Developing a Project Management Maturity Model to Initiate Sustainable Project Performance and Modernisation in the Kingdom of Saudi Arabia

Thesis submitted by

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Declaration

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Abstract

This research thesis involves the analysis of sustainable development activities in project management and project management maturity, taking organisational culture as a contributing factor to success in project-driven organisations (PDO) in Saudi Arabia. It was felt that the best way to do this was to introduce a model that would provide insight and increase our understanding of current performance levels of projects in Saudi Arabia's organisations, with a view to integrating concepts of sustainability into project management in the country.

Saudi Arabia's need to diversify its economic productivity and be less reliant on oil reserves in the long run and by implementing projects like those currently undertaken in infrastructure and construction gaining long-term value through sustainable project management will serve to maximise investment.

A key element in the process is to better appreciate the importance of achieving a suitable organisational culture in project driven organisations. This is regarded as an important condition for improving professional capability in project managers.

This research extends previous research by creating a model for evaluating and assessing the maturity of the sustainable dimension into project management practice. Assessing the project management maturity will help organisations integrate the ideas of sustainable development and modernisation through projects and project management by highlighting the areas in which an organisation should focus in order to reach project management best practice. The commitment of project stakeholders, project managers and decision makers in Saudi Arabia is critical to making changes to organisational culture and project management performance.

An online self-administered questionnaire was distributed to 4,948 project driven organisations in Saudi Arabia. Questions were asked of project managers about their organisational project management maturity considering their awareness and knowledge of the relevance of sustainability ideas to current and future project management practice. 644 valid responses were secured (13% response). The responses were analysed and a proposed model for assessing project management maturity was tested.

This research included extensive statistical analysis, which was divided into three different analyses. Firstly, it included descriptive statistical analysis using IBM *SPSS* version 20. Secondly, it introduces the use of structure equation modelling to demonstrate the validity of the proposed model via partial least squares analysis (PLS-SEM). Thirdly, it included further statistical analysis using (ANOVA) for different comparisons to test the relationships between the model components, which showed different results from the one expected.

The research demonstrated the correlation between the three dimensions of sustainable development (economic, social, and environmental), and variables of organisational culture as efficient for developing a sustainable project management maturity model for Saudi projects. It suggests that organisations that are likely to incorporate these elements would achieve project sustainability.

The study showed that Saudi organisations have average level of sustainable maturity of 3 out of 5 maximum points. This level of sustainability is not sufficient for organisations to achieve long-term project performance. This means that the project-driven organisations in Saudi Arabia need to put more effort into their project management practices to drive the Saudi economy to achieve sustainable modernisation.

The research makes an original contribution at two levels. At the scholarly level, it contributes toward theory development. At practical level, the research has implications for project managers and policy makers in Saudi Arabia. There is a need for Saudi organisations to integrate the concept of sustainable development into project management practice for the purpose of improving project performance. Also, the research findings should encourages the Saudi project management profession to reach higher standards of knowledge-based practice by incorporating some of the leading ideas of the sustainability movement through continuing professional development. This can be implemented by increasing the maturity of project management in Saudi organisations as well as the awareness and responsibility of project managers in respect to the concept of sustainable development. Such an outcome would reinforce the modernisation process taking place in the country.

The creation of a model for assessing the maturity of the sustainability dimension in project management practice would enable an organisation to identify strengths and weaknesses in their approach, and help stakeholders form and realise sustainable visions. It is anticipated that such a model would foster sustainable project outcomes that will directly impact the modernisation process in Saudi Arabia in the long-run.

Synonyms and Abbreviations

AMOS	Analysis of a Moment Structures
ANOVA	Analysis of Variance
ANSI	American National Standards Institute
AVE	Average Variance Extracted
BP	Business Performance
CB-SEM	Covariance-Based Structural Equation Modelling
CFA	Confirmatory Factor Analysis
CMM	Capability Maturity Model
CSR	Corporate Social Responsibility
CSV	Comma Separated Values
CVF	Competing Values Framework
ECIC	Entrepreneurship, Commercialization and Innovation Center
EMS	Environmental Management Systems
GCC	The Gulf Cooperation Council
GDP	Gross Domestic Product
GHG	Green House Gas
GUI	Graphical User Interface
H	Hypothesis
IMF	International Monetary Fund
ISO	International Organisation For Standardisation
KAEC	King Abdullah Economic City
KPI	Key Performance Indicators
LEED	Leadership in Energy & Environmental Design
LISREL	Linear Structural Relations
MLR	Multiple Linear Regression
NCC	The National Competiveness Centre
OC	Organizational Culture
OCAI	Organizational Culture Assessment Instrument
OPIC	Overseas Private Investment Corporation
OPM3	Organizational Project Management Maturity Model
PDO	Project Driven Organisation
PLS-SEM	Partial Least Squares Structural Equation Modeling
PMBOK	Project Management Body of Knowledge

PMI	Project Management Institute
PMKA	Project Management Knowledge Area
PMM	Project Management Maturity
PMMM	Project Management Maturity Model
PMO	Project Management Office
PMP	Project Management Professional
PP	Project Performance
PPP	(People, Planet, Profit)
PRINCE2	Projects IN Controlled Environment
R&D	Research and Development
RBV	Resources Based View
SAGIA	Saudi Arabian General Investment Authority
SBP	Sustainable Business Performance
SDI	Sustainable Development Indicators
SEM	Structure Equation Modeling
SPMKA	Sustainable Project Management Knowledge Area
SPMM	Sustainable Project Management Maturity
SPMM-Ec	Sustainable Project Management Maturity – Economic
SPMM-En	Sustainable Project Management Maturity – Environmental
SPMM-So	Sustainable Project Management Maturity – Social
SPMMM	Sustainable Project Management Maturity Model
SPP	Sustainable Project Performance
SPSS	Statistical Package for the Social Sciences
TBL	The Triple Bottom Line
WCED	The World Commission on Environment and Development

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Chapter One

Introduction

There is growing awareness in Saudi Arabia that the country should no longer base its economic future solely on oil reserves, which are now known to be finite. When the oil prices were consistently high, the country was able to afford large-scale infrastructure and construction investment, but increasingly there is recognition that more attention needs to be paid to alternative forms of economic activity that are not totally dependent on a diminishing resource.

Modern trends in the management of projects, along with modern knowledge-based industries, will be critical in moving Saudi Arabia from the current narrow focus of its economy to an economy encompassing a wider variety of industries and services. Firstly, it will be important to comprehend and utilise the ideas and tenets of the sustainability movement, as sustainability is fundamental to 21st century economic transformation. Secondly, there is a recognised need to develop knowledge-based industries that are not dependent on oil. Changes in both of these areas will have an impact on the project management profession, particularly project managers of local infrastructure and construction investment projects.

The goal of the research reported in the thesis was the development of a project assessment model that can be used to gauge the sustainability of the current projects in Saudi Arabia. More sustainable projects would hopefully lead to a more sustainable country and society in the long-run.

This research examined the impact of sustainable development, project management, project management maturity and organisational culture on the performance of project-orientated organisations in Saudi Arabia.

This chapter provides an overview of the thesis. It introduces the selection of the topic and provides the background to the research, research inspiration, introduces key definitions, presents the gaps in the literature and knowledge, provides a justification for the choice of the topic, presents the research questions, sets out the contributions that this study generated, briefly describes the research methodology, and finally, outlines and summarises the scope and limitations of the enquiry.

1.1 Background

1.1.1 Sustainable development

The 1960s and 1970s were a turning point in our awareness of the damage humans were inflicting on the planet. Enormous rates of resource use coupled with a rapid environmental degradation could not help but attract the attention of thoughtful individuals. Global society was urged to face the ugly reality of its destructive impact on the Earth's environment, and to face the truth of the impossibility of human existence on the planet should such deterioration continue (Singh et al. 2009).

One of the most prominent pioneering publications to direct the attention of researchers, politicians, and the general public to the need for a global change in attitudes to production and consumption was the book *Limits to Growth* published in 1972 by the Club of Rome, arguing that humanity is quickly moving to the end of its existence, given the impact of the human species on the resources of the planet. A simulation carried out by an analysis group at MIT indicated that based on the persistence of current economic activity, our species will face a major collapse in the middle of the 21st century. Sustainability was offered as an alternative way of prolonging the period of human existence (Bartlett 2012).

Ten years earlier, Rachel Carson's, *Silent Spring* (1962), had set the modern environmental movement in motion with an explanation of the damage modern chemicals were doing to the environment. *Limits to Growth* built on Carson's ideas by emphasising the finite nature of natural resources and was instrumental in initiating the ongoing debate related to sustainability. In 1997, another landmark publication *Our Common Future* from the World Commission on Environment and Development of the UN (WCED) provided the currently most commonly recognised definition of sustainability, writing that it is 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED 1997).

The WCED also noted that 'in its broadest sense, sustainable development strategy aims at promoting harmony among human beings and between humanity and nature', stressing the need for social, environmental and economic elements to be considered holistically. As a result, several aspects of economic growth underwent revisualisation and the concept of the *triple bottom line* emerged, referred to by John Elkington in his book *Cannibals with Forks: the Triple Bottom Line*

of 21st Century Business as the need for business to always consider the Triple-P – people, planet, and profit – when making business plans. Elkington claims that the three pillars are of a great importance to the concept of sustainability because they emphasise the need for a balance between social, environmental and economic activity (Henriques & Richardson 2004).

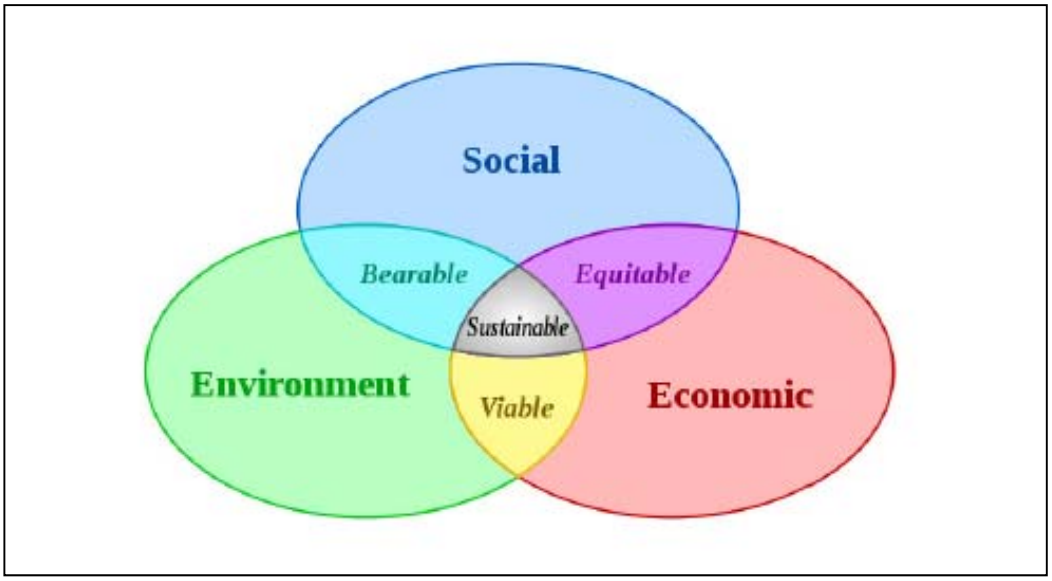

Figure 1.1 The Triple-P concept of sustainability (Henriques & Richardson 2004)

Sustainability, therefore, involves six main principles, which play an important role in the introduction of the concepts into the processes of management and sustainability. These six principles are:

- Sustainability is about balancing and harmonising social, environmental, and economic interests.
- Sustainability practices have both a short-term and long-term orientation.
- Sustainability has both a local and a global orientation.
- Sustainability focuses with consuming income, not capital.
- Core sustainability principles are transparency and accountability.
- Sustainability is about personal values and ethics. (Köhler et al. 2012)

1.1.2 The modernisation agenda in Saudi Arabia and sustainable development

Before the discovery of vast reserves of oil in the Kingdom of Saudi Arabia (KSA) in 1938, the country depended on subsistence agriculture conducted by a community that was largely nomadic (Gardner 2013). The country was largely isolated and ignored until the development of the oil fields in the 1940s, which brought prosperity and international influence. It was the rise in the price of oil after the 1973 oil crisis, however, that cemented the kingdom's current wealth and influence (Fatany 2013). From the mid-1970s onward, the high Saudi GDP has depended on the export of oil and varied according to the fortunes of that commodity (Table 1.1).

Table 1.1 The trends of the kingdom's GDP at market price as estimated by International Monetary Fund (IMF) (Index Mundi 2012)

Year	Gross Domestic Product	US Dollar Exchange Rate against Saudi Arabian Riyal (SR)	Inflation Index (2000=100)	Per Capita Income (as % of USA)
1970	22,565	4.50 SR		
1975	163,670	3.52 SR		
1980	546,602	3.59 SR	95	43.84
1985	376,318	3.62 SR	92	49.33
1990	437,334	3.74 SR	91	33.13
1995	533,504	3.74 SR	101	28.29
2000	706,657	3.74 SR	100	26.50
2005	1,152,600	3.74 SR	100	32.53

Table 1.1 shows that the Saudi GDP per capita shrank by 0.8% on average during the 1980s, grew by 2.1% during the 1990s and grew by 4.4% during the 2000s. Annual imports expanded by 44% on average during the 1970s, but shrank 1.9% during the 1980s, increased again by 2.4% during the 1990s and by 14% during the 2000s (Gardner 2013).

Although its influence has declined in recent years (Kayed & Hassan 2011), the kingdom possesses 25% of global oil reserves and plays a vital role in the Organization of the Petroleum Exporting Countries (OPEC). Oil makes up 75% of the budget revenues, 55% of the nation's GDP, and 90% of its exports (Al-Filali & Gallarotti 2012). Figure 1.1 illustrates the KSA's GDP breakdown by economic activity as estimated by the International Monetary Fund (IMF) (Index Mundi 2012).

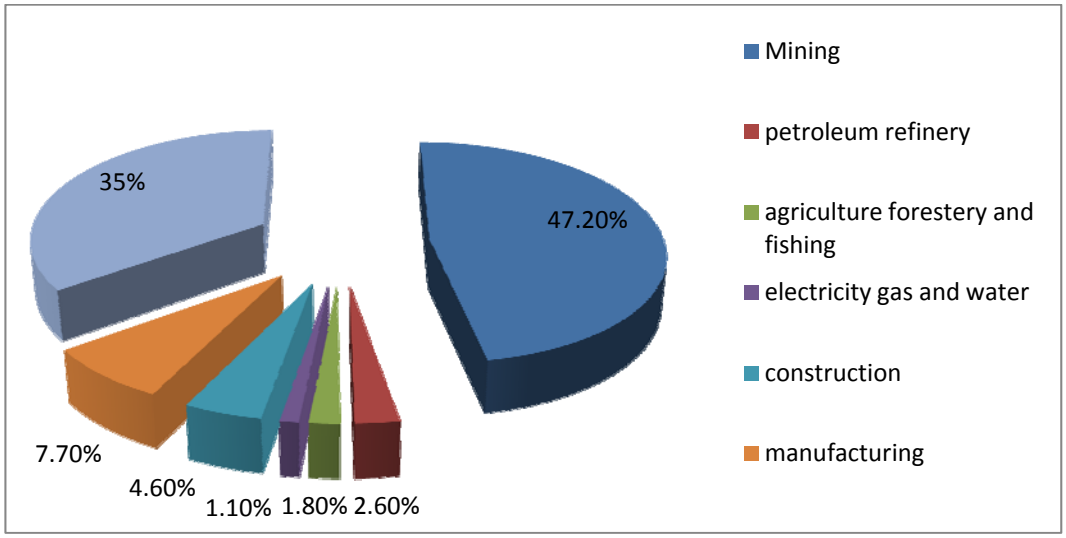

Figure 1.2 GDP breakdown by economic activity

The rise in the price of oil before 1980 allowed the KSA to expand its earnings, which encouraged the government of Saudi Arabia to fund large-scale infrastructure and construction projects (Kayed & Hassan 2011) managed by professional project managers. The Ninth Development Plan (2010-2014) presupposed heavy funding for infrastructure, and included SAR1.44tln (US$385 billion) for the improvement of social infrastructure. Infrastructure spend has included the:

- Haramain Speed Railway, with the budget of US$1.4 billion
- Saudi Landbridge project, an east-west rail line to link Jeddah and Dammam, with a spend of SAR26bln (US$7 billion)
- King Abdulaziz International Airport
- King Abdulah bin Abdulaziz Airport
- Abha Airport (air infrastructure)
- series of roads
  - Saudi Arabia Security Border
  - Batha
  - Shiba Um Al Zamool Road
  - Fourth Ring Road
  - Madinah Road Intersection with Jeddah Old Road
  - Shuqaiq to Jizan Highway
- Port expansion
- King Abdullah Economic City (KAEC) Sea Port

- Yanbu Industrial City
- Dareen Port Expansion projects under way. (Kuwait Finance House 2013)

The top 10 large scale infrastructure project are outlined in Table 1.2

Table 1.2 The top 10 infrastructure projects in Saudi Arabia (Ministry of Economy and Planning 2013)

#	Project	Budget	Region
1	**King Abdullah Economic City (KAEC)**	US $50 billion	Western
2	**Sudair City Development**	US $40 billion	Central
3	**Princess Noura bint AbdulRahman University for Women in Riyadh**	US $11 billion	Central
4	**Landbridge Project**	US $10 billion	Eastern
5	**Prince Abdulaziz bin Mousaed Economic City**	US $8 billion	Northern
6	**Knowledge Economic City (KEC**	US $8 billion	Western
7	**North-South Railway**	US $3.5 billion	North-South
8	**Jizan Economic City (JEC)**	US $3 billion	Southern
9	**Haramain High Speed Rail Project**	US $1.9 billion	Western
10	**Jeddah Gate Development**	US $1.6 billion	Jeddah - Western

Oil, which has been the primary contributor to the kingdom's GDP, has now been recognised as finite. It is clear that the government of Saudi Arabia is aware of the need and demand for sustainability and looks to diversify the economy by supporting new and different long-term projects in the kingdom (Chauvin 2013; Kadhim 2013). Project management is closely related to successful project execution; therefore it is logical that if the concept of sustainability integrates with project management, it will greatly boost the development of sustainable projects in the KSA, which would help to reduce the dependency on oil in the long-term.

1.1.3 Challenges facing the modernisation agenda in Saudi Arabia

Despite the fact that Saudi Arabia has witnessed a series of large-scale changes in the past couple of decades, the country still experiences a range of constraints, barriers, and challenges to modernisation and therefore to sustainability. Zia (2006) points out that on the one hand, Saudi Arabia is a booming country participating in the globalised economy, while on the other, the government's strict enforcement of religious and social doctrines has contributed to conservatism and strict adherence to Islamist rules and mores (Hamdan 2005).

Tension between the need for modernisation and the conservative, outdated traditions is felt most strongly in the field of women's rights, since women are not allowed to drive cars, and are prohibited from voting in the municipal elections. Such strictures on approximately half the population is a cultural challenge for the KSA. Economically, the over reliance on oil production, climate and KSA's geographical position pose their own risks and challenges, all of which inhibit modernisation, thus hampering the pursuit of sustainability by Saudi Arabian businesses. Some important challenges will be explored in detail below.

Economic challenges. Susilawati and Al-Surf (2011) have explored challenges to sustainable housing in the KSA, such as the dominance of oil in the Saudi economy, the absence of mortgage housing and other banking facilities typical of western financial institutions, and the large-scale influx of foreign investors and residents making Saudi investors reluctant to contribute to sustainability in Saudi Arabia.

Moreover, Saudi Arabia faces a significant gap in the distribution of wealth and benefits from the oil economy. still having a poor class of tribal people on the one hand and an extremely rich class of oil producers, business people, and investors. This disparity reinforces as well as creates different types of access, or no access at all, to resources, which hinders the overall achievement of sustainability in the KSA. Moreover, there are no legislative regulations for ensuring environmental, social, and business sustainability in the KSA, which makes its implementation and evaluation especially challenging (Al-Surf et al. 2011).

The KSA National Competitiveness Center (NCC) (NCC 2009) also notes the barriers to trade across borders and legislation enforcing contracts, as well as the slow bureaucratic machinery of the Saudi government prevent businesses from fully realising the benefits of newly introduced reforms directed at modernisation. Investment and innovation face immature banking and ICT systems, as well as a relatively poor level of education.

