applied a cross-section methodology, which is considered one of the most respected methods for management research.

Due to the complex nature of the questions on organisational culture and stakeholder CSFs, the length of the questionnaire could be considered a limitation. However, the author used an online survey with the option to save and return, to continue answering the questionnaire. The author also tried to use closed-ended Likert questions to reduce the time required to answer the questionnaire.

The results and findings of this study can be generalised in Bahrain, but cannot be fully generalised in other countries because of the complex and context-dependent nature of culture, which is unpredictable and varies from place to place. However, these findings can provide valuable groundwork for future research in the same field.

A final limitation could be the cross-sectional design of this research. This is due to the time limitations for collecting data. Therefore, one of the recommendations is to consider longitudinal designs, to establish the influence of organisational culture on stakeholder critical success factors.

Regardless of the limitations above, this study achieved its objectives and aim of empirically examining the evidence on the relationship between organisational culture and stakeholder CSFs, and their influence on delivering successful construction projects.

7.7 Recommendations for Further Research

Several future research directions can be proposed as a result of this study's findings.

1. This study has measured the relationship between organisational culture and stakeholder critical success factors in construction projects in Bahrain, and is considered the first of its kind. Future research must examine this relationship in other countries, where the dominant culture is different, to compare results.
2. This study has examined the influence of culture on stakeholder management by collecting data from managerial levels, using a survey questionnaire as a quantitative data approach. Future research could use interview methods as a qualitative or mixed methods approach, to identify a bigger picture of this topic.
3. This study measures the relationship between organisational culture types and stakeholder management, especially critical success factors in construction projects. For future research, it will be important to study the relationship between organisational culture on stakeholder management in different aspects, like portfolio, salience, and engagements. This will enable more understanding of the relationship between these two topics.

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Appendix 1 - Survey Questionnaire

Survey Questionnaire

Relationship between organisational cultures and stakeholders success criteria for managing successful construction projects

Page 1: Page 1

Relationship between organisational cultures and stakeholders success criteria for managing successful construction project

This survey is a part of a study that seeks to examine the impact of underlying cultural factors on stakeholder management in order to better understand their influence towards the successful construction of projects. The study will identify the type of organisational culture and stakeholders' critical success factors (CSFs) existing in the Bahraini four governorates (civil centres). It will also enable an analysis of which stakeholders' CSFs are most associated with each type of organisational culture. The results of the study will offer original insight into some of the less understood practical aspects of managing successful construction projects in Bahrain.

The survey comprises four parts:

Part I Profile of your organisation

Part II Organisational culture that exists in your organisation

Part III Stakeholders critical success factors (CSFs) that exist in your organisation

This research is the first of its kind in Bahrain and many future research studies will base their work on the results of this research, I request a very careful, accurate and unbiased response from managers, quality practitioners and the leaders of projects. By completing the survey carefully, you can assist in improving our understanding of managing successful construction projects.

Your responses will remain anonymous but analysed alongside other responses I receive. The findings from the study will support the writing of my PhD thesis and papers.

Thank you in advance for your time and effort. I am extremely grateful for your participation in this study. If you have any questions, please email me.

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Page 2: Part I General and Background Information Survey

This section of the survey seeks to understand the general background of the participant and their organisation. Please select the most appropriate response for each question.

1. What is your gender? * *Required*

- ○ Male
- ○ Female

2. How much work experience do you have working in the construction industry? * *Required*

- ○ Less than 1 year
- ○ 1-3 years
- ○ 3-5 years
- ○ 5-8 years
- ○ Above 8 years

3. How would you classify your professional role? * *Required*

- ○ Architecture
- ○ Client
- ○ Mechanical and electrical (or services) engineer
- ○ Quantity surveyor or costs manager
- ○ Structural engineer
- ○ Other

4. How would you classify your level of workplace responsibility? * *Required*

- Associate Project Manager
- Project Coordinator
- Project Manager
- Project Scheduler
- Senior Project Manager
- Team Assistant
- Other

5. What is your highest level of educational qualification? * *Required*

- Level 8 - Doctoral Degree (eg PhD, DPhil, EdD)
- Level 7 – Master Degree
- Level 6 - Bachelors Degree
- Level 5 - Higher National Diploma
- Level 4 - Certificate of Higher Education
- Others

Page 3: Part II Organisational Culture Survey

This section of the survey explores the types of organisational culture influencing organisations. Organisational culture is examined through six areas that are presented in questions 6 - 11 below.

Please choose the number that most accurately represents your perception of your organisation's culture, where 1 is very low and 6 is very high.

6. **For each statement below, rate it from 1 (very low) to 6 (very high) to reflect your opinion of your organisation's work environment.**

	Work environment ✱ *Required*					
	1 (very low)	2	3	4	5	6 (very high)
It feels like a personal place – it is like an extended family. People seem to share a lot of themselves	○	○	○	○	○	○
It feels like a dynamic and entrepreneurial place – people are willing to stick their necks out and take risks	○	○	○	○	○	○
It feels like a results-oriented place – a major concern getting the job done. People are very competitive and achievement-oriented	○	○	○	○	○	○
It feels like a controlled and structured place – formal procedures generally govern what people do	○	○	○	○	○	○

7. **For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the team leadership style in your organisation.**

	Team leadership ✱ *Required*					
	1 (very low)	2	3	4	5	6 (very high)
Mentoring, facilitating, or nurturing	○	○	○	○	○	○
Entrepreneurial, innovative, or risk-taking	○	○	○	○	○	○

A no-nonsense, aggressive, results-oriented focus	○	○	○	○	○	○
Coordinating, organising, or smooth-running efficiency	○	○	○	○	○	○

8. **For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the task management style in your organisation.**

	Task management * *Required*					
	1 (very low)	2	3	4	5	6 (very high)
Teamwork, consensus, and participation	○	○	○	○	○	○
Individual risk-taking, innovation, freedom, and uniqueness	○	○	○	○	○	○
Hard-driving competitiveness, high demands, and achievement	○	○	○	○	○	○
Security of employment, conformity, predictability, and stability in relationships	○	○	○	○	○	○

9. **For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the main drivers in your organisation.**

	Main drivers * *Required*					
	1 (very low)	2	3	4	5	6 (very high)
Loyalty and mutual trust – commitment to this organisation runs high	○	○	○	○	○	○
Innovation and development – there is an emphasis on being at the cutting edge	○	○	○	○	○	○
Emphasis on achievement and goal accomplishment – aggressiveness and winning are common themes	○	○	○	○	○	○

Formal rules and policies – maintaining a smooth-running organisation is important	○	○	○	○	○	○

10. **For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the strategic emphasis displayed by your organisation.**

	Strategic emphases ✱ *Required*					
	1 (very low)	2	3	4	5	6 (very high)
Human development – high trust, openness, and participation persist	○	○	○	○	○	○
Acquiring new resources and creating new challenges – trying new things and searching for opportunities	○	○	○	○	○	○
Competitive actions and achievement – meeting stretched targets and winning in the marketplace are dominant	○	○	○	○	○	○
Permanence and stability – efficiency, control, and smooth operations are important	○	○	○	○	○	○

11. **For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the success measures in your organisation.**

	Success measures ✱ *Required*					
	1 (very low)	2	3	4	5	6 (very high)
The development of human resources, teamwork, employee commitment, and concern for people.	○	○	○	○	○	○
The basis of having unique or the newest products – it is a product leader and innovator	○	○	○	○	○	○
Winning in the marketplace and outpacing the competition – competitive market leadership is key	○	○	○	○	○	○

Efficiency – dependable delivery, smooth scheduling, and low-cost production are critical	○	○	○	○	○	○

Page 4: Part III Stakeholder Critical Success Factors Survey

This section of the survey explores the critical success factors of construction project stakeholders. Managing critical success factors effectively has the potential to lead to the realisation of a successful construction project.

Please choose the number that most accurately represents your perception of the critical success factors that are most important to your organisation, where 1 is very low and 6 is very high.

12. **For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the most important management strategy your organisation requires before engaging with stakeholders.**

	Stakeholder and Project Characteristics * *Required*					
	1 (very low)	2	3	4	5	6 (very high)
Identifies and lists all project stakeholders	○	○	○	○	○	○
Uses a flexible project organisation that includes stakeholders	○	○	○	○	○	○
Uses a favourable procurement method that includes stakeholders	○	○	○	○	○	○
Determines and assesses the attributes of stakeholders involved in the project, e.g. urgency, power, etc.	○	○	○	○	○	○
Involves relevant stakeholders at project start-up and when making changes.	○	○	○	○	○	○

13. **For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the most important strategy factor your organisation considers when assessing stakeholders.**

Stakeholder Analysis * *Required*

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	1 (very low)	2	3	4	5	6 (very high)
Predicting and mapping stakeholders' behaviours and reactions	○	○	○	○	○	○
Predicting stakeholders' potential influence on each other	○	○	○	○	○	○
Predicting stakeholders' potential influence on the project	○	○	○	○	○	○
Predicting, analysing, and resolving possible conflicts and coalitions among stakeholders	○	○	○	○	○	○

14. **For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the most important strategy your organisation adopts while engaged with stakeholders.**

	Stakeholder Dynamics ✱ *Required*					
	1 (very low)	2	3	4	5	6 (very high)
Managing changes in the project that arise from changes to stakeholders' demands	○	○	○	○	○	○
Managing changes in the project that arise from changes to stakeholders' influence	○	○	○	○	○	○
Managing changes in the project that arise from changes to the relationships among stakeholders	○	○	○	○	○	○
Managing changes in the project that arise from changes to stakeholders' attributes, e.g., urgency, power, etc.	○	○	○	○	○	○

15. **For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the most important strategy your organization adopts to maintain stakeholder relationships.**

	Stakeholder Satisfaction ✱ *Required*

	1 (very low)	2	3	4	5	6 (very high)
Formulating appropriate communication strategies to manage different stakeholders	○	○	○	○	○	○
Keeping and promoting positive relationships among the stakeholders	○	○	○	○	○	○
Taking social responsibility for the project and stakeholders, e.g., paying attention to economic, legal, and environmental issues.	○	○	○	○	○	○
Communicating with stakeholders and providing feedback when needed	○	○	○	○	○	○

16. **For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the criteria follows by your organization to measure the project success after engaging with the stakeholder.**

	Project success measures * *Required*					
	1 (very low)	2	3	4	5	6 (very high)
Completion of project on time	○	○	○	○	○	○
Completion of project on budget	○	○	○	○	○	○
Completion of project to specified standards/quality	○	○	○	○	○	○
Completion of the project to the satisfaction of stakeholders	○	○	○	○	○	○

Page 5: Final page

Thank you very much for taking the time to complete this survey.

The fact that you are reading this message indicates that you have completed the Questionnaire, and that I owe you a debt of thanks.

Your replies to this questionnaire are kept in strict confidence. The name of participating companies are not released or divulged to third parties. Data will be analysed and reported on a group basis.

Once again, I am extremely grateful for your contributing your valuable time, your honest information, and your thoughtful suggestions.

Appendix 2 – Survey Results

Survey Questionnaire - Online Results

Jisc Online surveys

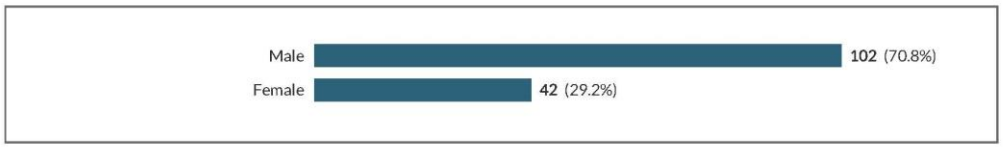
Relationship between organisational cultures and stakeholders success criteria for managing successful construction projects (FINAL)

Showing 144 of 144 responses

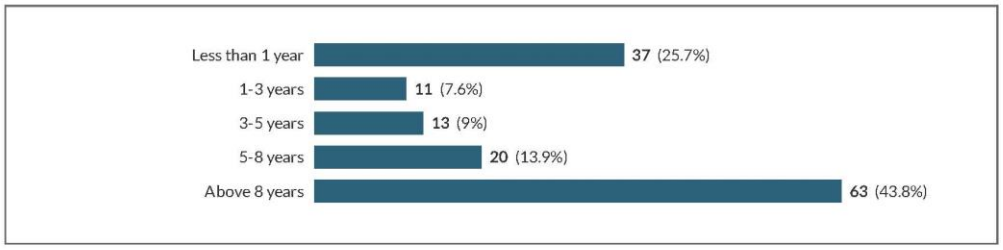
Showing **all** responses
Showing **all** questions
Response rate: 144%

Relationship between organisational cultures and stakeholders success criteria for managing successful construction project

1 What is your gender?

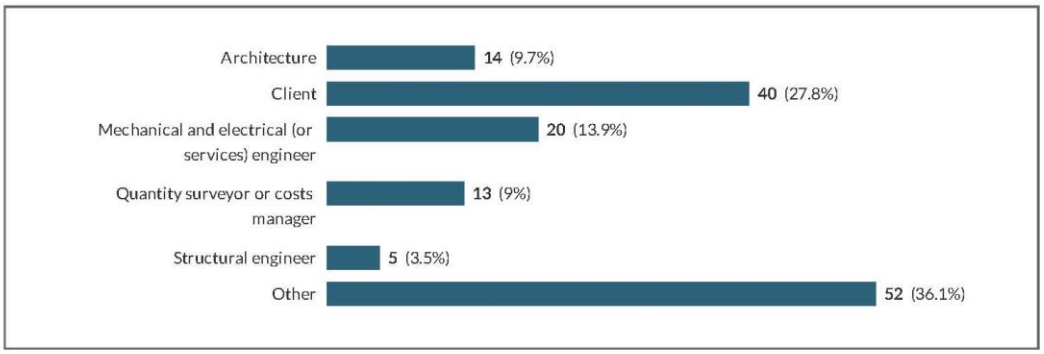


2 How much work experience do you have working in the construction industry?

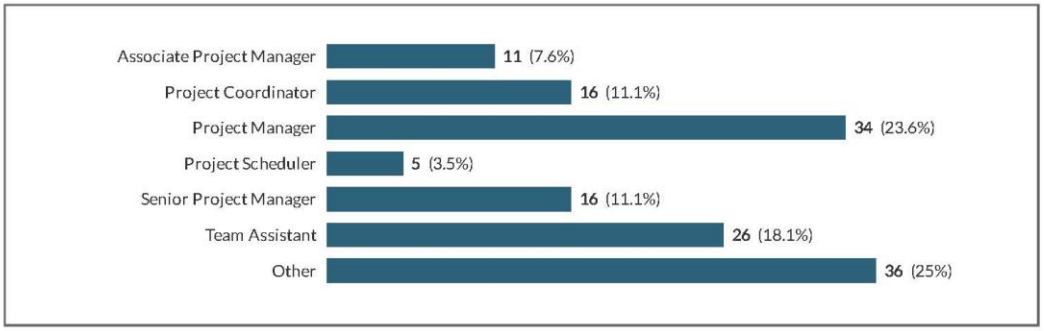


3 How would you classify your professional role?

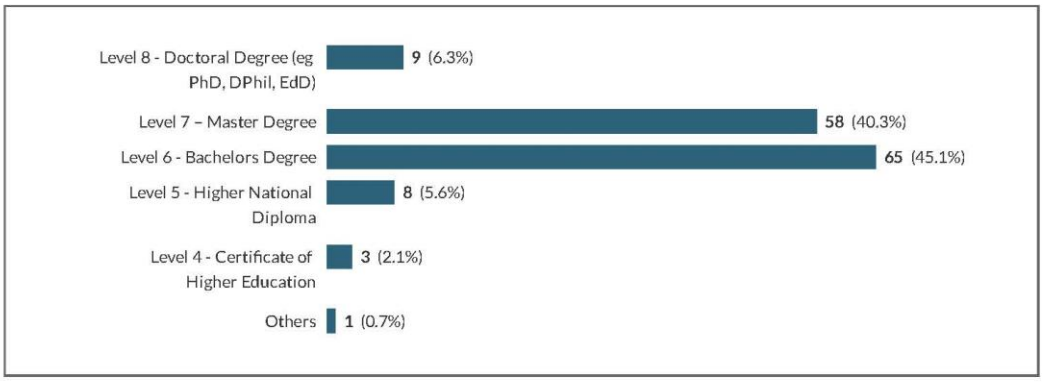
1 / 20



4 How would you classify your level of workplace responsibility?



5 What is your highest level of educational qualification?

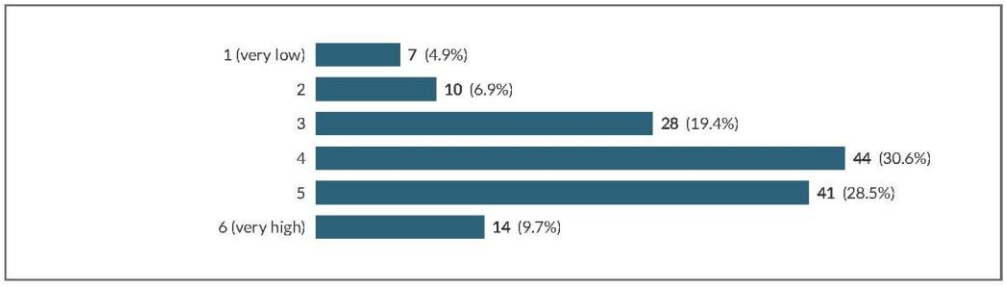


6 For each statement below, rate it from 1 (very low) to 6 (very high) to reflect your opinion of your organisation's work environment.

2 / 20

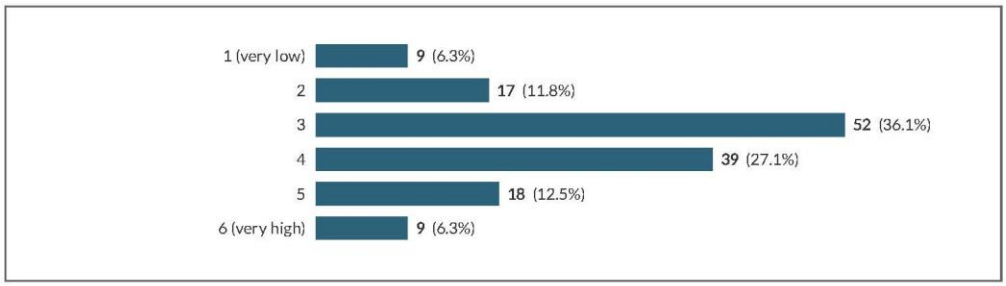
6.1 It feels like a personal place – it is like an extended family. People seem to share a lot of themselves

6.1.a It feels like a personal place – it is like an extended family. People seem to share a lot of themselves - Work environment



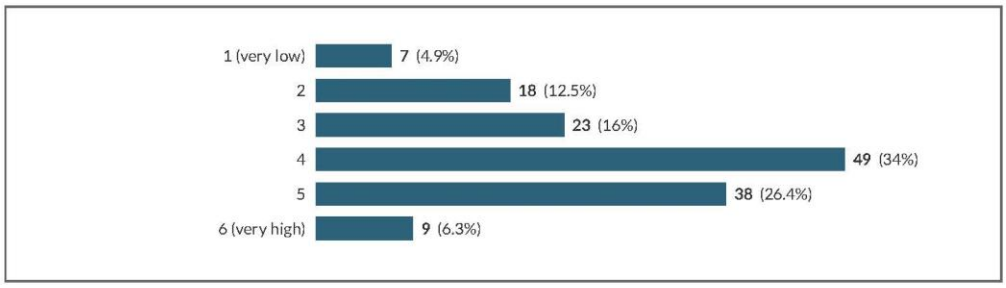
6.2 It feels like a dynamic and entrepreneurial place – people are willing to stick their necks out and take risks

6.2.a It feels like a dynamic and entrepreneurial place – people are willing to stick their necks out and take risks - Work environment



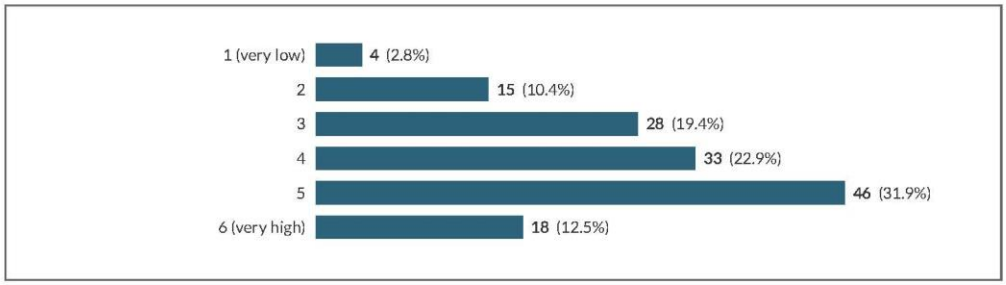
6.3 It feels like a results-oriented place – a major concern getting the job done. People are very competitive and achievement-oriented

6.3.a It feels like a results-oriented place – a major concern getting the job done. People are very competitive and achievement-oriented - Work environment



6.4 It feels like a controlled and structured place – formal procedures generally govern what people do

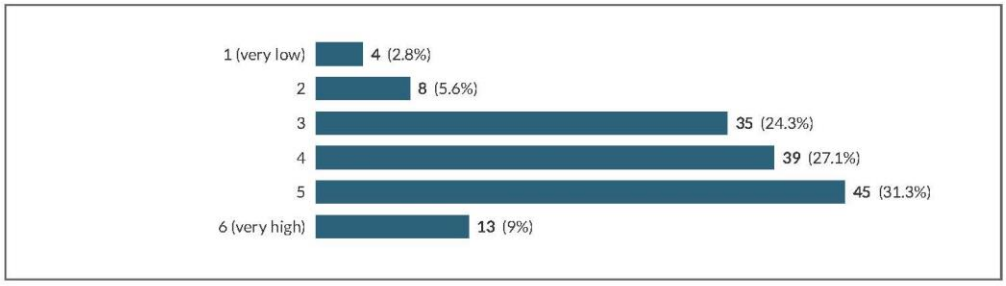
6.4.a It feels like a controlled and structured place – formal procedures generally govern what people do - Work environment



7 For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the team leadership style in your organisation.

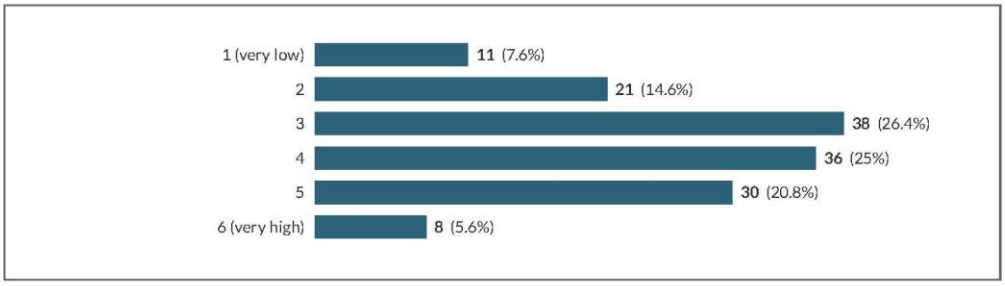
7.1 Mentoring, facilitating, or nurturing

7.1.a Mentoring, facilitating, or nurturing - Team leadership



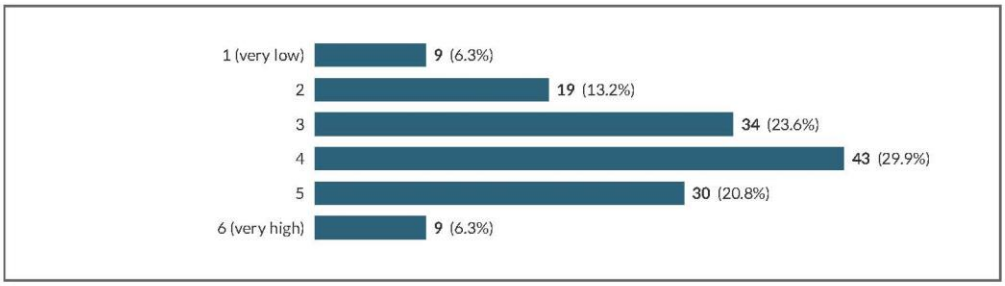
7.2 Entrepreneurial, innovative, or risk-taking

7.2.a Entrepreneurial, innovative, or risk-taking - Team leadership



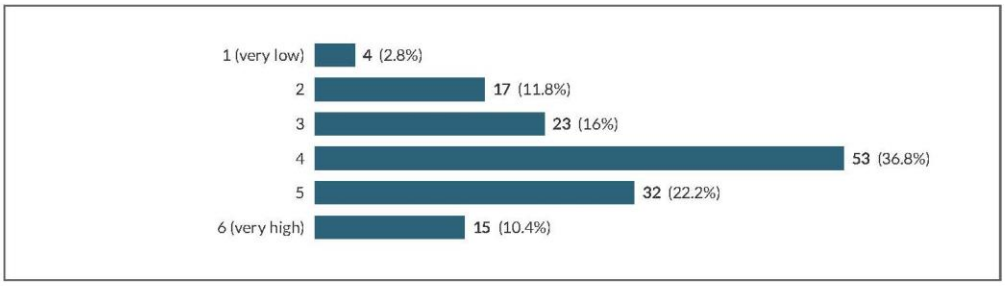
7.3 A no-nonsense, aggressive, results-oriented focus