To manage these challenges, Saudi authorities are planning a new set of measures related to starting a business. Their goal is to make establishing a business easier, quicker, and smoother. Important aspects of business organisation to be modified include the process of dealing with construction permits, conditions for professional workers, registering property, getting credit for business and personal needs, and paying taxes. Stronger legislation for protection of foreign

investors is also under way, and new regulations for enforcing contracts and closing a business are being developed for making the economic activity in Saudi Arabia simpler and safer for both national and international business people (NCC 2009).

Social challenges. Saudi Arabian culture is dominated by a conservative interpretation of Islam, and Saudi society operates according to the laws of the Quran and the Hadith (Abu-Rabi 2013). Social culture is largely family-oriented, with close family ties and strong respect for, and appreciation of the wisdom of the elderly. Sometimes, large families, including three to four generations, live in a single house. This multigenerational approach to a household contradicts westernising trends towards a single family living in an individual home or unit (Al-Surf et al. 2011).

Gardner (2013) supports the idea that Saudi society represents a complex and multi-layered demographic fabric consisting of tribal Saudi nomads, foreign expatriates invited to the KSA as managers and business leaders, temporary manual workers from neighbouring countries, such as Pakistan, Indonesia or Somalia, and modern Saudi urban residents. Although Saudi Arabia is now considered intensely urbanised, the northern deserts of the country still host a rich and vibrant culture of tribal Bedouins who do not want to join the pace of modernisation.

Gardner also notes that the influx of oil wealth into the KSA has caused a major socio-demographic change by attracting immigrant workers to the country. The presence of so many people representing foreign cultures has made the highly conservative and traditional Muslim people of Saudi Arabia uncomfortable. The celebrations and traditions of other cultures are considered immoral and sinful by many Saudis, and , although no religion other than Islam is allowed to be practised in the KSA, people from different backgrounds still behave as much as possible according to their own beliefs and habits, revealing their cultural heritage. Saudis find the outsiders' behaviours embarrassing, which causes large-scale opposition to the pursuit of internationalisation, globalisation, and modernisation, which encourage the arrival of the migrants, who are looking for jobs in the modernising economy (Osman 2012).

Saudi Arabia, along with other Gulf Cooperation Council (GCC) countries, is now experiencing the highest rates of influx of foreign immigrants, which poses a threat to the coherence and fabric

of Saudi society (Bryde et al. 2014). (The GCC consists of all Arab states of the Persian Gulf, other than Iraq. It is a regional intergovernental political and economic group brought together to cooperatively tackle common issues in the region.)

Finally, Bryde, Mouzughi and Rasheed (2014) claim that Saudi Arabia shares some social challenges with other countries of the GCC shaped by their economic and socio-demographic development of recent years. Before embarking on a wholehearted pursuit of sustainability, GCC countries' social problems must be overcome, including:

- a high level of unemployment rates among local people
- low levels of education and lack of a qualified labour force among Saudis
- lack of educational, professional training, and business engagement initiatives that would assist Saudis in the smooth integration into the modernisation and business growth process taking place in their country.

Moreover, there is a profound lack of regulatory infrastructure in the KSA to support a sustainable approach to development, including:

- safety at work
- fair working hours regulations
- laws fostering equality and diversity in the country
- protection against noise, dust and pollution
- traffic congestion regulations
- stakeholder management and community involvement in social decision making

Environmental challenges. The major environmental challenge that Saudi Arabia faces on its path towards sustainability is the dry climate and harsh climatic conditions aggravated by global warming and pollution. These conditions complicate urban planning and the creation of sustainable infrastructure in the country. Desert conditions and extreme temperature fluctuations, as well as the general shortage of water, pose certain limitations on business and ordinary human activities, and limit the places where people can live without experiencing a shortage of basic resources. As a result of such a harsh climate, Saudi Arabia mainly represents a set of heavily inhabited and developing cities separated by vast tracts of desert (Al-Surf et al. 2011).

According to Bryde et al. (2014), Saudi Arabia is one of the GCC countries facing the environmental sustainability challenges in the form of energy use, with the need to pursue more renewable energy sources. The KSA is also fighting high levels of pollution, and the management of waste has obviously mostly been dysfunctional in the country. The major issue with energy sustainability is paradoxical for Saudi Arabia, since it is a country gaining wealth primarily from its rich oil deposits. Energy sustainability for the KSA is inevitably connected with an economic decline, since it will presuppose the partial refusal of oil technologies and oil fuel.

Taher and Hajjar (2014) also point out that environmental concerns have recently come to the forefront of public attention in Saudi Arabia because of the recognition of the disastrous tempo of environmental degradation in the country. The researchers also claim that Saudi business people should not necessarily see a challenge, but an opportunity in the current problematic environmental situation, as the pursuit of sustainable and renewable energy sources, fresh water production, desalination, and other technologies related to increasing the sustainability of human activity are a new, profitable sector of business.

Moreover, Taher and Hajjar (2014) emphasise that Saudi Arabia, being one of the world's largest owners of oil deposits, is primarily interested in not only reducing its environmental impact, but also in securing and economising its oil reserves for the sake of maintaining its position as the world's leading oil exporter. Therefore, energy sustainability should become one of the top priorities for the country, a profitable business sector, in the KSA changing its focus on oil in economy for the sake of achieving a sustainable energetic advantage in the global energy market.

Water. One immediate, overriding concern in the drive for sustainability in Saudi Arabia is the need to secure a sustainable water supply. Less than 2% of the land in the KSA is arable and there are no permanent rivers or bodies of water to supply the agricultural sector or the urban centres. The country, therefore, depends on streams, groundwater, desalinated seawater, and very scarce surface water to supply the country's needs. Saudi authorities have been predominantly relying on non-renewable groundwater to supply the inhabited regions, so it is imperative to secure new and renewable water resources in order to become sustainable. Both the reclamation of wastewater and desalination are therefore priority projects.

The dire environmental challenge facing Saudi Arabia is indicated by the country's ecological footprint of 4.5 hectares per capita, which is twice as high as the global average. Saudi Arabia is, in fact, in the top 20 of the world's most environmentally challenged countries, and sustainable development in the KSA is absolutely essential to secure the future of the nation (Al-Surf et al. 2011).

Cultural constraint. As we have seen, there is considerable resistance in Saudi Arabia is greatly resistant to change due to its history, political system, cultural and religious values (Al-Rasheed 2010). For Saudi Arabian projects to have a long-term investment value and provide value there is an inherent need to that the country to adopt cutting-edge ideas of sustainability from across the globe, instead of relying solely on domestic input (Edum-Fotwe & Price 2009). This would represent a broader approach to development, increase the potential for investment and reassure stakeholders and sponsors of the potential for project success, as well as enhance the development and professionalism of project managers' skill sets (Kavandi 2011).

Therefore, it would be advisable to instil the leading ideas of sustainability to project management best practice polices in the kingdom in order to allow development of long-term project rather than short-term (Labuschagne & Brent 2005). It would also be advisable for the country to borrow leading ideas of sustainability from other successful nations rather than putting entirely their own ideas into practice (Kavandi 2011). This way everyone involved in project development will be contented with the success of the projects.

Taking projects as a vehicle to deliver change and apply change, the research demonstrates that in recent times, the principle of sustainability is closely connected with these large projects and project management practices. To achieve the goal of this study within the context of Saudi Arabia, it is vital to first explore the role of sustainable development within project management and its relationship to project outcomes to produce a clear introduction of the thesis.

1.2 Research inspiration

1.2.1 Sustainable development and project management

Definitions of project management. Project management is widely recognised as the benchmark method by which projects are executed and has become the managerial approach that organisations have adopted to manage projects and achieve specific goals (Hillson 2003; Pitagorsky 2001; PMI 2014). The project management institute describes project management as

> *the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. (PMI 2014, p. 27)*

The PRINCE2 program states that project management is

> *the planning, monitoring and controlling of all aspects of a project and the motivation of all those involved in it to achieve the project objectives on time and to the specified cost, quality and performance. (PRINCE2 2014, online)*

Jugdev and Müller (2005) not only state that project management is

> *the tools techniques, and knowledge based practices applied to achieve organisational goals*
> *but further state that*
> *project management has an integral role in managing organisational assets.*

Introducing sustainability. According to Silvius, AG and Schipper (2010), sustainability is one of the most important challenges of recent times. Labuschagne, Brent and Erck (2005) explain that current project management frameworks lack the appropriate emphasis on sustainable development in projects, failing to include equal amounts of social equity, economic efficiency, and environmental performance in their project calculations (Barnard, Ackles & Haner 2011). Silvius, A and van den Brink (2011) argue that sustainability is essential in order to ensure the long-term success of projects and to avoid hurting future generations at the expense of immediate monetary gain (PMI 2009).

Turner (2014) emphasised the fact that current concerns about integrating sustainability into projects and project management are based on the observation that the current ways of production, organisation, consumption, and living produce a plethora of negative effects that will threaten future generations. The way in which the modern global community lives is unsustainable, since consumption modes and production methods are designed without proper regard to the far-reaching consequences of the project on the quality of life of the current generations' descendants. For this reason, the need to change ways of doing and thinking about things has become the basis

for introducing sustainability. Since projects are regarded as instruments of change, making projects sustainable enables an organisation to bring about changes in its strategy, goals, and society.

Numerous studies have been conducted on the issue of including sustainability in a project and the project's management. Many of them have found that the project manager plays a significant role in a project, regardless of the level of sustainability, which will vary with each project. Therefore, the profession of project management is very important, involving not just the management of the current project, but the promotion of sustainability as an aspect of project development that is critical to the future of not just current but future generations.

Furthermore, sustainability is now considered to be an integral part of the responsibility of the project management profession, and a project managed developed and managed sustainably will grow staff understanding of important concepts and their implementation.

For society to see real changes, the implementation of sustainable projects would be a powerful message. Therefore, projects can be regarded to as the means for change. The World Commission on Environment and Development (WCED) (1987) has held preliminary discussions into the connection between projects and the principle of sustainability. A little later (20 years after this commission was held) Eid (2009) states that the norms for project management 'fail to seriously address the sustainability agenda' (para. 1). This conclusion is expected because projects are temporary. There is no 'natural' connection between the process of sustainable development and projects. Figure 1.3 demonstrates how 'naturally' different these two concepts are in their features.

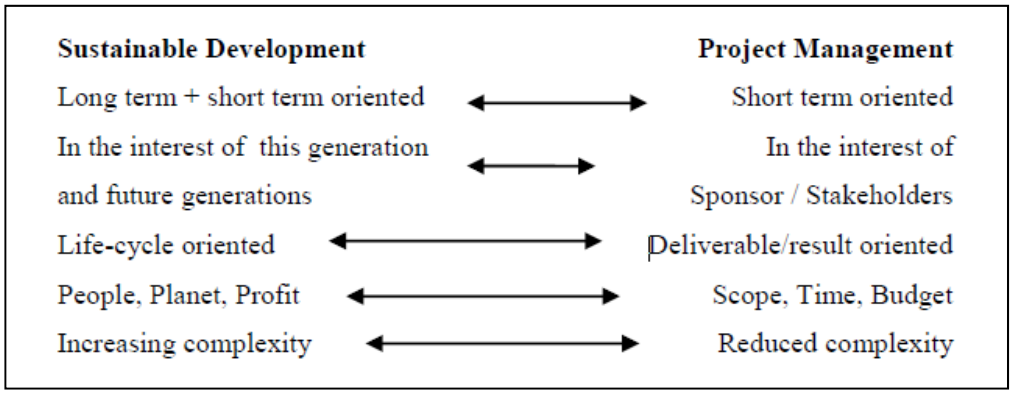

Figure 1.3 The contrast between the concepts of sustainable development and projects

Gareis et al. (2009) state that the field of project management and sustainability, and the connection between them, should be further investigated. Some first studies and ideas on this have recently been published. Although the studies differ in approach and depth, a few conclusions can be drawn including:

- Sustainability is relevant to projects and project management.
- Integrating sustainability stretches the system boundaries of the concept of project.
- Project management standards fail to address sustainability management.
- The integration of sustainability may change the project management profession.

In conclusion, the correlation between sustainability and project management is an interesting topic from a research perspective. Therefore, researchers have explored this correlation, concentrating mainly on the future developments in the field of project management (Eid 2009; Gareis, Heumann & Martinuzzi 2009; Labuschagne & Brent 2005; Silvius, G et al. 2012).

1.2.2 Project management maturity

In the past decade, the emergence of *project management maturity* (PMM) has become an area of focus as a means of striving to attain the highest levels of outcomes in projects. Extensive research into the theory of maturity has been undertaken, from which the present notion of the meaning of maturity has been generally agreed. Read (1996) states that the Webster's dictionary definition of the word 'maturity' as 'the state or condition of being mature, ripe, fully developed, and approaching perfection'. Project management maturity, as defined by the Project Management Institute (PMI) is 'the degree to which an organisation practices organisational project management,' (Kerzner 2011).

Conversely, the Organisational Project Management Maturity Model (OPM3) sets out a definition of maturity as ' the existence of best practices,' and that best practice is seen as 'an optimal way currently recognised by industry to achieve a stated goal or objective' (PMI 2009).

Research has indicated that mature organisations exhibit specific elements that reflect their maturity, namely levels of performance, degrees of competence and a focus on customer satisfaction (Barber 2004; Cooke-Davies & Arzymanow 2003; Jung & Wang 2006; Scherlock 2006). The origin of maturity and performance capability can be traced to production facilities as

a means of measuring total quality and striving for continuous improvement. It is from this that the measures were supplemented with additional improvement methods to eventually produce the renowned Six-Sigma Process. These process improvement techniques gave rise in 1993 to the Capability Maturity Model (CMM) (CarnegieMellonUniversity 2013; Jha & Iyer 2007).

By 2000, through the adoption by academics, practitioners, and project management associations, CMM became combined with project management and the subsequent project management maturity models became popular and used globally. In 1997 Ibbs and Kwak published what was known as the Berkeley Project Management Process Maturity Model (Kwak & W. 2000). They noted that until the year 2000 there had been a lack of cohesion in establishing acceptable standards for measuring organisational practice when assessed against normal standardised measurements. Ibbs and Kwak stressed that there was an inherent need to adopt a norm whereby the standard would uniformly compare specific capabilities such as: performance, competences and customer satisfaction. Despite this progress broad based adoption is limited with only a few organisations undertaking to use the OPM3 and PRINCE2 models as a way to measure capabilities.

Choice of models. Maturity models have currently expanded in choice and continue to do so in the contemporary marketplace. Table 1.2 illustrates the leading maturity models by their sector. Just as PMI in 2003 introduced OPM3, the Association for Project Management (APM) similarly introduced PRINCE2 (**Pr**ojects **IN C**ontrolled **E**nvironment), along with the P3M3 model in 2004 (OGC 2006). The ProMMM project maturity model was also announced in 2003 by Risk, Doctor and Partner (Hillson 2003).

Table 1.2 A summary of the most popular project maturity models since 1993

Model	Author	Year	Area	Target Organisation	Maturity levels	Classification	Comments	+/_
Barkeley (PM)2	Ibbs-Kwak	1997	project management	project-driven organisation	5	system-based	no sustainable aspects	-
PMMM	Kerzner	2000	project management	project-driven organisation	5	system-based	no sustainable aspects	-
OPM3	PMI	2003	project management	project-driven organisation	4	system-based	no sustainable aspects	+
PMMM	PM Solutions	2001	project management	project-driven organisation	5	system-based	no sustainable aspects	-
ProMMM	PM Professional	2001	project management	project-driven organisation	4	system-based	no sustainable aspects	-
Project Management Maturity model (P3M3)	APM Group / OGC, Office of Government Commerce,	2004	program / portfolio and project	project-driven organisation	4	system-based	no sustainable aspects	+
Sustainable Maturity Model	Silvius A.J.G.	2012	sustainable development project management	project-driven organisation	4	system-based	no clear project management area included	++

In 2001 the founder of PM Solutions, the Center of Business Practices, introduced the Project Management Maturity Benchmark and further revised the model to a Project Management Maturity Model (PMMM) the following year (Pennypacker & Grant 2003).

Crawford (2006) claims that the advent of development in project maturity management models can be directly attributed to the desire to standardise methods and processes with a view to establishing consistency of best practice with industries by project management practitioners and associations. New project management methodologies were developed after extensive research so as to have mechanisms that were effective and consistently applied to assess organisational capabilities and would reflect existing maturity levels of projects.

In addition, organisations have begun to continually evaluate project performance by introducing measurement techniques that include benchmarking and key performance indicators (KPIs) that provide a means to measure levels of project success and a way to do comparative analysis of performance against established targets (Bent & Humphreys 1996). These developments brought about the emergence of project management maturity models that emphasised excellence and a means of achieving increased project performance. In some instances, organisations undertook to adopt these maturity models with a view of improving operational performance as a way to increase their competitive advantage in the corporate arena.

Based on the importance of project management maturity in the development of project management within the organisational context, it is vital to introduce a project management maturity model in order to improve project management performance. According to Ruwanpura (2012), the three last decades witnessed a global shift in focus towards sustainable development due to the sustainable movement which led to the development of different project management models in 1980s. The shift has been of great advantage to the countries that adopted it and this therefore necessitates a revised project management maturity model that includes sustainability.

1.2.3 Organisational culture

Organisational cultures must be adaptable despite the individuality that is intrinsic in each organisation. Flexibility within the structure and framework are an essential characteristic (Pasian, Sankaran & Boydell 2012). Pasian, Sankaran and Boydell (2012) suggest that organisational culture must have a continual willingness to embrace new conditions and engage with new ideas,

such as sustainability or project management maturity, and that their ability to do this means that they are more prepared and able to address project demands, especially when they are indeterminate. This feature of an organisation's culture can best be appreciated when we consider the idea that business processes are subject to human influences that can affect management and employee motivation. Not knowing the goal of a project, for example, can impact on the quality of the process, detracting from the efficiency of the project process (Pasian, Sankaran & Boydell 2012).

When employing project management maturity a level of sophistication is expected of the project management team. It is assumed that they will understand the project management code of practice and bring it to bear upon processes by embracing the value it brings to a project. However, there is a need to fully understand the value of the project by effectively communicating the goals to sustain motivation for the project and building a level of trust that can shape the attitude of those participating in the project (Pasian, Sankaran & Boydell 2012). This then could be construed as maturity.

Organisational performance is measured by assessing the effectiveness and efficiency of projects and the resulting business outcomes (Yazici 2009). Project management maturity is directly correlated to business outcomes, but not necessarily to project performance, yet organisational culture has been solely attributed to both project and business outcomes (Yazici 2009). The need for organisational culture to impart, collaborate and empower is essential for projects to succeed (Yazici 2009). Having an organisational culture that is results-orientated and that has a high degree of project management maturity increases an organisation's competiveness that yields economic efficiencies (Yazici 2009). It is clear that the value of having both an organisational culture that is progressive supports a collaborative approach towards goal orientation, and coupled with a high level of project management maturity will result in strategic advantage, especially for project orientated organisations (Yazici 2009).

1.3 The research problem

In order to tackle rising global competition, countries are pursuing their own unique strategies for improving their economies. Saudi Arabia for example, which is not diversified and relies predominantly on natural resources to sustain the economy, has realised that dependency totally

on those resources will render Saudi Arabia less competitive in the future (Oehlmann 2010). Consequently, countries like the KSA have recently attempted to undertake sustainable projects to increase the probability of remaining competitive in the foreseeable future. Saudi Arabia has realised that oil, which has provided 90% of its export market and contributes 75% of the country's public revenue, is gradually diminishing, thus posing a threat to the country's economic future.

However, Saudi Arabia has recently moved to modernise its economy, which has had an effect on the project management profession (Shehadi et al. 2013). Policy changes are intended to maintain the kingdom's high economic position relative to its neighbours (Banani, Vahdati & Elmualim 2011). The government is putting a greater focus on comprehending and utilising the leading ideas of sustainable development and developing knowledge-based industries that do not depend on oil (Banani, Vahdati & Elmualim 2011; Shaahid & El-Amin 2009). Some of the sustainable ideas which have captured the government's attention are developing sustainable residential buildings in Saudi Arabia, investing in tourism, and developing the agriculture and water resources in the kingdom (Al-Zahrani 2009; Al-Saleh & Taleb 2010; Shehadi et al. 2013).

Although Saudi Arabia has not been unaffected by the global movement of sustainability, the kingdom is only just beginning to approach the concept systematically. There has been an abundance of mega-projects, with many organisations practising project management in an ad hoc way. And several companies claim success that they directly attribute to their capabilities in project management (Al-Ahmad 2009). In reality, organisations have continued to focus on the whole on production rather than project efficiency, and maintain the belief that their method of project management is correct for delivering project outcomes.

The organisations have continued to measure success based on the speed of project completion from commissioning to project transfer. However, in measuring the success of the projects in terms of efficiency and effectiveness, Saudi organisations demonstrate a considerably different interpretation for the region compared to standards across the globe (Mitra & Tan 2012). Therefore, it could be of significant benefit to the KSA, if the country is to modernise, to standardise sustainable development, incorporating it into project management methodology throughout Saudi Arabia's organisations.

The focus of the current research was on how the issue of sustainability impacts the project management profession in Saudi Arabia. A main assumption of the research was that in the modernisation process, Saudi Arabia is embracing best practice in project management from around the world. Best practice would enhance the professionalism of Saudi project managers and reassure stakeholders that the best outcomes can be achieved. Saudi Arabia is a country poised between tradition and change. The leading ideas of the sustainability movement represent the future and provide a challenge to stakeholders who must grasp new ideas.

One important new idea is that of integrating the concept of sustainable development into project management practice in Saudi Arabia in order to improve organisational performance and influence organisational culture for the better. This outcome is important for the KSA because the kingdom is desirous of improving professional capability in projects.

The creation of a model for assessing the maturity of the sustainability dimension in project management practice will enable an organisation to identify strengths and weaknesses in their approach, and will help stakeholders form and realise sustainable visions. It is anticipated that such a model would foster sustainable project outcomes that will directly impact the modernisation process in the long-run.

1.4 Research questions

The purpose of the study was to address issues relating to sustainability in project management practice, developing a model that will assist Saudi project managers and Saudi organisations to incorporate sustainable principles into their plans and operations.

Saudi Arabia is continually undertaking projects across all sectors and given the highly competitive resource sector of oil and gas as well as others sectors gives rise to the need for research to be undertaken about sustainable project management in Saudi Arabia and as such three primary research questions have been identified in order to achieve the research objectives. The questions address two core issues:

- how project management maturity in the three sustainable development dimensions (economic, social and environmental) influences project management in Saudi Arabian organisations
- whether organisational culture influences project management in Saudi Arabia for better sustainable performance

Insight into these issues can be provided by studying the existing relationships among sustainable development and project management and project management maturity variables and their respective influence on organisation performance. This drives the research to address the following three research questions:

- What are the challenges facing the modernisation agenda in Saudi Arabia to achieve sustainability?
- What is the role of sustainable project management maturity as a part of the modernisation process in Saudi Arabia?
- How important is organisational culture in fostering the introduction of sustainability ideas into project management?

The first question focuses on the background context of Saudi Arabia and implications for project management practice, while questions two and three concentrate on the issues of sustainability and organisational culture as contributory factors that impact project management practice and performance.

1.5 Research objectives

Based on the above research questions, main research objectives were formulated to give direction to the study. The main objective of the research, which addresses the primary research question, is to develop a model to assess sustainability of project management in Saudi Arabia considering organisational culture success factors. These objectives are:

- Explain the importance of sustainable development applications for project management in the modernisation agenda in Saudi Arabia.
- Explain the significance of project management maturity as a tool to assess the project management in Saudi projects for long-term project and business performance for the modernisation agenda through sustainable development criteria (economic, social and environmental).
- Explain the organisational culture as a key driver in fostering the sustainability ideas in project management.
- Provide sustainable solutions for project implementations in Saudi organisations, for practitioners and stakeholders based on the sustainable project management maturity assessment results in order to enhance project outcomes.

1.6 The knowledge gap and theoretical bases

Apart from answering the research questions, the purpose of this study is to explore the gaps in knowledge regarding the topic under study while attempting to fill those gaps. As a result of this study intends to show how those gaps will be filled. This study attempted to fill three gaps by:

- Interconnecting strategic management and project management considering the three sustainable development dimensions (economic, environmental and social).
- Testing empirically the theories involved with statistical methods.
- Generating a more holistic model of sustainable development activities into project management in project-driven organisations.

Several theories supported the purpose and methods of the research. They were the *corporate social responsibility theory* (CSR), *stakeholder theory*, *resources based view theory* and the *administrative theory* while several other theories associated with the suggested model were also used for developing the theoretical basis for the research.

Undertaking research involves understanding the gaps in the literature in order to fill these by providing new insights in the area. This current research project addresses gaps in the knowledge as follows:

- The lack of connection between project management and sustainable development using (CSR) theory.
- The lack of connection between project stakeholders and project management maturity by using stakeholder's theory.
- The lack of connection between strategic management and organisational culture behavior by using administrative theory.

1.7 Methods

This research used a self-administered questionnaire answered by 489 project managers in Saudi Arabia who are working in project-driven organisations in order for us to be able to make a representative conclusion of project management practices in the region. Preliminary results revealed a vast collection of information on factors influencing sustainable project maturity levels in the kingdom, including many correlations among variables. Qualitative and quantitative statistical techniques such as IBM *SPSS* version 20 and a structural equation modelling (SEM) approach via partial least squares analysis (PLS-SEM) were used to scrutinise the data and retrieve as many possible conclusions and describe recommendations for improvement to attain higher sustainable maturity levels in the Saudi Arabia projects.

1.8 Research contribution

This research makes a contribution at two levels. First, at the scholarly level, the research is multifaceted in that it undertakes to identify those relationships connecting business performance, project performance, project management maturity and the latest concept of sustainable development, as well as identify those factors that impel the progress of sustainable project management. Introducing a new sustainable project management model is the most proficient way to explore these relationships and by using Saudi Arabia as a new study context this model will help to expand the system boundaries of the project and of project management by adapting new sustainable development elements for their benefit. Furthermore, the examination of the combined interrelationships among sustainable development, project management and organisation culture and performance constructs helps to develop a more holistic theory.

Second, at an applied level, this research will help to bring a rich insight into the project management best practice in Saudi Arabia by exploring the feasibility of integrating the leading ideas of sustainability with project management by investigating the sustainable project management practices implemented by organisations in Saudi Arabia. There is growing awareness in Saudi Arabia that the country should no longer base its economic future on oil reserves, which are now known to be finite. While oil prices are currently high the country is able to afford large-scale infrastructure and construction investment, but increasingly there is recognition that more attention needs to be paid to alternative forms of economic activity that is not totally dependent on a decreasing resource.

This study will be able to illustrate problems and suggest sustainable solutions that could improve project management best practice in Saudi Arabia by exploring the concept of sustainability and its application to project management. It also, aims to identify the responsibilities surrounding the integration of sustainability into project management.

1.9 Limitations

The main focus of the research is on what is happening inside Saudi Arabia. Therefore, the generalisations that arise from the research have to be limited to the context of Saudi Arabia.

1.10 Thesis outline

The thesis is organised as follows (Figure 1.4):

- Chapter 2 provides the critical literature review that explains the logic applied to the literature review and examines the central theories underpinning the research. Three theoretical foundations (corporate social responsibility theory, stakeholders theory and resource based view) and the project management maturity & knowledge models to support the conceptual model developed in this research. Thus, the purpose of Chapter 2 is to consider the theoretical basis for the study
- Chapter 3 discusses the conceptual model, which is used to better explain the sustainable project management practices implemented by organisations in Saudi Arabia. It includes those factors that will be conceptualised and deployed in the development of the study model to be considered in the study. This chapter defines the model's elements and the constraints and connections between them. Also this chapter identifies the relationship between variables and define those variables to be used in establishing the truth of the research hypothesis.
- Chapter 4 discusses the research methodology and elucidates the survey design and proposes a survey questionnaire template along with outlining the inclusive study and analysis approaches.
- Chapter 5 presents the data analysis. the statistical analysis and the testing of the proposed model for project management in Saudi Arabia.
- Chapter 6 discusses the results of the data analysis.
- Chapter 7 is a summation of conclusions drawn, recommendations for sustainable project implementation, and an identification of the contribution to knowledge with further research recommendations.

Step 1	Identify research problem and questions
Step 2	Conduct intensive literature review for research disciplines and theories
Step 3	Design the study model and its components and variables based on step 2
Step 4	Identify related components and variables and categories them (4 main components and 71 variables)
Step 5	Identify study hypothesis between model main components (7 Hypotheses)
Step 6	Design questionnaire instruments by converting the model components and variables into survey questions (81 questions)
Step 7	Define measures for variables in the questionnaire (Likert Scale 1 to 5)
Step 8	Get ethical approval
Step 9	Identify survey population (Total population 4,948 PDO) identified by 2 Saudi official Authorities
Step 10	Design sample size (94 participants are needed, but have been collected 664 completed responses)
Step 11	Distribute questionnaire through online-survey (*SurveyGizmo*) where the 2 Saudi official Authorities have sent emails through their database
Step 12	Collect data (3 months, 2 interval)
Step 13	Analyse data through quantitative applications (SPSS for descriptive)
Step 14	Investigate hypotheses (Smart-SPL for SEM)
Step 15	Discuss the result theoretically and implication
Step 16	Recommendation for project management best practice for sustainable performance.

Figure 1.4 The study process step diagram

Chapter Two

Literature review and theoretical framework

This chapter presents the background to the research, discussing different scholars' views regarding the success of projects, and the theories underpinning project management and sustainability. Management theory describes how organisations can adopt various managerial techniques and theories to ensure the sustainability of the proposed projects.

Saudi Arabia's organisations are beginning to diversify their investments on different mega projects. Consequently, there is a need to develop a model that will assess the sustainability of the projects. To this end, this chapter focuses on four theories that relate to project management and strategic management and their use in conducting a sustainable project.

This chapter discusses theories and begins the introduction of the proposed model that formed the basis of the research. The stakeholder theory and how it is linked with aspects of project management is discussed in detail. Furthermore, the theory explains how project management can achieve sustainability through its core features. RBV theory and its links with the management of project resources for sustainability are examined, along with the theory of corporate social responsibility and administrative theory as avenues by which project management can achieve sustainability. The goal of the research, a model for sustainability (project management maturity model) and how to achieve it and apply it to projects is finally discussed.

Aware that the KSA cannot rely on oil indefinitely, the government has begun to diversify its economy by encouraging domestic and international investors to undertake other, non-oil oriented projects in the country. Being novices in terms of strategic management on developmental projects, managers from various organisations are only just beginning to look at the success of each project in terms of its sustainability (Hubbard 2009).

PMI (2014) describes a **project** as a temporary endeavour under which a unique service, product, or result is achieved. Programs and the mode of operation distinguish the nature of the project. There are interconnections required between project resources and management in order to achieve sustainability (Almarri & Gardiner 2014), and each service, product or result related to a project should strive to be unique and distinguishable from other projects while meeting universal high standards in terms of process and outcome.

Project management is the process of applying skills, knowledge, techniques and tools to ensure that a project meets the required standards (Kerzner 2013). These skills enable project managers to achieve the targeted goals and objectives. Project management is a broad field and entails managing inputs to generate outputs in an iterative and integrated manner. Once there is a achievement of project goals and objectives, the project is said to have achieved sustainability, despite using finite or infinite resources.

Köhler et al. (2012) define **sustainability** as the continual progress of project efforts, goals, principles, and desired outcome. Sustainability does not involve finding unlimited resources for the continuation of a project, but is the process of ensuring that the goals of the project are met by applying appropriate activities that are consistent with the project (Morfaw & Mba 2011). Sustainability is achieved through the effort of the industry and workers.

The question regarding project sustainability in Saudi Arabia revolves around organisations' efforts and the motivation among workers. Both project management and management theory were used in this study to understand and explain the current organisational and project activity in the KSA. The project management maturity model was used to guide the research.

2.1 The theoretical framework for the research

Planning and implementation of the strategic goals of an organisation are critical tools to use for the achievement of organisational goals (Kerzner 2011; Mattie 2012; Wessels 2007). Many organisations unfortunately fail to meet their customers' demands in the long-term because of poor strategic management resources and lack of efficient skills to govern and monitor the project (Gareis, Heumann & Martinuzzi 2009; Labuschagne & Brent 2005). An organisation that takes time to plan for its projects achieves a higher rate of effectiveness and efficiency than a company that takes little or no time to plan (Yazici 2009).

Project management therefore is a critical tool for enhancing the proper implementation of every corporate strategy in a systematic and controlled manner. In every initiation and completion of a project, it is advised that organisations and their managers follow appropriate plans and strategies, know the steps required to manage a project in order to be successful (Müller & Turner 2010), and provide leadership (Müller & Turner 2010). A talented business leader can motivate the workforce, making a targeted goal easier to achieve (Laufer 2012; Müller & Turner 2010).

Many organisations, however, fail to reach project goals, particularly the sustainability of the project in all three areas by which sustainability can be measured. Economically, for example, organisations often fail to realise continuous benefits at the end of the project, either for themselves or for the commissioning agent (Chinta & Kloppenborg 2010), damaging institutional integrity and reputation.

Household and community resilience, the social elements of sustainability, also contribute to the continuing success of a project. If households and communities are able to adapt through the management of both internal and external resources, if they are treated as stakeholders in the project, with the ability to add to decision making and collaboration (Sarkis, Cordeiro & Vazquez Brust 2010), the sustainability of a project is much more likely. For example, consider an organisation that tends to implement mega infrastructure projects in developing countries. Even after completing the project, the organisation must remain active through the employment of technological innovations aiming to maintain, train and upgrade the infrastructure during the whole of the whole project life cycle.

A third dimension of a sustainable project is environmental sustainability. Environmental sustainability ensures that an organisation is able to sustain natural resources by avoiding overexploitation and preserving biodiversity. Structural change can also be an element of sustainability and it's best achieved through empowerment where possible (Tosi & Pilati 2011). Figure 2.1 illustrates the integration of project management with sustainability and the theories used in the current research to examine how the integration can be achieved.

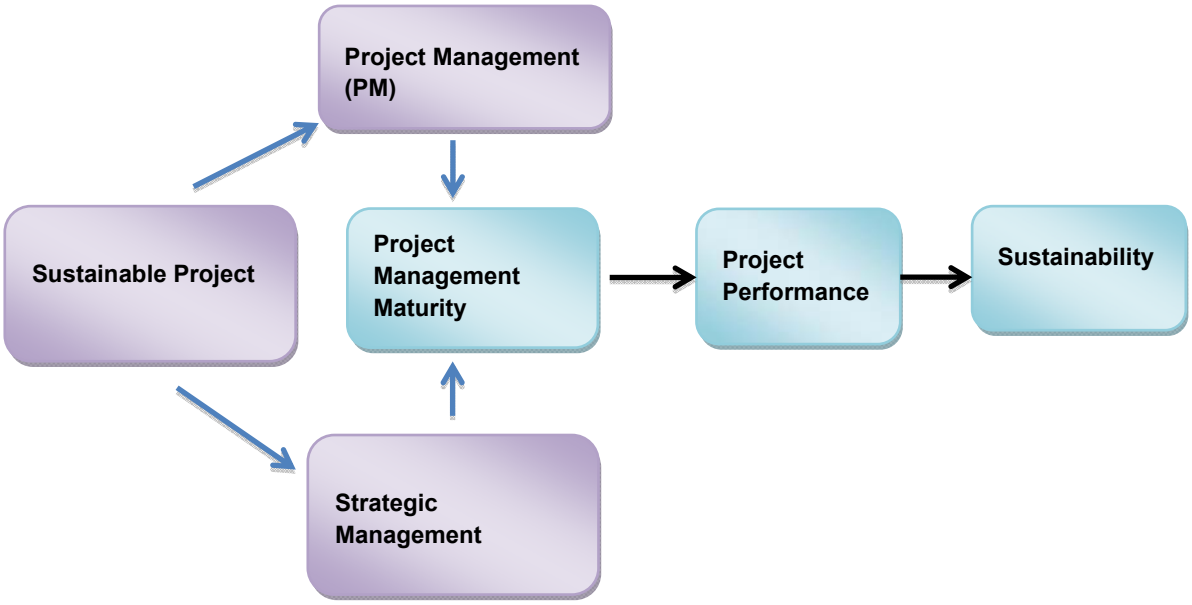

Figure 2.1 **Figure representing the conceptual relationships in the research**

Once it is understood what a sustainable project is, it becomes necessary to find the appropriate management theory to be applied in order to see whether a sustainable project has been successful. The goal of the current research was to develop or discover the necessary management theories, directly linked to project management, that would recognise, encourage and support sustainability. From an economic perspective, projects fail to succeed in the long-run because resources are scarce and finite. Management techniques that secure the long-term success of an organisation's objectives and goals are required to reduce the risk of failure; and it was the aim of the research to show how already initiated projects, as well as new projects, can be managed to achieve sustainability. This may require strategic management of scarce or finite resources and innovation (Conrad 2010).

While trying to explain what is involved in successful project management, Henry (2011) described strategic management as the application of decisions, analysis, and actions that a corporation adopts to achieve competitive advantages in the market. Strategic management sets the bases under which an organisation achieves better customer relationships and competitiveness through corporate policies and the setting of strategic priorities. To achieve competitive advantage, an organisation's internal environment should be able to maintain thoroughgoing management practices.

2.1.1 Theories of project management

There are many theories of management, but only four were chosen for consideration in this study, all connected to strategic management and project management under the umbrella of management theory.

- The ***resource based view*** *theory* (RBV) is critical as it involves firms' competitive advantage in the availability and use of its resources (Jong 2010). The theory relies on both tangible and intangible resources (Barney, Ketchen & Wright 2011). Therefore, it becomes a necessary tool for assessing how resources on a given project have to be managed in order to achieve competitiveness.
- ***Stakeholder theory*** describes organisational management and the moral ethics and values that describe the success of an organisation. According to Chinyio and Olomolaiye 2009; Freeman, H, Wic 2010; and Perrini & Tencati 2006), the main objective of stakeholder theory is to ensure sustainability is achieved over time through clear collaboration between

shareholders, suppliers, communities, customers and employees. Also, considering ethics of character that rises beyond the normative deontological and consequentialist perspectives is suggested by (Bredillet, Tywoniak and Dwivedula 2015). Therefore, the theory has become critical to project management.

- The theory of ***corporate social responsibility*** (CSR) emphasises the responsibility of an organisation to interact ethically in the community while it enjoys the profitability of being in a society (Aras & Crowther 2012). The theory observes that organisations have an economic responsibility, that is, they have to make profits. In addition, they have legal responsibilities and must abide by societal rules in good faith. In addition, the theory asserts that the organisation has ethical and social responsibility for conducting its business in an ethical manner, as well as contributing to projects that assist societal livelihoods (Lock & Scott 2013).

  CSR is a managerial attribute used to define the success of a company's project by conducting its activities ethically and helping the society improve their livelihood. Sustainability is achieved when the society is not only able to benefit from the project, but also when the organisation is engaged into social responsibilities of the community around. In chapter three, CSR will be discussed in greater detail to explain the social aspect of achieving sustainability.

  There is a clear link between societies and organisations and the achievement of sustainable project development. CSR explains behaviours that organisations should abide to in order to uphold ethical standards in both the organisation and the community involved. Therefore, the integration of CSR with triple bottom line (TBL) becomes a critical issue for discussing the social aspects of organisational responsibility (Henriques & Richardson 2004). The theory was used to assess how Saudi Arabian organisations have been true to social norms and standards.

- ***Administrative theory*** is concerned with how the organisation is designed and managed. The theory is based on the idea that there are areas of responsiveness that provide a clear division of endeavour and power of delegation (Karin Stulz 2012; Sapru 2013). The theory is relevant as it involves how the management structure should look in order to achieve the objectives of the organisation. A project cannot be sustainable if there is no clear channel of management and reliability.

  Administrative theory has become an important aspect of organisational culture if organisations want to achieve their goals and objectives. The theory is a necessary tool for

assessing organisational behaviour, and concomitantly, for assessing employees' motivation and delegation of duties in an organisation. In Chapter 3, administrative theory is discussed more fully using the application of six organisational culture assessment instruments (OCAI).

2.1.2 Project management maturity models

A project management maturity model can provide an overview of continuous improvement in many areas of a business. The model also measures an organisation's project maturity. The model provides a scope or roadmap, as well as steps that should be taken for sustainable project management. The model also incorporates managerial attributes that should be available at each stage of project development to enhance sustainability.

Organisation project management maturity model (OPM3). There are several project management maturity models, but this literature review focuses on the *organisational project management maturity model* (OPM3). The model deals with project management, program management, and the appropriate capabilities in portfolio management (PMI 2003). It is frequently used by organisations due to its strengths in execution and strategic planning.

The model is also efficient in the sense that it can predict a project's outcome. It is consistent, reliable, and goes hand in hand with organisational success (PMI 2003). The model also offers a framework with which successful projects can be realised within the context of the organisation. The model depends on the capability of the organisation in acquiring and applying the necessary management skills. A capable organisation will apply the principles of the theories discussed above, which together conform to a single model of project maturity, to achieve sustainability (Ghorbanali et al. 2011). The goal of the research reported in this thesis was to develop and appraise a holistic project management maturity model to assess the sustainability of a project.