7.3.a A no-nonsense, aggressive, results-oriented focus - Team leadership



7.4 Coordinating, organising, or smooth-running efficiency

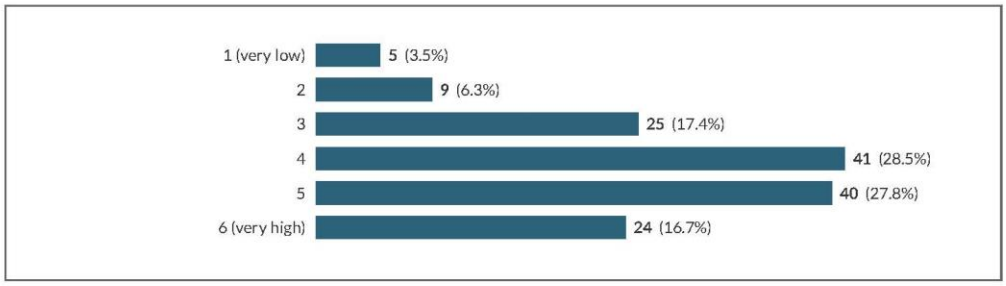
7.4.a Coordinating, organising, or smooth-running efficiency - Team leadership



8 For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the task management style in your organisation.

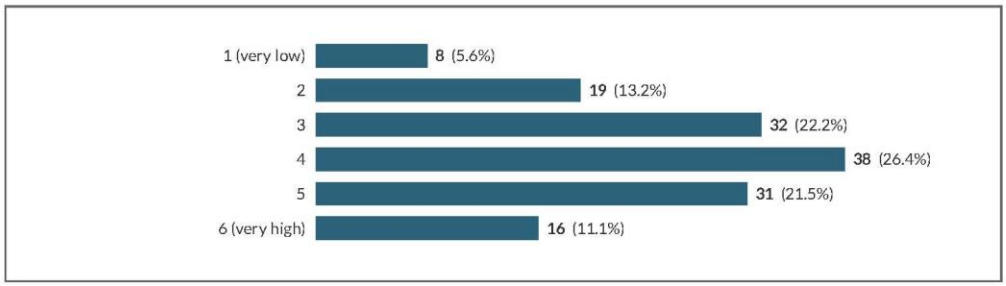
8.1 Teamwork, consensus, and participation

8.1.a Teamwork, consensus, and participation - Task management



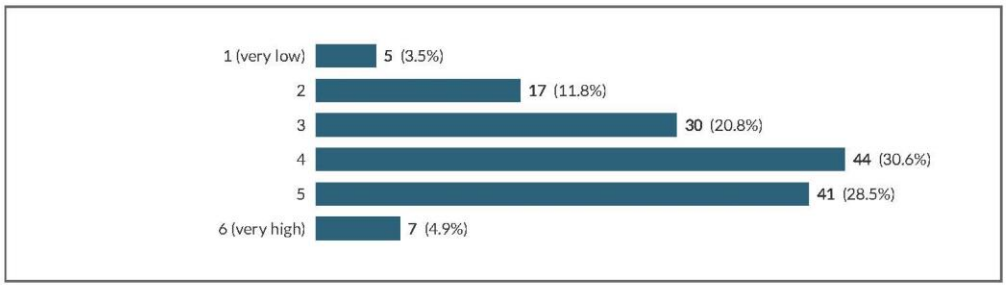
8.2 Individual risk-taking, innovation, freedom, and uniqueness

8.2.a Individual risk-taking, innovation, freedom, and uniqueness - Task management



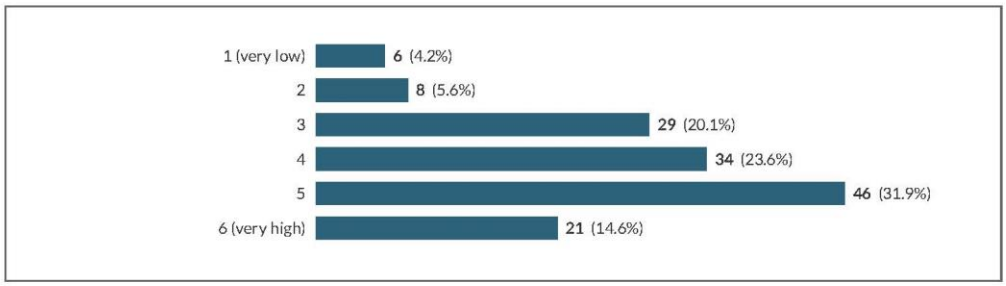
8.3 Hard-driving competitiveness, high demands, and achievement

8.3.a Hard-driving competitiveness, high demands, and achievement - Task management



8.4 Security of employment, conformity, predictability, and stability in relationships

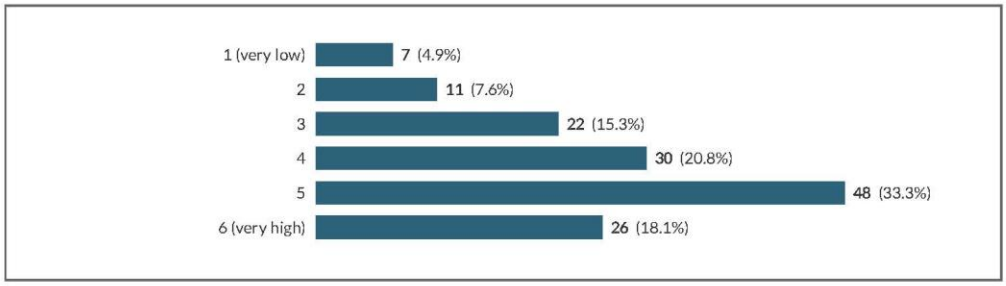
8.4.a Security of employment, conformity, predictability, and stability in relationships - Task management



9 For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the main drivers in your organisation.

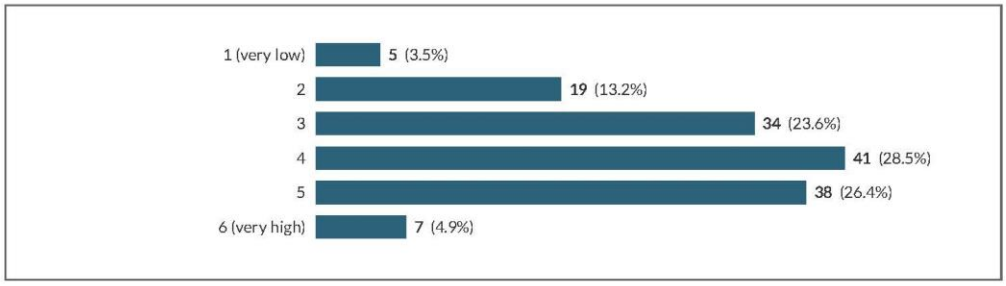
9.1 Loyalty and mutual trust – commitment to this organisation runs high

9.1.a Loyalty and mutual trust – commitment to this organisation runs high - Main drivers



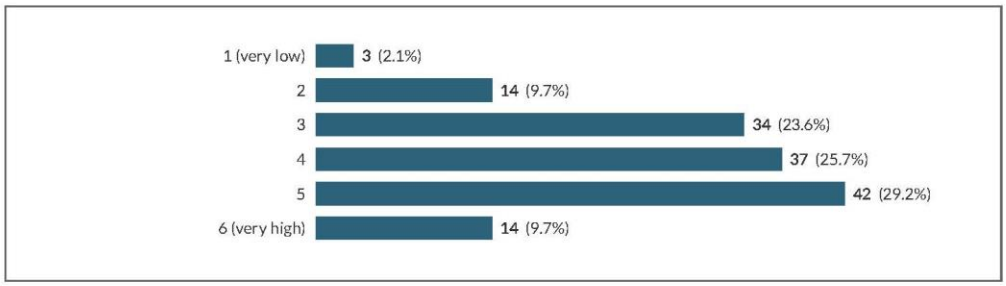
9.2 Innovation and development – there is an emphasis on being at the cutting edge

9.2.a Innovation and development – there is an emphasis on being at the cutting edge - Main drivers



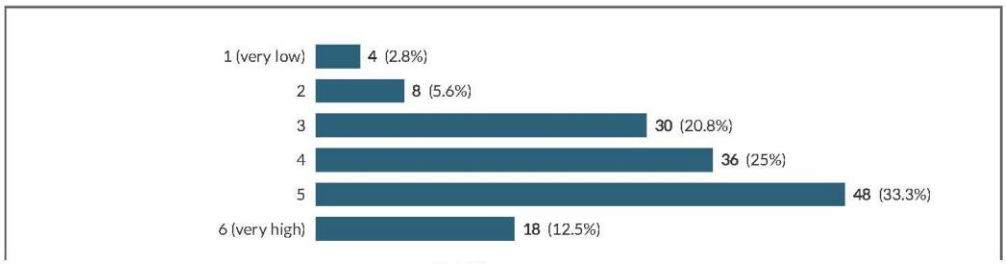
9.3 Emphasis on achievement and goal accomplishment – aggressiveness and winning are common themes

9.3.a Emphasis on achievement and goal accomplishment – aggressiveness and winning are common themes - Main drivers



9.4 Formal rules and policies – maintaining a smooth-running organisation is important

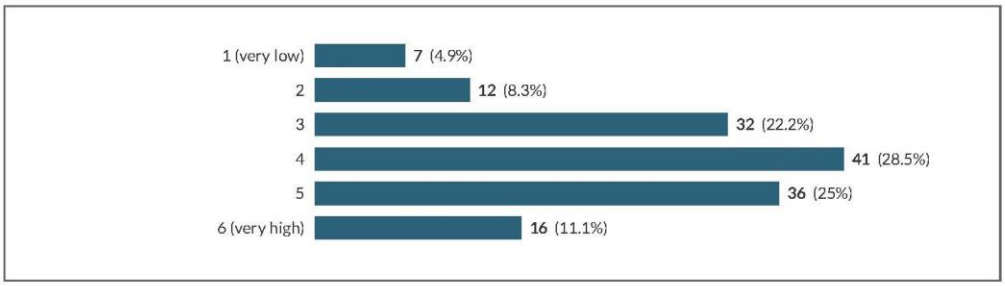
9.4.a Formal rules and policies – maintaining a smooth-running organisation is important - Main drivers



10 For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the strategic emphasis displayed by your organisation.

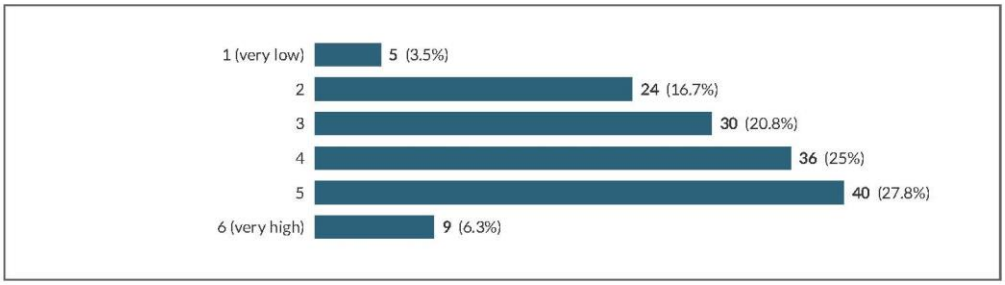
10.1 Human development – high trust, openness, and participation persist

10.1.a Human development – high trust, openness, and participation persist - Strategic emphases



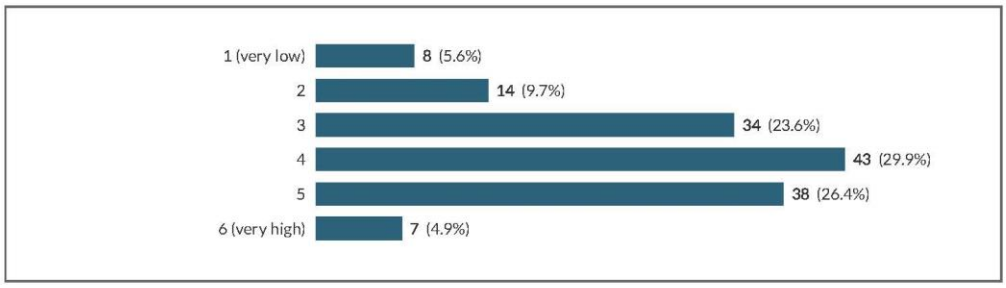
10.2 Acquiring new resources and creating new challenges – trying new things and searching for opportunities

10.2.a Acquiring new resources and creating new challenges – trying new things and searching for opportunities - Strategic emphases



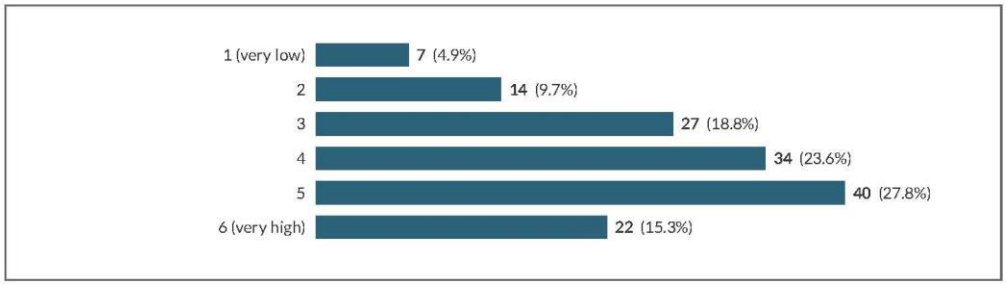
10.3 Competitive actions and achievement – meeting stretched targets and winning in the marketplace are dominant

10.3.a Competitive actions and achievement – meeting stretched targets and winning in the marketplace are dominant - Strategic emphases



10.4 Permanence and stability – efficiency, control, and smooth operations are important

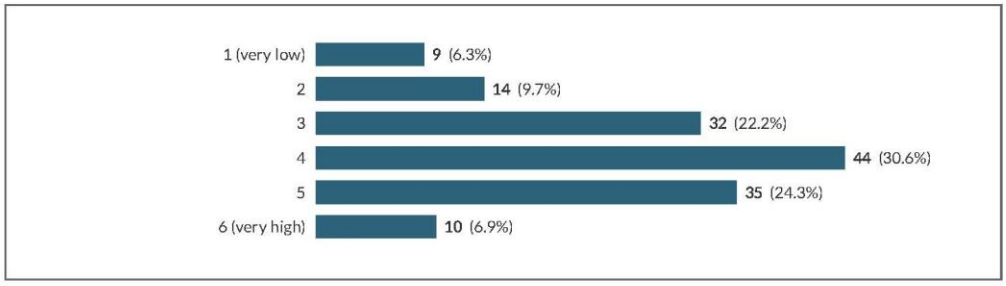
10.4.a Permanence and stability – efficiency, control, and smooth operations are important - Strategic emphases



11 For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the success measures in your organisation.

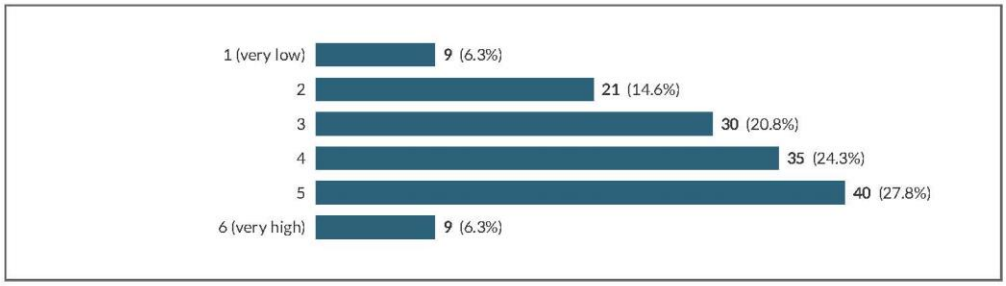
11.1 The development of human resources, teamwork, employee commitment, and concern for people.

11.1.a The development of human resources, teamwork, employee commitment, and concern for people. - Success measures



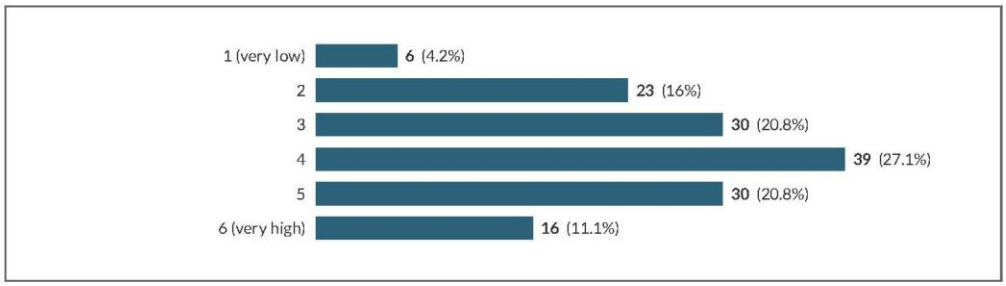
11.2 The basis of having unique or the newest products – it is a product leader and innovator

11.2.a The basis of having unique or the newest products – it is a product leader and innovator - Success measures



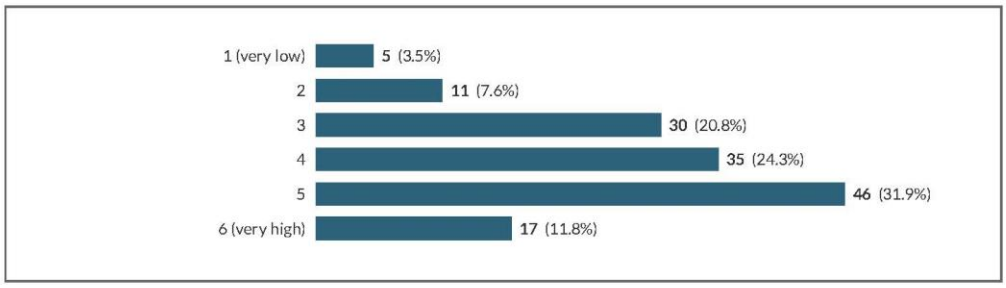
11.3 Winning in the marketplace and outpacing the competition – competitive market leadership is key

11.3.a Winning in the marketplace and outpacing the competition – competitive market leadership is key - Success measures



11.4 Efficiency – dependable delivery, smooth scheduling, and low-cost production are critical

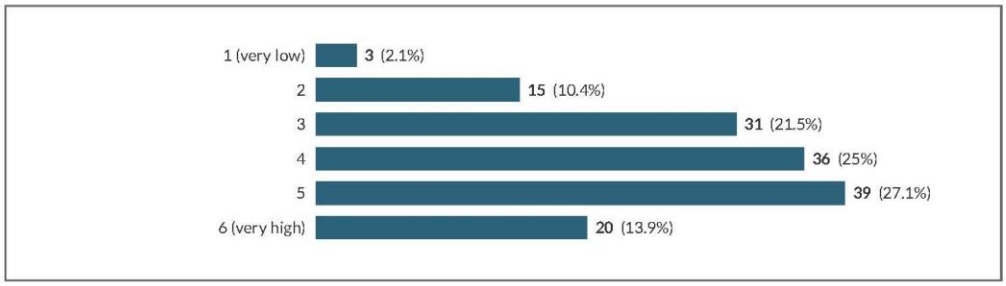
11.4.a Efficiency – dependable delivery, smooth scheduling, and low-cost production are critical - Success measures



12 For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the most important management strategy your organisation requires before engaging with stakeholders.

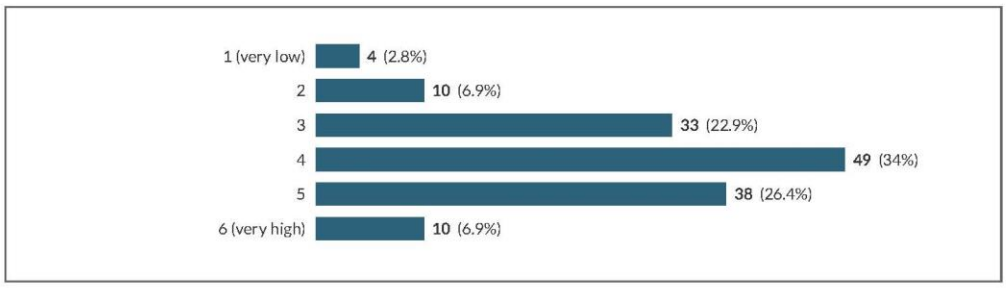
12.1 Identifies and lists all project stakeholders

12.1.a Identifies and lists all project stakeholders - Stakeholder and Project Characteristics



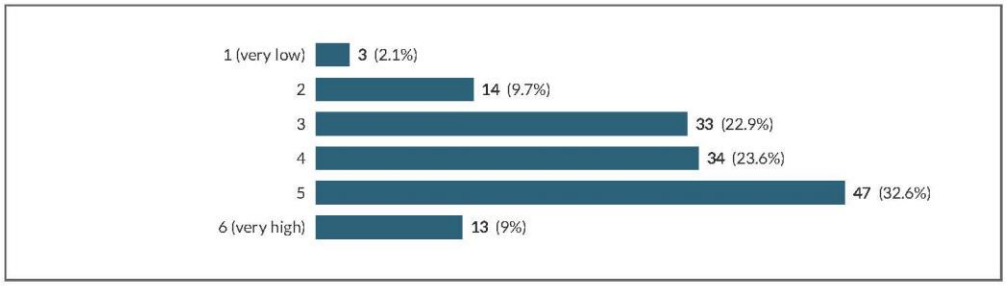
12.2 Uses a flexible project organisation that includes stakeholders

12.2.a Uses a flexible project organisation that includes stakeholders - Stakeholder and Project Characteristics



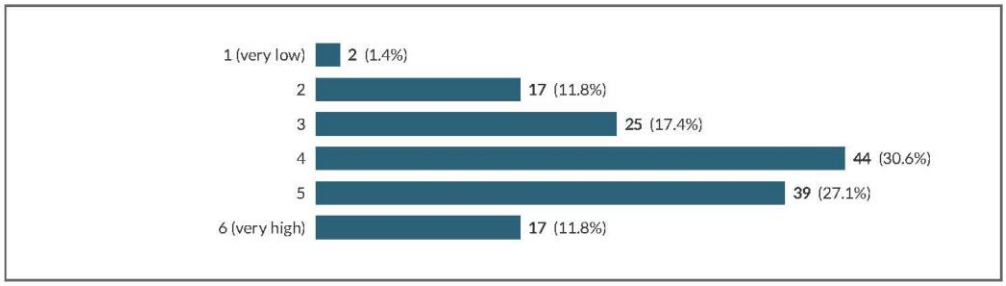
12.3 Uses a favourable procurement method that includes stakeholders

12.3.a Uses a favourable procurement method that includes stakeholders - Stakeholder and Project Characteristics



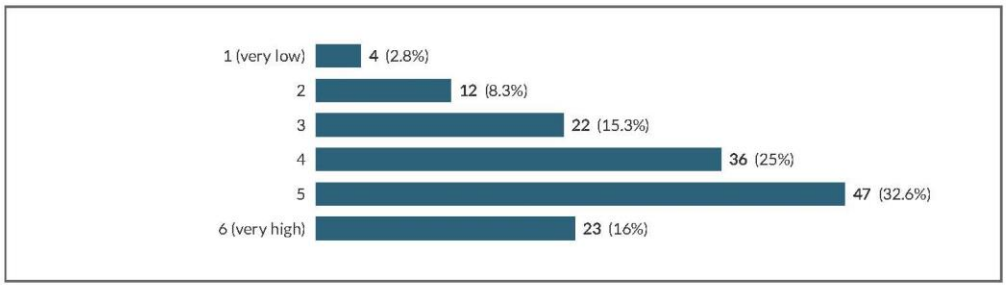
12.4 Determines and assesses the attributes of stakeholders involved in the project, e.g. urgency, power, etc.

12.4.a Determines and assesses the attributes of stakeholders involved in the project, e.g. urgency, power, etc. - Stakeholder and Project Characteristics



12.5 Involves relevant stakeholders at project start-up and when making changes.

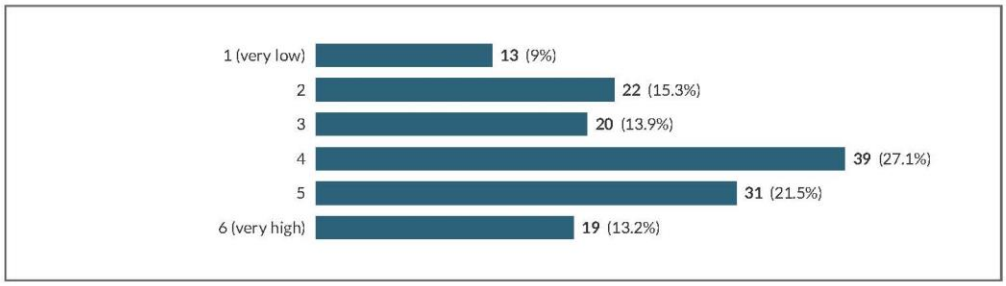
12.5.a Involves relevant stakeholders at project start-up and when making changes. - Stakeholder and Project Characteristics



13 For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the most important strategy factor your organisation considers when assessing stakeholders.