2.2 Conceptual model for the research

Figure 2.2 illustrates a framework for assessing the sustainability of a project. The key drivers are project management, strategic management, project management maturity, project and business performance. The figure represents the conceptual relationship in this research.

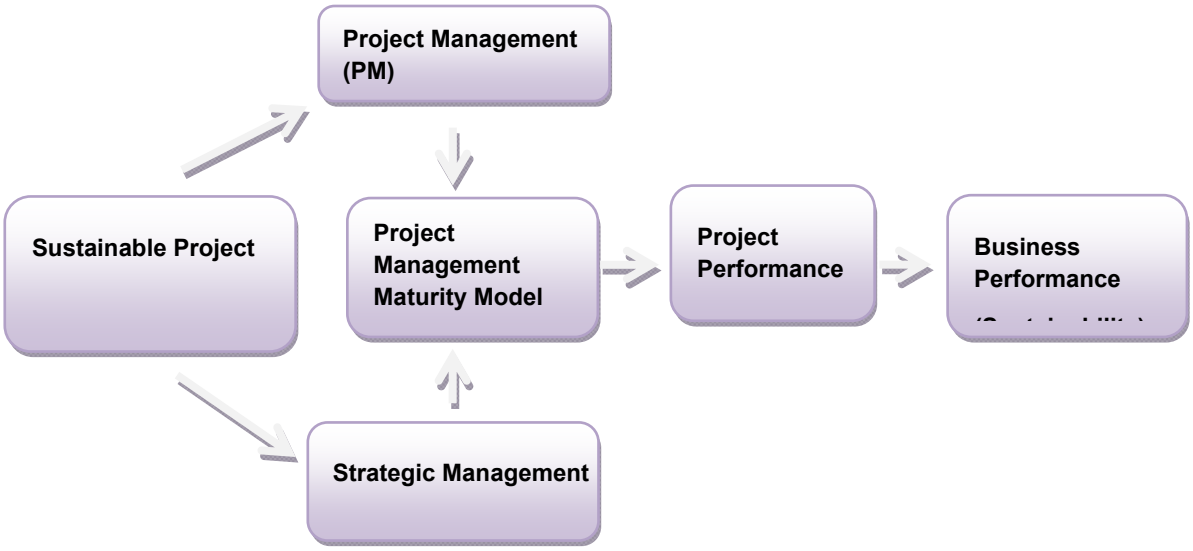

Figure 2.2 Conceptual model

The figure shows how the project management maturity model and the management theories introduced in this paper are interconnected in order to achieve business performance through sustainable projects development.

2.2.1 Siting the theories and explaining their significance for the research

Stakeholder theory argues that organisational management ensures that key participants apply ethical standards as part of the management of the project, and that management, shareholders, employees, and the community collaborate in order to achieve successful project implementation results. In the conceptual model, stakeholder theory holds that for the successful management of a sustainable project, there should be organisational management of the key parties involved to insure that projects mature equitably, resulting in project performance and sustainability.

The current study further explains the relationship between the resource based view, project management, project maturity, project performance and sustainability. The resource based view stresses the importance of the right selection of resources to enhance management for sustainability. It is true that an organisation that selects the right resources achieves competitive advantage. Organisations select resources that are applicable to their projects, thereby enhancing equitable management of the project. An organisation with few but reasonable resources can perform better than an organisation that utilises more resources that are not aligned with the goals of the project. Selecting the right and manageable resources enables easier management of resources.

Corporate social responsibility explains the organisational ethics of operation within a social community (Aras & Crowther 2012). The success of every organisation comes through the support of its consumers. If the organisation is not conducting its services responsibly in a society, it is less likely to win customers, leading to project failure. The theory combines project management with strategic management techniques for guiding a project to successful maturity in terms of performance and sustainability.

Administrative theory is based on attributes of good leadership. It represents how power and authority is distributed in an organisation in terms of the decision making process. Various leadership techniques will be described in details in the subsequent sections. Poor managerial techniques lead to failure of economic resources. Motivated workers are always attached to the organisation's goals and objectives. Therefore, in order to achieve sustainability of projects, administrative success has to be enhanced as an organisational strategic management technique. Through good leadership, project maturity is achieved, leading to project performance and long-term dependability.

The project management maturity model is concerned with the interaction between the four theories previously listed. It is the key determinant of whether the project will achieve sustainability or not. There are various stages of project maturity, and at every stage, different techniques are applied for enhancing total growth. Once the project materialises, sustainability can easily be achieved. Since the research focuses on an organisational project management maturity model, a brief history of the maturity models will be presented in later chapters, and concomitantly, the coining and evolution of OPM3.

The model assumes that the organisation takes all the responsibility for ensuring a project is successful. The organisational project management maturity model was used as the focus of the study to explain how Saudi Arabian organisations should work with the model to achieve sustainable project development. The analysis in this chapter shows how different project management and strategic management can be integrated to achieve a sustainable project management maturity model.

Figure 2.3 illustrates the relationship of RBV to project components. The theory depicts sustainability as the result of the right selection of resources for projects, project management, project management maturity, project performance and sustainability. The initial step of every successful sustainable project starts with the right selection of resources for available

opportunities. Stakeholder theory argues that proper management and cooperation among shareholders, employees and community enables the success of a project, thereby leading to sustainability. Unless the key participants cooperate, the project cannot be realised.

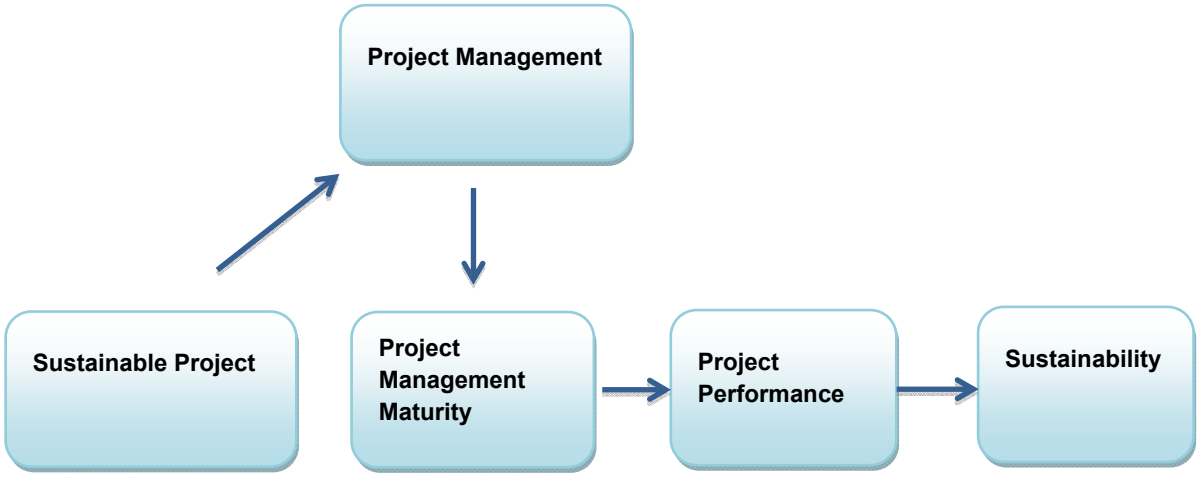

Figure 2.3 Conceptual model involved in RBV and stakeholder theories

Figure 2.4 illustrates the success of a sustainable project through the application of strategic management. A project cannot be successful if the organisation has a limited customer base. Therefore, CSR asserts that every organisation has the responsibility of operating ethically in the society where its operations are based. By doing this, the company demonstrates that it is not only aiming to achieve profitability, but also to improve society. Through CSR, an organisation's projects mature, leading to project performance and sustainability. Administrative theory asserts that organisational leadership techniques influence the performance of the sustainable project. It is only where the management is active that sustainable project development can be realised.

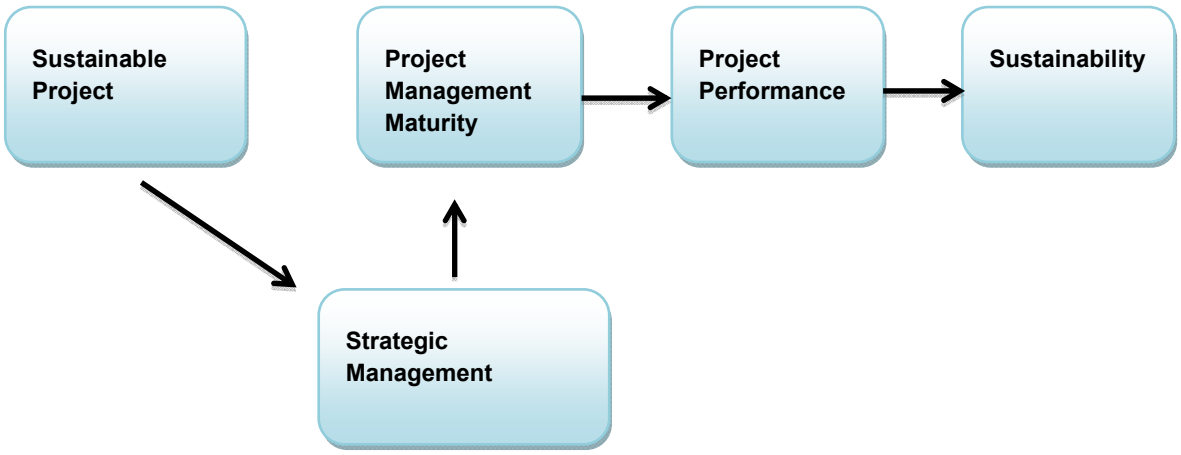

Figure 2.4 Conceptual model involve in CSR and administrative theories

Table 2.1 is a summary of the relationships between the components of a project management model and various theories. RBV is concerned with how organisations make the correct selection of resources. Stakeholder theory argues that the management and cooperation of the parties involved in a project are beneficial to its success. Administrative theory stresses that leadership in management is crucial for the success of a project. CSR stresses the importance of the organisational contribution to social activities to the community involved, while conducting their activities in an ethical manner

Table 2.2 Summary of theories and model applied in this thesis

	Sustainable Project	Project Mgt	Strategic Mgt	Project Mgt Maturity	Project Performance	Sustainability
Resource based view (RBV)	✓	✓		✓	✓	✓
Stakeholder theories	✓	✓		✓	✓	✓
Corporate social responsibility (CSR)	✓		✓	✓	✓	✓
Administrative	✓		✓	✓	✓	✓

2.3 A detailed examination of the key theories

Having introduced the key theories that formed the conceptual framework for the current research, it is worthwhile examining each in detail before moving on to Chapter 3 to discuss how the conceptual model fits in the Saudi Arabian context since the principles of these theories guided the development of the new model for sustainable project management.

2.3.1 Corporate social responsibility (CSR)

Antecedents to CSR. Although the concept of corporate social responsibility (CSR) has been discussed since the 1950s, it can still be considered an emerging idea and encompasses contrasting definitions that are often characterised by varying terminology, models, themes, concepts and theories (Pedersen 2012). (Aras & Crowther 2012) debate the resulted in new practices that are varied in nature, and pinning down exactly what CSR means has not proved possible. CSR remains elusive for researchers, as well as project managers and their clients. In

addition, there is debate whether its implementation is necessary. The definitions of CSR mainly rely on an individual's perception of obligation or responsibility that in effect dictates the role of an organisation to the broader society and societal issues such as ethics and responsibility (Pedersen 2012).

Early contributions of CSR theory. Carroll (1999) argues that the integration of social responsibilities into businesses operations had its roots in the year between 1880 and 1890, and involves practices or programs that impact citizens and employees. Rashid and Abdullah (2012) further argue that large corporations should voluntarily assume social responsibility and behave philanthropically. The authors suggest that factors such as public opinion, labour unionism and political pressures are the sole basis of CSR for large corporations and organisations, and all conform to the aim of social responsibility. CSR received a boost after the First World War (Bacher 2007). During this period, businesses added the term 'service' to their descriptions of themselves to imply the taking of social responsibility. He continues to argue that contemporary CSR concepts originated with the 1800s financial capitalists, and gained support through the social issues arising after the 1930s Great Depression (Carroll 1999).

Development of CSR theory. Many factors led to the development of CSR theory. Carroll (1991) argues that the drivers behind CSR shifted into the hands of the public and away from corporations due to the societal change occurring in the 1960s and 1970s because of stakeholder activism. Cespa and Cestone (2007) argue that the stakeholder activism arose due to increased awareness of social issues. Individuals increasingly realised the externalities and consequences of production and consumption, both direct and indirect effects, including how other parties are affected.

Carroll (1999) points out that the increased public demand for CSR activities by the firms and corporations in the 1970s contributed to the development in CSR theory. Consumers became much more interested with the final destination of their dollars. They were also concerned about whether the investors ploughed profits back into the community. CSR theory therefore developed from the belief that corporations and firms had social responsibilities due to the nature of their operations.

Further contributions to the CSR. There have been contributions of the CSR to the discipline of project management and sustainability. Carroll and Shabana (2010) argue that firms and organisations have obligations to society and the groups that make-up the society. As such, he points out that firms should uphold these obligations in a way that achieves sustainability in the society which is impacted by the projects that the firms undertake. When an organisation takes social responsibility via the CSR, its projects are likely to achieve a greater sustainability(Kolk & van Tulder 2010).

Labuschagne, Brent and Claasen (2005) argue that the practice of CSR in project management is a necessary, though not sufficient factor, for wealth maximisation. CSR is also sufficient in ensuring the sustainability of projects. Labuschagne, Brent and Claasen (2005) suggest that for projects to remain sustainable over longer periods, the project managers should devise mechanisms through which the stakeholders benefit through CSR.

Review of the CSR theory. There have been reviews of CSR theory since its inception in the 1950s. The theory originated as a mechanism for diverting public criticism (Bacher 2007). Organisations and businesses engaged in social responsibility for the sole purpose of mitigating the externalities caused by their production activities (Bacher 2007). Carroll and Shabana (2010) also found that organisations only concerned themselves with the issue of ethical CSR when they could embed it in the motive of profit making.

Sacconi (2012) suggested that CSR must fulfil the social contract argument, meaning that the approach to CSR by businesses must achieve flexibility since the values of the society vary across economies and change over time. Ido Crowther and Aras (2008) supported Sacconi's view. According toCrowther and Aras (2008), businesses hold a social contract with the society and thus exist only with the society's goodwill. Therefore, businesses have a social responsibility to the society in which they operate. CSR helps businesses and organisations maintain their reputation and public goodwill and minimise the implicit costs. The explicit costs are those associated with running and undertaking the CSR activities. However, the authors point out that CSR is costly to initiate and maintain, and that corporations should not focus on the cost incurred

2.3.2 Stakeholder theory

The stakeholder theory, according to Friedman and Miles (2006), imagines the firm as a group of stakeholders. The main purpose of the firm is to manage their needs, viewpoints and interests.

Early contributions to the theory. Stakeholder theory was visualised in the works of Dodd in 1932. In Dodd's work, the General Electric Company (GEC) was already recognising four groups as stakeholders. Among them were customers, the public, shareholders and employees. Freeman, H, Wic (2010) also identified four critical groups, but included managers rather than shareholders.

The concept emerged again in the pioneering work of the Stanford Research Institute (SRI) in 1960 (Friedman & Miles 2006), and in the mid-1980s through the publications of Richard Edward Freeman. In 1984, Freeman popularised the stakeholder theory through his work titled *Strategic Management* (1984). He based his theory on other earlier work by Ian Mitroff, James Emshoff and Richard Mason.

Development of the theory. The stakeholder concept raised many arguments during its development in the 1980s because of the many changes occurring in the thinking of students, workers, environmentalists and consumer groups as the 1960s drew to a close. Freeman (2001) notes that the development of the stakeholder theory rests on the planning, management and sustainability of the business entity through reliance on information symmetry. Freeman also notes that project management literature, like the literature in other disciplines such as strategic management, hardly considered stakeholders 30 years ago.

For example, Porter's (1980) work on SWOT analyses (strengths, weaknesses, opportunities and threats) ignored the concept of stakeholders in the analyses of business environments. Friedman and Miles (2006) point out that Igor Ansoff, considered the father of strategic management, was part of the Lockheed-Stanford 1960s-1970s connection responsible for the initial stakeholder definition and the introduction of the stakeholder theory.

Freeman chose the term stakeholder rather than stockholder because of the latter word's association with economics. Later, he introduced the concept of stakeholder management in the context of project management and sustainability. His viewpoint was that project managers ought to manage their stakeholders towards the achievement of the strategic goals of the project, one of which is to make the project sustainable.

Further contributions to the theory. There were further contributions to the stakeholder theory that relate directly or indirectly to the field of project management and sustainability. Freeman (2010) suggested that project managers should formulate and implement those processes that would most likely satisfy all including those groups that had a stake in the firm's projects or businesses. Bourne & Walker (2008) suggest that the major tasks of these processes are the management and integration of the interests and relationships of the shareholders, customers, employees, communities, suppliers and other parties or groups in ways that ensure the long-term success and sustainability of a project.

According to Donaldson and Preston (1995), there are three main elements in the stakeholder theory. These include the descriptive, the instrumental and the normative approaches. The *descriptive* aspect of the theory deals with the ways in which project managers relate to various stakeholders and the ways in which they represent their interests. In this instance, the firm can be pictured as a composite of interests, which may be sometimes cooperative and sometimes competitive.

In the *instrumental* approach, various attributes of the organisation, the project and the stakeholders receive examination. In this case, the organisational consequences of integrating stakeholders into the management of projects receives examination., and the connection between corporate governance goals and stakeholder participation receive scrutiny.

Freeman (2010) notes that the *normative* element of stakeholder theory relates to the identification of philosophical and moral guidelines linked to the management of the activities of the firm and its projects. The view also incorporates project sustainability, as moral and philosophical guidelines help in project management and planning to ensure that stakeholders appreciate the need for the sustainably of the project over a long period of time.

Review of the theory. The stakeholder theory has also undergone various reviews since its introduction by Freeman in 1984. Donaldson and Preston are quoted in the work of Lu and Abeysekera (2014) after introducing the idea of normative theory as a core component of stakeholder theory. The idea behind normative theory is that the stakeholders possess legitimate interests in the projects that firms undertake and that their interests possess an intrinsic value as a

result. In this case, Donaldson and Preston argued that firms have a responsibility towards their stakeholders in relation to the projects they undertake.

However, Freeman thought that normative theory could be divided into an ethical and an economic strand (Sapru 2013). His view is that every firm, whether knowingly or unknowingly, incorporates the dimensions of morality in every project they undertake. For this reason, the relationships between stakeholders and firms rests on the aspect of moral commitment.

Freeman (2001) also provided a new definition of the term stakeholder. In his view, the term referred to special groups regarded as crucial to the operation and survival of any organisational activity. Freeman also suggested various ways of facilitating the mapping of important stakeholders through a string of formulaic questions. Friedman and Miles (2006) have added to the definition of stakeholder, suggesting two criteria to define stakeholders and their relationship with the firm. Firstly, Friedman and Miles seek to determine the compatibility or incompatibility of the stakeholders while the second criterion considers the position of the stakeholder, and whether they are a necessity or a contingency.

2.3.3 Resource based view

The resource based view (RBV) views a firm's resources as the basis of superior performance. The RBV theory emerged to explain why some firms outperform others. In project management, RBV explains how management resources, such as strategic thinking and the decisions relating to sustainability can result in better performance over time and greater sustainability (Barney, Ketchen & Wright 2011).

Antecedents of the RBV. Around 1809, the political economist, David Ricardo, formed one of the most important principles of economics, the *law of rent*. The law states that the rent of a land site is equal to the economic advantage obtained from the site when it is put to its most productive purpose relative to the advantage obtained by using rent-free (marginal) land, always assuming the same inputs. Rent differences are due therefore to the variations in the land's fertility due to its geographical disposition.

Ricardo concentrated on the differences in land fertility that occurred due to increases in population and resulting variations in land rent. Thereafter, he applied the same concept to mining, considering labour and transportation costs as the resources through which the

performance of the mine should be judged. This thinking introduced the concept of *competitive advantage* due to variations in the resources available to a business (Peteraf 1993) compared to other businesses of the same kind.

In 1951, Chamberlain worked on consumer choices and competition theory. He also worked on how they relate to prices. In 1953, Robinson focused on imperfect competition that arose due to product differentiation. In 1959, Penrose laid the foundations for the firm's RBV theory. He included elements of growth in his theory of the firm, highlighting the factors affecting a firm's growth, including those services crucial for expansion. Competition and diversification emerged as the perfect instruments that a firm could use to gain competence (Wernerfelt 1984).