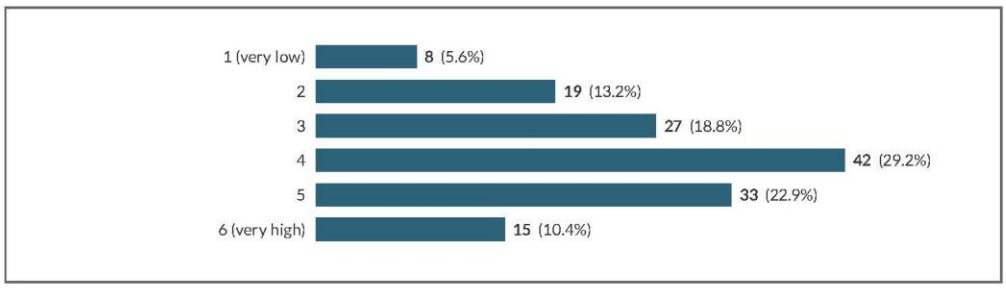
13.1 Predicting and mapping stakeholders' behaviours and reactions

13.1.a Predicting and mapping stakeholders' behaviours and reactions - Stakeholder Analysis



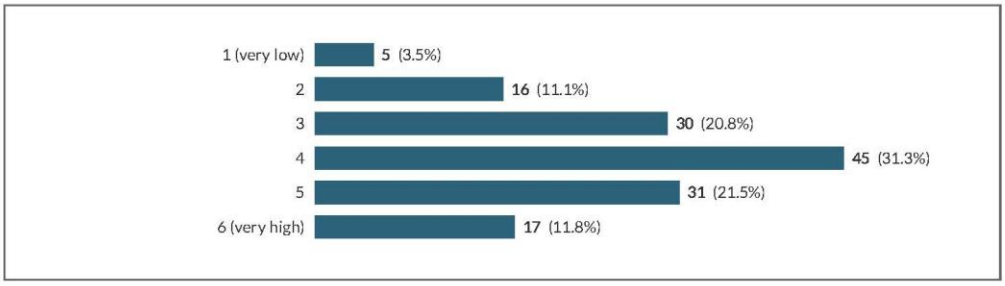
13.2 Predicting stakeholders' potential influence on each other

13.2.a Predicting stakeholders' potential influence on each other - Stakeholder Analysis



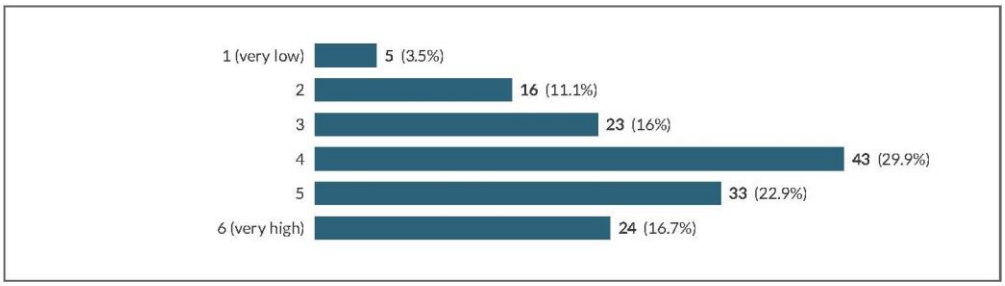
13.3 Predicting stakeholders' potential influence on the project

13.3.a Predicting stakeholders' potential influence on the project - Stakeholder Analysis



13.4 Predicting, analysing, and resolving possible conflicts and coalitions among stakeholders

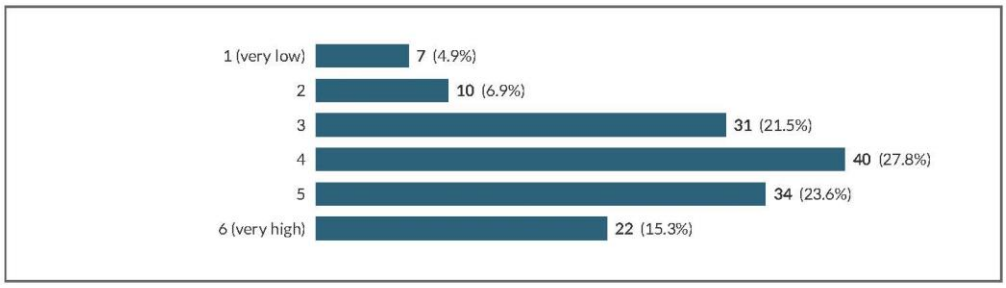
13.4.a Predicting, analysing, and resolving possible conflicts and coalitions among stakeholders - Stakeholder Analysis



14 For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the most important strategy your organisation adopts while engaged with stakeholders.

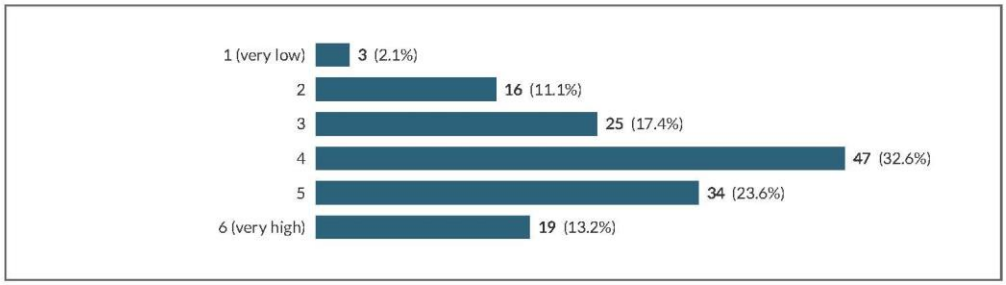
14.1 Managing changes in the project that arise from changes to stakeholders' demands

14.1.a Managing changes in the project that arise from changes to stakeholders' demands - Stakeholder Dynamics



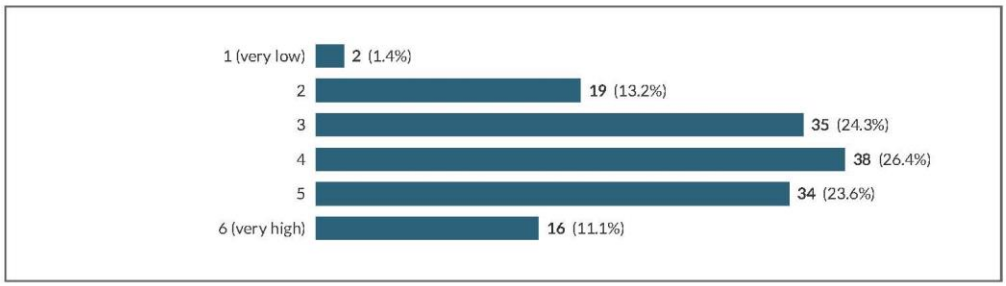
14.2 Managing changes in the project that arise from changes to stakeholders' influence

14.2.a Managing changes in the project that arise from changes to stakeholders' influence - Stakeholder Dynamics



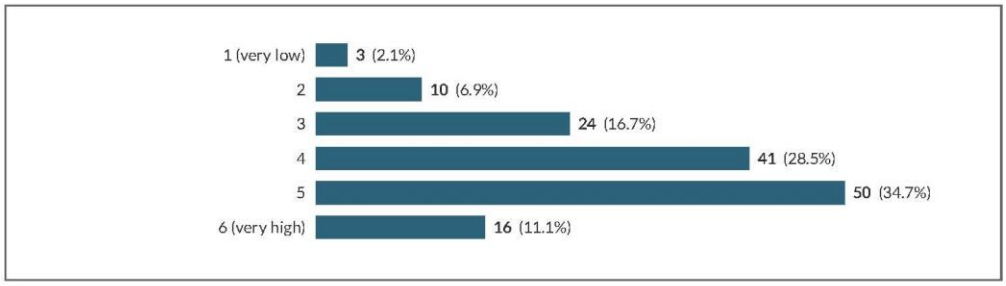
14.3 Managing changes in the project that arise from changes to the relationships among stakeholders

14.3.a Managing changes in the project that arise from changes to the relationships among stakeholders - Stakeholder Dynamics



14.4 Managing changes in the project that arise from changes to stakeholders' attributes, e.g., urgency, power, etc.

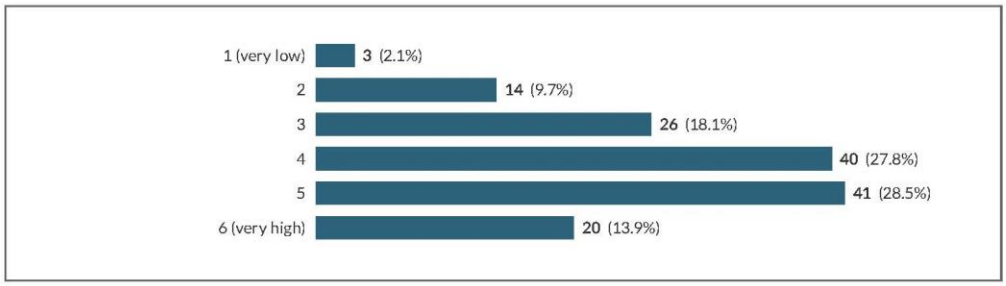
14.4.a Managing changes in the project that arise from changes to stakeholders' attributes, e.g., urgency, power, etc. - Stakeholder Dynamics



15 For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the most important strategy your organization adopts to maintain stakeholder relationships.

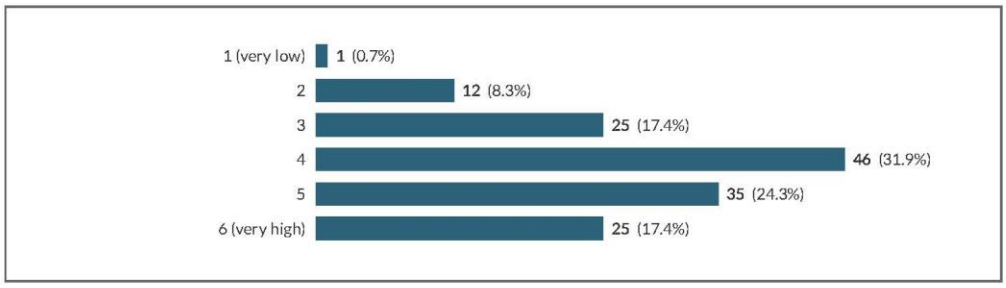
15.1 Formulating appropriate communication strategies to manage different stakeholders

15.1.a Formulating appropriate communication strategies to manage different stakeholders - Stakeholder Satisfaction



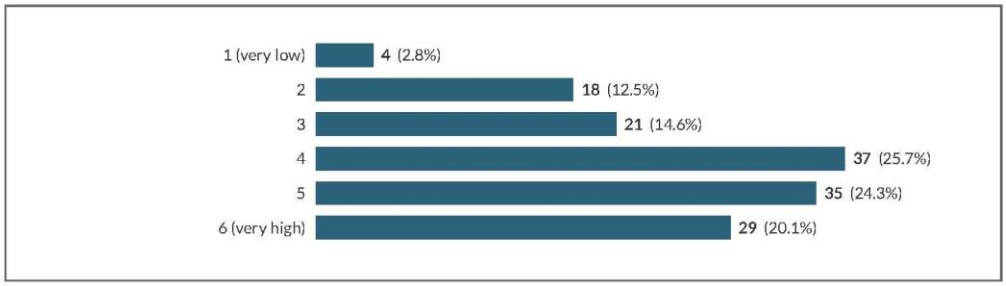
15.2 Keeping and promoting positive relationships among the stakeholders

15.2.a Keeping and promoting positive relationships among the stakeholders - Stakeholder Satisfaction



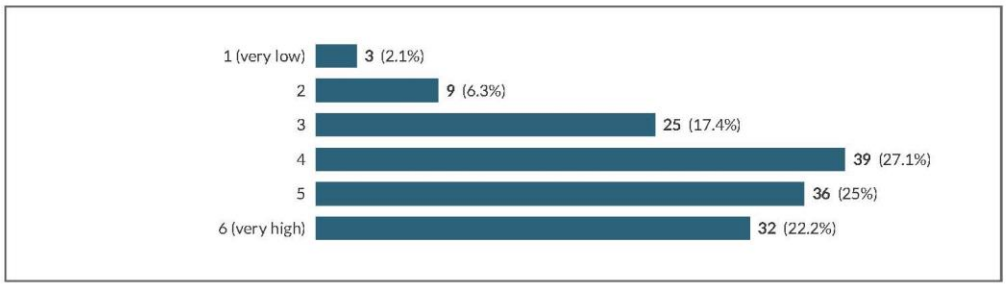
15.3 Taking social responsibility for the project and stakeholders, e.g., paying attention to economic, legal, and environmental issues.

15.3.a Taking social responsibility for the project and stakeholders, e.g., paying attention to economic, legal, and environmental issues. - Stakeholder Satisfaction



15.4 Communicating with stakeholders and providing feedback when needed

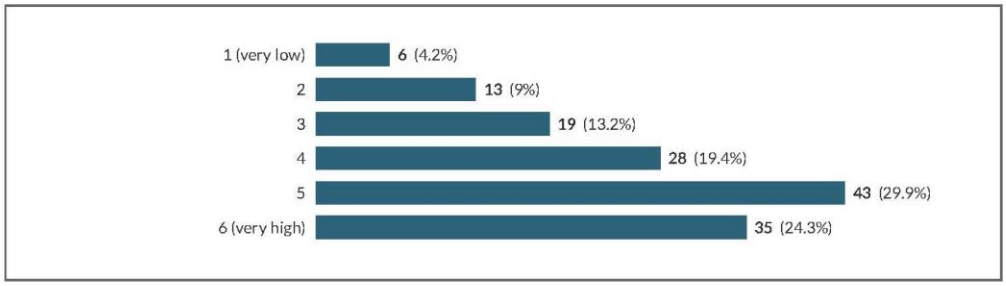
15.4.a Communicating with stakeholders and providing feedback when needed - Stakeholder Satisfaction



16 For each statement below, rate it from 1 (very low) to 6 (very high) to reflect the criteria follows by your organization to measure the project success after engaging with the stakeholder.

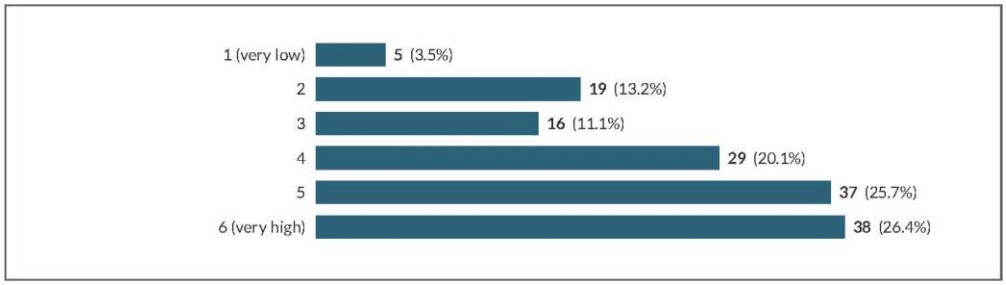
16.1 Completion of project on time

16.1.a Completion of project on time - Project success measures



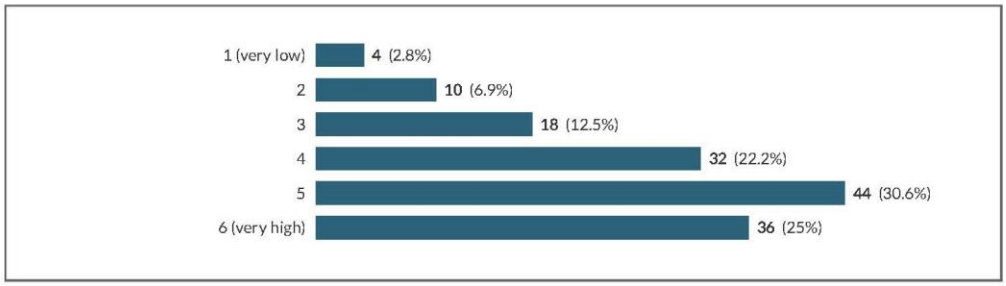
16.2 Completion of project on budget

16.2.a Completion of project on budget - Project success measures



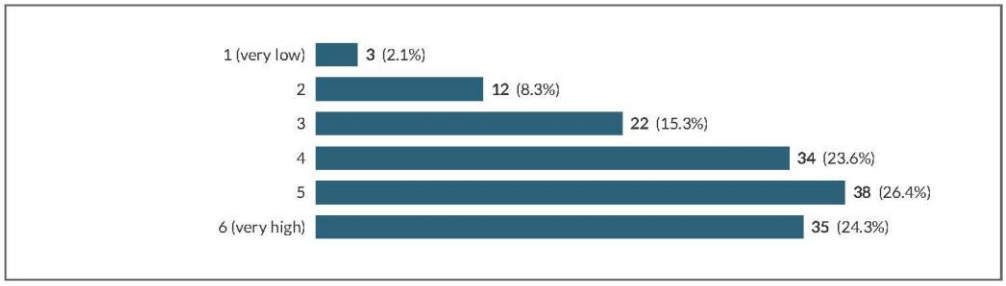
16.3 Completion of project to specified standards/quality

16.3.a Completion of project to specified standards/quality - Project success measures



16.4 Completion of the project to the satisfaction of stakeholders

16.4.a Completion of the project to the satisfaction of stakeholders - Project success measures



Thank you very much for taking the time to complete this survey.

Appendix 3 - Data Variables

Data Variables: SPSS data file - descriptions of the attributes of each variable in the data file

SPSS and Amos

No	Variable name	Short variable description for analysis after normalizing the statements	Full variable description according to questionnaire
1	OCd1A	Collaborate Culture	It feels like a personal place – it is like an extended family. People seem to share a lot of themselves
2	OCd2A		Mentoring, facilitating, or nurturing
3	OCd3A		Teamwork, consensus, and participation
4	OCd4A		Loyalty and mutual trust – commitment to this organisation runs high
5	OCd5A		Human development – high trust, openness, and participation persist - Strategic emphases
6	OCd6A		The development of human resources, teamwork, employee commitment, and concern for people.
7	OCd1B	Create Culture	It feels like a dynamic and entrepreneurial place – people are willing to stick their necks out and take risks - Work environment
8	OCd2B		Entrepreneurial, innovative, or risk-taking - Team leadership
9	OCd3B		Individual risk-taking, innovation, freedom, and uniqueness - Task management
10	OCd4B		Innovation and development – there is an emphasis on being at the cutting edge - Main drivers
11	OCd5B		Acquiring new resources and creating new challenges – trying new things and searching for opportunities - Strategic emphases
12	OCd6B		The basis of having unique or the newest products – it is a product leader and innovator - Success measures
13	OCd1C	Compete Culture	It feels like a results-oriented place – a major concern getting the job done. People are very competitive and achievement-oriented - Work environment
14	OCd2C		A no-nonsense, aggressive, results-oriented focus - Team leadership
15	OCd3C		Hard-driving competitiveness, high demands, and achievement - Task management
16	OCd4C		Emphasis on achievement and goal accomplishment – aggressiveness and winning are common themes - Main drivers
17	OCd5C		Competitive actions and achievement – meeting stretched targets and winning in the marketplace are dominant - Strategic emphases
18	OCd6C		Winning in the marketplace and outpacing the competition – competitive market leadership is key - Success measures

19	OCd1D	Control Culture	It feels like a controlled and structured place – formal procedures generally govern what people do - Work environment
20	OCd2D		Coordinating, organising, or smooth-running efficiency - Team leadership
21	OCd3D		Security of employment, conformity, predictability, and stability in relationships - Task management
22	OCd4D		Formal rules and policies – maintaining a smooth-running organisation is important - Main drivers
23	OCd5D		Permanence and stability – efficiency, control, and smooth operations are important - Strategic emphases
24	OCd6D		Efficiency – dependable delivery, smooth scheduling, and low-cost production are critical - Success measures
25	SPC1	Stakeholder and Project Characteristics	Identifies and lists all project stakeholders
26	SPC2		Uses a flexible project organisation that includes stakeholders
27	SPC3		Uses a favourable procurement method that includes stakeholders
28	SPC4		Determines and assesses the attributes of stakeholders involved in the project, e.g. urgency, power, etc.
29	SPC5		Involves relevant stakeholders at project start-up and when making changes.
30	SA1	Stakeholder Analysis	Predicting and mapping stakeholders' behaviours and reactions
31	SA2		Predicting stakeholders' potential influence on each other
32	SA3		Predicting stakeholders' potential influence on the project
33	SA4		Predicting, analysing, and resolving possible conflicts and coalitions among stakeholders
34	SD1	Stakeholder Dynamics	Managing changes in the project that arise from changes to stakeholders' demands
35	SD2		Managing changes in the project that arise from changes to stakeholders' influence
36	SD3		Managing changes in the project that arise from changes to the relationships among stakeholders
37	SD4		Managing changes in the project that arise from changes to stakeholders' attributes, e.g., urgency, power, etc.
38	SS1	Stakeholder Satisfaction	Formulating appropriate communication strategies to manage different stakeholders
39	SS2		Keeping and promoting positive relationships among the stakeholders
40	SS3		Taking social responsibility for the project and stakeholders, e.g., paying attention to economic, legal, and environmental issues.
41	SS4		Communicating with stakeholders and providing feedback when needed
42	PSM1	Project success measures	Completion of project on time
43	PSM2		Completion of project on budget
44	PSM3		Completion of project to specified standards/quality
45	PSM4		Completion of the project to the satisfaction of stakeholders

Appendix 4 – AMOS Results

Amos Results

Estimates (Group number 1 - Default model)

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
SPC	<---	Collaborate	-.091	.086	-1.054	.292	par_37
SA	<---	Collaborate	-.028	.104	-.269	.788	par_38
PSM	<---	Collaborate	.296	.113	2.634	.008	par_39
SS	<---	Collaborate	.337	.097	3.469	***	par_40
SPC	<---	Create	-.242	.091	-2.647	.008	par_41
SA	<---	Create	-.250	.109	-2.285	.022	par_42
SD	<---	Create	-.576	.112	-5.122	***	par_43
PSM	<---	Create	-.713	.135	-5.273	***	par_44
SPC	<---	Compete	1.763	.260	6.793	***	par_45
SA	<---	Compete	1.977	.292	6.760	***	par_46
SD	<---	Compete	2.137	.305	7.007	***	par_47
SS	<---	Compete	1.818	.263	6.916	***	par_48
PSM	<---	Compete	1.316	.220	5.983	***	par_49
PSM	<---	Control	.379	.189	2.008	.045	par_50
SA	<---	Control	-.139	.167	-.831	.406	par_51
SPC	<---	Control	-.138	.139	-.992	.321	par_52
SD	<---	Collaborate	.045	.093	.483	.629	par_53
SS	<---	Create	-.830	.126	-6.563	***	par_54
SS	<---	Control	-.070	.144	-.484	.628	par_55
SD	<---	Control	-.353	.165	-2.145	.032	par_56
OCd1A	<---	Collaborate	1.000				
OCd2A	<---	Collaborate	.877	.138	6.339	***	par_1
OCd3A	<---	Collaborate	1.067	.153	6.961	***	par_2
OCd4A	<---	Collaborate	1.252	.168	7.453	***	par_3
OCd5A	<---	Collaborate	1.196	.159	7.523	***	par_4
OCd6A	<---	Collaborate	1.066	.154	6.944	***	par_5
OCd1B	<---	Create	1.000				
OCd2B	<---	Create	1.200	.162	7.394	***	par_6
OCd3B	<---	Create	1.150	.165	6.957	***	par_7
OCd4B	<---	Create	1.180	.151	7.802	***	par_8
OCd5B	<---	Create	1.247	.160	7.787	***	par_9
OCd6B	<---	Create	1.211	.165	7.360	***	par_10
OCd1C	<---	Compete	1.000				
OCd2C	<---	Compete	.824	.184	4.468	***	par_11
OCd3C	<---	Compete	1.176	.195	6.017	***	par_12
OCd4C	<---	Compete	1.161	.196	5.908	***	par_13
OCd5C	<---	Compete	1.251	.204	6.140	***	par_14
OCd6C	<---	Compete	1.328	.220	6.033	***	par_15
OCd1D	<---	Control	1.000				
OCd2D	<---	Control	1.701	.384	4.435	***	par_16
OCd3D	<---	Control	1.313	.332	3.951	***	par_17
OCd4D	<---	Control	1.704	.383	4.453	***	par_18
OCd5D	<---	Control	1.941	.435	4.460	***	par_19
OCd6D	<---	Control	1.886	.417	4.525	***	par_20
PMS1	<---	PSM	1.000				
PMS2	<---	PSM	1.028	.080	12.813	***	par_21
PMS3	<---	PSM	.977	.071	13.849	***	par_22
PMS4	<---	PSM	.878	.074	11.854	***	par_23
SS1	<---	SS	1.000				
SS2	<---	SS	.850	.056	15.150	***	par_24
SS3	<---	SS	1.000	.064	15.738	***	par_25
SS4	<---	SS	.974	.057	17.123	***	par_26
SD1	<---	SD	1.000				
SD2	<---	SD	.913	.056	16.438	***	par_27
SD3	<---	SD	.898	.056	16.026	***	par_28
SD4	<---	SD	.815	.053	15.244	***	par_29
SA1	<---	SA	1.000				
SA2	<---	SA	.949	.056	17.099	***	par_30
SA3	<---	SA	.819	.057	14.434	***	par_31
SA4	<---	SA	.779	.063	12.362	***	par_32
SPC1	<---	SPC	1.000				
SPC2	<---	SPC	.832	.065	12.791	***	par_33
SPC3	<---	SPC	.808	.072	11.203	***	par_34
SPC4	<---	SPC	.955	.068	13.950	***	par_35
SPC5	<---	SPC	.904	.074	12.186	***	par_36

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
SPC	<---	Collaborate	-.059
SA	<---	Collaborate	-.016
PSM	<---	Collaborate	.183
SS	<---	Collaborate	.189
SPC	<---	Create	-.151
SA	<---	Create	-.135
SD	<---	Create	-.296
PSM	<---	Create	-.424
SPC	<---	Compete	.932
SA	<---	Compete	.901
SD	<---	Compete	.929
SS	<---	Compete	.832
PSM	<---	Compete	.663
PSM	<---	Control	.148
SA	<---	Control	-.049
SPC	<---	Control	-.056
SD	<---	Collaborate	.024
SS	<---	Create	-.449
SS	<---	Control	-.025
SD	<---	Control	-.119
OCd1A	<---	Collaborate	.658
OCd2A	<---	Collaborate	.616
OCd3A	<---	Collaborate	.690
OCd4A	<---	Collaborate	.753
OCd5A	<---	Collaborate	.763
OCd6A	<---	Collaborate	.688
OCd1B	<---	Create	.655
OCd2B	<---	Create	.724
OCd3B	<---	Create	.673
OCd4B	<---	Create	.775
OCd5B	<---	Create	.773
OCd6B	<---	Create	.720
OCd1C	<---	Compete	.537
OCd2C	<---	Compete	.432
OCd3C	<---	Compete	.661
OCd4C	<---	Compete	.642
OCd5C	<---	Compete	.684
OCd6C	<---	Compete	.664
OCd1D	<---	Control	.404
OCd2D	<---	Control	.722
OCd3D	<---	Control	.531
OCd4D	<---	Control	.732
OCd5D	<---	Control	.736
OCd6D	<---	Control	.777
PMS1	<---	PSM	.853
PMS2	<---	PSM	.847
PMS3	<---	PSM	.888
PMS4	<---	PSM	.808
SS1	<---	SS	.916
SS2	<---	SS	.848
SS3	<---	SS	.862
SS4	<---	SS	.891
SD1	<---	SD	.902
SD2	<---	SD	.887
SD3	<---	SD	.878
SD4	<---	SD	.859
SA1	<---	SA	.888
SA2	<---	SA	.925
SA3	<---	SA	.857
SA4	<---	SA	.790
SPC1	<---	SPC	.866
SPC2	<---	SPC	.823
SPC3	<---	SPC	.761
SPC4	<---	SPC	.863
SPC5	<---	SPC	.801

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
Collaborate	.685	.165	4.148	***	par_57
Create	.637	.152	4.192	***	par_58
Compete	.456	.134	3.400	***	par_59
Control	.273	.117	2.331	.020	par_60
E46	.165	.049	3.380	***	par_61

E47	.368	.079	4.674	***	par_62
E48	.084	.047	1.777	.076	par_63
E49	.151	.051	2.971	.003	par_64
E50	.586	.112	5.230	***	par_65
E4	.819	.124	6.618	***	par_66
E3	.858	.119	7.187	***	par_67
E2	.859	.113	7.604	***	par_68
E1	.899	.122	7.395	***	par_69
E5	.705	.108	6.505	***	par_70
E6	.867	.120	7.202	***	par_71
E10	.589	.087	6.775	***	par_72
E9	1.020	.135	7.539	***	par_73
E8	.831	.115	7.228	***	par_74
E7	.848	.111	7.623	***	par_75
E11	.666	.098	6.796	***	par_76
E12	.867	.119	7.257	***	par_77
E16	.878	.108	8.170	***	par_78
E15	.814	.100	8.139	***	par_79
E14	1.350	.161	8.362	***	par_80
E13	1.127	.136	8.291	***	par_81
E17	.814	.101	8.097	***	par_82
E18	1.021	.126	8.133	***	par_83
E22	.687	.103	6.686	***	par_84
E21	1.200	.153	7.865	***	par_85
E20	.727	.107	6.792	***	par_86
E19	1.400	.172	8.164	***	par_87
E23	.870	.131	6.642	***	par_88
E24	.638	.104	6.112	***	par_89
E25	.543	.078	6.924	***	par_90
E26	.536	.072	7.394	***	par_91
E27	.774	.100	7.768	***	par_92
E28	.509	.073	6.967	***	par_93
E30	.590	.089	6.634	***	par_94
E31	.334	.060	5.551	***	par_95
E32	.534	.075	7.121	***	par_96
E33	.800	.104	7.659	***	par_97
E34	.552	.080	6.899	***	par_98
E35	.547	.076	7.161	***	par_99
E36	.581	.080	7.283	***	par_100
E37	.570	.076	7.478	***	par_101
E38	.420	.066	6.382	***	par_102
E39	.615	.082	7.458	***	par_103
E40	.755	.103	7.328	***	par_104
E41	.538	.077	6.939	***	par_105
E42	.673	.102	6.599	***	par_106
E43	.748	.112	6.693	***	par_107
E44	.463	.079	5.873	***	par_108
E45	.737	.103	7.164	***	par_109
E29	.745	.099	7.558	***	par_110

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
SPC	.899
SA	.833
SD	.965
SS	.931
PSM	.674
SPC5	.641
PMS4	.653
PMS3	.788
PMS2	.718
PMS1	.728
SS4	.793
SS3	.742
SS2	.719
SS1	.838
SD4	.738
SD3	.770
SD2	.786
SD1	.814
SA4	.625
SA3	.734
SA2	.856
SA1	.788

SPC4	.745
SPC3	.579
SPC2	.678
SPC1	.750
OCd6D	.604
OCd5D	.542
OCd1D	.163
OCd2D	.521
OCd3D	.282
OCd4D	.536
OCd6C	.441
OCd5C	.467
OCd1C	.288
OCd2C	.187
OCd3C	.437
OCd4C	.412
OCd6B	.519
OCd5B	.598
OCd1B	.429
OCd2B	.525
OCd3B	.453
OCd4B	.601
OCd6A	.473
OCd5A	.582
OCd1A	.432
OCd2A	.380
OCd3A	.476
OCd4A	.567

Matrices (Group number 1 - Default model)

Implied (for all variables) Covariances (Group number 1 - Default model)

	Control	Compete	Create	Collaborate	SPC	SA	SD	SS	PSM	SPC5	PMS4	PMS3	PMS2	PMS1	SS4	SS3	SS2	SS1	SD4	SD3	SD2	SD1	SA
Control	.273																						
Compete	.000	.456																					
Create	.000	.000	.637																				
Collaborate	.000	.000	.000	.685																			
SPC	-.038	.804	-.154	-.062	1.631																		
SA	-.038	.902	-.159	-.019	1.635	2.196																	
SD	-.097	.975	-.367	.031	1.818	2.032	2.415																
SS	-.019	.830	-.529	.230	1.572	1.768	2.095	2.176															
PSM	.104	.600	-.454	.203	1.135	1.280	1.517	1.529	1.799														
SPC5	-.034	.727	-.139	-.056	1.474	1.478	1.643	1.420	1.026	2.076													
PMS4	.091	.527	-.399	.178	.996	1.124	1.332	1.342	1.579	.900	2.123												
PMS3	.101	.587	-.444	.198	1.110	1.251	1.483	1.495	1.758	1.003	1.543	2.181											
PMS2	.107	.617	-.467	.209	1.167	1.316	1.560	1.572	1.849	1.055	1.623	1.808	2.649										
PMS1	.104	.600	-.454	.203	1.135	1.280	1.517	1.529	1.799	1.026	1.579	1.758	1.849	2.471									
SS4	-.019	.808	-.515	.224	1.530	1.722	2.039	2.119	1.489	1.383	1.307	1.455	1.531	1.489	2.601								
SS3	-.019	.829	-.529	.230	1.572	1.768	2.094	2.176	1.529	1.420	1.342	1.495	1.572	1.529	2.119	2.931							
SS2	-.016	.705	-.449	.196	1.336	1.503	1.781	1.850	1.300	1.207	1.141	1.271	1.337	1.300	1.801	1.850	2.188						
SS1	-.019	.830	-.529	.230	1.572	1.768	2.095	2.176	1.529	1.420	1.342	1.495	1.572	1.529	2.119	2.176	1.850	2.596					
SD4	-.079	.795	-.299	.025	1.482	1.657	1.969	1.708	1.237	1.339	1.086	1.209	1.272	1.237	1.663	1.707	1.452	1.708	2.174				
SD3	-.087	.876	-.330	.028	1.633	1.825	2.169	1.881	1.363	1.475	1.196	1.332	1.401	1.363	1.832	1.881	1.599	1.881	1.768	2.529			
SD2	-.088	.890	-.335	.028	1.660	1.856	2.205	1.913	1.385	1.500	1.216	1.354	1.425	1.385	1.862	1.912	1.626	1.913	1.797	1.980	2.561		
SD1	-.097	.975	-.367	.031	1.818	2.032	2.415	2.095	1.517	1.643	1.332	1.483	1.560	1.517	2.039	2.094	1.781	2.095	1.969	2.169	2.205	2.967	
SA4	-.030	.702	-.124	-.015	1.274	1.711	1.583	1.377	.997	1.151	.875	.975	1.025	.997	1.341	1.377	1.171	1.377	1.290	1.421	1.445	1.583	2.13
SA3	-.031	.738	-.130	-.016	1.339	1.798	1.663	1.447	1.048	1.210	.920	1.024	1.077	1.048	1.409	1.447	1.230	1.447	1.356	1.494	1.519	1.663	1.40
SA2	-.036	.856	-.151	-.018	1.552	2.084	1.929	1.678	1.215	1.402	1.066	1.188	1.249	1.215	1.634	1.678	1.427	1.678	1.572	1.732	1.761	1.929	1.62
SA1	-.038	.902	-.159	-.019	1.635	2.196	2.032	1.768	1.280	1.478	1.124	1.251	1.316	1.280	1.722	1.768	1.503	1.768	1.657	1.825	1.856	2.032	1.71
SPC4	-.036	.768	-.147	-.059	1.557	1.561	1.736	1.501	1.084	1.407	.951	1.060	1.115	1.084	1.461	1.501	1.276	1.501	1.415	1.559	1.585	1.736	1.21
SPC3	-.030	.650	-.124	-.050	1.318	1.322	1.470	1.271	.918	1.191	.805	.897	.944	.918	1.237	1.270	1.080	1.271	1.198	1.320	1.342	1.470	1.03
SPC2	-.031	.669	-.128	-.052	1.356	1.360	1.512	1.307	.944	1.226	.829	.923	.971	.944	1.273	1.307	1.111	1.307	1.233	1.358	1.381	1.512	1.05
SPC1	-.038	.804	-.154	-.062	1.631	1.635	1.818	1.572	1.135	1.474	.996	1.110	1.167	1.135	1.530	1.572	1.336	1.572	1.482	1.633	1.660	1.818	1.27
OCd6D	.515	.000	.000	.000	-.071	-.072	-.182	-.036	.196	-.064	.172	.191	.201	.196	-.035	-.036	-.031	-.036	-.148	-.163	-.166	-.182	-.05
OCd5D	.530	.000	.000	.000	-.073	-.074	-.187	-.037	.201	-.066	.177	.197	.207	.201	-.036	-.037	-.032	-.037	-.153	-.168	-.171	-.187	-.05
OCd1D	.273	.000	.000	.000	-.038	-.038	-.097	-.019	.104	-.034	.091	.101	.107	.104	-.019	-.019	-.016	-.019	-.079	-.087	-.088	-.097	-.03
OCd2D	.465	.000	.000	.000	-.064	-.065	-.164	-.032	.176	-.058	.155	.172	.181	.176	-.032	-.032	-.028	-.032	-.134	-.147	-.150	-.164	-.05
OCd3D	.359	.000	.000	.000	-.049	-.050	-.127	-.025	.136	-.045	.120	.133	.140	.136	-.024	-.025	-.021	-.025	-.103	-.114	-.116	-.127	-.03
OCd4D	.466	.000	.000	.000	-.064	-.065	-.164	-.033	.177	-.058	.155	.173	.182	.177	-.032	-.033	-.028	-.033	-.134	-.148	-.150	-.164	-.05
OCd6C	.000	.606	.000	.000	1.068	1.198	1.295	1.102	.797	.965	.700	.779	.820	.797	1.073	1.102	.936	1.102	1.056	1.163	1.182	1.295	.93
OCd5C	.000	.571	.000	.000	1.006	1.128	1.220	1.038	.751	.909	.659	.734	.772	.751	1.010	1.038	.882	1.038	.994	1.095	1.114	1.220	.87
OCd1C	.000	.456	.000	.000	.804	.902	.975	.830	.600	.727	.527	.587	.617	.600	.808	.829	.705	.830	.795	.876	.890	.975	.70
OCd2C	.000	.376	.000	.000	.663	.743	.803	.683	.495	.599	.434	.483	.509	.495	.665	.683	.581	.683	.655	.722	.734	.803	.57
OCd3C	.000	.536	.000	.000	.946	1.061	1.147	.975	.706	.855	.620	.690	.726	.706	.950	.975	.829	.975	.935	1.030	1.047	1.147	.82

OCd4C	.000	.530	.000	.000	.933	1.047	1.132	.963	.697	.843	.612	.681	.716	.697	.937	.963	.818	.963	.923	1.016	1.033	1.132	.81
OCd6B	.000	.000	.772	.000	-.186	-.193	-.445	-.640	-.550	-.168	-.483	-.537	-.565	-.550	-.623	-.640	-.544	-.640	-.362	-.399	-.406	-.445	-.15
OCd5B	.000	.000	.794	.000	-.192	-.199	-.458	-.659	-.566	-.173	-.497	-.553	-.582	-.566	-.642	-.659	-.560	-.659	-.373	-.411	-.418	-.458	-.15
OCd1B	.000	.000	.637	.000	-.154	-.159	-.367	-.529	-.454	-.139	-.399	-.444	-.467	-.454	-.515	-.529	-.449	-.529	-.299	-.330	-.335	-.367	-.12
OCd2B	.000	.000	.765	.000	-.185	-.191	-.441	-.634	-.545	-.167	-.478	-.533	-.560	-.545	-.618	-.634	-.539	-.634	-.359	-.396	-.402	-.441	-.14
OCd3B	.000	.000	.733	.000	-.177	-.183	-.422	-.608	-.522	-.160	-.459	-.511	-.537	-.522	-.592	-.608	-.517	-.608	-.344	-.379	-.386	-.422	-.14
OCd4B	.000	.000	.752	.000	-.182	-.188	-.433	-.624	-.536	-.164	-.470	-.524	-.551	-.536	-.607	-.624	-.530	-.624	-.353	-.389	-.396	-.433	-.14
OCd6A	.000	.000	.000	.730	-.066	-.020	.033	.246	.216	-.060	.190	.211	.222	.216	.239	.246	.209	.246	.027	.029	.030	.033	-.01
OCd5A	.000	.000	.000	.819	-.074	-.023	.037	.276	.243	-.067	.213	.237	.250	.243	.268	.276	.234	.276	.030	.033	.034	.037	-.01
OCd1A	.000	.000	.000	.685	-.062	-.019	.031	.230	.203	-.056	.178	.198	.209	.203	.224	.230	.196	.230	.025	.028	.028	.031	-.01
OCd2A	.000	.000	.000	.600	-.054	-.017	.027	.202	.178	-.049	.156	.174	.183	.178	.197	.202	.172	.202	.022	.024	.025	.027	-.01
OCd3A	.000	.000	.000	.730	-.066	-.020	.033	.246	.216	-.060	.190	.212	.223	.216	.239	.246	.209	.246	.027	.029	.030	.033	-.01
OCd4A	.000	.000	.000	.857	-.078	-.024	.038	.288	.254	-.070	.223	.248	.261	.254	.281	.288	.245	.288	.031	.035	.035	.038	-.01

Implied (for all variables) Correlations (Group number 1 - Default model)

	Control	Compete	Create	Collaborate	SPC	SA	SD	SS	PSM	SPC5	PMS4	PMS3	PMS2	PMS1	SS4	SS3	SS2	SS1	SD4	SD3	SD2	SD1	SA
Control	1.000																						
Compete	.000	1.000																					
Create	.000	.000	1.000																				
Collaborate	.000	.000	.000	1.000																			
SPC	-.056	.932	-.151	-.059	1.000																		
SA	-.049	.901	-.135	-.016	.864	1.000																	
SD	-.119	.929	-.296	.024	.916	.882	1.000																
SS	-.025	.832	-.449	.189	.834	.809	.914	1.000															
PSM	.148	.663	-.424	.183	.663	.644	.728	.773	1.000														
SPC5	-.045	.747	-.121	-.047	.801	.692	.734	.668	.531	1.000													
PMS4	.119	.535	-.343	.148	.536	.520	.588	.624	.808	.429	1.000												
PMS3	.131	.588	-.376	.162	.588	.572	.646	.686	.888	.471	.717	1.000											
PMS2	.125	.561	-.359	.155	.562	.546	.617	.655	.847	.450	.684	.752	1.000										
PMS1	.126	.565	-.362	.156	.566	.550	.621	.659	.853	.453	.689	.757	.723	1.000									
SS4	-.022	.741	-.400	.168	.743	.720	.814	.891	.688	.595	.556	.611	.583	.587	1.000								
SS3	-.021	.717	-.387	.163	.719	.697	.787	.862	.666	.576	.538	.591	.564	.568	.767	1.000							
SS2	-.021	.706	-.381	.160	.707	.686	.775	.848	.655	.566	.529	.582	.555	.559	.755	.731	1.000						
SS1	-.023	.762	-.411	.173	.764	.740	.837	.916	.708	.612	.572	.628	.600	.604	.815	.789	.776	1.000					
SD4	-.102	.798	-.254	.021	.787	.758	.859	.785	.625	.630	.505	.555	.530	.534	.699	.676	.666	.719	1.000				
SD3	-.104	.815	-.260	.021	.804	.774	.878	.802	.639	.644	.516	.567	.541	.545	.714	.691	.680	.734	.754	1.000			
SD2	-.105	.824	-.262	.021	.812	.782	.887	.810	.646	.651	.522	.573	.547	.551	.722	.698	.687	.742	.762	.778	1.000		
SD1	-.107	.838	-.267	.022	.827	.796	.902	.824	.657	.662	.531	.583	.556	.560	.734	.710	.699	.755	.775	.792	.800	1.000	
SA4	-.039	.712	-.106	-.012	.683	.790	.697	.639	.509	.547	.411	.452	.431	.434	.569	.551	.542	.585	.599	.612	.618	.629	1.00
SA3	-.042	.772	-.115	-.013	.740	.857	.756	.693	.552	.593	.446	.490	.467	.471	.617	.597	.587	.634	.649	.663	.670	.682	.67
SA2	-.045	.833	-.125	-.014	.799	.925	.816	.748	.596	.640	.481	.529	.505	.508	.666	.645	.634	.685	.701	.716	.724	.736	.73
SA1	-.044	.800	-.120	-.014	.767	.888	.783	.718	.572	.614	.462	.508	.484	.488	.639	.619	.609	.657	.673	.687	.695	.707	.70
SPC4	-.049	.805	-.130	-.051	.863	.746	.791	.720	.572	.691	.462	.508	.485	.488	.641	.620	.611	.659	.679	.694	.701	.714	.55
SPC3	-.043	.710	-.115	-.045	.761	.658	.697	.635	.504	.609	.408	.448	.427	.430	.565	.547	.538	.581	.599	.612	.618	.629	.52
SPC2	-.046	.768	-.124	-.048	.823	.712	.754	.687	.546	.659	.441	.484	.462	.466	.612	.592	.582	.629	.648	.662	.669	.681	.56
SPC1	-.049	.808	-.131	-.051	.866	.749	.794	.723	.574	.694	.464	.510	.486	.490	.644	.623	.613	.662	.682	.697	.704	.716	.55
OCd6D	.777	.000	.000	.000	-.044	-.038	-.092	-.019	.115	-.035	.093	.102	.097	.098	-.017	-.017	-.016	-.018	-.079	-.081	-.082	-.083	-.03
OCd5D	.736	.000	.000	.000	-.042	-.036	-.087	-.018	.109	-.033	.088	.097	.092	.093	-.016	-.016	-.015	-.017	-.075	-.077	-.078	-.079	-.02
OCd1D	.404	.000	.000	.000	-.023	-.020	-.048	-.010	.060	-.018	.048	.053	.051	.051	-.009	-.009	-.008	-.009	-.041	-.042	-.043	-.043	-.01
OCd2D	.722	.000	.000	.000	-.041	-.035	-.086	-.018	.107	-.033	.086	.095	.090	.091	-.016	-.015	-.015	-.016	-.074	-.075	-.076	-.077	-.02
OCd3D	.531	.000	.000	.000	-.030	-.026	-.063	-.013	.079	-.024	.063	.070	.067	.067	-.012	-.011	-.011	-.012	-.054	-.055	-.056	-.057	-.02
OCd4D	.732	.000	.000	.000	-.041	-.036	-.087	-.018	.108	-.033	.087	.096	.092	.092	-.016	-.016	-.015	-.017	-.075	-.076	-.077	-.078	-.02
OCd6C	.000	.664	.000	.000	.619	.598	.617	.553	.440	.496	.355	.391	.373	.375	.492	.476	.469	.506	.530	.541	.547	.556	.47
OCd5C	.000	.684	.000	.000	.637	.616	.635	.569	.453	.510	.366	.402	.384	.387	.507	.490	.483	.521	.546	.557	.563	.573	.48
OCd1C	.000	.537	.000	.000	.501	.484	.499	.447	.356	.401	.287	.316	.301	.304	.398	.385	.379	.409	.428	.438	.442	.450	.38
OCd2C	.000	.432	.000	.000	.403	.389	.401	.360	.286	.323	.231	.254	.243	.244	.320	.310	.305	.329	.345	.352	.356	.362	.30
OCd3C	.000	.661	.000	.000	.616	.595	.614	.550	.438	.493	.354	.389	.371	.374	.490	.474	.466	.504	.527	.539	.544	.554	.47
OCd4C	.000	.642	.000	.000	.598	.578	.596	.534	.425	.479	.344	.377	.360	.363	.476	.460	.453	.489	.512	.523	.529	.538	.45
OCd6B	.000	.000	.720	.000	-.109	-.097	-.213	-.323	-.305	-.087	-.247	-.271	-.259	-.261	-.288	-.279	-.274	-.296	-.183	-.187	-.189	-.192	-.07
OCd5B	.000	.000	.773	.000	-.117	-.104	-.229	-.347	-.328	-.094	-.265	-.291	-.278	-.280	-.309	-.299	-.294	-.318	-.197	-.201	-.203	-.206	-.08
OCd1B	.000	.000	.655	.000	-.099	-.088	-.194	-.294	-.278	-.079	-.224	-.247	-.235	-.237	-.262	-.253	-.249	-.269	-.167	-.170	-.172	-.175	-.07
OCd2B	.000	.000	.724	.000	-.109	-.098	-.214	-.325	-.307	-.088	-.248	-.273	-.260	-.262	-.290	-.280	-.276	-.298	-.184	-.188	-.190	-.193	-.07
OCd3B	.000	.000	.673	.000	-.102	-.091	-.199	-.302	-.285	-.081	-.231	-.253	-.242	-.243	-.269	-.260	-.256	-.277	-.171	-.175	-.177	-.180	-.07
OCd4B	.000	.000	.775	.000	-.117	-.104	-.229	-.348	-.329	-.094	-.266	-.292	-.279	-.281	-.310	-.300	-.295	-.319	-.197	-.201	-.203	-.207	-.08
OCd6A	.000	.000	.000	.688	-.040	-.011	.016	.130	.126	-.032	.102	.112	.107	.107	.116	.112	.110	.119	.014	.014	.015	.015	-.00
OCd5A	.000	.000	.000	.763	-.045	-.012	.018	.144	.139	-.036	.113	.124	.118	.119	.128	.124	.122	.132	.016	.016	.016	.016	-.00
OCd1A	.000	.000	.000	.658	-.039	-.010	.016	.124	.120	-.031	.097	.107	.102	.103	.111	.107	.105	.114	.013	.014	.014	.014	-.00
OCd2A	.000	.000	.000	.616	-.036	-.010	.015	.116	.113	-.029	.091	.100	.096	.096	.104	.100	.099	.107	.013	.013	.013	.013	-.00
OCd3A	.000	.000	.000	.690	-.041	-.011	.016	.130	.126	-.032	.102	.112	.107	.108	.116	.112	.110	.119	.014	.014	.015	.015	-.00
OCd4A	.000	.000	.000	.753	-.044	-.012	.018	.142	.138	-.035	.111	.122	.117	.117	.127	.122	.121	.130	.015	.016	.016	.016	-.00

Implied Covariances (Group number 1 - Default model)

	SPC5	PMS4	PMS3	PMS2	PMS1	SS4	SS3	SS2	SS1	SD4	SD3	SD2	SD1	SA4	SA3	SA2	SA1	SPC4	SPC3	SPC2	SPC1	OCd6D	OCd5D	OCd1D	C
SPC5	2.076																								