In 2001, Barney and Arikan introduced the antecedents of distinctive competencies and anti-trust implications. The distinctive competencies arose in those firms that applied strategies in ways that were more effective and efficient, outdoing other firms. The anti-trust implications touched on the the fact that the firms' success resulted from the failure of perfect competition in the market. The failure of perfect competition has anti-trust implications.

Early contributions to RBV theory. Wernerfelt (1984) was the first publisher of the RBV. The author demonstrated the difference between resources and product in his analysis. He also studied the relationships existing amongst strategic resources, profitability and resources. According to Wernerfelt, a firm's resources existed as either tangible or intangible assets (Barney 2001a). He also used Porter's (1980) five forces of competition in his analysis, describing those options that firms have in terms of project management and sustainability when choosing resources. In the analysis, he describes the basis of generating three types of advantages, which include the first mover advantage, mergers and acquisitions and attractive resources.

Ricardo's law of rent was expounded by Barney in1986, when he added the concept of the strategic factor market, suggesting that the market ought to be imperfect so that firms could gain above normal rents. In 1989, Dierickx and Cool introduced a new concept arguing that firms choose to use resources, products or strategies only based on opportunity cost analysis (Peteraf 1993) .

Development of RBV theory. In the development of the theory, Barney, through 1991-1995 publications built on the early contributions and thus explained how firms could gain competitive advantage through selection of capabilities and strategic resources (Almarri & Gardiner 2014). As a result, the concept allows firms to use strategies to make their market positions better. The RBV theory therefore relies on two assumptions in analysing a firm's performance and internal characteristics. Firstly, firms operating in a similar industry may have control over strategic resources. Secondly, the mobility of resources is imperfect, and thus there is inelastic supply across the industry. These observations are the basis of the idea of competitive advantage.

Barney (2001b) advanced his work by introducing two new definitions to the theory of the resource based view. The first defines the firm's resources as all capabilities, assets, attributes, knowledge, information and factors both tangible and intangible that enable a firm to make and implement strategies aimed at improving effectiveness and efficiency. The second definition stressed the concepts of competitive advantage and sustained competitive advantage.

VRIN (valuable, rare, imperfectly imitable, non-substitutable). The VRIN are characteristics that make it possible for capabilities and resources of a firm to convert into competitive advantages, including project management who emphasise sustainability (Kraaijenbrink, Spender & Groen 2010). A firm that employs those strategies that bring improvements in efficiency and effectiveness adds value (*valuable*). The result is that such a firm transforms into a better performing firm. If the firm has access to resources that are *rare* or difficult to obtain, it automatically has opportunities to outperform its competitors. If the resources used in one firm in an industry are difficult to obtain and also difficult to imitate (*imperfectly imitable*) or *non substitutable,* the firm has many advantages over its competitors. These sorts of resources may be the quality and vision of the management or the skill and dedication of the labour force, which a not easily replicated by competitors. The uniqueness of a firm's resources represents a tremendous advantage in the marketplace, and the theory of the resource based view emphasises this fact when analysing businesses and their activity (Barney & Arikan 2001).

Further contributions to the RBV. There have been further contributions to the RBV, especially to those aspects related to project management and sustainability, including more emphasis on the characteristics of durability, inimitability, competitive superiority, appropriability and

substitutability (Eisenhardt & Martin 2000). *Durability* relates to the amount of depreciation of resources involved in any project management work. *Inimitability* relates to issues of competition whereby it is better for a firm to have resources and produce outcomes that cannot be imitated by others. Nor should they be readily *substitutable*. In these circumstances, the business will exhibit competitive superiority and it is assumed that their projects will be more sustainable. Importantly, the success of the firm must be *appropriable*, meaning that the firm itself gains value from its successes.

Review of the RBV theory. The RBV theory has been reviewed by different researchers over the years. To start with, Almarri and Gardiner (2014) reviewed the RBV theory and concluded that the theory diffused into many disciplines including project management and selection of appropriate resources. The underlying theme that Barney stressed is that the asymmetries of information and market imperfections are the ones that give room for firms to be characteristically different from one another.

Wade and Hulland (2004) said that RBV is a major factor to note when it comes to the right selection of resources for initiating a sustainable projects. After borrowing some knowledge from the economics of project management, the researchers realised that there is a competitive advantage for firms that are able to select the right resources for its projects. Particularly, the two authors focused on market entry and diversification, market exit and corporate refocusing, industry evolution, performance and diversification, including innovative activity that firms undertake and brought these activities to the forefront of the concept of the resource based view.

2.3.4 Administrative theory

Early contributions to the theory. Fayol (1937) receives credit for the development of the administrative theory, introduced in his publication *Administration Industry et Generale*. In his book, he emphasises management functions. Fayol also incorporates broad administrative principles, purposely meant to act as guidelines in the rationalisation of activities in an organisation. Fayol argues that effective administration of an organisation could mean administering workers according to their specialisations. He further nominated the five functions that comprise administration in any particular organisation – organising, planning, coordinating, control and command (Breeze & Miner 1980).

Taylor (1939) introduced the idea of a bottom-up administrative structure in an organisation. In his view, administration operated effectively and efficiently when it operated from the bottom organisational structure to the top management. Mooney and Reiley (1939), supported by Fayol, (1939) disagreed. They felt that the administration ought to function from top down perspective. These theorists contrasted sharply with Taylor. They insisted that a pyramidal and hierarchical structure of administration controls the relationships in an organisation better. Fayol suggested that it was the subordinates in the administration who should handle routine matters, while only exceptional matters should reach the superiors. He also urges administrators to oversee no more juniors beyond their administrative ability (Breeze 1982; Breeze & Miner 1980; Sapru 2013).

Development of the theory. There have been various developments of the administrative theory since its inception by Henry Fayol in 1937. Fayol (1949) introduced the idea of the top down administrative system in organisations where the focus was on administration and management through the five core functions of administration. Fayol was interested in incentives that could motivate workers other than just the addition of more money. The incentives included the introduction of a fair and equitable working environment, improving the general welfare of workers, such as medical and safety services. Taylor's (1949) bottom-up administrative system demonstrated little concern for subordinate workers (Smith & Boyns 2005).

Fayol (1987) introduced the aspect of functional administration management in which he highlighted the various levels of administrative hierarchies among workers that he felt would be effective for efficient administration. Fayol later introduced the 14 management principles for effective administration in organisations. These included the

- delegation of authority
- division of work
- chain of commands
- discipline
- congenial workplace
- centralisation
- order
- scalar chains
- compensation package

- good interrelations among workers
- team spirit
- initiatives
- equity
- job guarantee.

Fayol (1987) further points to planning as the key to effective administration of an organisation. He argues that effective planning caps uncertainty in organisations by forcing administrators to anticipate change, focus ahead, consider the change impact and finally develop responses in an appropriate (Urwick 2002).

Further contribution to the theory. The administrative theory has made an enormous contribution to the discipline of project management and sustainability. Hurt and Thomas (2009) highlight the five core functions of administrators as being applicable to managers in the supervision of projects and firms – planning,

Planning. According to Hurt and Thomas (2009), planning reduces the risk from uncertainties involved in any particular project. Uncertainties are better managed when managers focus ahead, anticipate imminent changes, gauge impact change and develop responses that are appropriate. Planning is essential in the field of project management. Planning allows project managers to effectively manage their projects and ensure that they are sustainable in the long term.

Organisation. Hurt and Thomas (2009) also introduce the aspect of organisation. It involves the development of those resources related to an organisation, including human and material. Project management deals with the organisation of such resources in order to achieve the project goals and objectives. Through organisation, project managers are able to achieve their goals, including sustainability.

Command. Fayol (1987) suggests that command keeps the organisation's processes running. In the field of project management, some aspect of command has to apply since a hierarchical structure exists, demanding that someone has to be in charge. Therefore, the 'bottom up' structure has to operate on commands in order for the project to run effectively and efficiently while enhancing sustainability.

Coordination and control. Fayol (1987) also nominated coordination and control as essential aspects of administrative theory as applied to various disciplines, among them project management (Smith & Boyns 2005). Through *coordination*, a group's efforts have to receive alignment and harmonisation to produce the desired effect. *Control* means that the necessary and acceptable rules, regulations and procedures apply in the management of a particular project. Control and coordination are essential in project management, and a well-controlled and coordinated project will enhance the establishment of sustainability (Karin Stulz 2012).

Review of the theory. Administrative theory has been reviewed since its original inception by Fayol, who viewed the administrative structure from a 'top down' perspective and suggested that command from the top was the best way an organisation could achieve effectiveness and efficiency in its operations. He also inclined his administrative theory more to workers and the incentives to facilitate their motivation in an organisation other than addition of more money. Taylor (1949) contested Fayol's concept of an administrative structure, arguing instead that a bottom-up administrative structure was the best way for organisations to achieve efficiency in their operations. Taylor was not concerned with the workers or with stimulating their motivation.

Fayol (1949) was critical of Taylor's view on where and how a worker received their instructions. According to Fayol, Taylor was suggesting that orders came from eight quarters – route clerks, instruction card men, time and cost clerks, speed bosses, gang bosses, inspector bosses, repair bosses and shop disciplinarians. Fayol argued that this structure presented a situation that was unworkable. Fayol himself (1987), however, introduced 14 principles of administrative management, which he included in the administrative theory. These included the:

- division of work
- authority
- discipline
- unity of command and direction
- centralisation
- remuneration
- scalar chain
- equity

- initiative
- stability of tenure
- *espirit de corps*.

2.3.5 Project management maturity

Evolution of the project management maturity model (PMMM). A project management model is used by organisations to measure various projects' maturity. The model provides avenues under which necessary steps can be taken to oversee project improvement and maturity. PMMM is therefore a tool for enhancing the ways in which a project can be measured for maturity (Pasian, Sankaran & Boydell 2012). The model offers a logical path for a strategic plan of progressive project management.

The evolution of PMMM is quite technical. Various evidence shows that the model was developed from the project management discipline. In the second half of the 20th century, the management maturity model evolved through the effort of the software industry (Paulk 1993). There was a need to improve the model due to the increasing complexity of management, many measurement variables, constrained budgets, and the need to obtain consistent results. Several software project management models and methodologies were developed in Western countries that cannot be discussed at length in this single chapter. However, some of the software maturity models include the *capability maturity model integration*, *Kerzner's maturity model*, the *Prince 2 maturity model*, and the *organisational project management maturity model*, among others (Cooke-Davies 2004). These maturity models have different maturity levels, but all aim to enhance effective project management for sustainability.

Development of the *organisational project management maturity model* (OPM3). The organisational project management maturity model (OPM3), one of the versions of the general PMMM, was central to the conduct of the current research. Prior to the development of the OPM3, governments, organisations, corporations, charitable institutions, non-profit organisations, and the military were having difficulty establishing strategies for achieving objectives and goals (Kerzner 2011). Many organisations failed to achieve set goals, because there was no detailed and tactical means of applying organisational capabilities (Andersen & Jessen 2003), in spite of the existence of management models.

Therefore, a maturity model was developed in 1998 by a team of volunteers from the Project Management Institute after assessing 27 existing maturity models (Fahrenkrog et al. 2003). According to Fahrenkrog et al. (2003), the model was developed to cover the unanswered questions and gaps left by the other models. As determined by the OPM3 project team, the OPM3 model had five objectives:

- offering organisational project management best practices
- capabilities based on each aggregate best practice
- observable outcomes from an organisation
- means to measure outcome through key performance indicators
- the path for identifying the organisation's best practices and capabilities.

The OPM3 can be used as a roadmap which organisations follow to improve performance. Prior to the development of the maturity model, governments, organisations, corporations, charitable institutions, non-profit organisations, and the military were having difficulty establishing strategies for achieving objectives and goals (Kerzner 2011). Many organisations failed to achieve set goals, because there was no detailed and tactical means of applying organisational capabilities (Andersen & Jessen 2003).

Organisational project management codified the application of tools, techniques, skills and knowledge, indicating how they should be applied to project activities and project management. The success of the model has shown that organisations need to not only use individual tactics for competitiveness, but also involve external organisational orientations for setting strategic goals (Rad & Levin 2006). Adopting organisational project management is itself a strategic move, which, when used well by an organisation, enhances the critical regulation of resources in order to boost financial results (Aubry, Hobbs & Thuillier 2008).

The model enhances the capacity of the organisation to implement its strategic planning on individual and group projects (Kerzner 2011), and improve project management. The OPM3 consists of three elements – knowledge, assessment, and improvement (Meisner 2007). They are clear indication of every organisation's focus from start-up to sustainability. Once an organisation comes up with an idea for a project, knowledge is applied to access the available opportunities. Assessment establishes standards and the methods for initiating a project. Improvement relates to

the length of time the organisation will allow to realise the long-term dependability of the project. Therefore, the issue is not on how to start a project, but how the project will be managed and sustained for future dependability.

The OPM3 was not developed to inform organisations about what needed to be improved in relation to a project, or how to make the project, but was intended to be a framework on how to set standards and achieve self-examination by informing organisations about the required decisions and potential initiatives for change (O'Bray 2003).

Since the model was created to enhance improvement, steps for realising improvements are embedded in the stages of the process management. The stages range from general to more specific.

The generalised stages include the following:

- standardise
- measure
- control
- continuously improve

The model applies the four general stages to achieve the objectives of the project. More specific stages for project maturity involve; initiating processes, planning processes, executing processes, controlling processes and closing processes. These specific stages are interrelated and enhance the normal flow of information within the three domains of management, that is, portfolio management, project management and program management (PMI 2003).

Contribution of the model. The model has become a critical tool under the three domains of management in modern society. The model has helped organisations to gauge themselves against the standards of the project, in order to decide whether to pursue a plan of improvement or not, depending on the state of the project (Crawford 2006).

For those organisations that intend to improve a project, sustainability can be achieved through the adoption of the model by understanding the model standards and incorporating them into the organisational setup. In addition, the plans for project management should be known by every participant in the control process (Jachimowicz 2003).

The second step involves assessing the organisation (Maier, Moultrie & Clarkson 2012). This entails the organisational ability to compare the current maturity characteristics of the project with those highlighted by the model. Assessment allows the strengths and weaknesses of the organisation to be used or corrected as part of pushing the project toward maturity, unless the assessment indicates pursuing the project is an unworkable option. For example, when an organisation intends to start up a sustainable project, various factors, such as competition from other companies, can force the organisation to consider improvements. The model suggests that before initiating improvements, the company must first of all honestly examine its capacity to improve a project. A good example would be business product diversification and integration. Businesses that have the available resources and technology can readily achieve product diversification and integration. Businesses needing to put the technology or resources into place would have to think twice because of the financial and training commitments.

The third step is determining focus of improvement (Kärkkäinen et al. 2014). The model suggests focusing on the best practices associated with the current needs of the project. Users of the model have to determine which of the best practice methods should be applied in their organisation in order to enhance the continuity of the project.

The fourth step involves determining the path to improve. Once the best practices to be employed on a project have been realised, organisations should look for the best capabilities to employ. It is the role of the management to know the right capabilities to employ in order to achieve the improvement of the project.

The fifth step is evaluating current capabilities. It is the responsibility of the management to evaluate the current capabilities of the organisation towards project improvement. Evaluating the current capabilities allows management to further improve the project if improvement is required (Constantinescu & Iacob 2007).

For example, it is not possible for an organisation that has poor marketing management to market the project in a competitive manner. If the issue involves marketing of the project, the organisation must first ensure that marketing skills are present in the workforce.

Finally, the sixth step involves a plan for improvements (Singh et al. 2009). Planning is at the core of every successful every project. An organisation with a poor planning mechanism cannot achieve the ordained objectives of the company or organisation. The process involves determining the best practices and available resources for achieving the targeted outcomes. For example, consider a learning institution that intends to start an online education system program. If strategic planning involving the flow of information between users is not effective, improvement of such programs becomes difficult.

In short, OPM3 is beneficial for organisations in many ways. The model provides the best strategic techniques to advance organisational goals and objectives. It offers the best principles and practices to be applied to project management (Meisner 2007).

The model also provides the knowledge under which the best practices in the organisation can be applied. OPM3 enables organisations to determine their best practices and capabilities to apply at each stage of project management, in order to achieve improvement. Finally, OPM3 offers a clear domain under which an organisation decides on whether to continue with the project or not, based on the available resources, best practice, and capabilities (Ghorbanali et al. 2011).

2.3.6 Integration of OPM3 with the four background models

The RBV theory emphasises the need for selection of the right resources for achieving competitive advantage. Most organisations miss the point when it comes to which resources are needed for success in developmental projects. When RBV is integrated across other managerial attributes, maturity is more likely to be achieved for developmental projects since RBV entails the right selection of both tangible and intangible resources.

OPM3 reflects RBV theory in the sense that it involves the best selection of resources. OPM3 asserts that for successful project management, organisations should look to ensure that their best practices and capacities are employed on a chosen project. The best practices in OPM3 mean the maximum expertise that an organisation can provide for a successful project. Since an organisation has hundreds of best practices, the right selection of practices becomes part of project management.

Selection of the best practices is directly linked to **RBV theory**. The selection of the best tangible and intangible resources is essential in an attempt to ensure project sustainability. Organisational abilities for managing the project and the capacity to gather and use the right resources are, in fact,

organisational imperatives. RBV theory becomes a necessary tool for assessing the organisational capacity of the firm. The theory can be used to select management techniques and other intangibles, as well as tangible resources, such as labour and managerial measures. RBV theory guides the selection of necessary resources selected in order to achieve sustainability at every stage of project management.

Corporate social responsibility is a strategic management technique that most multinational organisations and corporations have adopted for successful project management. CSR asserts that organisations and corporations should conduct their services from an ethical point of view. Ethically, organisations are required to obey legal measures established by the society in which they base their operations. Also, the theory of CSR asserts that an organisation or corporation has a social responsibility for the community in which it is based.

It is also important that organisations remember that most projects require the efforts of both the organisation and the community in which the project or the organisation is based to achieve success. Firstly, community cooperation facilitates project development and completion. Secondly, many projects require participants to move them towards maturity.

For example, consider an organisation whose project is to support solar energy consumption that is friendly to the environment. The project cannot achieve sustainability if the society involved is not in support of the program of solar energy supply. To ensure that the community is involved, the responsible organisation can enlighten people on the importance of solar energy, and perhaps support communities in remote areas to access solar energy at reduced rates. Contributing to charity programs, such as donating solar panels to learning institutions, could also convince the community to support the project.

CSR contributes enormously to successful project management maturity and sustainability. When a society is involved in the management of a project, sustainability can be achieved. CSR calls for organisational adherence to legal measure when serving or operating within a society. Therefore, the development of the research model using CSR is further discussed in Chapter 3, where CSR is used to assess the social dynamics of Saudi organisations.

Stakeholder theory emphasises effective cooperation of all stakeholders involved in the project. The theory holds that successful project management comes through the inclusion in decision making of all parties involved in or affected by a project, and that organisations have a

responsibility to satisfy their key stakeholders, including employees, shareholders, and the community. Knowledge and information should be shared in an effective manner that every participant is aware of since failure of information effectiveness will result in the failure of management because of lack of support.

In terms of OPM3, stakeholder theory emphasises the selection of best practices and capabilities and advocates proper planning that involves consultation with all stakeholders. Communication with all stakeholders is more likely to result in project maturity, success and sustainability, including securing finance and achieving project objectives.

Administrative theory deals with the management of the organisation. It emphasises the best practices of organisational culture and decision making. Leadership skills are a major focus of the theory when comes to decision making processes, and organisational culture is considered a key motivator in terms of how employees participate in achieving the organisation's goals and objectives. Leaders who are able to motivate their employees have more success in terms of having decisions followed through and objectives met. The best leaders create a culture in which contributions are recognised and staff are treated equally, without gender bias.

Motivated employees who are treated with respect are much more likely to be careful when making decisions and adhering to them for the organisation. Project management is made easier and the culture encourages continuity and sustainability. Therefore, the adoption of best work-force culture contributes significantly towards the success of a firm and of its projects. To this end, administrative theory offers guidelines under which organisations can adopt the best project management techniques as described in Chapter 3.

2.3.7 Summary of the integration of the four theories

This section presents a summary of the four theories discussed in this chapter. The section shows how the theories are integrated and relate to OPM3. Their integration is important because the principles from these theories and their interaction formed the basis for the theory of project management and sustainability developed during the current research.

Similarities and differences between the application of the theories and the OPM3 are depicted in Table 2.3. Having assessed the seven dimensions of the application of the theories and the model, it can be seen that in more than one dimension, the theories are interconnected and supportive of the management-sustainability model developed during the current research. Each offers elements that can be used to assess project management and sustainability in Saudi Arabian organisations.

Table 2.3 Matrix of the connectedness of the main theories

Dimensions of interest	Theories and model					
		CSR (Theories)	**Administrative Theory**	**Stakeholders Theory**	**RBV (Theories)**	**Organisational Project Management Maturity Model (OPM3)**
	unit	community development	leadership and culture	knowledge and information	resources	planning and project improvement
	focus of the study	policies regulation and ethical consideration	motivation and decision making	flow of knowledge and information among actors	right selection of resources	best practices and capabilities
	level	local, regional, national, organisational	organisational	local, regional, national, organisational	organisational	organisational, local, national, regional
	competitive advantage (ca)	regional, local, national	organisational	not specified	regional, organisational	organisational, local, national, regional
	source of ca	customer base	employee motivation and right decision making	information to make strategic decision and action	strategic resource	strategic planning
	mechanism for protection ca	not specified	not specified	not specified	resource position barriers, vrin	not specified
	actors involved	organisations, government, community	managers and employees	employees, community, shareholders	organisations, government, firms, academic	organisations

In Chapter 3, the new model developed during the course of the current research will be explained in detail. Table 2.3 provides an outline of how the four background theories complement one another and provide the principles to be used in the new model to guide the assessment of Saudi Arabian organisations.

Unit. The first dimension in the table is the unit of the study. For CSR, the unit of study is community development, which is directly linked with the organisation's capacity to enhance the sustainability of project management through community support. This point is elaborated in Chapter 3, especially the ways in which to assess social attributes that organisations should adopt for successful project management.

For RBV, the unit of study is resources, and that of stakeholder theory is knowledge and information. Both theories are directly linked to project management planning and improvement. The right selection of resources, along with knowledge and information flow among all stakeholders in an organisation, enhances proper planning and the improvement of the project.

The unit of study for administrative theory is leadership and organisational culture. Without effective leadership and enhanced organisational culture, the planning and successful completion of projects cannot be secured. In this regard, the model becomes the point of reference for discussing organisational culture in Chapter 3.

Focus. The second dimension is the focus of the study. For CSR, the focus of the study is policy regulations and ethical consideration. Adherence to policy regulations and ethical consideration of the society in which the organisation has based its operations is crucial. It guides the selection of best practices and capabilities for the application of OPM3.

Administrative theory focuses on motivation and decisions making that are important elements during selection of capabilities and best practices of the organisation. Capabilities of the organisation are gauged by how employees are motivated, and how effective they are on matters of implementing and enhancing decisions on a given project.

For RBV and stakeholder theories, the focus of the study is the correct selection of resources, and flow of knowledge and information among key stakeholders. Right selection of resources and stakeholder's cooperation enables the organisation to select its best practices, and is able to enhance continuity of the project based on its available capabilities.

Level. The third dimension is the level of study. For RBV and administrative theory, the level of study is the organisation and focuses on organisation's best practices and capabilities. For CSR and stakeholder theory, the levels of study are regional, local and national.

Competitive advantage. The fourth dimension is competitive advantage. For CSR, when organisations adhere to the rules of the theory, they are able to compete across local, national and regional levels. The administrative theory shows competitiveness across organisations. It deals with how the organisation is able to make decisions and able to emerge the best in terms of performance as compared to other organisations. The RBV competitive advantages go across organisational and regional levels. These competitive advantages enable the organisation to compete on a global perspective as compared to other organisations.

Source of competitive advantage. The fifth dimension is the source of competitive advantage. The reason for competitiveness for CSR is having a large customer base, or the highest support from the community, while for administrative theory, the reason for competitiveness is because employees are motivated and are at all times, making the right decisions and executing duties perfectly. For RBV, the reason for competitiveness is through strategic resource, which depicts how an organisation is able to select the best resources for competitiveness compared to others. As depicted by OPM3, all these sources of competitive advantage apply the basics of strategic planning to projects in order to enhance continuity.

Protection of CA. The sixth dimension is the mechanism for protection of competitive advantage. For RBV, the protection of competitive advantage is through resource position barriers and VRIN. Other theories and the model have no specified protection mechanisms.

The actors. The last dimension is the actors involved. The main actors for CSR are organisations, government and the community, while those for administrative theory are managers and employees. For stakeholders, the actors are employees, community and shareholders, who play a vital role in the management of the organisation. For RBV, the main actors are organisations, government, firms and academic, while for OPM3, the main actor is the organisation. All these actors directly or indirectly influence the management and implementation of sustainable projects.

2.4 Summary

In conclusion, Chapter 2, the literature review, focuses on the discussion of the theories that were used to inform the model developed during the research. A clear relationship on theories towards project management and sustainability has been discussed, and concomitantly, the relationship of theories to the model has been assessed. Although there are other theories connected to the OPM3, they depend on the focus of the study.

The four theories that are discussed are related to the management of projects. In addition, the model for this study has been developed and will be used on other chapters for clear understanding of project maturity and sustainability. As depicted by the theories and the model, achieving sustainability requires a combination or resources, both tangible and intangible. Effective planning calls for the combination of project management theories, especially those that are related to strategic management.

Therefore, the discussed theories and the model offer guidelines for achieving sustainability of any project. In addition, key actors in sustainable project management have been discussed in this chapter. The flow of knowledge and information among participants is critical in the understanding of project management. As depicted by the CSR, the community plays a big role towards the achievement of sustainable project management. These relationships and combination of resources will be tested against projects implemented and initiated in Saudi Arabia through using various methods.

The following chapter explains the developed model in relation to the project management environment in the Saudi Arabian context.

Chapter Three

Developing the conceptual model within the Saudi Arabian context

Key theories that formed the conceptual framework for the current research were explained in Chapter 2, along with their relationship to project management, strategic management, project management maturity, business and project performance (Figure 3.1). In this chapter, the project management maturity model developed during the course of the study is described. This developed model was designed to help investigate sustainable project management maturity and its influence in Saudi Arabian project management.

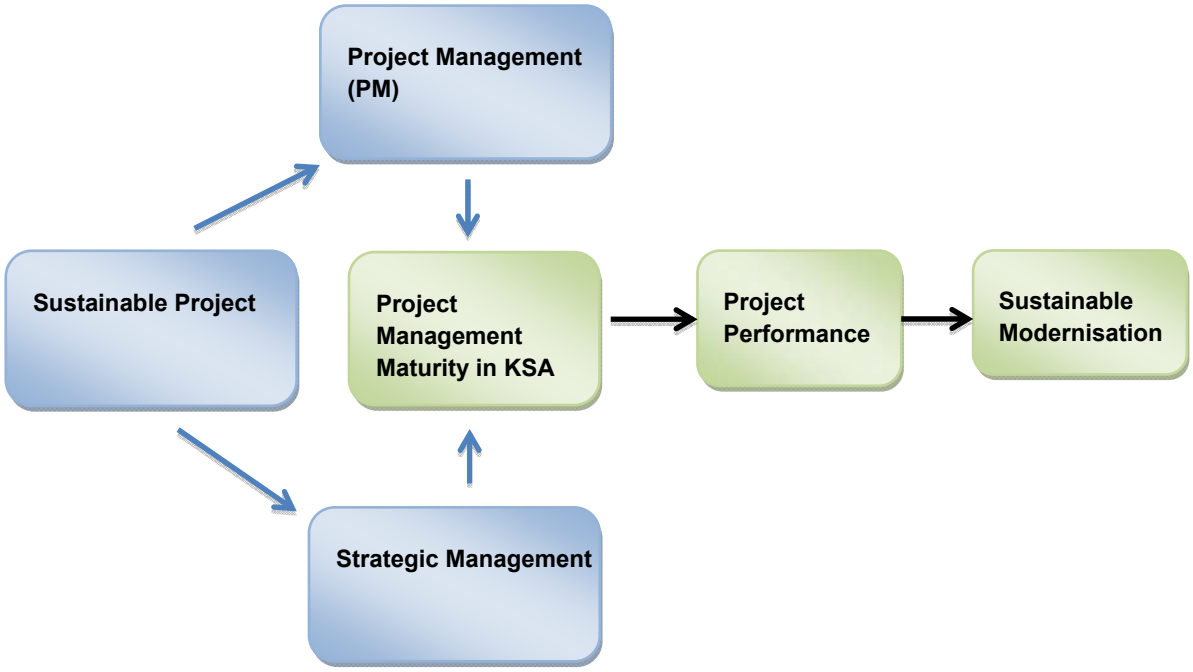

Figure 3.1 **The conceptual relationship within the Saudi context**

The goal of the current study was the development of a project management maturity model incorporating sustainability, to be used as a tool in assessing current levels of project management on Saudi Arabian project sites, as well as organisational culture. The principles and standards outlined in the new model are expected to assist in the modernisation of business practices and the introduction of sustainability in Saudi Arabia.

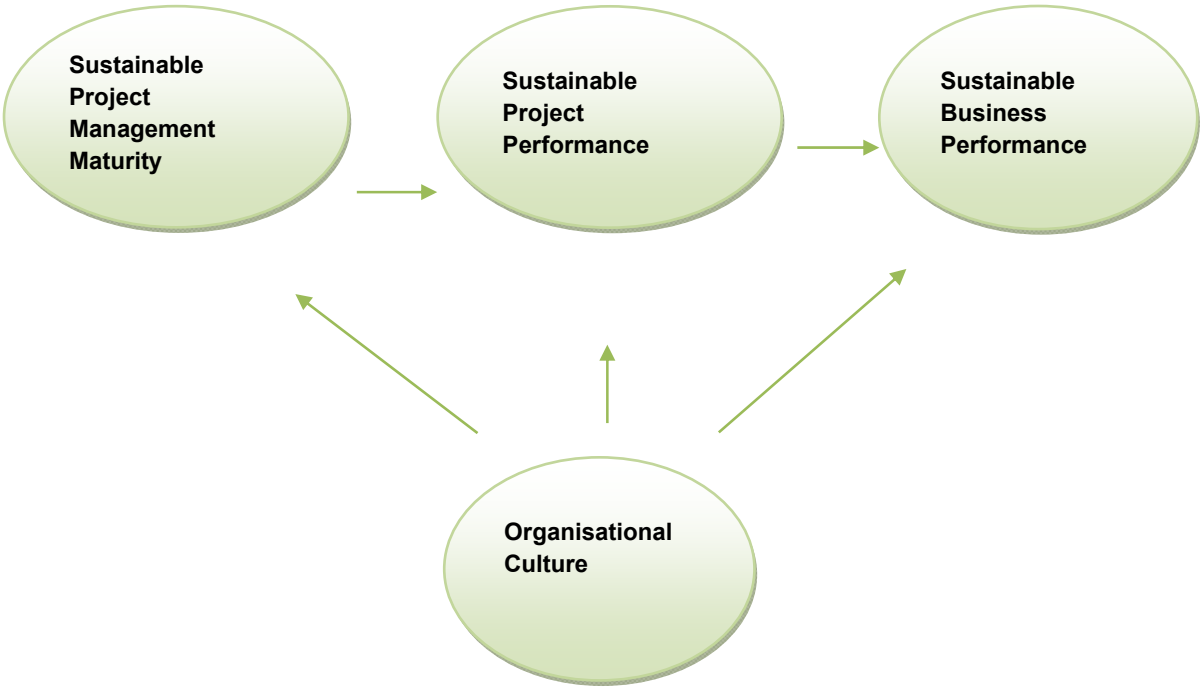

Figure 3.2 **Transferring the conceptual relationship into the research model**

3.1 The research model

As indicated in Chapter 2, the research model was derived from the literature review and represents four main components whose relationship can be empirically observed; each component consists of a set of specific independent variables. Altogether, four elements formed the basis of the model. These were the existing theories of:

- sustainable project management maturity
- sustainable project performance
- sustainable business performance
- organisational culture

The new model helps an organisation to identify the best practices from hundreds of practices. The aim of the model is to offer guidelines on the best practices that an organisation can use to achieve the best outcomes from its business activities. It also detects whether the desired outcomes have been achieved. Although the process described by the model was proved to work during the course of the current research, it must be recognised that in the real world organisational culture and management determines whether the stages of the model will be achieved or not, or whether the project can achieve continuity.

Effective management and planning for both the people and the resources requires the use of management skills, such as CSR, RBV and administrative management techniques. All these skills and attitudes should be incorporated in the management system in order to achieve continuity, improvement, and the sustainability of any project.

In order to conceptualise the research model within the context of Saudi Arabia, this chapter aims to explain how sustainable development can be built into and measured for a project as Saudi Arabia modernises. Figure 3.3 illustrates the focus of this research.

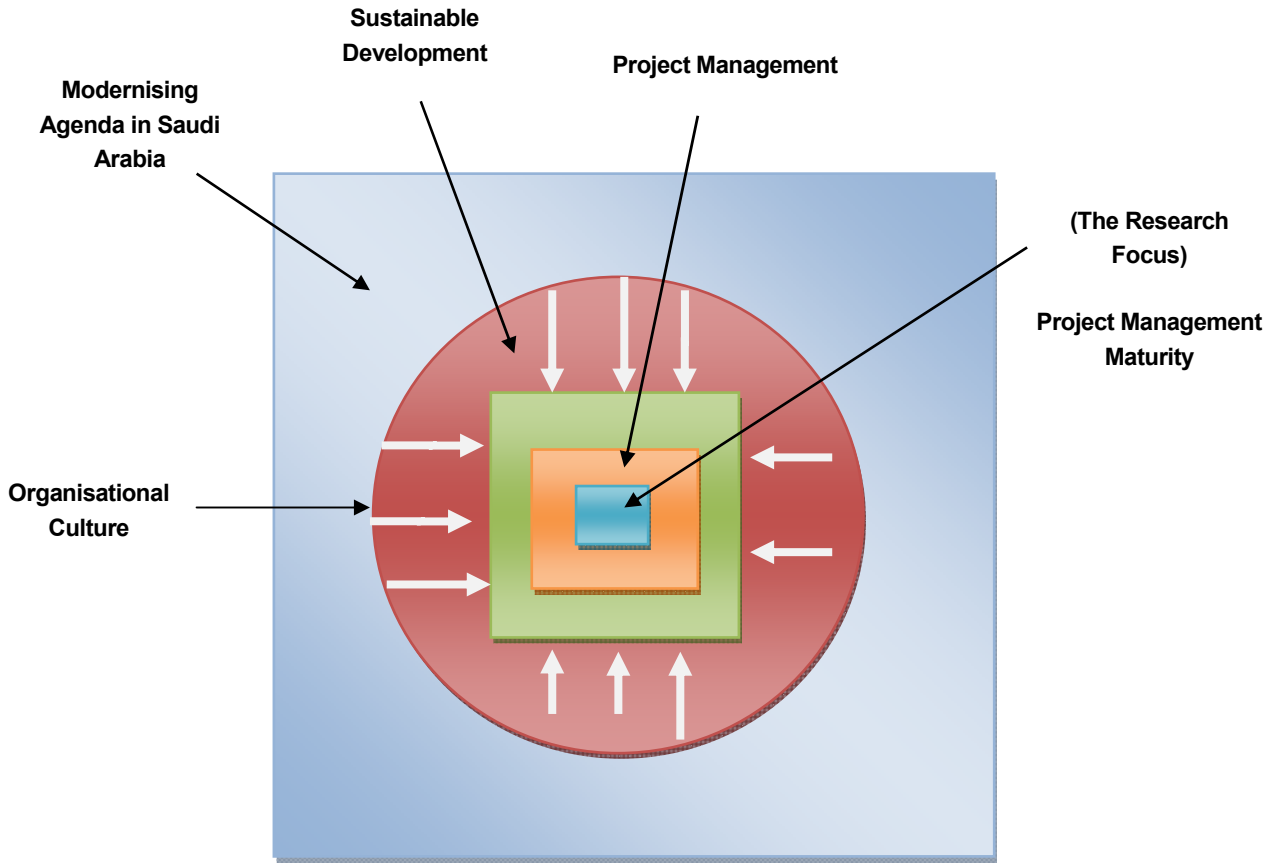

Figure 3.3 Focus of the research

Therefore, the following approach was undertaken in order to develop the new model of project management in the context of Saudi Arabia and achieve the research objectives. The research process, as explained in the chapter, can be summarised as follows:

- This chapter explores the role of sustainable development in the modernisation agenda in Saudi Arabia by identifying and categorising the challenges facing the modernisation process and achieve sustainability.

- The chapter explains the significance of sustainable project management maturity for the modernisation agenda in Saudi Arabia by identifying and categorising the most common sustainable project management maturity levels and criteria. There is a handful of well-recognised maturity models that can be used to investigate projects and project management maturity, but the selected model has to be adapted to the region's customs and practices, and has to be applicable across a large population. A maturity model will use criteria, such as economic, social and environmental measures, to evaluate the sustainability of Saudi Arabia's projects, An extensive list of variables affecting project management practice in general was established. These variables will be mapped against the sustainability of the project as indicated by the relationships between economic, social and environmental factors. The model also employed the PMI's 10 knowledge areas to explore sustainable project management maturity as shown in Figure 3.4.
- Project performance and business performance are comprehensively discussed in this chapter to illustrate and categorise suitable variables and indicators.
- Organisational culture as a key driver in fostering the insertion of sustainability ideas into project management is emphasised in this chapter by identifying and categorising the organisational culture's factors that influence project success. Organisational culture is used to test the study hypothesis in different contexts since organisational cultural factors can vary from on organisational area to another.

Figure 3.4 illustrates the composition of the four areas that constitute the conceptual model of the study and was converted into survey questions answered by the project manager in Saudi Arabia; in order for the researcher to be able to make a representative conclusion about project management practices in the region. Relevant hypotheses are discussed in the chapter and appear as 'H1' in the model.

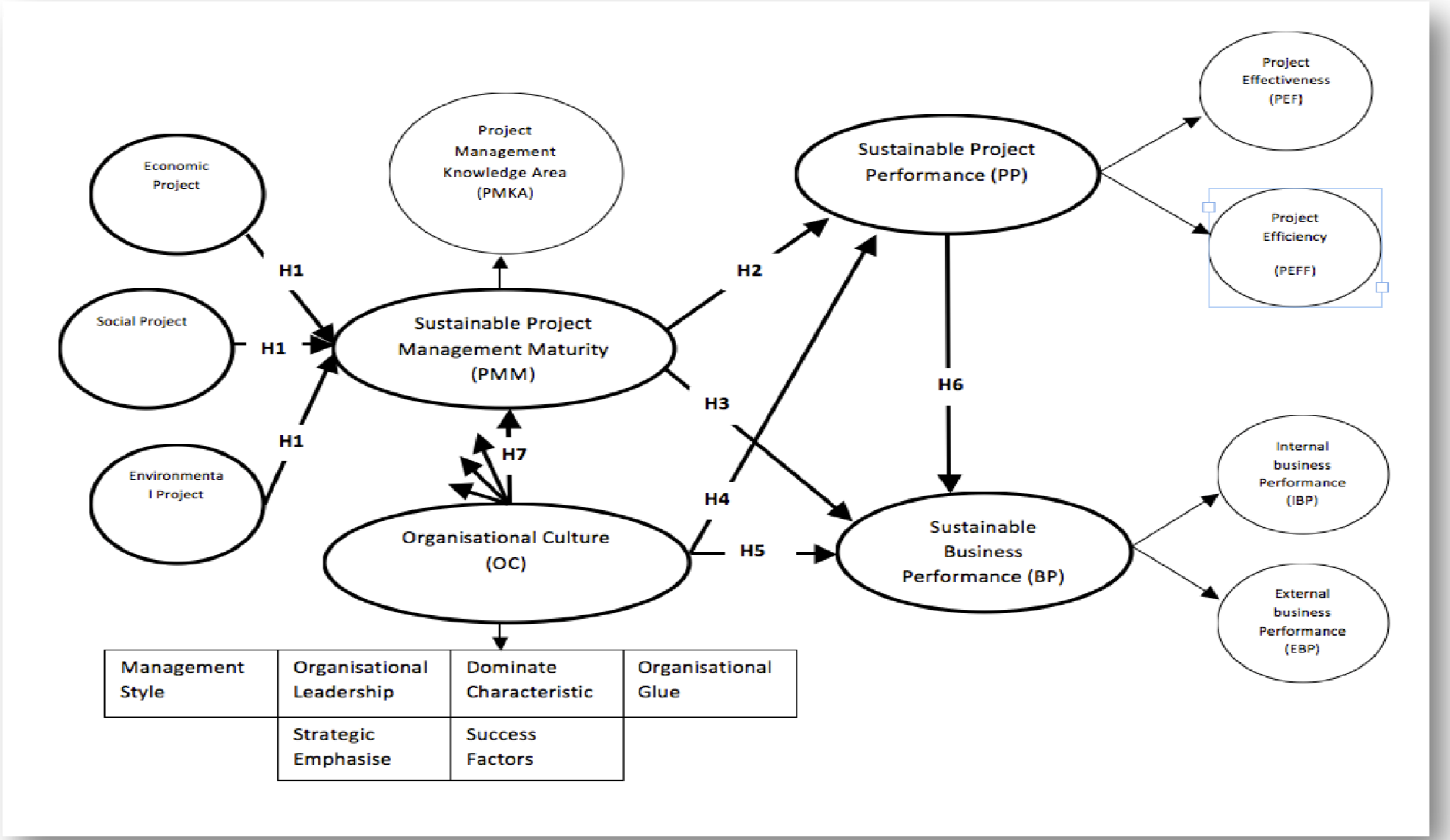

Figure 3.4 **Composition of the four areas constitute the conceptual model of the study**

The chapter first discusses each conceptual construct separately. Subsequently it presents the relationships between the constructs, in order to study the combined influence of the variables.