PMS4	.900	2.123																							
PMS3	1.003	1.543	2.181																						
PMS2	1.055	1.623	1.808	2.649																					
PMS1	1.026	1.579	1.758	1.849	2.471																				
SS4	1.383	1.307	1.455	1.531	1.489	2.601																			
SS3	1.420	1.342	1.495	1.572	1.529	2.119	2.931																		
SS2	1.207	1.141	1.271	1.337	1.300	1.801	1.850	2.188																	
SS1	1.420	1.342	1.495	1.572	1.529	2.119	2.176	1.850	2.596																
SD4	1.339	1.086	1.209	1.272	1.237	1.663	1.707	1.452	1.708	2.174															
SD3	1.475	1.196	1.332	1.401	1.363	1.832	1.881	1.599	1.881	1.768	2.529														
SD2	1.500	1.216	1.354	1.425	1.385	1.862	1.912	1.626	1.913	1.797	1.980	2.561													
SD1	1.643	1.332	1.483	1.560	1.517	2.039	2.094	1.781	2.095	1.969	2.169	2.205	2.967												
SA4	1.151	.875	.975	1.025	.997	1.341	1.377	1.171	1.377	1.290	1.421	1.445	1.583	2.132											
SA3	1.210	.920	1.024	1.077	1.048	1.409	1.447	1.230	1.447	1.356	1.494	1.519	1.663	1.400	2.006										
SA2	1.402	1.066	1.188	1.249	1.215	1.634	1.678	1.427	1.678	1.572	1.732	1.761	1.929	1.623	1.706	2.312									
SA1	1.478	1.124	1.251	1.316	1.280	1.722	1.768	1.503	1.768	1.657	1.825	1.856	2.032	1.711	1.798	2.084	2.787								
SPC4	1.407	.951	1.060	1.115	1.084	1.461	1.501	1.276	1.501	1.415	1.559	1.585	1.736	1.216	1.278	1.482	1.561	1.995							
SPC3	1.191	.805	.897	.944	.918	1.237	1.270	1.080	1.271	1.198	1.320	1.342	1.470	1.030	1.082	1.255	1.322	1.259	1.840						
SPC2	1.226	.829	.923	.971	.944	1.273	1.307	1.111	1.307	1.233	1.358	1.381	1.512	1.059	1.113	1.291	1.360	1.295	1.096	1.664					
SPC1	1.474	.996	1.110	1.167	1.135	1.530	1.572	1.336	1.572	1.482	1.633	1.660	1.818	1.274	1.339	1.552	1.635	1.557	1.318	1.356	2.173				
OCd6D	-.064	.172	.191	.201	.196	-.035	-.036	-.031	-.036	-.148	-.163	-.166	-.182	-.056	-.059	-.068	-.072	-.068	-.057	-.059	-.071	1.610			
OCd5D	-.066	.177	.197	.207	.201	-.036	-.037	-.032	-.037	-.153	-.168	-.171	-.187	-.057	-.060	-.070	-.074	-.070	-.059	-.061	-.073	1.000	1.900		
OCd1D	-.034	.091	.101	.107	.104	-.019	-.019	-.016	-.019	-.079	-.087	-.088	-.097	-.030	-.031	-.036	-.038	-.036	-.030	-.031	-.038	.515	.530	1.674	
OCd2D	-.058	.155	.172	.181	.176	-.032	-.032	-.028	-.032	-.134	-.147	-.150	-.164	-.050	-.053	-.061	-.065	-.061	-.052	-.053	-.064	.877	.902	.465	
OCd3D	-.045	.120	.133	.140	.136	-.024	-.025	-.021	-.025	-.103	-.114	-.116	-.127	-.039	-.041	-.047	-.050	-.047	-.040	-.041	-.049	.677	.696	.359	
OCd4D	-.058	.155	.173	.182	.177	-.032	-.033	-.028	-.033	-.134	-.148	-.150	-.164	-.050	-.053	-.062	-.065	-.061	-.052	-.053	-.064	.879	.904	.466	
OCd6C	.965	.700	.779	.820	.797	1.073	1.102	.936	1.102	1.056	1.163	1.182	1.295	.933	.980	1.137	1.198	1.020	.863	.888	1.068	.000	.000	.000	
OCd5C	.909	.659	.734	.772	.751	1.010	1.038	.882	1.038	.994	1.095	1.114	1.220	.879	.923	1.071	1.128	.961	.813	.837	1.006	.000	.000	.000	
OCd1C	.727	.527	.587	.617	.600	.808	.829	.705	.830	.795	.876	.890	.975	.702	.738	.856	.902	.768	.650	.669	.804	.000	.000	.000	
OCd2C	.599	.434	.483	.509	.495	.665	.683	.581	.683	.655	.722	.734	.803	.579	.608	.705	.743	.633	.536	.551	.663	.000	.000	.000	
OCd3C	.855	.620	.690	.726	.706	.950	.975	.829	.975	.935	1.030	1.047	1.147	.826	.868	1.007	1.061	.903	.764	.787	.946	.000	.000	.000	
OCd4C	.843	.612	.681	.716	.697	.937	.963	.818	.963	.923	1.016	1.033	1.132	.815	.857	.994	1.047	.891	.755	.776	.933	.000	.000	.000	
OCd6B	-.168	-.483	-.537	-.565	-.550	-.623	-.640	-.544	-.640	-.362	-.399	-.406	-.445	-.150	-.158	-.183	-.193	-.178	-.151	-.155	-.186	.000	.000	.000	
OCd5B	-.173	-.497	-.553	-.582	-.566	-.642	-.659	-.560	-.659	-.373	-.411	-.418	-.458	-.155	-.163	-.188	-.199	-.183	-.155	-.160	-.192	.000	.000	.000	
OCd1B	-.139	-.399	-.444	-.467	-.454	-.515	-.529	-.449	-.529	-.299	-.330	-.335	-.367	-.124	-.130	-.151	-.159	-.147	-.124	-.128	-.154	.000	.000	.000	
OCd2B	-.167	-.478	-.533	-.560	-.545	-.618	-.634	-.539	-.634	-.359	-.396	-.402	-.441	-.149	-.156	-.181	-.191	-.176	-.149	-.154	-.185	.000	.000	.000	
OCd3B	-.160	-.459	-.511	-.537	-.522	-.592	-.608	-.517	-.608	-.344	-.379	-.386	-.422	-.143	-.150	-.174	-.183	-.169	-.143	-.147	-.177	.000	.000	.000	
OCd4B	-.164	-.470	-.524	-.551	-.536	-.607	-.624	-.530	-.624	-.353	-.389	-.396	-.433	-.146	-.154	-.178	-.188	-.173	-.147	-.151	-.182	.000	.000	.000	
OCd6A	-.060	.190	.211	.222	.216	.239	.246	.209	.246	.027	.029	.030	.033	-.016	-.017	-.019	-.020	-.063	-.054	-.055	-.066	.000	.000	.000	
OCd5A	-.067	.213	.237	.250	.243	.268	.276	.234	.276	.030	.033	.034	.037	-.018	-.019	-.022	-.023	-.071	-.060	-.062	-.074	.000	.000	.000	
OCd1A	-.056	.178	.198	.209	.203	.224	.230	.196	.230	.025	.028	.028	.031	-.015	-.016	-.018	-.019	-.059	-.050	-.052	-.062	.000	.000	.000	
OCd2A	-.049	.156	.174	.183	.178	.197	.202	.172	.202	.022	.024	.025	.027	-.013	-.014	-.016	-.017	-.052	-.044	-.045	-.054	.000	.000	.000	
OCd3A	-.060	.190	.212	.223	.216	.239	.246	.209	.246	.027	.029	.030	.033	-.016	-.017	-.019	-.020	-.063	-.054	-.055	-.066	.000	.000	.000	
OCd4A	-.070	.223	.248	.261	.254	.281	.288	.245	.288	.031	.035	.035	.038	-.019	-.020	-.023	-.024	-.074	-.063	-.065	-.078	.000	.000	.000	

Implied Correlations (Group number 1 - Default model)

	SPC5	PMS4	PMS3	PMS2	PMS1	SS4	SS3	SS2	SS1	SD4	SD3	SD2	SD1	SA4	SA3	SA2	SA1	SPC4	SPC3	SPC2	SPC1	OCd6D	OCd5D	OCd1D	C
SPC5	1.000																								
PMS4	.429	1.000																							
PMS3	.471	.717	1.000																						
PMS2	.450	.684	.752	1.000																					
PMS1	.453	.689	.757	.723	1.000																				
SS4	.595	.556	.611	.583	.587	1.000																			
SS3	.576	.538	.591	.564	.568	.767	1.000																		
SS2	.566	.529	.582	.555	.559	.755	.731	1.000																	
SS1	.612	.572	.628	.600	.604	.815	.789	.776	1.000																
SD4	.630	.505	.555	.530	.534	.699	.676	.666	.719	1.000															
SD3	.644	.516	.567	.541	.545	.714	.691	.680	.734	.754	1.000														
SD2	.651	.522	.573	.547	.551	.722	.698	.687	.742	.762	.778	1.000													
SD1	.662	.531	.583	.556	.560	.734	.710	.699	.755	.775	.792	.800	1.000												
SA4	.547	.411	.452	.431	.434	.569	.551	.542	.585	.599	.612	.618	.629	1.000											
SA3	.593	.446	.490	.467	.471	.617	.597	.587	.634	.649	.663	.670	.682	.677	1.000										
SA2	.640	.481	.529	.505	.508	.666	.645	.634	.685	.701	.716	.724	.736	.731	.792	1.000									
SA1	.614	.462	.508	.484	.488	.639	.619	.609	.657	.673	.687	.695	.707	.702	.760	.821	1.000								
SPC4	.691	.462	.508	.485	.488	.641	.620	.611	.659	.679	.694	.701	.714	.590	.639	.690	.662	1.000							
SPC3	.609	.408	.448	.427	.430	.565	.547	.538	.581	.599	.612	.618	.629	.520	.563	.608	.584	.657	1.000						
SPC2	.659	.441	.484	.462	.466	.612	.592	.582	.629	.648	.662	.669	.681	.562	.609	.658	.632	.711	.627	1.000					
SPC1	.694	.464	.510	.486	.490	.644	.623	.613	.662	.682	.697	.704	.716	.592	.641	.692	.665	.748	.659	.713	1.000				
OCd6D	-.035	.093	.102	.097	.098	-.017	-.017	-.016	-.018	-.079	-.081	-.082	-.083	-.030	-.033	-.035	-.034	-.038	-.033	-.036	-.038	1.000			
OCd5D	-.033	.088	.097	.092	.093	-.016	-.016	-.015	-.017	-.075	-.077	-.078	-.079	-.029	-.031	-.033	-.032	-.036	-.032	-.034	-.036	.572	1.000		
OCd1D	-.018	.048	.053	.051	.051	-.009	-.009	-.008	-.009	-.041	-.042	-.043	-.043	-.016	-.017	-.018	-.018	-.020	-.017	-.019	-.020	.314	.297	1.000	
OCd2D	-.033	.086	.095	.090	.091	-.016	-.015	-.015	-.016	-.074	-.075	-.076	-.077	-.028	-.030	-.033	-.031	-.035	-.031	-.034	-.035	.561	.531	.292	
OCd3D	-.024	.063	.070	.067	.067	-.012	-.011	-.011	-.012	-.054	-.055	-.056	-.057	-.021	-.022	-.024	-.023	-.026	-.023	-.025	-.026	.413	.391	.215	
OCd4D	-.033	.087	.096	.092	.092	-.016	-.016	-.015	-.017	-.075	-.076	-.077	-.078	-.028	-.031	-.033	-.032	-.036	-.031	-.034	-.036	.569	.539	.296	

OCd6C	.496	.355	.391	.373	.375	.492	.476	.469	.506	.530	.541	.547	.556	.473	.512	.553	.531	.534	.471	.510	.536	.000	.000	.000
OCd5C	.510	.366	.402	.384	.387	.507	.490	.483	.521	.546	.557	.563	.573	.487	.528	.570	.547	.550	.485	.525	.552	.000	.000	.000
OCd1C	.401	.287	.316	.301	.304	.398	.385	.379	.409	.428	.438	.442	.450	.382	.414	.447	.429	.432	.381	.412	.434	.000	.000	.000
OCd2C	.323	.231	.254	.243	.244	.320	.310	.305	.329	.345	.352	.356	.362	.308	.333	.360	.346	.348	.307	.332	.349	.000	.000	.000
OCd3C	.493	.354	.389	.371	.374	.490	.474	.466	.504	.527	.539	.544	.554	.471	.510	.551	.529	.532	.469	.507	.534	.000	.000	.000
OCd4C	.479	.344	.377	.360	.363	.476	.460	.453	.489	.512	.523	.529	.538	.457	.495	.535	.513	.516	.455	.493	.518	.000	.000	.000
OCd6B	-.087	-.247	-.271	-.259	-.261	-.288	-.279	-.274	-.296	-.183	-.187	-.189	-.192	-.077	-.083	-.090	-.086	-.094	-.083	-.090	-.094	.000	.000	.000
OCd5B	-.094	-.265	-.291	-.278	-.280	-.309	-.299	-.294	-.318	-.197	-.201	-.203	-.206	-.082	-.089	-.096	-.092	-.101	-.089	-.096	-.101	.000	.000	.000
OCd1B	-.079	-.224	-.247	-.235	-.237	-.262	-.253	-.249	-.269	-.167	-.170	-.172	-.175	-.070	-.076	-.082	-.078	-.085	-.075	-.081	-.086	.000	.000	.000
OCd2B	-.088	-.248	-.273	-.260	-.262	-.290	-.280	-.276	-.298	-.184	-.188	-.190	-.193	-.077	-.084	-.090	-.087	-.094	-.083	-.090	-.095	.000	.000	.000
OCd3B	-.081	-.231	-.253	-.242	-.243	-.269	-.260	-.256	-.277	-.171	-.175	-.177	-.180	-.072	-.078	-.084	-.080	-.088	-.077	-.084	-.088	.000	.000	.000
OCd4B	-.094	-.266	-.292	-.279	-.281	-.310	-.300	-.295	-.319	-.197	-.201	-.203	-.207	-.082	-.089	-.097	-.093	-.101	-.089	-.096	-.101	.000	.000	.000
OCd6A	-.032	.102	.112	.107	.107	.116	.112	.110	.119	.014	.014	.015	.015	-.008	-.009	-.010	-.010	-.035	-.031	-.033	-.035	.000	.000	.000
OCd5A	-.036	.113	.124	.118	.119	.128	.124	.122	.132	.016	.016	.016	.016	-.009	-.010	-.011	-.011	-.039	-.034	-.037	-.039	.000	.000	.000
OCd1A	-.031	.097	.107	.102	.103	.111	.107	.105	.114	.013	.014	.014	.014	-.008	-.009	-.009	-.009	-.033	-.029	-.032	-.033	.000	.000	.000
OCd2A	-.029	.091	.100	.096	.096	.104	.100	.099	.107	.013	.013	.013	.013	-.008	-.008	-.009	-.009	-.031	-.028	-.030	-.031	.000	.000	.000
OCd3A	-.032	.102	.112	.107	.108	.116	.112	.110	.119	.014	.014	.015	.015	-.008	-.009	-.010	-.010	-.035	-.031	-.033	-.035	.000	.000	.000
OCd4A	-.035	.111	.122	.117	.117	.127	.122	.121	.130	.015	.016	.016	.016	-.009	-.010	-.011	-.010	-.038	-.034	-.036	-.038	.000	.000	.000

Residual Covariances (Group number 1 - Default model)

	SPC5	PMS4	PMS3	PMS2	PMS1	SS4	SS3	SS2	SS1	SD4	SD3	SD2	SD1	SA4	SA3	SA2	SA1	SPC4	SPC3	SPC2	SPC1	OCd6D	OCd5D	OC
SPC5	-.434																							
PMS4	-.157	-.349																						
PMS3	-.378	-.365	-.433																					
PMS2	-.372	-.451	-.420	-.479																				
PMS1	-.332	-.457	-.473	-.414	-.453																			
SS4	-.464	-.270	-.553	-.695	-.452	-.962																		
SS3	-.558	-.334	-.710	-.936	-.629	-.911	-1.015																	
SS2	-.513	-.267	-.487	-.580	-.518	-.808	-.867	-.733																
SS1	-.527	-.374	-.566	-.673	-.406	-.994	-1.100	-.851	-1.015															
SD4	-.458	-.354	-.600	-.528	-.369	-.723	-.796	-.755	-.740	-.791														
SD3	-.620	-.371	-.707	-.866	-.644	-.954	-.984	-.814	-1.023	-.861	-.960													
SD2	-.712	-.474	-.575	-.701	-.462	-.980	-.996	-.760	-.994	-1.007	-.921	-.993												
SD1	-.723	-.389	-.710	-.760	-.559	-1.046	-1.046	-.887	-.954	-.991	-1.088	-1.012	-1.191											
SA4	-.183	-.146	-.301	-.243	-.281	-.401	-.424	-.466	-.498	-.312	-.498	-.573	-.669	-.326										
SA3	-.412	-.181	-.201	-.378	-.199	-.562	-.593	-.586	-.506	-.492	-.591	-.494	-.695	-.373	-.360									
SA2	-.407	-.375	-.487	-.659	-.548	-.720	-.738	-.538	-.801	-.675	-.602	-.635	-.886	-.408	-.395	-.484								
SA1	-.233	-.335	-.511	-.696	-.497	-.851	-.743	-.650	-.732	-.623	-.693	-.686	-.800	-.505	-.470	-.467	-.537							
SPC4	-.448	-.284	-.432	-.500	-.326	-.730	-.621	-.573	-.640	-.544	-.679	-.726	-.759	-.151	-.343	-.347	-.389	-.485						
SPC3	-.411	-.355	-.545	-.554	-.362	-.688	-.656	-.543	-.558	-.487	-.526	-.697	-.811	-.184	-.365	-.362	-.324	-.413	-.347					
SPC2	-.401	-.311	-.553	-.435	-.309	-.632	-.493	-.482	-.523	-.542	-.619	-.622	-.719	-.319	-.367	-.432	-.330	-.480	-.283	-.368				
SPC1	-.461	-.339	-.423	-.534	-.136	-.648	-.547	-.635	-.489	-.675	-.759	-.739	-.744	-.369	-.389	-.534	-.565	-.498	-.445	-.437	-.532			
OCd6D	.681	.406	.566	.625	.565	.748	.750	.718	.907	.748	.748	.794	.921	.848	.837	.904	.843	.702	.660	.779	.781	.000		
OCd5D	.594	.324	.410	.582	.300	.434	.507	.560	.690	.690	.687	.752	.928	.650	.766	.719	.899	.539	.627	.702	.597	-.005	.000	
OCd1D	.208	.149	.242	.146	.208	.227	.207	.240	.286	.416	.240	.217	.489	.301	.253	.280	.329	.344	.168	.299	.248	-.065	-.084	.
OCd2D	.827	.405	.475	.458	.396	.763	.707	.636	.775	.873	.664	.701	.847	.887	.750	.886	.935	.724	.629	.627	.630	.002	.052	.
OCd3D	.454	.462	.280	.300	.401	.439	.698	.502	.628	.436	.470	.379	.675	.560	.479	.475	.528	.600	.481	.508	.511	.002	-.005	.
OCd4D	.591	.452	.626	.576	.372	.590	.690	.521	.635	.702	.706	.608	.664	.676	.631	.726	.753	.669	.416	.548	.574	.015	.003	.
OCd6C	-.508	-.014	-.261	-.280	.023	-.269	-.328	-.261	-.227	-.435	-.489	-.507	-.626	-.069	-.200	-.309	-.382	-.292	.016	-.142	-.290	.999	.860	.
OCd5C	-.220	-.065	-.098	-.186	-.134	-.404	-.248	-.147	-.286	-.405	-.478	-.437	-.509	-.180	-.283	-.294	-.219	-.329	-.183	-.112	-.352	.820	1.110	.
OCd1C	-.270	-.007	-.087	-.080	-.049	-.287	-.121	-.160	-.253	-.192	-.377	-.536	-.267	.137	-.217	-.351	-.254	-.175	-.154	-.184	-.259	.508	.815	.
OCd2C	-.277	-.082	.040	-.053	-.101	-.478	-.354	-.215	-.257	-.334	-.247	-.323	-.282	-.066	-.152	-.325	-.299	-.085	-.153	-.159	-.134	.497	.721	.
OCd3C	-.307	-.100	-.100	-.147	-.134	-.457	-.336	-.353	-.295	-.241	-.468	-.485	-.404	-.126	-.264	-.266	-.183	-.213	-.240	-.177	-.296	.730	.627	.
OCd4C	-.411	-.144	.030	-.277	.056	-.477	-.364	-.372	-.351	-.400	-.357	-.415	-.493	-.162	-.128	-.279	-.305	-.155	-.227	-.228	-.225	.806	.778	.
OCd6B	.724	1.129	1.133	1.055	1.190	1.225	1.201	1.089	1.349	.878	1.054	1.105	1.081	.950	.981	1.027	1.070	.909	.844	.968	.871	.866	.835	.
OCd5B	.781	.961	1.019	1.004	1.026	1.126	1.304	1.095	1.203	.985	1.084	1.032	1.107	.909	.864	1.033	1.141	.877	.806	.884	.825	.841	.937	.
OCd1B	.526	.811	.786	.825	.793	.860	1.007	.878	1.054	.754	.816	.746	1.028	.769	.593	.693	.790	.753	.615	.560	.687	.520	.578	.
OCd2B	.683	.969	.968	1.036	.977	1.099	1.170	1.153	1.241	.925	.979	.908	1.043	.823	.708	.854	1.047	.765	.735	.721	.804	.563	.672	.
OCd3B	.622	.885	1.068	.915	.965	1.164	1.116	1.025	1.239	.915	.915	.999	1.063	1.048	.958	.941	1.000	.806	.870	.644	.781	.589	.540	.
OCd4B	.557	.907	1.086	.958	1.023	.869	.991	.905	1.182	.805	.992	.906	.929	.748	.724	.794	.929	.791	.721	.646	.739	.584	.729	.
OCd6A	.517	.329	.425	.325	.500	.307	.514	.370	.470	.435	.416	.618	.608	.686	.783	.799	.898	.673	.433	.683	.677	.944	.929	.
OCd5A	.561	.296	.271	.207	.432	.239	.415	.301	.524	.608	.621	.608	.723	.745	.895	.885	.932	.797	.700	.670	.793	.922	1.010	.
OCd1A	.528	.287	.350	.152	.214	.338	.478	.353	.443	.281	.445	.521	.643	.654	.578	.595	.554	.677	.377	.385	.673	.583	.458	.
OCd2A	.508	.448	.460	.411	.206	.312	.372	.343	.478	.390	.543	.494	.596	.655	.484	.547	.752	.598	.418	.527	.634	.592	.775	.
OCd3A	.704	.393	.505	.436	.357	.254	.358	.320	.402	.612	.434	.538	.625	.646	.583	.661	.764	.607	.549	.531	.637	.759	.870	.
OCd4A	.678	.285	.411	.303	.370	.221	.511	.303	.369	.538	.508	.441	.549	.785	.755	.664	.797	.693	.655	.472	.778	.811	.924	.