Defining and condensing the key concept. The rest of the chapter presents definitions and relevant concepts related to each of the constructs that form the main part of the conceptual model. The purpose of this section is to present each construct separately in order to show their individual importance.

3.2 Sustainable project management maturity

Project management maturity models provide a means of practically explaining complex concepts in order to realise them as organisational capabilities, while identifying opportunities for potential development. They provide a framework by which to establish action plans from which organisations can monitor and manage progress and performance (Pasian, Sankaran & Boydell 2012). In most instances maturity modelling has been derived from the Software Engineering Institute's Capability Maturity Model and shows the level of maturity of the processes (Carnegie Mellon Software Engineering Institute 2002). In the case of the project management maturity model, it serves to measure an organisation's capacity for performance and assesses processes for optimisation.

To meet the research goals, current process maturity as it relates to sustainability is inadequate, requiring a more focused approach. In order to develop a suitable model, the concept of 'depth' of vision was considered in terms of project sustainability maturity; observation and experience demonstrated that sustainability can be considered on different levels.

From the extensive literature review and research undertaken, the most practical project management maturity models were identified (Table 3.1). These diverse models have been used to identify and categorise the five most comprehensive sustainability levels to measure the maturity of sustainable project management practice in Saudi Arabia. The five sustainability levels could be characterised into the following:

- **Sustainable Maturity Level 1:** No established sustainable practices and standards exist.
- **Sustainable Maturity Level 2:** Some sustainable practices and standards are in place, such as project resources selection, but not across the organisation.

- **Sustainable Maturity Level 3:** Sustainable practices and standards are instituted, and followed through the project execution process using established reporting forms and documents.
- **Sustainable Maturity Level 4:** Sustainable practices and standards are instituted and mostly followed throughout the project life cycle until the project deliverable using established reporting forms and documents. The targets of the project deliverable are included only in the project operation activities, but not included in the long-term strategy of the organisation.
- **Sustainable Maturity Level 5:** Continuous improvement regarding sustainability is maintained through the efficient collection, use, and decimation of data obtained at level 4. The organisation uses benchmarking metrics regarding sustainability as a means to rate itself against commonly accepted/expected standards and/or against others. The project's goals are included in the long-term organisational strategy.

Table 3.1 A quick summary of the most popular project maturity models that were examined by the current research

Model	Author	Year	Area	Target Organisation	Maturity Levels	Classification	Comments	+/_
Barkeley (PM)2	Ibbs-Kwak	1997	project management	project-driven organisation	5	system-based	no sustainable aspects	-
PMMM	Kerzner	2000	project management	project-driven organisation	5	system-based	no sustainable aspects	-
PMBOK	PMI	2013	project management	project-driven organisation	4	system-based	no sustainable aspects	+
PMMM	PM Solutions	2001	project management	project-driven organisation	5	system-based	no sustainable aspects	-
ProMMM	PM Professional	2001	project management	project-driven organisation	4	system-based	no sustainable aspects	-
Project Management Maturity model (P3M3)	APM Group / OGC, Office of Government Commerce	2004	program / portfolio and project	project-driven organisation	4	system-base	no sustainable aspects	+
Sustainable Maturity Model	Silvius A.J.G.	2012	sustainable development project management	project-driven organisation	4	system-based	no clear project management area included	++

For the purposes of this study, two project management maturity models were selected in order to categorise the project management area for sustainable maturity assessment. They are PMBOK by PMI (2013) and the Sustainable Maturity Model by Silviusab, Schipperb and Nedeski (2012).

3.2.1 Project Management Body of Knowledge Guide (PMBOK 5th) (PMI, 1987-2013)

The Project Management Institution (PMI) gave rise to the development of the profession of project management, and made efforts to standardise it during the 1980s. Nowadays, the Project Management Institute is acknowledged as the authority in the United States (and maybe the entire world) in the field of PM. It has more than 100,000 members in 125 countries (PMI 2014).

The guide provides definitions of some basic PM concepts, and descriptions of key knowledge areas with which a project manager should be familiar. It is approved by the American National Standards Institute (ANSI) as an American Standard.

The purpose of the guide is to record and make available the sum of knowledge in the project management field that is frequently used in projects and generally accepted as applicable to most projects, and widely recognised as valuable by practitioners and academics. The guide provides a common vocabulary in the framework of the given profession, which is all the more important as PM is a relatively young profession and needs a collective set of the words to be used by professionals.

The guide also provides a basic reference for all the stakeholders involved in a project completion, as well as for educators and trainers, along with the requirements for Project Management Professional (PMP) certification, and project management educational program accreditation.

The focus of the guide is to provide a well-defined scope of knowledge for the project managers to understand and use it in practice. The model structure contains 10 key knowledge areas that are described as:

1 Project integration management
to guarantee a successful adjustment of all the elements of the project into one consistent method

2 Project scope management
to ensure that only the necessary work is involved to successfully complete the project

3 Project time management
to guarantee the project is completed in time

4 Project cost management
to provide management with an opportunity to know that the approved budget is enough for the completion of the project

5 Project quality management
to be sure that the needs of the customers were met by the project, as well as the quality requirements

6 Project human resource management
to guarantee that people, who are the part of the project, perform in the most efficient way

7 Project communications management
to ensure an effective running of the following processes of the information of the project: generation, gathering, distribution, storage, and allocation

8 Project risk management
to identify, analyze, risk and create alternative courses of action

9 Project procurement management
to guarantee the effective purchase of services and goods beyond the borders of the organisation

10 Project stakeholder management
to identify stakeholders, communicate and engage them, manage expectations and focus on satisfaction (PMI 2013).

3.2.2 The Sustainable Maturity Model (Silviusab, Schipperb & Nedeski 2012)

The Sustainable Maturity Model evaluates the degree to which various facets of sustainability exist in a project (business model, services and products, resources, business process). Several aspects play an important role in the obtaining of the sustainability characteristics – indicators in social, economic, and environmental aspects (Table 3.2). An organisation is given a chance to identify the differences in its values, if each of the three components mentioned above indicate the maturity of the project.

The assessment model that was the outcome of the current research was developed to assess the integration of sustainability concepts at the level of individual projects.

- The distribution and application of resources for a project are two areas of investigation on the current level. For instance, the use of alternative fuel cars that have less negative impact on the environment may or may not result in sustainability in the performance of the organisation. The non-sustainability effect should not be excluded.
- The use of resources in the business process, which involves the processes of project delivery and project management. The reason for non-sustainability is eliminated. For instance, to create an appropriate process for the optimisation of the service management in order to reduce the number of trips between the project and homebase.
- The business strategy of the project. For example, the design of a more dynamic approach to project management, or an approach where the project is constantly developing.
- The fourth level involves all these steps, in addition to the results of the project and its fundamental advantages.

Table 3.2 The sustainable indicators structure of the model by Sliviusab, 2012

economic	return on investment	direct financial benefits / net present value
		strategic value
	business agility	flexibility / optionality in the project
		increased business flexibility
social	human rights	non-discrimination
		diversity and equal opportunity
		freedom of association
		child labour
		forced and compulsory labour
	society and customers	community support
		public policy / compliance
		customer health and safety
		products and services labelling
		market communication and advertising
		customer privacy
	labour practices and decent work	employment
		labour / management relations
		health and safety
		training and education
		organisational learning
	ethical behaviour	investment and procurement practices
		bribery and corruption
		anti-competition behaviour
environmental	transport	local procurement / supplier selection
		digital communication
		travelling
		transport
	energy	energy used
		emission / co2 from energy used
	water	water usage
		recycling
	waste	recycling
		disposal
	material	reusability
		incorporated energy
		supplier selection

This maturity model allows organisations to transfer the interpretive and non-objective ideas of sustainable development into the practice. Moreover, a very convenient option is given by this model: the assessment results may be delivered in graphs, enabling an organisation to check the effectiveness of the system's maturity and to control its development. However, this model is not associated clearly with the project management area of knowledge since it considers only the project life cycle without getting deep into the project activities (Table 3.3).

Table 3.3 Maturity model

Advantages	**Disadvantages**
broad, generic model easy to explain easy to change and apply	need continues up to date regarding the sustainable indicators doesn't consider the areas of the project management knowledge doesn't consider the continues improvement level of the organisation no adequate benchmarking
Enablers	**Barriers**
environmental manger supportive organisational culture. senior manager project manger	needs high level corporate culture regarding sustainability development

3.2.3 Criteria of sustainable project management maturity

The economic dimension of sustainable projects. Al-Ahmad (2009) states that every project that focuses on making efforts in the context of sustainability means that the project is striving to link the economic, social and environmental parts of the community. The economic dimension is one of the major dimensions of business sustainability. Without the profit, a business cannot survive in the end. With the help of the economic growth of the company, taking into account the well-being of society as well as the natural environment, a business or project can function in a sustainable manner.

There are various indicators of the economic dimension of sustainability. The two most important economic indicators of the economic dimension are return on investment and business agility. Return on investment includes direct financial benefits, net present value and the strategic value of the economic activities of the business. Business agility includes flexibility and options in the project and increased business flexibility. The economic dimension is part of the sustainable project management maturity model. It positively influences sustainable project performance and sustainable business performance (Al-Ahmad 2009) (Table 3.4).

Projects contribute to the sustainable credentials of a company. Using the level of resources that provide the same functionality, but are less harmful to the environment, reduces the less sustainable effects of the operational activities of the company. For example, use of hybrid cars instead of fuelled cars takes some pressure off the environment. Return on investment is measured by the results of project activity, while business agility is measured through increased business flexibility in the concerned project. By effectively measuring project results using economic indicators, the company can analyse whether project activities are going in the right direction to meet the expectations of sustainable design and business performance. Effective use of resources is essential to get the business results in terms of sustainability, thus satisfying stakeholder's expectations (Yazici 2009).

Table 3.4 Economic project assessment criteria for the model

economic project	return on investment	direct financial benefits / net present value
		strategic value
	business agility	flexibility / optionality in the project
		increased business flexibility

The social dimension of sustainable projects. As per Ruwanpura (2012), the social dimension of a sustainable project management maturity model is an important element in the goal of attaining project sustainability. Social sustainability has its focus on personal assets, such as education, experience, skills, income, employment and consumption. Institutional and project settings present the opportunity for the development of social sustainability. Social sustainability in the project is important because it fosters participation, openness, accountability and transparency. It invites the employees to get involved in decision making, thus creating an enabling society.

The focus on the social sustainability of a business promotes the quality of life in the project, and leaves the individual with the possibility of sustaining themselves and all their dependents on the basis of their salary. Social security and giving access to paid labour create satisfaction and motivation among the project members so that potentially sustainable development trends can be embedded in the project.

There are several indicators of social sustainability (Table 3.5). In achieving these indicators, the performance of the project can be enhanced. Sustainable goals involve human rights, society and customers, labour practices and decent work. Meeting the human rights indicator enhances project sustainability by promoting non-discrimination, diversity and equality, freedom of association, avoidance of child labour, as well as forced and compulsory labour (Ruwanpura 2012).

There is a growing global consensus that an organisation has to respect human rights. An organisation must report on the extent to which projects and processes have been implemented and take note of incidents of violation of human rights and on changes in the ability of stakeholders to enjoy and exercise their human rights. The first point of reference for any business to follow human rights are the Universal Declaration of Human Rights (1948), the International Covenant on Civil and Political Rights (1966) and the International Covenant on Economic, Social and Cultural Rights. There is an emphasis on being responsive to the wider society and customers, including acting within public policy and complying with the law, attending to the health and safety of customers, labelling products and services, being honest with marketing communication and honouring customer privacy. Labour practices and decent work include maintaining fair labour/management relationships, adopting appropriate health and safety features, providing training and education and fostering organisational learning (Savitz 2013).

Table 3.5 Social project assessment criteria for the model

social project	human rights	non-discrimination
		diversity and equal opportunity
		freedom of association
		child labour
		forced and compulsory labour
	society and customers	community support
		public policy / compliance
		customer health and safety
		products and services labelling
		market communication and advertising
		customer privacy
	labour practices and decent work	employment
		labour / management relations
		health and safety
		training and education
		organisational learning
	ethical behaviour	investment and procurement practices
		bribery and corruption
		anti-competition behaviour

The environmental dimension of sustainable projects. André, Delisle and Revéret (2004) present environmental sustainability as the third pillar of sustainable development. Rapid growth without attention to the environment results in degraded opportunities for future generations. A project is positively influenced when the company takes into account sustainability in the environmental context, and demonstrates concern for the impact of a project on living, as well as non-living systems, including land, air, ecosystems and water.

Environmental indicators cover the performance that is related to inputs, such as water, material and energy, and outputs, such as effluent, emission and waste. It is the responsibility of the business to provide a concise disclosure on the management approach as it relates to environmental aspects of materials, water, energy, biodiversity, compliance, products, services, and transport. The environmental sustainability dimension helps the project attain its goals and performance through commitment related to the environment.

Education and Training provided by the project manager helps the project team to be aware of environmental features. There are many indicators for the environmental dimension, which helps in sustainable maturity assessment of the project. They include aspects of transport, energy, water, waste and material. The indicator for transport includes local procurement and selection of the supplier, digital information, transport and travelling (Table 3.6). The indicator for energy includes energy used and the emission of carbon dioxide from the energy that is used. Water includes usage of water and its recycling. Waste includes the degree to which an organisation can dispose of the waste and can make it reusable. The indicator of material involves how much power is included and on what basis the company has selected the supplier (André, Delisle and Revéret 2004).

Table 3.6 Environmental project assessment criteria for the model

environmental project	transport	local procurement / supplier selection
		digital communication
		travelling
		transport
	energy	energy used
		emission / co2 from energy used
	water	water usage
		recycling
	waste	recycling
		disposal
	material	reusability
		incorporated energy
		supplier selection

For example, CH2MHill includes an environmental element in its sustainability policy through its internal operations and delivery of client projects. The company manages its internal operations through an Environmental Management Systems (EMS), which is based on the policies of the International Organisation for Standardization. CH2M HILL has established programs related to EMS in various parts of the world, including the Middle East. Goals are set at the beginning of the year. Documents are then progressed and the company assesses the performance at regular intervals. The company seeks cooperation from its project managers, suppliers and subcontractors (Hinman & Speranza 2013).

There are many challenges that a business faces in an attempt to deliver client projects effectively. Clients face economic constraints and the company has to aim at maximising the return on investment for the customer. At the same time, the company has to adopt options that have less impact on the environment. It requires collaboration with the client so that a full spectrum of sustainable solutions can be developed.

The integration of environmental sustainability significantly affects the performance and reputation of the business in a positive manner (Omann & Spangenberg 2002). For instance, CH2M HILL has earned a reputation for being a responsible business for its well-informed behaviour regarding environmental issues. Thus, effective utilisation of resources creates value for the company and has a positive effect on driving project and business performance (Hinman & Speranza 2013).

3.2.4 Summary

Indicators for the economic development include three dimensions – economic, social and environmental. The dimensions are inter-linked and they act as pillars of sustainable development. The **economic indicator** is important because a business needs to grow and make profits for its long-term survival. Indicators for the economic dimension are return on investment and business agility. For any client of a project, return on investment is essential. Usually, the design choice and selection of materials can come down to the cost of the project, though the business case can be made for positive ROI in the long-term. Thus, close work with project clients is necessary while keeping in consideration other dimensions of sustainable development.

The next dimension is the **social dimension**, which incorporates the individual and society. Following good labour practices, practising ethical behaviour and taking care of customers are important for attaining social sustainability for a project. Companies have an impact on communities, particularly those that have a direct impact on the natural environment, such as extractive businesses, agriculture and manufacturing projects. Those living near business operations can have a major influence on how projects are conducted and the level of care shown by the project company.

Human rights and labour relations also matter in social sustainability. Ethical behaviour includes complying with all the norms and policies set by the international certification programs and

having a transparent conduct of business. The environmental dimension includes indicators, such as waste management, transport, material handling, etc. A business has to focus on making decisions that have lesser environmental impact, and clients now consider integrating sustainability into their projects.

3.3 Sustainable project performance

According to Yazici (2009), project success has been assessed by evaluating the projects ability to meet specifications, stay within budget and be completed on time. It is essential that when incorporating sustainability into project management that consideration of people and the planet are included as performance indicators as part of the management systems (Silvius et al. 2010).

While traditionally project management has been driven by only three drivers, the triple constraint of cost, time and quality (PMI 2013), which have inherently been focused on a project's profitability, there is still a desire to adopt a more holistic approach to managing projects. There is now a need to have a more harmonious balance between economic outcomes and the social and environmental concerns rather than the historic imbalance that has persisted (Table 3.7).

Table 3.7 The paradigm shift of sustainable project management (Silvius et al. 2010)

Traditional Project Management	Sustainable Project Management
time, budget, quality	social, environmental, economic
inside-out	outside-in
shareholder	stakeholders
process	content
threats	opportunities
path	steps
control	guide
knowing	learning
output	outcome
closed	open

3.3.1 Sustainable project efficiency: Meeting the sustainable targets

These measures reflect the addition of a desire to meet stakeholder expectations (Mullaly 2006). When the project goals are defined as meeting balanced, sustainable targets of economic, social and environmental outcomes, then efficiency is considered to be the most important aspect (Dyllick & Hockerts 2002), whereas, project satisfaction is measured in terms of effectiveness (Bannan 2005; Dvir, Sadeh & Malach-Pines 2006).

Andre et al (2004) argue that meeting sustainable targets includes economic, social and environmental targets. Economic targets include time, cost and quality. Social targets include such conditions as ensuring the project does not disadvantage members of the community in which the project is being constructed, while environmental targets include meeting environmental conditions established after an examination of environmental impacts on the region under development.

Today, many companies are realising that when they embed sustainability into their project program and related portfolio management practices, it increases the positive impact on the bottom line of the project (André, Delisle and Revéret 2004). By integrating sustainability goals into the project management process, companies can see a positive result in terms of increase in the market share and improvement in profits while meeting the demands of the client and the government for more socially responsible business practices. Considering the example of sustainability in action at the global level, Group L'Oreal, a cosmetics industry conglomerate, seeks ROI on its sustainability efforts by integrating biodiversity with other goals at the procurement stage. This practice ensures sustainability throughout the life cycle of new product development. Furthermore, the company pursues sustainability measures and milestones at every stage of a development project (Phillips, Brantley & Phillips 2011).

The triple bottom line.

Economic goals

- **Project cost**:

  As per Brebbia (2012), the sustainable target for the economic aspects of project efficiency is meeting the budget requirements of the project. The cost of any project should not exceed the defined budget. Cost is a deciding factor that decides whether a project has moved forward. Meeting real costs is part of the sustainability challenge. Continued availability of resources depends on the long term relationship of benefits to costs. A project that is conceived to generate income cannot become sustainable if that income does not exceed the costs of the operating the project. There are many types of costs related to a project, such as maintenance and operational costs. In terms of sustainability, the environmental impact of a project must be considered. Project budgeting should indicate the costs of environmental features and safeguards so that the overall impact on the project cost can be identified. Environmental features and safeguards must be cost effective in the context of the availability of skills and equipment (Brebbia 2012).

- **Project time**

  Hess (2013) argues that defined project outputs must be delivered within the required project time. Time over-runs increase in the overall cost of a project and often result in the need to secure more long-term and expensive funding. One of the major tasks of a project manager is to ensure that the schedule for a project is maintained as this maximises the use of the resources and is vital for financial sustainability (Hess 2013).