Standardized Residual Covariances (Group number 1 - Default model)

	SPC5	PMS4	PMS3	PMS2	PMS1	SS4	SS3	SS2	SS1	SD4	SD3	SD2	SD1	SA4	SA3	SA2	SA1	SPC4	SPC3	SPC2	SPC1	OCd6D	OC
SPC5	-1.767																						
PMS4	-.819	-1.389																					
PMS3	-1.921	-1.646	-1.677																				
PMS2	-1.730	-1.877	-1.670	-1.528																			
PMS1	-1.599	-1.962	-1.941	-1.568	-1.550																		

SS4	-2.051	-1.200	-2.368	-2.737	-1.838	-3.128																	
SS3	-2.343	-1.410	-2.890	-3.497	-2.429	-3.128	-2.927																
SS2	-2.504	-1.310	-2.304	-2.520	-2.328	-3.234	-3.307	-2.834															
SS1	-2.315	-1.656	-2.408	-2.632	-1.641	-3.545	-3.743	-3.373	-3.305														
SD4	-2.179	-1.759	-2.880	-2.323	-1.681	-2.979	-3.125	-3.444	-3.023	-3.077													
SD3	-2.721	-1.702	-3.132	-3.521	-2.704	-3.621	-3.556	-3.425	-3.847	-3.505	-3.211												
SD2	-3.094	-2.157	-2.523	-2.824	-1.925	-3.684	-3.564	-3.167	-3.703	-4.061	-3.415	-3.279											
SD1	-2.903	-1.636	-2.885	-2.834	-2.156	-3.631	-3.458	-3.414	-3.281	-3.687	-3.726	-3.430	-3.394										
SA4	-.914	-.760	-1.522	-1.122	-1.340	-1.770	-1.778	-2.268	-2.183	-1.488	-2.186	-2.495	-2.693	-1.291									
SA3	-2.074	-.957	-1.034	-1.778	-.970	-2.504	-2.511	-2.886	-2.241	-2.362	-2.617	-2.167	-2.813	-1.786	-1.517								
SA2	-1.872	-1.824	-2.291	-2.844	-2.445	-2.920	-2.850	-2.416	-3.227	-2.946	-2.422	-2.530	-3.259	-1.775	-1.719	-1.769							
SA1	-.986	-1.497	-2.211	-2.755	-2.035	-3.186	-2.642	-2.691	-2.718	-2.510	-2.574	-2.522	-2.717	-2.028	-1.893	-1.702	-1.629						
SPC4	-2.166	-1.500	-2.209	-2.338	-1.575	-3.224	-2.609	-2.800	-2.806	-2.585	-2.970	-3.146	-3.037	-.754	-1.727	-1.590	-1.643	-2.053					
SPC3	-2.150	-1.988	-2.972	-2.760	-1.867	-3.276	-2.963	-2.851	-2.639	-2.498	-2.489	-3.266	-3.513	-.985	-1.980	-1.793	-1.478	-2.152	-1.596				
SPC2	-2.155	-1.810	-3.126	-2.250	-1.654	-3.097	-2.299	-2.611	-2.549	-2.862	-3.011	-2.994	-3.197	-1.768	-2.054	-2.198	-1.549	-2.567	-1.638	-1.868			
SPC1	-2.132	-1.712	-2.070	-2.392	-.631	-2.742	-2.201	-2.970	-2.054	-3.069	-3.178	-3.064	-2.850	-1.763	-1.875	-2.342	-2.287	-2.291	-2.220	-2.236	-2.068		
OCd6D	4.453	2.616	3.594	3.605	3.370	4.371	4.129	4.576	5.302	4.768	4.419	4.663	5.024	5.468	5.568	5.598	4.757	4.679	4.581	5.686	4.987	.000	
OCd5D	3.576	1.920	2.396	3.087	1.650	2.336	2.569	3.287	3.714	4.049	3.738	4.065	4.660	3.863	4.693	4.100	4.672	3.308	4.011	4.722	3.514	-.032	
OCd1D	1.336	.945	1.515	.826	1.219	1.301	1.115	1.501	1.643	2.606	1.394	1.250	2.621	1.905	1.653	1.704	1.819	2.250	1.142	2.144	1.553	-.449	-
OCd2D	5.565	2.686	3.107	2.722	2.435	4.591	4.008	4.172	4.665	5.729	4.040	4.236	4.757	5.895	5.139	5.651	5.434	4.968	4.499	4.717	4.142	.016	
OCd3D	2.913	2.930	1.752	1.701	2.353	2.517	3.768	3.142	3.607	2.734	2.729	2.189	3.619	3.549	3.128	2.886	2.927	3.928	3.278	3.641	3.204	.013	-
OCd4D	4.024	3.037	4.149	3.460	2.313	3.591	3.959	3.461	3.871	4.664	4.348	3.722	3.776	4.544	4.373	4.689	4.431	4.653	3.013	4.174	3.821	.100	
OCd6C	-2.797	-.079	-1.456	-1.425	.121	-1.326	-1.533	-1.412	-1.111	-2.305	-2.391	-2.458	-2.811	-.376	-1.114	-1.573	-1.790	-1.615	.096	-.869	-1.536	6.970	5
OCd5C	-1.314	-.407	-.596	-1.033	-.771	-2.161	-1.259	-.868	-1.522	-2.333	-2.540	-2.304	-2.479	-1.073	-1.713	-1.625	-1.112	-1.977	-1.176	-.745	-2.025	6.252	7
OCd1C	-1.650	-.046	-.533	-.449	-.286	-1.571	-.627	-.962	-1.382	-1.137	-2.064	-2.913	-1.343	.831	-1.348	-2.005	-1.328	-1.083	-1.006	-1.253	-1.533	3.806	5
OCd2C	-1.696	-.506	.243	-.295	-.578	-2.620	-1.831	-1.291	-1.408	-1.986	-1.358	-1.766	-1.428	-.399	-.943	-1.866	-1.572	-.529	-1.003	-1.084	-.794	3.638	4
OCd3C	-1.902	-.643	-.626	-.843	-.795	-2.530	-1.767	-2.155	-1.626	-1.441	-2.580	-2.646	-2.039	-.775	-1.652	-1.524	-.966	-1.326	-1.595	-1.215	-1.765	5.727	4
OCd4C	-2.519	-.913	.189	-1.566	.326	-2.613	-1.892	-2.245	-1.914	-2.365	-1.948	-2.244	-2.465	-.987	-.794	-1.586	-1.593	-.953	-1.488	-1.552	-1.324	6.218	5
OCd6B	4.459	6.703	6.599	5.592	6.529	6.505	6.024	6.325	7.155	5.219	5.806	6.048	5.494	5.779	6.154	5.997	5.691	5.710	5.527	6.658	5.241	6.082	5
OCd5B	5.016	5.926	6.155	5.520	5.838	6.196	6.779	6.601	6.614	6.088	6.208	5.874	5.847	5.767	5.650	6.286	6.325	5.742	5.500	6.338	5.175	6.162	6
OCd1B	3.571	5.327	5.072	4.840	4.814	5.061	5.593	5.649	6.198	4.951	4.965	4.511	5.771	5.156	4.096	4.461	4.630	5.213	4.435	4.249	4.559	4.026	4
OCd2B	4.269	5.836	5.719	5.569	5.438	5.920	5.952	6.795	6.676	5.579	5.469	5.039	5.377	5.083	4.505	5.060	5.648	4.874	4.886	5.036	4.910	4.011	4
OCd3B	3.770	5.185	6.139	4.789	5.226	6.106	5.528	5.880	6.494	5.361	4.968	5.385	5.323	6.271	5.911	5.400	5.233	4.980	5.601	4.357	4.622	4.066	3
OCd4B	3.786	5.921	6.952	5.584	6.167	5.066	5.456	5.780	6.880	5.271	6.021	5.460	5.201	5.027	5.011	5.118	5.456	5.485	5.214	4.909	4.906	4.534	5
OCd6A	3.341	2.097	2.667	1.849	2.947	1.764	2.780	2.317	2.698	2.748	2.438	3.602	3.293	4.377	5.154	4.897	5.018	4.438	2.976	4.935	4.281	6.934	6
OCd5A	3.589	1.861	1.676	1.164	2.514	1.353	2.219	1.861	2.971	3.797	3.599	3.501	3.867	4.700	5.827	5.366	5.143	5.194	4.755	4.783	4.956	6.699	6
OCd1A	3.483	1.864	2.241	.886	1.285	1.981	2.638	2.254	2.597	1.808	2.657	3.091	3.547	4.255	3.879	3.715	3.153	4.555	2.637	2.835	4.337	4.369	3
OCd2A	3.579	3.113	3.150	2.554	1.322	1.958	2.196	2.346	2.999	2.690	3.471	3.135	3.513	4.554	3.469	3.652	4.576	4.295	3.128	4.150	4.369	4.741	5
OCd3A	4.562	2.508	3.179	2.489	2.110	1.460	1.944	2.008	2.314	3.878	2.550	3.141	3.392	4.133	3.845	4.063	4.277	4.015	3.782	3.842	4.033	5.590	5
OCd4A	4.087	1.689	2.402	1.610	2.032	1.184	2.577	1.770	1.972	3.170	2.778	2.395	2.769	4.672	4.635	3.795	4.148	4.260	4.195	3.181	4.583	5.559	5

Factor Score Weights (Group number 1 - Default model)

	SPC5	PMS4	PMS3	PMS2	PMS1	SS4	SS3	SS2	SS1	SD4	SD3	SD2	SD1	SA4	SA3	SA2	SA1	SPC4	SPC3	SPC2	SPC1	OCd6D	OCd5D	OCd1D	O
Control	.000	.005	.009	.006	.006	.002	.001	.001	.002	-.008	-.009	-.009	-.010	.000	.000	.000	.000	.000	.000	.000	.000	.121	.091	.029	
Compete	.019	.004	.008	.005	.005	.021	.015	.016	.028	.033	.035	.038	.041	.011	.017	.031	.019	.029	.016	.024	.028	.009	.006	.002	
Create	.006	-.008	-.014	-.009	-.010	-.026	-.019	-.020	-.035	-.007	-.007	-.008	-.008	.004	.006	.012	.007	.009	.005	.008	.009	.001	.001	.000	
Collaborate	-.008	.006	.010	.006	.007	.021	.015	.016	.028	-.004	-.004	-.004	-.005	-.003	-.004	-.008	-.005	-.013	-.007	-.011	-.012	-.002	-.002	-.001	
SPC	.109	.004	.007	.004	.005	.019	.014	.015	.026	.028	.031	.033	.036	.008	.013	.025	.015	.169	.094	.139	.165	-.001	-.001	.000	
SA	.011	.003	.005	.003	.004	.014	.010	.011	.019	.020	.022	.023	.025	.113	.177	.329	.196	.016	.009	.014	.016	.000	.000	.000	
SD	.024	.008	.014	.009	.010	.041	.030	.031	.053	.131	.142	.153	.166	.014	.022	.040	.024	.037	.021	.031	.037	-.017	-.013	-.004	
SS	.013	.008	.014	.009	.010	.170	.124	.130	.223	.032	.035	.037	.041	.008	.012	.022	.013	.020	.011	.017	.020	.003	.002	.001	
PSM	.004	.157	.279	.182	.197	.012	.009	.009	.016	.010	.010	.011	.012	.002	.004	.007	.004	.006	.003	.005	.006	.012	.009	.003	

Total Effects (Group number 1 - Default model)

	Control	Compete	Create	Collaborate	SPC	SA	SD	SS	PSM
SPC	-.138	1.763	-.242	-.091	.000	.000	.000	.000	.000
SA	-.139	1.977	-.250	-.028	.000	.000	.000	.000	.000
SD	-.353	2.137	-.576	.045	.000	.000	.000	.000	.000
SS	-.070	1.818	-.830	.337	.000	.000	.000	.000	.000
PSM	.379	1.316	-.713	.296	.000	.000	.000	.000	.000
SPC5	-.125	1.593	-.218	-.082	.904	.000	.000	.000	.000
PMS4	.333	1.155	-.625	.260	.000	.000	.000	.000	.878
PMS3	.371	1.286	-.696	.290	.000	.000	.000	.000	.977
PMS2	.390	1.353	-.733	.305	.000	.000	.000	.000	1.028
PMS1	.379	1.316	-.713	.296	.000	.000	.000	.000	1.000
SS4	-.068	1.770	-.808	.328	.000	.000	.000	.974	.000
SS3	-.070	1.818	-.830	.337	.000	.000	.000	1.000	.000
SS2	-.059	1.546	-.705	.286	.000	.000	.000	.850	.000
SS1	-.070	1.818	-.830	.337	.000	.000	.000	1.000	.000
SD4	-.288	1.742	-.470	.037	.000	.000	.815	.000	.000
SD3	-.317	1.919	-.517	.040	.000	.000	.898	.000	.000
SD2	-.322	1.952	-.526	.041	.000	.000	.913	.000	.000
SD1	-.353	2.137	-.576	.045	.000	.000	1.000	.000	.000
SA4	-.108	1.540	-.195	-.022	.000	.779	.000	.000	.000

SA3	-.114	1.618	-.205	-.023	.000	.819	.000	.000	.000
SA2	-.132	1.876	-.237	-.026	.000	.949	.000	.000	.000
SA1	-.139	1.977	-.250	-.028	.000	1.000	.000	.000	.000
SPC4	-.132	1.683	-.231	-.087	.955	.000	.000	.000	.000
SPC3	-.111	1.425	-.195	-.073	.808	.000	.000	.000	.000
SPC2	-.115	1.466	-.201	-.075	.832	.000	.000	.000	.000
SPC1	-.138	1.763	-.242	-.091	1.000	.000	.000	.000	.000
OCd6D	1.886	.000	.000	.000	.000	.000	.000	.000	.000
OCd5D	1.941	.000	.000	.000	.000	.000	.000	.000	.000
OCd1D	1.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd2D	1.701	.000	.000	.000	.000	.000	.000	.000	.000
OCd3D	1.313	.000	.000	.000	.000	.000	.000	.000	.000
OCd4D	1.704	.000	.000	.000	.000	.000	.000	.000	.000
OCd6C	.000	1.328	.000	.000	.000	.000	.000	.000	.000
OCd5C	.000	1.251	.000	.000	.000	.000	.000	.000	.000
OCd1C	.000	1.000	.000	.000	.000	.000	.000	.000	.000
OCd2C	.000	.824	.000	.000	.000	.000	.000	.000	.000
OCd3C	.000	1.176	.000	.000	.000	.000	.000	.000	.000
OCd4C	.000	1.161	.000	.000	.000	.000	.000	.000	.000
OCd6B	.000	.000	1.211	.000	.000	.000	.000	.000	.000
OCd5B	.000	.000	1.247	.000	.000	.000	.000	.000	.000
OCd1B	.000	.000	1.000	.000	.000	.000	.000	.000	.000
OCd2B	.000	.000	1.200	.000	.000	.000	.000	.000	.000
OCd3B	.000	.000	1.150	.000	.000	.000	.000	.000	.000
OCd4B	.000	.000	1.180	.000	.000	.000	.000	.000	.000
OCd6A	.000	.000	.000	1.066	.000	.000	.000	.000	.000
OCd5A	.000	.000	.000	1.196	.000	.000	.000	.000	.000
OCd1A	.000	.000	.000	1.000	.000	.000	.000	.000	.000
OCd2A	.000	.000	.000	.877	.000	.000	.000	.000	.000
OCd3A	.000	.000	.000	1.067	.000	.000	.000	.000	.000
OCd4A	.000	.000	.000	1.252	.000	.000	.000	.000	.000

Standardized Total Effects (Group number 1 - Default model)

	Control	Compete	Create	Collaborate	SPC	SA	SD	SS	PSM
SPC	-.056	.932	-.151	-.059	.000	.000	.000	.000	.000
SA	-.049	.901	-.135	-.016	.000	.000	.000	.000	.000
SD	-.119	.929	-.296	.024	.000	.000	.000	.000	.000
SS	-.025	.832	-.449	.189	.000	.000	.000	.000	.000
PSM	.148	.663	-.424	.183	.000	.000	.000	.000	.000
SPC5	-.045	.747	-.121	-.047	.801	.000	.000	.000	.000
PMS4	.119	.535	-.343	.148	.000	.000	.000	.000	.808
PMS3	.131	.588	-.376	.162	.000	.000	.000	.000	.888
PMS2	.125	.561	-.359	.155	.000	.000	.000	.000	.847
PMS1	.126	.565	-.362	.156	.000	.000	.000	.000	.853
SS4	-.022	.741	-.400	.168	.000	.000	.000	.891	.000
SS3	-.021	.717	-.387	.163	.000	.000	.000	.862	.000
SS2	-.021	.706	-.381	.160	.000	.000	.000	.848	.000
SS1	-.023	.762	-.411	.173	.000	.000	.000	.916	.000
SD4	-.102	.798	-.254	.021	.000	.000	.859	.000	.000
SD3	-.104	.815	-.260	.021	.000	.000	.878	.000	.000
SD2	-.105	.824	-.262	.021	.000	.000	.887	.000	.000
SD1	-.107	.838	-.267	.022	.000	.000	.902	.000	.000
SA4	-.039	.712	-.106	-.012	.000	.790	.000	.000	.000
SA3	-.042	.772	-.115	-.013	.000	.857	.000	.000	.000
SA2	-.045	.833	-.125	-.014	.000	.925	.000	.000	.000
SA1	-.044	.800	-.120	-.014	.000	.888	.000	.000	.000
SPC4	-.049	.805	-.130	-.051	.863	.000	.000	.000	.000
SPC3	-.043	.710	-.115	-.045	.761	.000	.000	.000	.000
SPC2	-.046	.768	-.124	-.048	.823	.000	.000	.000	.000
SPC1	-.049	.808	-.131	-.051	.866	.000	.000	.000	.000
OCd6D	.777	.000	.000	.000	.000	.000	.000	.000	.000
OCd5D	.736	.000	.000	.000	.000	.000	.000	.000	.000
OCd1D	.404	.000	.000	.000	.000	.000	.000	.000	.000
OCd2D	.722	.000	.000	.000	.000	.000	.000	.000	.000
OCd3D	.531	.000	.000	.000	.000	.000	.000	.000	.000
OCd4D	.732	.000	.000	.000	.000	.000	.000	.000	.000
OCd6C	.000	.664	.000	.000	.000	.000	.000	.000	.000
OCd5C	.000	.684	.000	.000	.000	.000	.000	.000	.000
OCd1C	.000	.537	.000	.000	.000	.000	.000	.000	.000
OCd2C	.000	.432	.000	.000	.000	.000	.000	.000	.000
OCd3C	.000	.661	.000	.000	.000	.000	.000	.000	.000
OCd4C	.000	.642	.000	.000	.000	.000	.000	.000	.000
OCd6B	.000	.000	.720	.000	.000	.000	.000	.000	.000
OCd5B	.000	.000	.773	.000	.000	.000	.000	.000	.000

OCd1B	.000	.000	.655	.000	.000	.000	.000	.000	.000
OCd2B	.000	.000	.724	.000	.000	.000	.000	.000	.000
OCd3B	.000	.000	.673	.000	.000	.000	.000	.000	.000
OCd4B	.000	.000	.775	.000	.000	.000	.000	.000	.000
OCd6A	.000	.000	.000	.688	.000	.000	.000	.000	.000
OCd5A	.000	.000	.000	.763	.000	.000	.000	.000	.000
OCd1A	.000	.000	.000	.658	.000	.000	.000	.000	.000
OCd2A	.000	.000	.000	.616	.000	.000	.000	.000	.000
OCd3A	.000	.000	.000	.690	.000	.000	.000	.000	.000
OCd4A	.000	.000	.000	.753	.000	.000	.000	.000	.000

Direct Effects (Group number 1 - Default model)

	Control	Compete	Create	Collaborate	SPC	SA	SD	SS	PSM
SPC	-.138	1.763	-.242	-.091	.000	.000	.000	.000	.000
SA	-.139	1.977	-.250	-.028	.000	.000	.000	.000	.000
SD	-.353	2.137	-.576	.045	.000	.000	.000	.000	.000
SS	-.070	1.818	-.830	.337	.000	.000	.000	.000	.000
PSM	.379	1.316	-.713	.296	.000	.000	.000	.000	.000
SPC5	.000	.000	.000	.000	.904	.000	.000	.000	.000
PMS4	.000	.000	.000	.000	.000	.000	.000	.000	.878
PMS3	.000	.000	.000	.000	.000	.000	.000	.000	.977
PMS2	.000	.000	.000	.000	.000	.000	.000	.000	1.028
PMS1	.000	.000	.000	.000	.000	.000	.000	.000	1.000
SS4	.000	.000	.000	.000	.000	.000	.000	.974	.000
SS3	.000	.000	.000	.000	.000	.000	.000	1.000	.000
SS2	.000	.000	.000	.000	.000	.000	.000	.850	.000
SS1	.000	.000	.000	.000	.000	.000	.000	1.000	.000
SD4	.000	.000	.000	.000	.000	.000	.815	.000	.000
SD3	.000	.000	.000	.000	.000	.000	.898	.000	.000
SD2	.000	.000	.000	.000	.000	.000	.913	.000	.000
SD1	.000	.000	.000	.000	.000	.000	1.000	.000	.000
SA4	.000	.000	.000	.000	.000	.779	.000	.000	.000
SA3	.000	.000	.000	.000	.000	.819	.000	.000	.000
SA2	.000	.000	.000	.000	.000	.949	.000	.000	.000
SA1	.000	.000	.000	.000	.000	1.000	.000	.000	.000
SPC4	.000	.000	.000	.000	.955	.000	.000	.000	.000
SPC3	.000	.000	.000	.000	.808	.000	.000	.000	.000
SPC2	.000	.000	.000	.000	.832	.000	.000	.000	.000
SPC1	.000	.000	.000	.000	1.000	.000	.000	.000	.000
OCd6D	1.886	.000	.000	.000	.000	.000	.000	.000	.000
OCd5D	1.941	.000	.000	.000	.000	.000	.000	.000	.000
OCd1D	1.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd2D	1.701	.000	.000	.000	.000	.000	.000	.000	.000
OCd3D	1.313	.000	.000	.000	.000	.000	.000	.000	.000
OCd4D	1.704	.000	.000	.000	.000	.000	.000	.000	.000
OCd6C	.000	1.328	.000	.000	.000	.000	.000	.000	.000
OCd5C	.000	1.251	.000	.000	.000	.000	.000	.000	.000
OCd1C	.000	1.000	.000	.000	.000	.000	.000	.000	.000
OCd2C	.000	.824	.000	.000	.000	.000	.000	.000	.000
OCd3C	.000	1.176	.000	.000	.000	.000	.000	.000	.000
OCd4C	.000	1.161	.000	.000	.000	.000	.000	.000	.000
OCd6B	.000	.000	1.211	.000	.000	.000	.000	.000	.000
OCd5B	.000	.000	1.247	.000	.000	.000	.000	.000	.000
OCd1B	.000	.000	1.000	.000	.000	.000	.000	.000	.000
OCd2B	.000	.000	1.200	.000	.000	.000	.000	.000	.000
OCd3B	.000	.000	1.150	.000	.000	.000	.000	.000	.000
OCd4B	.000	.000	1.180	.000	.000	.000	.000	.000	.000
OCd6A	.000	.000	.000	1.066	.000	.000	.000	.000	.000
OCd5A	.000	.000	.000	1.196	.000	.000	.000	.000	.000
OCd1A	.000	.000	.000	1.000	.000	.000	.000	.000	.000
OCd2A	.000	.000	.000	.877	.000	.000	.000	.000	.000
OCd3A	.000	.000	.000	1.067	.000	.000	.000	.000	.000
OCd4A	.000	.000	.000	1.252	.000	.000	.000	.000	.000

Standardized Direct Effects (Group number 1 - Default model)

	Control	Compete	Create	Collaborate	SPC	SA	SD	SS	PSM
SPC	-.056	.932	-.151	-.059	.000	.000	.000	.000	.000
SA	-.049	.901	-.135	-.016	.000	.000	.000	.000	.000
SD	-.119	.929	-.296	.024	.000	.000	.000	.000	.000
SS	-.025	.832	-.449	.189	.000	.000	.000	.000	.000
PSM	.148	.663	-.424	.183	.000	.000	.000	.000	.000
SPC5	.000	.000	.000	.000	.801	.000	.000	.000	.000
PMS4	.000	.000	.000	.000	.000	.000	.000	.000	.808
PMS3	.000	.000	.000	.000	.000	.000	.000	.000	.888

PMS2	.000	.000	.000	.000	.000	.000	.000	.000	.000	.847
PMS1	.000	.000	.000	.000	.000	.000	.000	.000	.000	.853
SS4	.000	.000	.000	.000	.000	.000	.000	.000	.891	.000
SS3	.000	.000	.000	.000	.000	.000	.000	.000	.862	.000
SS2	.000	.000	.000	.000	.000	.000	.000	.000	.848	.000
SS1	.000	.000	.000	.000	.000	.000	.000	.000	.916	.000
SD4	.000	.000	.000	.000	.000	.000	.000	.859	.000	.000
SD3	.000	.000	.000	.000	.000	.000	.000	.878	.000	.000
SD2	.000	.000	.000	.000	.000	.000	.000	.887	.000	.000
SD1	.000	.000	.000	.000	.000	.000	.000	.902	.000	.000
SA4	.000	.000	.000	.000	.000	.000	.790	.000	.000	.000
SA3	.000	.000	.000	.000	.000	.000	.857	.000	.000	.000
SA2	.000	.000	.000	.000	.000	.000	.925	.000	.000	.000
SA1	.000	.000	.000	.000	.000	.000	.888	.000	.000	.000
SPC4	.000	.000	.000	.000	.000	.863	.000	.000	.000	.000
SPC3	.000	.000	.000	.000	.000	.761	.000	.000	.000	.000
SPC2	.000	.000	.000	.000	.000	.823	.000	.000	.000	.000
SPC1	.000	.000	.000	.000	.000	.866	.000	.000	.000	.000
OCd6D	.777	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd5D	.736	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd1D	.404	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd2D	.722	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd3D	.531	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd4D	.732	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd6C	.000	.664	.000	.000	.000	.000	.000	.000	.000	.000
OCd5C	.000	.684	.000	.000	.000	.000	.000	.000	.000	.000
OCd1C	.000	.537	.000	.000	.000	.000	.000	.000	.000	.000
OCd2C	.000	.432	.000	.000	.000	.000	.000	.000	.000	.000
OCd3C	.000	.661	.000	.000	.000	.000	.000	.000	.000	.000
OCd4C	.000	.642	.000	.000	.000	.000	.000	.000	.000	.000
OCd6B	.000	.000	.720	.000	.000	.000	.000	.000	.000	.000
OCd5B	.000	.000	.773	.000	.000	.000	.000	.000	.000	.000
OCd1B	.000	.000	.655	.000	.000	.000	.000	.000	.000	.000
OCd2B	.000	.000	.724	.000	.000	.000	.000	.000	.000	.000
OCd3B	.000	.000	.673	.000	.000	.000	.000	.000	.000	.000
OCd4B	.000	.000	.775	.000	.000	.000	.000	.000	.000	.000
OCd6A	.000	.000	.000	.688	.000	.000	.000	.000	.000	.000
OCd5A	.000	.000	.000	.763	.000	.000	.000	.000	.000	.000
OCd1A	.000	.000	.000	.658	.000	.000	.000	.000	.000	.000
OCd2A	.000	.000	.000	.616	.000	.000	.000	.000	.000	.000
OCd3A	.000	.000	.000	.690	.000	.000	.000	.000	.000	.000
OCd4A	.000	.000	.000	.753	.000	.000	.000	.000	.000	.000

Indirect Effects (Group number 1 - Default model)

	Control	Compete	Create	Collaborate	SPC	SA	SD	SS	PSM	
SPC	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
SA	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
SD	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
SS	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
PSM	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
SPC5	-.125	1.593	-.218	-.082	.000	.000	.000	.000	.000	.000
PMS4	.333	1.155	-.625	.260	.000	.000	.000	.000	.000	.000
PMS3	.371	1.286	-.696	.290	.000	.000	.000	.000	.000	.000
PMS2	.390	1.353	-.733	.305	.000	.000	.000	.000	.000	.000
PMS1	.379	1.316	-.713	.296	.000	.000	.000	.000	.000	.000
SS4	-.068	1.770	-.808	.328	.000	.000	.000	.000	.000	.000
SS3	-.070	1.818	-.830	.337	.000	.000	.000	.000	.000	.000
SS2	-.059	1.546	-.705	.286	.000	.000	.000	.000	.000	.000
SS1	-.070	1.818	-.830	.337	.000	.000	.000	.000	.000	.000
SD4	-.288	1.742	-.470	.037	.000	.000	.000	.000	.000	.000
SD3	-.317	1.919	-.517	.040	.000	.000	.000	.000	.000	.000
SD2	-.322	1.952	-.526	.041	.000	.000	.000	.000	.000	.000
SD1	-.353	2.137	-.576	.045	.000	.000	.000	.000	.000	.000
SA4	-.108	1.540	-.195	-.022	.000	.000	.000	.000	.000	.000
SA3	-.114	1.618	-.205	-.023	.000	.000	.000	.000	.000	.000
SA2	-.132	1.876	-.237	-.026	.000	.000	.000	.000	.000	.000
SA1	-.139	1.977	-.250	-.028	.000	.000	.000	.000	.000	.000
SPC4	-.132	1.683	-.231	-.087	.000	.000	.000	.000	.000	.000
SPC3	-.111	1.425	-.195	-.073	.000	.000	.000	.000	.000	.000
SPC2	-.115	1.466	-.201	-.075	.000	.000	.000	.000	.000	.000
SPC1	-.138	1.763	-.242	-.091	.000	.000	.000	.000	.000	.000
OCd6D	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd5D	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd1D	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

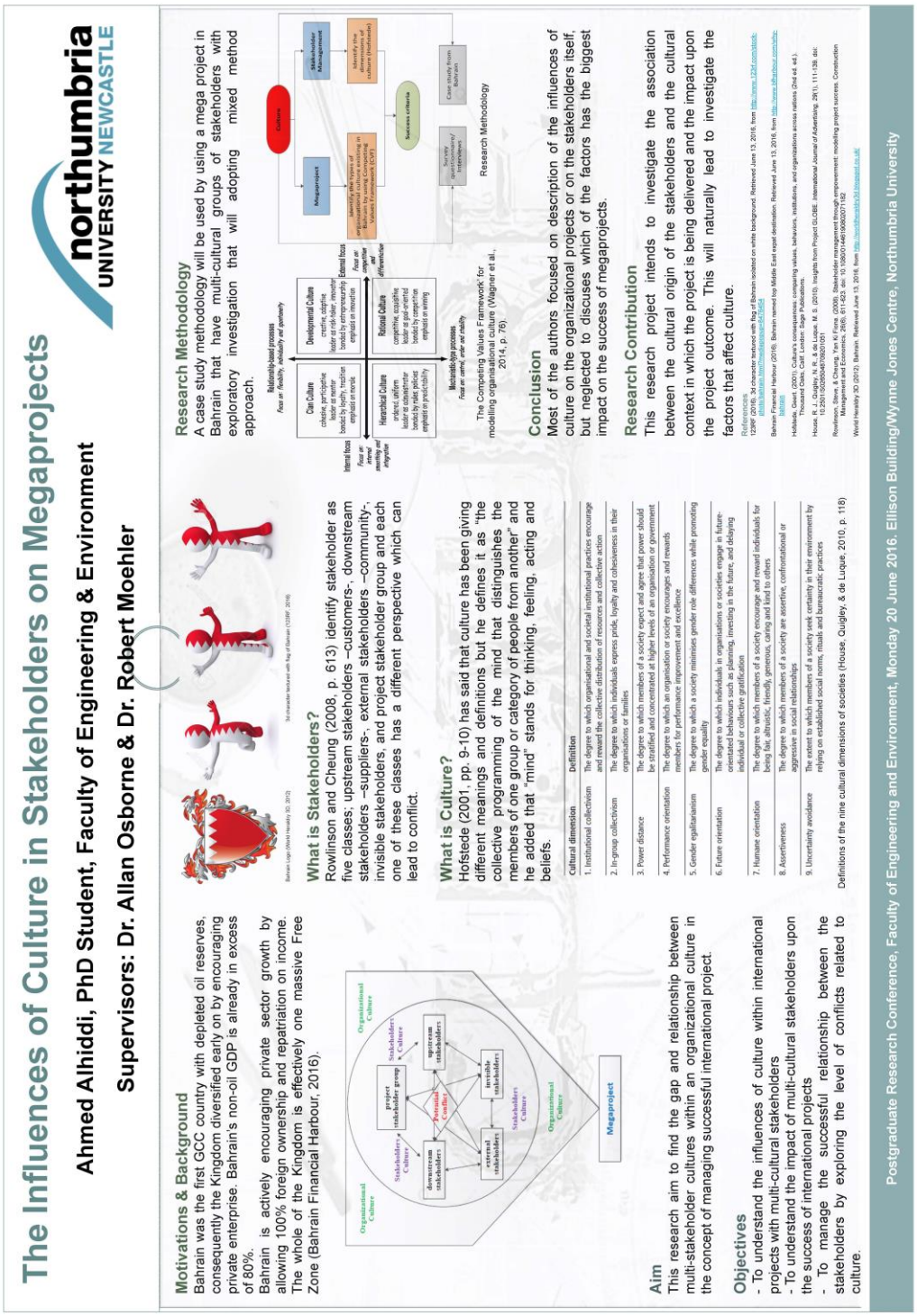
OCd2D	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd3D	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd4D	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd6C	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd5C	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd1C	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd2C	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd3C	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd4C	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd6B	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd5B	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd1B	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd2B	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd3B	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd4B	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd6A	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd5A	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd1A	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd2A	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd3A	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd4A	.000	.000	.000	.000	.000	.000	.000	.000	.000

Standardized Indirect Effects (Group number 1 - Default model)

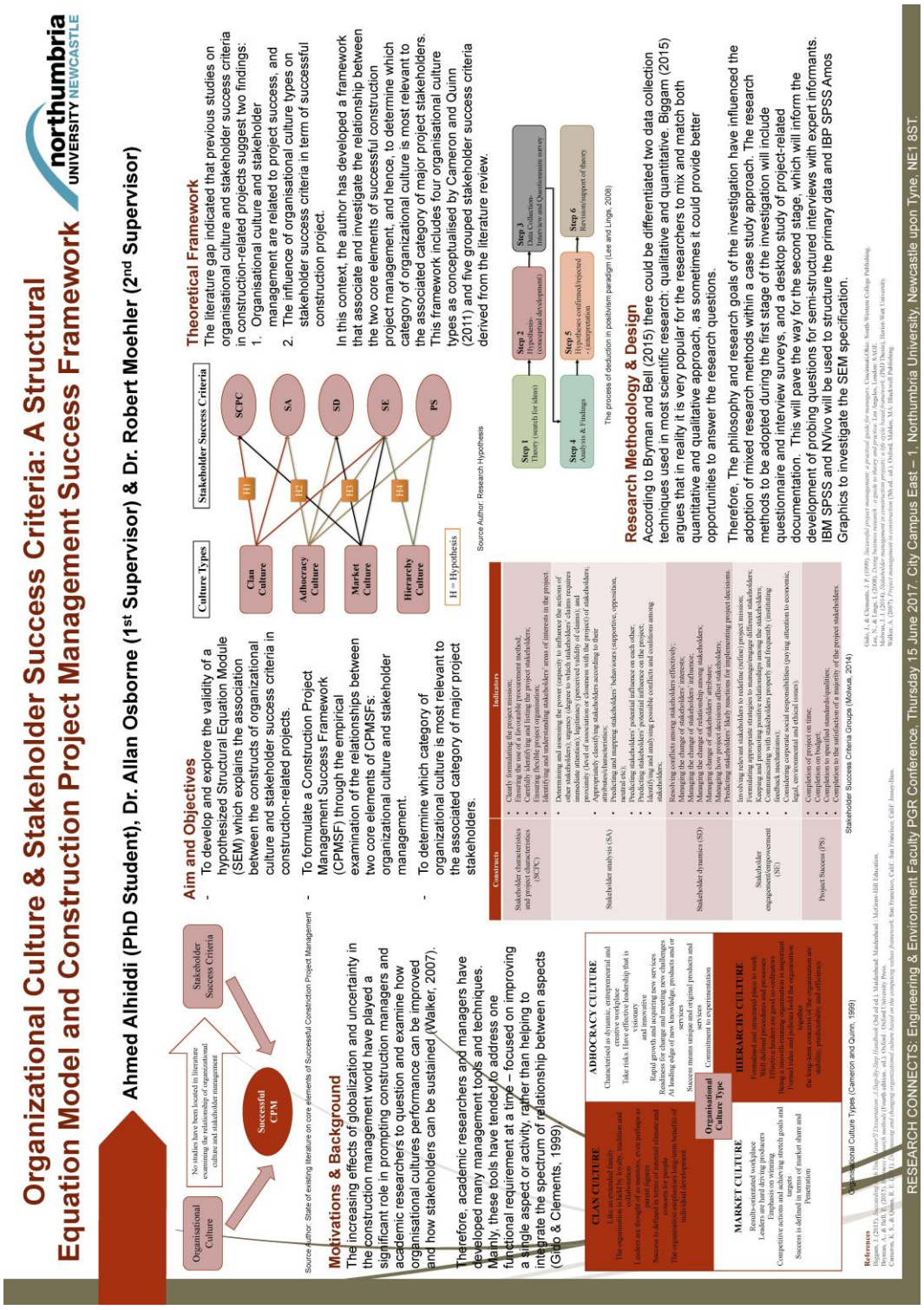
	Control	Compete	Create	Collaborate	SPC	SA	SD	SS	PSM
SPC	.000	.000	.000	.000	.000	.000	.000	.000	.000
SA	.000	.000	.000	.000	.000	.000	.000	.000	.000
SD	.000	.000	.000	.000	.000	.000	.000	.000	.000
SS	.000	.000	.000	.000	.000	.000	.000	.000	.000
PSM	.000	.000	.000	.000	.000	.000	.000	.000	.000
SPC5	-.045	.747	-.121	-.047	.000	.000	.000	.000	.000
PMS4	.119	.535	-.343	.148	.000	.000	.000	.000	.000
PMS3	.131	.588	-.376	.162	.000	.000	.000	.000	.000
PMS2	.125	.561	-.359	.155	.000	.000	.000	.000	.000
PMS1	.126	.565	-.362	.156	.000	.000	.000	.000	.000
SS4	-.022	.741	-.400	.168	.000	.000	.000	.000	.000
SS3	-.021	.717	-.387	.163	.000	.000	.000	.000	.000
SS2	-.021	.706	-.381	.160	.000	.000	.000	.000	.000
SS1	-.023	.762	-.411	.173	.000	.000	.000	.000	.000
SD4	-.102	.798	-.254	.021	.000	.000	.000	.000	.000
SD3	-.104	.815	-.260	.021	.000	.000	.000	.000	.000
SD2	-.105	.824	-.262	.021	.000	.000	.000	.000	.000
SD1	-.107	.838	-.267	.022	.000	.000	.000	.000	.000
SA4	-.039	.712	-.106	-.012	.000	.000	.000	.000	.000
SA3	-.042	.772	-.115	-.013	.000	.000	.000	.000	.000
SA2	-.045	.833	-.125	-.014	.000	.000	.000	.000	.000
SA1	-.044	.800	-.120	-.014	.000	.000	.000	.000	.000
SPC4	-.049	.805	-.130	-.051	.000	.000	.000	.000	.000
SPC3	-.043	.710	-.115	-.045	.000	.000	.000	.000	.000
SPC2	-.046	.768	-.124	-.048	.000	.000	.000	.000	.000
SPC1	-.049	.808	-.131	-.051	.000	.000	.000	.000	.000
OCd6D	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd5D	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd1D	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd2D	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd3D	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd4D	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd6C	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd5C	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd1C	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd2C	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd3C	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd4C	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd6B	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd5B	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd1B	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd2B	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd3B	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd4B	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd6A	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd5A	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd1A	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd2A	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd3A	.000	.000	.000	.000	.000	.000	.000	.000	.000
OCd4A	.000	.000	.000	.000	.000	.000	.000	.000	.000

Appendix 5 – List of Publications

1) The Influences of Culture of Stakeholders on Mega-projects. *Postgraduate Research Conference (POSTER 2016)*



2) Organizational Culture & Stakeholder Success Criteria: A Structural Equation Model and Construction Project Management Success Framework *(POSTER 2017)*



3) Organizational Culture & Stakeholder Success Criteria in construction projects (conference paper, 2018)

CCC 2018

Proceedings of the Creative Construction Conference (2018)
Edited by: Miroslaw J. Skibniewski & Miklos Hajdu
DOI 10.3311/CCC2018-081

Creative Construction Conference 2018, CCC 2018, 30 June - 3 July 2018, Ljubljana, Slovenia

Organizational culture and stakeholder success criteria in construction projects

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Abstract

This paper presents the findings of a theoretical investigation into the association between organizational culture and stakeholder management. With an aspect focused on international construction projects, the study explores the relationship between the cultural origin of key stakeholders and the cultural context in which projects are realized. Emphasis is placed on the examination of project outcomes and the factors that influence cultural domain. Secondary data suggests stakeholder management and corporate culture are critical areas that decide an organization's success. The importance of these areas will inevitably grow in the future as projects continue to be procured in a global economy. Identifiable theoretical associations between the constructs have been found that provide early evidence that stakeholders and culture influence project life-cycles. Stakeholders—organizations and their representatives—must be informed of the distinct types of cultures and success criteria to ensure they manage them efficiently alongside traditional and long-accepted project variables.

Keywords: critical success factor; construction project; organizational culture; stakeholder management.

1. Introduction

In recent years, construction project management has attracted enormous global interest, especially in organizational culture and stakeholder management. These two independent social constructs are crucial for successful construction project management, hence the need to explore the relationship that exists between them.

In his often-cited textbook, Walker [1] explains that construction project management (CPM) has been recognized as a distinct profession for a long time, yet, in the long-established context of natural and social scientific knowledge discovery, the study of how projects are organized and managed has, relatively speaking, evaded the attention of academics. Walker goes on to say, in a somewhat defiant manner, that 'management is the dynamic input that makes the organization work' [1]. Aaltonen *et al.* [2] sharpen the focus of Walker's viewpoint by explaining that the management of stakeholders' needs and requirements is an essential consideration for teams managing complex, global projects. More specifically from the perspective of the construction industry, several studies have pronounced that stakeholder involvement is an essential organizational component when realizing successful project outcomes (see example [1-3]). Recognition that stakeholder management is a fundamental aspect with regard to construction project success has understandably grown in recent years [4].

Ankrah and Proverbs [5] have acknowledged that organizational culture is an inherent aspect of a project's environment and that a definitive empirically-based interpretation of it is currently lacking. Eberlein [6] expands this position by explaining that culture is a critical factor that contributes to the realization of successful project management outcomes. Because large projects typically involve many stakeholders, each with competing values and demands, Marrewijk and Smits [7] have remarked they are potentially *conflict-ridden* environments. Driven by the need to gain a deeper, more meaningful understanding of organizational culture, Hofstede *et al.* [8] present five dimensions that can

be used for exploring *culture awareness*. They explained that managers could choose to use these dimensions to regulate the social conflict that may arise within a project environment.

Currently, borders no longer limit construction and infrastructure projects. In fact, large-scale construction projects have increased the business opportunities available for global construction firms. These global construction projects involve managing culturally-diverse and globally-dispersed teams, international financing, and more importantly, global stakeholders. Considering the above findings, the aim of this paper is to present the outcomes of a literature survey to find the association between organizational culture and stakeholder success criteria (see Fig. 1). This has resulted in the need to develop a conceptual, theoretical framework that illustrates the variables and steps that contribute to the management of successful construction projects in culturally-complex contexts.

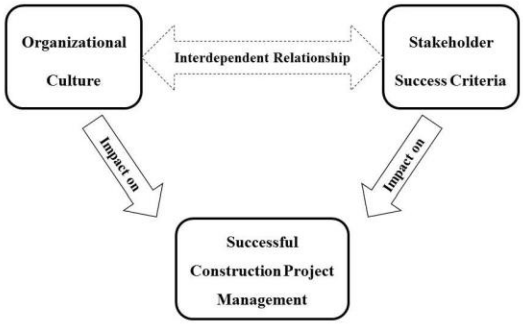

Fig. 1. Core elements of successful construction project management

2. Project success

According to the Oxford English Dictionary [9], success is defined as 'the accomplishment of an aim or purpose'. Young [10] defined success from managers' personal views as 'those words that conjure up a picture we paint in our minds' and he provided examples of these pictures: huge benefits gained, public recognition, great achievements, and promotion to new projects. This takes the point-of-view of the managers or leaders themselves. Müller and Turner [11] defined success criteria for projects as 'the measures by which we judge the successful outcome of a project; these are dependent variables which measure project success'. This introduces the concept that the project outcome is the measure of project success. Furthermore, APM [12] defined success as 'the satisfaction of stakeholder needs, which is measured by the success criteria as identified and agreed at the start of the project'. The word *success* used in earlier definitions shows that it is dependent on some elements, like stakeholders, clients, sponsors, managers, resources, project team members, organizational culture. Moreover, each one of these elements can measure the success or failure of the project [10].

In general, the presented various authors' perspectives on project success definition agree that there must be some form of measure by which a project is judged to be either successful or not. The most common element in these definitions is the acknowledgement that projects have some level of complexity that involves different elements including the two core elements—stakeholder management and organizational culture—which are the focus of this study.

3. Stakeholder management

Stakeholder, as a lemma, first appeared in the domain of management literature in an internal memorandum at the Stanford Research Institute—now SRI International, Inc.—in 1963 where it was used to define ancillary support groups [13]. Aaltonen *et al.* [2] discovered that for almost every publication about stakeholders that exists, a new definition is proclaimed. Of the many examples, a contemporary yet classic definition is offered by Friedman and Miles who

have pronounced it as 'any group or individual who can affect or is affected by the achievement of the organization's objectives'[14].

According to Friedman and Miles [14], there are many publications that present different theories about stakeholders. For example, Phillips, Freeman, and Wicks have added that 'one of stakeholder theory's greatest strengths is also one of its most prominent theoretical liabilities . . .' and go on to define stakeholder theory as 'a theory of organizational management and ethics' [15]. In addition, Meding *et al.* [3] have mentioned the importance of fully embracing stakeholder theories in construction projects due to the increase of stakeholders' diversity, power, and influence. However, Smyth [16], as cited by Meding *et al.* [3], discussed the utilitarian approach, which bases the value of a firm in terms of profit and growth. He suggested the need for ethics and relationship management principles to bridge the conceptual gap in this theory to help manage stakeholders in practice. In summary, studies mentioned in this paper have recognized stakeholders to have a considerable effect on project outcomes and acknowledge the need to manage this relationship with stakeholders successfully. This means considering some common factors such as stakeholders' characteristics and dynamics, relationship and communication with stakeholders, understanding engagement and needs, and defining the link between stakeholders and project success.

On the other hand, according to Rockart [17], critical success factors (CSFs) 'are, for any business, the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization. They are the few key areas where 'things must go right' for the business to flourish. If results in these areas are not adequate, the organization's efforts for the period will be less than desired'. Likewise, Yang *et al.* [18] have said that understanding stakeholders related factors are essential during the project process to establish appropriate decision-making strategies. These perspectives highlight the importance for managers to acknowledge CSFs. However, Jepsen and Eskerod [19] found in their study that stakeholder identification, classification, and analysis are essential factors for stakeholder management. Olander and Landin [20] recommended four CSFs for stakeholder management, which included analysis of stakeholders, communication, evaluation, and relationship.

So far, this paper has identified and discussed the fundamental theories explaining (1) stakeholder management and project success and (2) stakeholders' CSFs, both of which included consideration of the management of communication with stakeholders. Most of the factors discussed are essential to delivering successful projects. However, most of the authors have focused on finding the factors without ranking them or creating models to manage them.

Molwus [21], in his doctoral thesis about stakeholder management in construction projects, has developed Yang *et al.* [22] model that helps managers to identify and manage stakeholders CSFs and ranked 15 CSFs according to priority by building a model for 5 main CSFs groups for the management of stakeholders in construction projects. Molwus's model not only named the 5 main stakeholder factors that have been highlighted in past studies but also substantiated the indicators for each factor; thus, making it easier for makers to apply the knowledge and manage stakeholders successfully (see Table 1). For these reasons, this study uses these CSFs for stakeholder management in order to identify the CSFs of the selected project.

4. Organisational culture

Cameron and Freeman [23] mentioned that the correct management of organizational culture leads to delivery of successful projects; this directed scholars in the management field to improve and develop different methods to help with the management of organizational culture. There has also been an abundance of research on organizational culture and its associated disciplines: this has resulted in many meanings and explanations of organizational culture and its relevance to other organizational parameters (Ankrah and Proverbs [5], Smircich [24], Zu *et al.* [25]).

One study was carried out by Schein [26] during which he defined organizational culture as 'a pattern of basic assumptions, invented, discovered, or developed by a given group as it learns to cope with its problem of external adoption and internal integration that has worked well enough to be considered valid and therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems'. According to Marcoulides and Heck [27], organizational culture is a complex phenomenon characterized by many dimensions. One reason for the many dimensions that have been described is that organizational culture is very general and inclusive in scope [28]. However, Hofstede *et al.* [8] strongly argue that the cultural values of each organization need to be explicitly identified, and that reliance on reported values and beliefs from, for example, a parent company in one region may not be a reliable measure of the culture of a subsidiary in another region. This implies that changes in stakeholders, and their inherent cultures, will have an impact on the potential organizational culture of projects.

From the theoretical perspectives of organizational culture, Smircich [24] mentioned that many scholars had linked the concept of culture with the study of organization management but every organization theory had been studied from a different perspective in terms of the way it manages interdependencies and exchanges across system boundaries. For example, some scholars have studied organization and culture from a practical and operational perspective, while others have studied a *rules* or *scripts* perspective, while others have focused on one or more concepts of culture related to the organization, including cognitive, symbolic, structural, and psychodynamic perspectives.

Table 1. Critical success factors groups for stakeholder management [21].

Constructs	Indicators
Stakeholder characteristics and project characteristics (SCPC)	• Clearly formulating the project mission; • Ensuring the use of a favorable procurement method; • Carefully identifying and listing the project stakeholders; • Ensuring flexible project organization; • Identifying and understanding stakeholders' areas of interests in the project.
Stakeholder analysis (SA)	• Determining and assessing the power (capacity to influence the actions of other stakeholders); urgency (degree to which stakeholders' claims requires immediate attention); legitimacy (perceived validity of claims); and proximity (level of association or closeness with the project) of stakeholders; • Appropriately classifying stakeholders according to their attributes/characteristics; • Predicting and mapping stakeholders' behaviors (supportive, opposition, neutral etc.); • Predicting stakeholders' potential influence on each other; • Predicting stakeholders' potential influence on the project; • Identifying and analyzing possible conflicts and coalitions among stakeholders;
Stakeholder dynamics (SD)	• Resolving conflicts among stakeholders effectively; • Managing the change of stakeholders' interests; • Managing the change of stakeholders' influence; • Managing the change of relationship among stakeholders; • Managing change of stakeholders' attributes; • Managing how project decisions affect stakeholders; • Predicting stakeholders' likely reactions for implementing project decisions.
Stakeholder engagement/empowerment (SE)	• Involving relevant stakeholders to redefine (refine) project mission; • Formulating appropriate strategies to manage/engage different stakeholders; • Keeping and promoting positive relationships among the stakeholders; • Communicating with stakeholders properly and frequently (instituting feedback mechanisms); • Considering corporate social responsibilities (paying attention to economic, legal, environmental and ethical issues).
Project Success (PS)	• Completion of project on time; • Completion on budget; • Completion to specified standards/qualities; • Completion to the satisfaction of a majority of the project stakeholders.

Furthermore, many methods and frameworks have been designed to identify and measure organizational culture. In this context, Wallach [29] developed a set of cultural dimensions based upon a synthesis of other major organizational culture indices. Another method is the Organizational Culture Profile Scale that was developed by O'Reilly *et al.* [30]. The third is the Competing Values Framework (CVF) that was developed by Quinn and Rohrbaugh [31], and the fourth and final one is the Organizational Value Congruence Scale that was developed by Fitz-Enz [32] and Fitz-Enz [33].

This research will focus on CVF as a model to explain and recognize the differences of organizational culture types. Zu *et al.* [25] have argued that the CVF developed by Quinn and his associates explores the deep structures of organizational culture relating to compliance, motives, leadership, decision-making, effectiveness, and organizational forms in the organization [31]. Yeung *et al.* [34] added that the CVF could be integrated into the organizational culture to other organizational components, which are both theoretically and psychometrically sound. Furthermore, CVF is built on two axes to explain the differences of value orientations. The axes are (X+Y) and are derived from the control-flexibility axis (vertical) reflecting the extent to which an organization focuses on change and stability. A focus on flexibility shows the organization's desire for flexibility and spontaneity, while a focus on control indicates a mutual desire to stay stable, controlled, and in order (see Fig. 2).

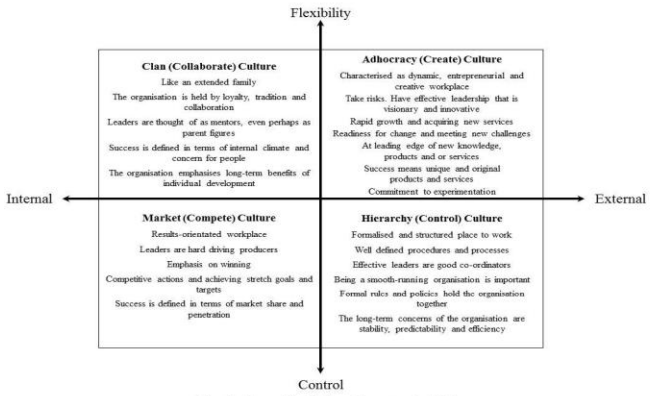

Fig. 2. Competing Values Framework [28]

Ajmal and Koskinen [35], however, mentioned that if managers understand the norms of organizational culture about the *right* and *wrong* and manage it correctly, it will lead to the successful operation of organizations. Likewise, Ashkanasy *et al.* [36] have suggested that an awareness of culture types within the organization from the strategic phase of project life cycle is essential to recognize the project organization environment and beliefs that will reduce conflicts. Ankrah and Proverbs [5] mentioned that organizational culture in construction projects consider the characteristics, tactics, competencies, goals, and values of the project environment. Therefore, recognizing the type of project organizational culture is essential to improve project delivery.

In addition, the earlier literature of organizational culture and project success shows a healthy relationship between these two elements. It revealed that identifying and understanding the types of culture within the project reduces conflicts, promotes innovation that eventually leads to improved project delivery. It also defines the link between organizational culture and successful project management. Although the above-reviewed literature has defined the impact of organizational culture on project management success, as well as established the impact of stakeholder management on project management success, there is no apparent literature discussing the relationship between organizational culture and stakeholder management explicitly. If both organizational culture and stakeholder management impact the success or failure of project management, then it is logical to say that there must be some connection between the two. This study, therefore, intends to look at this undefined relationship with the aim of enhancing the tools currently available for improving construction project management.

5. Research design

The research process started with a review of the literature on stakeholder management and organizational culture. A construction project as the subject of the case study will be selected based on the following criteria: service provider classified as a global provider for construction projects, the location of the project outside the home base of the service provider (another state, country, or region), and a construction project considered successful. Based on the survey of

literature, the research focus was set, and a questionnaire has been structured for data collection using both the competitive value framework (CVF) instrument to identify the organizational culture of the chosen project, and the stakeholder criteria for stakeholder management [21, 22] to identify the stakeholders criteria of the chosen project. A web-based method has been selected to administer the electronic survey questionnaire.

The target respondents of the survey questionnaire will be the decision makers of the selected project: managers, directors, operations managers, quality managers (both internal and external stakeholders related to construction projects), public and private clients, project professionals (in-house and out-house), and contractors and suppliers, as identified by Chinyio and Olomolaiye [37]. Moreover, Structural Equation Modelling (SEM) will be utilized to explore the associations between the constructs constituting the two variables: organizational culture and stakeholder success criteria.

4. Discussion

The literature on stakeholder management shows the importance of recognizing and identifying the critical success factors to help managers deliver successful projects. Likewise, many scholars have mentioned the CSFs of stakeholder management within construction projects. Some have identified the CSFs constructs [19, 37], while others have identified the CSFs indicators [3, 18, 22]. Yang *et al.* [22] investigated CSFs from both sides and ranked them from the most influential to the least. More recently, Molwus [21] grouped the CSFs into five main constructs by converging the theories about stakeholder management and the outcomes arising from empirical studies.

Organizational culture theories link culture and organization projects to clarify the types of cultures in each organization. The organizational culture literature also shows how vital it is for managers to understand the types of culture in which a project is being delivered. Many theories that described culture have been presented in the literature [24, 26, 27] and many authors have empirically examined these theories [29, 30]. However, Cameron and Quinn's [28] competitive value framework (CVF) has been used to underpin many types of research because it shows that it is both a theoretically and psychometrically sound instrument when integrating and operationalizing organizational culture with other organizational components [25, 28, 34].

The initial examination has led to the hypothesis that the CSFs for stakeholder management in construction projects by Molwus [21] has an association with organizational culture (see Fig. 3). For example, stakeholder characteristics and project characteristics (SCPC) indicators—ensuring flexible project organization and use of a favourable procurement method—can be linked with the CVF's adhocracy culture; while SCPC indicators, such as, formulating the project mission and identifying the project interest and stakeholders, are more likely associated with the CVF's hierarchy culture.

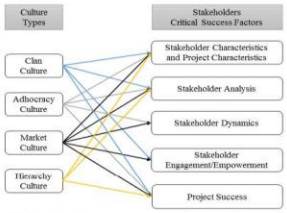

Fig. 3. Illustrated relationship between organizational culture and stakeholder CSFs

The stakeholder analysis (SA) indicator—determining and assessing the power, urgency, legitimacy, and proximity to stakeholders—shows an association exists with CVF's four culture types. The third construct, stakeholder dynamics (SD) as a whole, is more closely related to *market* and *adhocracy* cultures and, to a lesser degree, to *clan* culture. The stakeholder engagement/empowerment (SE) construct, however, is more likely to be related to *market* and *clan* cultures. The last construct, project success (PS), shows a link with all the organization types.

6. Conclusion

The above indicative literature review shows that both stakeholder management and organizational culture have an impact on project success. To examine the relationship between organizational culture and stakeholder success criteria

for a successful construction project and to develop the indicators with the literary theories to classify the relationship between the two variants, it will be necessary to test Molwus's [21] model (see Table 1) and Cameron and Quinn's [28] CVF model (see Fig. 2).

The discussion section of this paper evaluates some of the relationships between stakeholder management and organizational culture from various aspects, each of which requires empirical study to classify and identify the postulated relationships in terms of project success. Furthermore, the paper highlights the benefits of adopting the stakeholder management model in construction projects to achieve project success as well as highlighting the importance of recognizing stakeholder success criteria. The paper goes on to explain the need to understand the types of organizational cultures within construction projects to sustain stakeholders and deliver the project outcome successfully.

The investigation proposed to analyze and empirically-investigate both theoretical models that were presented in the outline research design (as shown in Fig. 3) in the near future in order to derive a wealth of information about the relationship between the two core elements of construction projects in terms of success. From the empirically-derived results, the authors will investigate the findings with the aim of developing a framework that explains the organizational culture and stakeholders' success criteria that determine successful construction projects (see Fig. 4).

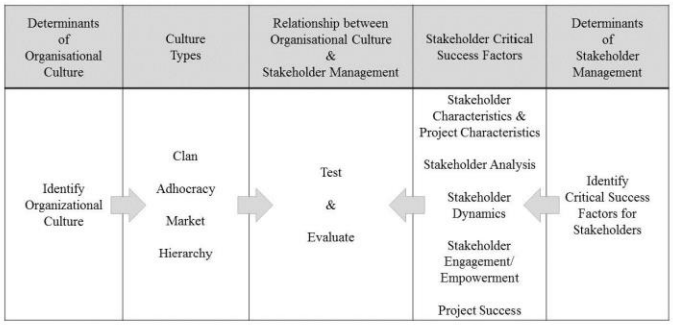

Fig. 4. Schematic conceptual framework

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Organizational Culture and Stakeholder Success Criteria in Construction Projects

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Abstract

This paper presents the findings of a theoretical investigation into the association between organizational culture and stakeholder management. With an aspect focused on international construction projects, the study explores the relationship between the cultural origin of key stakeholders and the cultural context in which projects are realized. Emphasis is placed on the examination of project outcomes and the factors that influence cultural domain. Secondary data suggests stakeholder management and corporate culture are critical areas that decide an organization's success. The importance of these areas will inevitably grow in the future as projects continue to be procured in a global economy. Identifiable theoretical associations between the constructs have been found that provide early evidence that stakeholders and culture influence project life-cycles. Stakeholders—organizations and their representatives—must be informed of the distinct types of cultures and success criteria to ensure they manage them efficiently alongside traditional and long-accepted project variables.

Keywords

critical success factor, construction project, organizational culture, stakeholder management

1 Introduction

In recent years, construction project management has attracted enormous global interest, especially in organizational culture and stakeholder management. These two independent social constructs are crucial for successful construction project management; hence, the need to explore the relationship that exists between them.

In his often-cited textbook, Walker (2007) explains that construction project management (CPM) has been recognized as a distinct profession for a long time; yet, in the long-established context of natural and social scientific knowledge discovery, the study of how projects are organized and managed has, relatively speaking, evaded the attention of academics. Walker goes on to say, in a somewhat defiant manner, that, "management is the dynamic input that makes the organization work" (Walker, 2007). Aaltonen et al. (2008) sharpen the focus of Walker's viewpoint by explaining that the management of stakeholders' needs and requirements is an essential consideration for teams managing complex, global projects. More specifically from the perspective of the construction industry, several studies have pronounced that stakeholder involvement is an essential organizational component when realizing successful project outcomes (see Aaltonen et al., 2008; Meding et al., 2013; Walker, 2007.) Recognition that stakeholder management is a fundamental aspect with regard to construction project success has understandably grown in recent years (Yang et al., 2011).

Ankrah and Proverbs (2004) have acknowledged that organizational culture is an inherent aspect of a project's environment and that a definitive empirically-based interpretation of it is currently lacking. Eberlein (2008) expands this position by explaining that culture is a critical factor that contributes to the realization of successful project management outcomes. Because large projects typically involve many stakeholders, each with competing values and demands, Marrewijk and Smits (2016) have remarked they are potentially *conflict-ridden* environments. Driven by the need to gain a deeper, more meaningful understanding of organizational culture, Hofstede et al. (2002) present five dimensions that can be used for exploring *culture*

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awareness. They explained that managers could choose to use these dimensions to regulate the social conflict that may arise within a project environment.

Borders no longer limit construction and infrastructure projects: in fact, large-scale construction projects have increased the business opportunities available for global construction firms. These global construction projects involve managing culturally-diverse and globally-dispersed teams, international financing, and more importantly, global stakeholders. Considering the above observations, the aim of this paper is to present the outcomes of a literature survey to find the association between organizational culture and stakeholder success criteria (see Fig. 1). This goal has resulted in the need to develop a conceptual, theoretical framework that illustrates the variables and steps that contribute to the management of successful construction projects in culturally-complex contexts.

2 Project success

According to the Oxford English Dictionary (Angus and Stevenson, 2010), success is defined as, "the accomplishment of an aim or purpose." Young (2010, p. 7) has defined success from managers' personal views as, "those words that conjure up a picture we paint in our minds" and he provided examples of these pictures: huge benefits gained, public recognition, great achievements, and promotion to new projects. This takes the point-of-view of the managers or leaders themselves. Müller and Turner (2007:p.299) defined success criteria for projects as, "the measures by which we judge the successful outcome of a project; these are dependent variables which measure project success." This introduces the concept that the project outcome is the measure of project success. Furthermore, the APM (2006:p.19) has defined success as, "the satisfaction of stakeholder needs, which is measured by the success criteria as identified and agreed at the start of the project." The word *success* used in earlier definitions shows that it is dependent on some elements, like stakeholders, clients, sponsors, managers, resources, project team members, organizational culture. Moreover, each one of these elements can measure the success or failure of the project (Young, 2010).

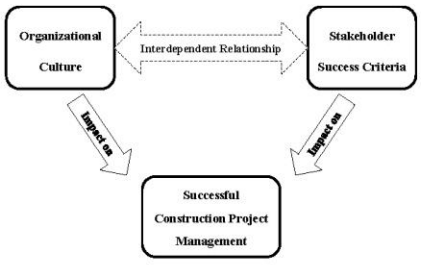

Fig. 1 Core elements of successful construction project management

In summary, the presented various authors' perspectives on project success definition agree that there must be some form of measure by which a project is judged to be either successful or not. The most common element in these definitions is the acknowledgement that projects have some level of complexity that involves different elements, including the two core elements—stakeholder management and organizational culture—which are the focus of this paper.

3 Stakeholder management

Stakeholder, as a lemma, first appeared in the domain of management literature in an internal memorandum at the Stanford Research Institute—now SRI International, Inc.—in 1963, where it was used to define ancillary support groups (Freeman, 2010:p.31). Aaltonen et al. (2008) discovered that for almost every publication about stakeholders that exists, a new definition is proclaimed. Of the many examples, a contemporary yet classic definition is offered by Friedman and Miles (2006:p.46) who have pronounced it as, "any group or individual who can affect or is affected by the achievement of the organization's objectives."

According to Friedman and Miles (2006), there are many publications that present different theories about stakeholders. For example, Phillips et al. (2003:p.480) have added that "one of stakeholder theory's greatest strengths is also one of its most prominent theoretical liabilities" and go on to define stakeholder theory as, "a theory of organizational management and ethics". In addition, Meding et al. (2013) have mentioned the importance of fully embracing stakeholder theories in construction projects due to the increase of stakeholders' diversity, power, and influence. However, Meding et al. (2013) appraise Smyth's (2008) work and discuss the utilitarian approach, which bases the value of a firm in terms of profit and growth. He suggested the need for ethics and relationship management principles to bridge the conceptual gap in this theory to help manage stakeholders in practice. In essence, studies mentioned in this paper have recognized stakeholders to have a considerable effect on project outcomes and acknowledge the need to manage this relationship with stakeholders successfully. This means considering some common factors such

as stakeholders' characteristics and dynamics, relationship and communication with stakeholders, understanding engagement and needs, and defining the link between stakeholders and project success.

On the other hand, according to Rockart (1979:p.85), critical success factors (CSFs) "are, for any business, the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization." They are the few key areas where 'things must go right' for the business to flourish. If results in these areas are not adequate, the organization's efforts for the period will be less than desired." Likewise, Yang et al. (2014) have said that understanding stakeholders related factors are essential during the project process to establish appropriate decision-making strategies. These perspectives highlight the importance for managers to acknowledge CSFs. However, Jepsen and Eskerod (2009) found in their study that stakeholder identification, classification, and analysis are essential factors for stakeholder management. Olander and Landin (2008) recommended four CSFs for stakeholder management, which included analysis of stakeholders, communication, evaluation, and relationship.

So far, this paper has identified and discussed the fundamental theories explaining (1) stakeholder management and project success and (2) stakeholders' CSFs, both of which included consideration of the management of communication with stakeholders. Most of the factors discussed are essential to delivering successful projects. However, most of the authors have focused on finding the factors without ranking them or creating models to manage them.

Molwus (2014), in his doctoral thesis about stakeholder management in construction projects, has developed Yang et al.'s (2009) model that helps managers to identify and manage stakeholders CSFs. He ranked 15 CSFs according to priority by building a model for 5 main CSFs groups for the management of stakeholders in construction projects. Molwus's model not only named the 5 main stakeholder factors that have been highlighted in past studies but also substantiated the indicators for each factor; thus, making it easier for makers to apply the knowledge and manage stakeholders successfully (see Table 1). For these reasons, this paper uses these CSFs for stakeholder management in order to identify the CSFs of the selected project.

Table 1 Critical success factors groups for stakeholder management (Molwus, 2014).

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Stakeholder engagement/ empowerment (SE)	• Involving relevant stakeholders to redefine (refine) project mission; • Formulating appropriate strategies to manage/ engage different stakeholders; • Keeping and promoting positive relationships among the stakeholders; • Communicating with stakeholders properly and frequently (instituting feedback mechanisms); • Considering corporate social responsibilities (paying attention to economic, legal, environmental and ethical issues).
Project Success (PS)	• Completion of the project on time; • Completion on budget; • Completion to specified standards/qualities; and • Completion to the satisfaction of a majority of the project stakeholders.

4 Organizational culture

Cameron and Freeman (1991) mentioned that the correct management of organizational culture leads to the delivery of successful projects. Their work directed scholars in the management field to improve and develop different methods to help with the management of organizational culture. There has also been an abundance of research on organizational culture and its associated disciplines, which has resulted in many meanings and explanations of organizational culture

and its relevance to other organizational parameters (Ankrah and Proverbs, 2004; Smircich, 1983; Zu et al., 2010).

One study was carried out by Schein (1985, p. 5), during which he defined organizational culture as "a pattern of basic assumptions, invented, discovered, or developed by a given group as it learns to cope with its problem of external adoption and internal integration that has worked well enough to be considered valid and therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems." According to Marcoulides and Heck (1993), organizational culture is a complex phenomenon characterized by many dimensions. One reason for the many dimensions that have been described is that organizational culture is very general and inclusive in scope (Cameron and Quinn, 2011). However, Hofstede et al. (2002) strongly argue that the cultural values of each organization need to be explicitly identified, and that reliance on reported values and beliefs from, for example, a parent company in one region may not be a reliable measure of the culture of a subsidiary in another region. This implies that changes in stakeholders, and their inherent cultures, will have an impact on the potential organizational culture of projects.

From the theoretical perspectives of organizational culture, Smircich (1983) mentioned that many scholars had linked the concept of culture with the study of organization management, but every organization theory had been studied from a different perspective in terms of the way it manages interdependencies and exchanges across system boundaries. For example, some scholars have studied organization and culture from a practical and operational perspective, while others have studied a *rules* or *scripts* perspective, and yet others have focused on one or more concepts of culture related to the organization, including cognitive, symbolic, structural, and psychodynamic perspectives.

Furthermore, many methods and frameworks have been designed to identify and measure organizational culture. In this context, Wallach (1983) developed a set of cultural dimensions based upon a synthesis of other major organizational culture indices. Another method is the Organizational Culture Profile Scale that was developed by O'Reilly et al. (1991). The third is the Competing Values Framework (CVF) that was developed by Quinn and Rohrbaugh (1983), and the fourth and final one is the Organizational Value Congruence Scale that was developed by Fitz-Enz (1986a; 1986b).

This paper focuses on CVF as a model to explain and recognize the differences between organizational culture types. Zu et al. (2010) have argued that the CVF developed by Quinn and his associates explores the deep structures of organizational culture relating to compliance, motives, leadership, decision-making, effectiveness, and organizational forms in the organization (Quinn and Rohrbaugh, 1983). Yeung et al. (1991) added that the CVF could be integrated into the organizational culture to other organizational components, which are both theoretically and psychometrically sound. Furthermore, CVF is built on two axes to explain the differences in value orientations. The axes are (X+Y) and are derived from the control-flexibility axis (vertical) reflecting the extent to which an organization focuses on change and stability. A focus on flexibility shows the organization's desire for flexibility and spontaneity, while a focus on control indicates a mutual desire to stay stable, controlled, and in order (see Fig. 2).

Ajmal and Koskinen (2008), however, mentioned that if managers understand the norms of organizational culture about the *right* and *wrong* and manage it correctly, it will lead to the successful operation of organizations. Likewise, Ashkanasy et al. (2000) have suggested that an awareness of culture types within the organization from the strategic phase of project life cycle is essential to recognize the project organization environment and beliefs that will reduce conflicts. Ankrah and Proverbs (2004) mentioned that organizational culture in construction projects consider the characteristics, tactics, competencies, goals, and values of the project environment. Therefore, recognizing the type of project organizational culture is essential to improve project delivery.

It has been observed that the earlier literature on organizational culture and project success shows a healthy relationship between these two elements. It revealed that identifying and understanding the types of culture within the

Fig. 2 Competing Values Framework (Cameron and Quinn, 2011)

project reduces conflicts, promotes innovation that eventually leads to improved project delivery. It also defines the link between organizational culture and successful project management. Although the above-reviewed literature has defined the impact of organizational culture on project management success, as well as established the impact of stakeholder management on project management success, there is no apparent literature discussing the relationship between organizational culture and stakeholder management explicitly. If both organizational culture and stakeholder management impact the success or failure of project management, then it is logical to say that there must be some connection between the two. This study, therefore, intends to look at this undefined relationship with the aim of enhancing the tools currently available for improving construction project management.

5 Research design

The research procedure commenced with a review of the literature on stakeholder management and organizational culture to extract key theories. A construction project (as the subject of the case study) will be selected using the following criteria: service provider classified as a global provider for construction projects, the location of the project outside the home base of the service provider (another state, country, or region), and a construction project considered to be successful. Based on the literature survey, the research focus was set and a questionnaire structured for the collection of data using both the competitive value framework (CVF) instrument to identify the organizational culture of the chosen project and the stakeholder criteria for stakeholder management (Molwus, 2014; Yang et al., 2009) to identify the stakeholders' criteria of the chosen project. A web-based delivery method has been selected to administer the electronic survey questionnaire.

The target respondents of the survey questionnaire will be the decision makers of the selected project: managers, directors, operations managers, quality managers (both internal and external stakeholders related to construction projects), public and private clients, project professionals (in-house and external), and contractors and suppliers, as identified by Chinyio and Olomolaiye (2010). Furthermore, structural equation modelling (SEM) will be utilized to explore the associations between the constructs forming the two variables: organizational culture and stakeholder success criteria.

6 Discussion

The literature on stakeholder management shows the importance of recognizing and identifying the critical success factors to help managers deliver successful projects. Likewise, many scholars have mentioned the CSFs of stakeholder management within construction projects. Some have identified the CSFs' constructs (Chinyio and Olomolaiye, 2010; Jepsen and Eskerod, 2009), while others have identified the CSFs' indicators (Meding et al., 2013; Yang et al., 2009; Yang et al., 2014). Yang et al. (2009) investigated CSFs from both sides and ranked them from the most influential to the least. More recently, Molwus (2014) grouped the CSFs into five main constructs by converging the theories about stakeholder management and the outcomes arising from empirical studies.

Organizational culture theories link culture and organization projects to clarify the types of cultures in each organization. The organizational culture literature also shows how vital it is for managers to understand the types of culture in which a project is being delivered. Many theories that described culture have been presented in the literature (see Marcoulides and Heck, 1993; Schein, 1985; Smircich, 1983) and many authors have empirically examined these theories (see O'Reilly et al., 1991; Wallach, 1983). However, Cameron and Quinn's (2011) competitive value framework (CVF) has been used to underpin many types of research because it shows that it is both a theoretically and psychometrically sound instrument when integrating and operationalizing organizational culture with other organizational components (Cameron and Quinn, 2011; Yeung et al., 1991; Zu et al., 2010).

The initial examination has led to the hypothesis that the CSFs for stakeholder management in construction projects by Molwus (2014) has an association with organizational culture (see Fig. 3). Stakeholder characteristics and project characteristics (SCPC) indicators—ensuring flexible project organization and use of a favourable procurement method—can be linked with the CVF's adhocracy culture; while SCPC indicators, such as, formulating the project mission and identifying the project interest and stakeholders, are more likely associated with the CVF's hierarchy culture.

The stakeholder analysis (SA) indicator—determining and assessing the power, urgency, legitimacy, and proximity to stakeholders—shows an association exists with CVF's four culture types. The third construct, stakeholder dynamics (SD) as a whole, is more closely related

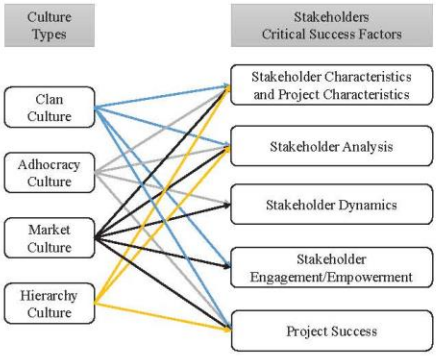

Fig. 3 Illustrated relationship between organizational culture and stakeholder CSF

to *market* and *adhocracy* cultures and, to a lesser degree, to *clan* culture. The construct for stakeholder engagement/empowerment (SE), however, is more likely to be related to *market* and *clan* cultures. The last construct, project success (PS), shows a link with all the organization types.

7 Conclusion

The above indicative theoretical review shows that both stakeholder management and organizational culture have an impact on project success. To examine the relationship between organizational culture and stakeholder success criteria for a successful construction project, and to develop the indicators with the literary theories to classify the relationship between the two variants, it will be necessary to test Molwus's (2014) model (see Table 1) and Cameron and Quinn's (2011) CVF model (see Fig. 2).

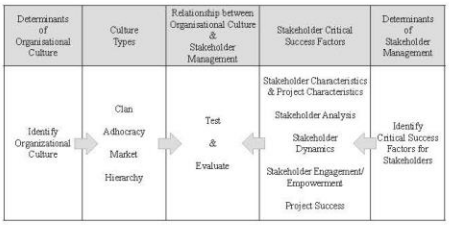

Fig. 4 Schematic conceptual framework

The discussion section of this paper evaluates some of the relationships between stakeholder management and organizational culture from various aspects, each of which requires empirical study to classify and identify the postulated relationships in terms of project success. Furthermore, the paper highlights the benefits of adopting the stakeholder management model in construction projects to achieve project success, as well as highlighting the importance of recognizing stakeholder success criteria. The paper goes on to explain the need to understand the types of organizational cultures within construction projects to sustain stakeholders and deliver the project outcome successfully.

It is proposed that a future investigation will analyse and empirically-investigate both theoretical models that were presented in the outline research design (as shown in Fig. 3) in order to derive a wealth of information about the relationship between the two core elements of construction projects in terms of success. From the empirically-derived results, the authors will investigate the findings with the aim of developing a framework that will explain the organizational culture and stakeholders' success criteria that determine successful construction projects (see Fig. 4).

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