- **Project quality**

  In terms of sustainability, the company has to maintain the quality of the project as quality is the foremost factor in sustainability. A project must be fit for purpose, while taking social, environmental and economic factors into account. Meeting these conditions will make it much more likely that a project will be sustainable. However, since conditions can change during the life of a development, project managers must prepare for contingencies with a thorough needs and risk analysis. It is the project manager's responsibility to make appropriate adjustments as the project progresses, for which he or she will need to have a quality process in place, along with regularly scheduled periods of progress assessment (Gallego Carrera & Mack 2010) .

Social outcomes

- Social requirements

Lehtonen (2004) notes the importance of social sustainability for projects. Social sustainability for a project can be aided if the goals or indicators of the project include the following:

  - self-determined lifestyle including the mix of informal and paid work
  - satisfaction of basic needs of the society and employees
  - foundation of reliable and sufficient social security system, equal opportunities for participation in a democratic society, and enabling the social innovation and structuring of the types of workspaces. (Lehtonen 2004)

Furthermore, requirement of full employment, fair distribution of burdens between generations and social security are important types of sustainable requirements needed for social sustainability. Basic supply, independent security of subsistence, equal opportunities and social resources are important requirements for sustainability.

An indicator that basic needs are being met is general life satisfaction, while an indicator showing that social resources are adequate (general satisfaction) will contain a portion the population that frequently feel lonely and another that believes that things have become far too complicated. Indicators for equal opportunities include satisfaction with support. An indicator for the criteria of cultural diversity is support for the development, sustaining and documentation of a broadly accessible and understandable cultural life in pluralistic diversity (UNECE 2005).

Environmental goals

- Environmental requirements

Pyle and Forrant (2002) argue that without environmental sustainability, it is not possible for an organisation to make its project sustainable in the long run. Projects are required, therefore, to make an environmental assessment for every stage of a project (Pyle & Forrant 2002).

In phase one of project planning, environmental assessment includes an assessment of anticipated impacts of all the other phases in the project on the environment when making choices for proceeding with the project. Informing and consulting the public are also required. In the second phase of construction and development, environmental sustainability requirements include setting up mitigation measures, as well as compensation measures. Environmental plans may also include possible support of the various concerned public.

The third phase of the operation and maintenance or use of the environment includes the initiation and carrying out of mitigation and compensation measures and the initiation, carrying out and assessment of an environmental follow-up program.

Another requirement is the application of environmental codes and procedures for the assessment of the internal environment. Setting up of ISO 14000 environmental management systems is also part of any environmental sustainability requirements (Schmidt 2009). The phase four of decommissioning and closure of a project also needs the participation of the concerned public so that the company can ensure that its project has not been and will not be harmful to the environment at any cost (Silvius, AG & Schipper 2014).

Summary. Project efficiency is measured by assessing whether a project has made efforts to meet sustainable targets in the areas of the economy, society and the environment. Economic targets include meeting the budget requirements of the project. Traditional budget criteria include factors of project cost, quality and time. These three factors are interrelated. By creating a balance among all three factors, the project can become economically sustainable (Table 3.8).

The social requirements of a project include ensuring that the basic needs of the workforce and the society are met, that resources can be accessed, employment and social security systems are available, and that, in general, equal opportunity is provided for different sections of the society in which the project is sited.

Environmental targets require a business to have an environmental assessment plan in place for a project. All four phases of the life cycle of a project have address environmental concerns and consultation is required with concerned public so that the company can make sure that a project is environmentally compliant. Environmental requirements include taking care of the concerned public, waste management, recycling, reduced levels of pollution, and compliance with environmental standards set under certifications, such as ISO 14000.

Table 3.8 The sustainable targets for the project efficiency

Sustainable Criteria	Social	Environmental	Economic
Variable	Meeting the project social requirements	Meeting the project environmental requirements	Meeting the project budget and time requirements

3.3.2 Project effectiveness: Meeting stakeholder expectations

The rapid rise in global industrial production has disturbed earth's ecosystems and affected human communities both positively and negatively. Any project will be sustainable and effective only inasmuch as project management can assure the access to water, food, clean air and safe living conditions during and after the project's development and completion. The concept of sustainability implies that development in one dimension should not be at the cost of other dimensions. Rather, the development should move toward economic prosperity, environmental protection and social equity in equal measure. These three dimensions are also connoted as PPP or 'people, planet, profit'. Since the primary objective of an organisation is profit maximisation, however, project managers and developers must tread a fine line to meet the expectations of stakeholders with a monetary interest in the project and those who will simply be affected by it (Kohler et al. 2012).

Organisations such as Siemens Saudi Arabia have effectively implemented sustainable management throughout the organisation and successfully met to the expectations of stakeholders.

Teamwork satisfaction. According to Schibi (2013), project sustainability effectiveness often depends on the individuals who work in teams or with teams on projects. These individuals require the right skills, knowledge and personal values. Sustainability is based on personal values, such as ethics, fairness, equality and accountability, inspiring professionalism and a willingness to take on professional responsibilities.

Effective project sustainability will meet the expectations of employees by enabling them to improve their work-life balance. The project would be unsustainable if employees working in teams work too hard and suffer from burnout syndrome. Successful sustainable projects motivate employees to engage in social activities, facilitate training, and encourage employees to take decisions relating to all three dimensions – people, planet and profit. A highly functioning team is one in which every member performs their best and, if needed, picks up a failing member's job. If any conflict arises, it is expected that there will be guidelines for solving it, and that the project manager will take the lead in resolving the issues. The natural expectation of a team member is that the project manager will have leadership expertise and be able to guide the team throughout the project (Schibi 2013).

Project client expectations. Project sustainability over a long period depends on the relationships with stakeholders, most importantly the clients. The clients have invested in the project and so they want to know where their money has gone. They view the work of the project from a triple bottom line perspective to a balanced scorecard. Effective project sustainability has appropriate measures to control and report, and to ensure that plans and the results of project activities are clearly communicated (Perrini & Tencati 2006). Members of the team should all know general client expectations, and respond quickly to any complaints. Of particular importance, clients expect their projects to be profitable at minimal risk (Kaptein & Van Tulder 2003), and to be completed on time.

At Siemens Saudi Arabia, they translate climate's expectations and aspirations into concrete measures for business success. They involve clients in identifying business opportunities; and conduct a walk the talk and stakeholder engagement program which aims to strengthen project sustainability.

Government expectations. Government plays a pivotal role in contributing to the success of sustainable projects. It is the most crucial stakeholder in any project. The government establishes the legal framework that gives the project guidelines and conditions, such as health, safe working environment, restructuring, ethics, honesty, gender equality and civil protection the force of law if required. Any deviation from the framework may lead to penalty or suit. The government expects that taxes will be paid on profit generated by the project and that the profit will be appropriately distributed among various stakeholders. The government promotes those projects which are beneficial for society and not detrimental (Schibi 2013). The government expects from a sustainable project that it will balance the interests of the shareholder as a whole.

The state presumes that the project will combine both financial and ethical consideration in every aspect of project sustainability. If the project is unable to meet the financial and performance targets as per its business plan, then it should inform the government in a timely fashion. The sustainable project maintains a high level of accountability toward government as one of the key stakeholders (Morfaw & Mba 2011).

Community satisfaction from project sustainability. The success of project sustainability is measured in terms of the value created for stakeholders and society. Expectations for sustainable

projects are that they will create educated, prosperous, socially inclusive communities through local collaboration, training and employment and the support of small business and amenities (Barnard, Ackles & Haner 2011). Positive social, as well as environmental outcomes should be maximised, so that air quality, water quality, energy use and waste management are equal to or better after the project than before it (Kohler 2012).

A community expects from project sustainability that all three (PPP) dimensions will be honestly considered when taking decisions. With the growing number of sustainability projects, some institutions and frameworks have been launched, such as ISO 26000, to provide comprehensive guidelines on community social responsibility so that project developers must introduce more sustainable practices than have typically been in place. To be considered successful, projects should contribute to the society from which it takes its profits (Kohler 2012).

Summary. The expectation of each stakeholder is different and it is of the utmost importance for the project to explore the stakeholder's interests if it is to be sustainable (Table 3.9). No single solution exists that can accommodate all stakeholders' expectations, but their expectations are critical success factors for the project. Nevertheless, a sustainable project is successful when it is not just driven by profits but also by a sense of reasonability for the well-being of the community, stakeholders and environment. Companies such as Siemens Saudi Arabia effectively use their power projects by using renewable energies.

Table 3.9 Sustainable targets for project effectiveness

Project Stakeholders	Expectations
project teamwork	the project team member working satisfactory
project client	the project meet the client expatiations
government	the project has improved collaborations of government bodies
community	the project reduced the community complains

An efficient sustainable project is a crosscutting task, which requires clear project structures, plans, and integration of various stakeholders. The sustainable project should incorporate the expectations of each stakeholder by identifying social, economic, environmental cost- benefit and risks. By identifying present, future risk, cost and benefits, the project will be more sustainable and effective in meeting the requirements of stakeholders.

3.4 Sustainable business performance

Nahm et al. (2004) measured organisational business performance by considering the business metrics of return on investment, sales growth, market-share gain, along with the organisation's overall competitive position. This was affirmed by Dvir et al. (2006) who used comparable measures when evaluating project success. In the context of sustainable business performance, additional measurements have been adopted that look beyond the economic performance. These sustainable measurements consider all three categories of the triple bottom line, i.e., social, economic and environmental aspects of performance by integrating these measures across the project and shown in Table 3.10.

Sustainable business performance consists of internal and external business performance. Both the internal and external business performance has to take into account triple bottom line features of the organisation's operating environment. Landrum and Edwards (2009) stated that business operations lie at the heart of sustainable development. A business cannot become sustainable without critical analysis of current operations and consideration of changes required to move towards the path of sustainability. They also state that rethinking the business operations in terms of the triple bottom line and its impact on performance is critical for sustainable internal and external business performance. Figure 3.5 depicts the business performance and its relation to triple bottom line.

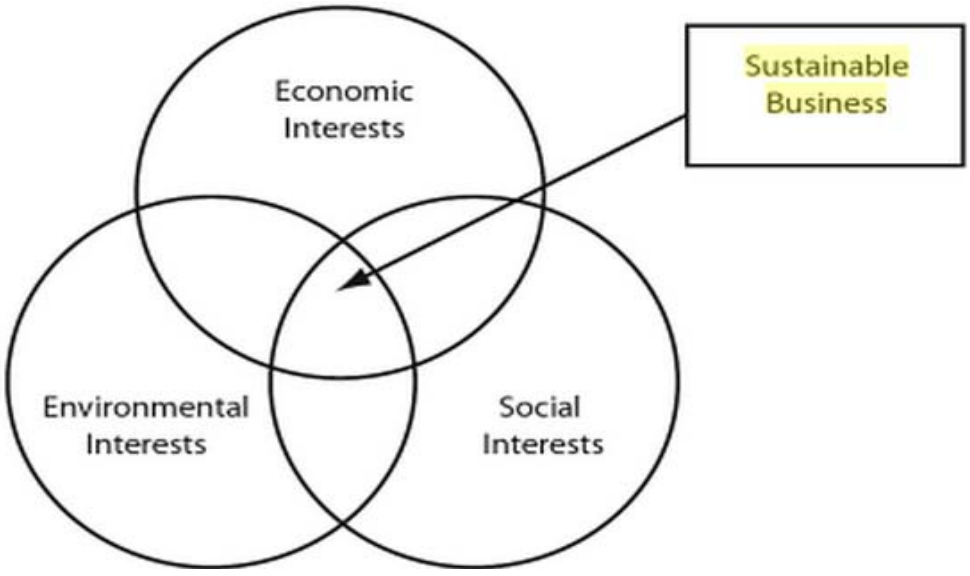

Figure 3.5 **The relation of business performance and the triple bottom line (Source: Landrum and Edwards 2009)**

3.4.1 Internal business performance

Sustainable development indicators (SDI) or key performance indicators (KPI) measure the performance of an organisation or project in terms of how well it meets sustainability goals and standards. The policies, plans and programs of sustainable projects are linked at macro level. The SDI is referred to as the triple bottom line, which includes the pillars of sustainability, i.e., society, the economy, and the environment. This SDI helps in measuring the efficiencies and effectiveness of projects. Appropriate performance measuring systems bring transparency, effective communication and meeting stakeholder concerns (Singh et al. 2009).

The current advances in technology and globalisation are compelling companies to undertake effective performance measurement systems. This initiative has brought improvements in operating efficiency, reductions in cost, quality improvement, and the development of new product lines (Meyer 2002).

Economic performance

Financial benefits. The business or project needs a balanced set of financial and non-financial performance measures. Traditionally the focus was on measuring quantitative financial resources, such as cost, revenue and profit. Quantitative measures are, however, inadequate to judge the entire performance of the project. Managers now take into consideration both financial and non-financial measures. Financial measures indicate past performance, whereas non-financial measure future performance (Vaidya & Gill 2009).

The balanced scorecard

The most commonly used tool in financial performance measures is the balanced scorecard. It measures the performance of the project on cost, productivity and quality. The stakeholders view the balanced scorecard to compare the desired and actual performance of the project. The stakeholder is interested in revenue growth, return on equity and per unit cost of production. These measures help in measuring the customer results, capacity utilisations, customer satisfaction, yield, cycle time and organisational potential (Vaidya & Gill 2009).

Social performance

Employment opportunities. The social performance of the project is measured by indicators, such as investment, in each employee as training, salaries and compensation, the frequency of employee breakdown due to work related pressure, labour stability, absenteeism report, frequency of work rotation done, creation of employment opportunity, organisational training and education. The performance measures collect, analyse and assess data against performance criteria. The data is then reported and communicated to various stakeholders to periodically review the process (Labuschagne & Brent 2008).

Social performance is the effective translation of the interaction of the social environment with the organisation or project activities. The internal performance of the business is measured by the amount of corporate social responsibility undertaken, such as health services or employment opportunities generated. A project takes resources from society and so the business becomes accountable for using those resources in an efficient manner by uplifting the economy, society, culture and the environment. The programs and services conducted by the organisation should prepare the young and adults for employment by harnessing their soft skills (Meyer 2002).

According to Talbot (2012), an organisation makes considerable effort fostering employment and creating more jobs by conducting specialised training programs, or setting up a project in special economic zones with the support of investors to produce favourable internal performance measures. Employment strategies focus on high standards of employment and the building of a knowledge based society (Talbot 2012).

Organisational training and education. Organisations are now increasingly held responsible for their performances. For effective internal business performance, organisations must regard the training and developmental of employees as a critical feature of their operations. The on-the-job and off-the-job training of employees or teams should be monitored and results evaluated. The organisation should maximise business education schemes for employees who will benefit in their jobs after attending those courses. To improve performance, there is a consistent need to upgrade training (Talbot 2012).

The training and educational programs have a positive impact on the internal performance of the organisation. Training decreases workplace stress since employees are equipped to do their jobs,

thereby increasing the productivity of the firm. It also keeps employees abreast of new technology and best practices, resulting in superior performances at work. Training and education also reduce the attrition cost to an organisation, which boosts the overall internal performance of the company (Adegoke 2013).

Environmental performance

Organisations' environmental tools and methods. Internal business performance from an environmental point of view can be measured by identifying key indicators, such as energy used, GHG emissions management, and biodiversity conservation management. The increase in measuring the impact on society has been widely encouraged in order to minimise the environmental damage caused by industrial and building activity, and aims to give something positive back to society. The business performance model facilitates continuous improvement in business methods. Organisations promote environmental awareness through campaigns, education and action programs. They aim to harness the scarce resources to achieve the desired environmental goals by promoting an environment ethic in the community (Epstein & Buhovac 2014).

Stakeholders are motivated and made aware of the need for environmental protection. Organisations promote programs that lead to a reduction in waste and energy consumption. Apart from having their awareness of environmental issues raised, employees are trained to organise waste reduction activities in their estates. The organisations promote green messages through mass media, encourage community based environmental projects and the conservation of energy by following sustainable business processes. These tools and activities improve the internal performance of the organisation when applied effectively (Ciampi 2009).

Environmental cost. Environmental benchmarks are used to determine if a project is sustainable and efficient.. Organisations face a number of opportunities and challenges when trying to be environmentally responsible, such as the demand for natural resources and the possibility of air and water contamination due to business activity. We know already that the environment suffers from the practices that produce some of our most valued products, from vehicles to homes. As resources are accessed and used, there is contamination of air, water, land by chemicals hazardous waste and weapons. Depletion of ground water is a major concern. The exhaustion of forests is

resulting in environmental hazards such as floods and landslides. The unsustainable use of forests has also led to the reduction of fuel woods and building materials, as well as the loss of biodiversity loss along with land degradation (Nyborg 2012).

A large number of standards have been developed internationally, such as ISO. These are used in current business practices to make projects sustainable and favourable in terms of environmental, social and economic impacts. Several companies have implemented techniques like cost-benefit analysis and environment and material flow cost accounting, realising the importance of issues associated with the use of resources from the natural environment, such as the volatility of energy prices, material unavailability and the efficient use of resources, including recycling,. This has improved the performance of business in achieving a successful triple bottom line (Jasch 2008).

3.4.2 External business performance

Morfaw and Mba (2011) argue that when an organisation makes a commitment to sustainable development, the real work of reporting the process to internal and external stakeholders starts. External reporting tends to drive internal business performance. In the context of external business performance, an organisation needs to take into account two factors. The first factor is the origin of the business, or the place where it performs its primary operations. The second factor is related to legislation and information needs among stakeholders. Reports on particular issues related to sustainability and the environment can damage a business if it is listed on the stock exchange and share prices fall. when making reports on particular issues related to sustainable development (Morfaw & Mba 2011).

Economic. Landrum and Edwards (2009) state that the economic impact of sustainable external business performance does not look at the profitability of the business, which is indicated in the financial statements. Although, maintaining profitability is critical for the survival of the business, economic impact looks at the contribution towards building a strong and healthy economy at the local level so that it can achieve a considerable amount of market share in the industry.

Market share

For example, the El Dorado promise is a strategic philanthropic initiative of Murphy Oil Corporation, a Fortune 500 company. With a declining population, industry and talent pool, the company announced it would donate $50 million for a local students' scholarship program. Within a year of the announcement of the program, the area registered an 18% increase in the

college-bound seniors and 4% increase in school enrolment. Families from more than 10 foreign countries also moved to El Dorado; thus the company benefitted from increased economic activity to increase market share (Landrum and Edwards 2009).

Competitive position

As per Searcy (2012), a competitive position is an important target for any business in the market where it is operating. Suppliers are an important constituent of a supply chain. In order to maintain competitive position in the market, the company makes sure that its suppliers are engaged across the supply chain with companies that share similar economic values and sustainable practices. Thus, strong and healthy supply chains lead to a strong and healthy future for the business. The competitive position is created through ensuring sustainable business activities and organisations (Hubbard 2009).

External benchmarking provides companies with tools for the assessment of their competitive position. Following sustainable practices leads to a high level of customer satisfaction and employee satisfaction. Such non-financial performance indicators, along with financial indicators, such as return on investment and profitability, provide firms with the tools for assessing their competitive position (Berger & Berger 2011).

Social. Landrum and Edwards (2009) find that the social dimension is related to society and social justice. Companies should not overlook social impact.

Collaboration with government and community

Collaboration with communities involves respect of others. It includes respect for individuals, as well as other businesses that are encountered at local and global levels. A sustainable business has to make sure that its practices, policies, regulation, products, services, advertisements, mascot or logo, and many other related business aspects, are not offensive or disrespectful in any manner to its clients in the global market.

An example of collaboration with community as part of the social aspect can be seen in TOMS Shoes. In 2006, the company was founded with the single mission of bringing improvement in the lives of children with the help of providing shoes to those in need. Production of shoes takes place in China and Argentina, following fair labour practices and creating minimal environmental

impact. The company sells shoes online and to retailers with the promise that for every pair of shoes sold, the company will provide a second pair of shoes to a child in need in various locations around the world.

Collaboration with the government includes following the legislation of the country where the company operates, with consideration given to following practices and policies that are fair to the country's labour force (Landrum & Edwards 2009).

Environmental. Sahay (2006) points out the necessity of preserving environmental quality.

Environmental benchmarking

Environmental benchmarking is done to assess the environmental impact of suppliers in the context of products and services, as well as the transportation of goods. Seeking out the products and services of suppliers who are environment friendly results in the purchase of those raw materials which produce less waste, are less toxic and generate a minimum amount of pollution in manufacturing and transportation.

Green procurement policy or environmently friendly purchasing policy is another aspect of environmental benchmarking. Under such policy, the company sets standards for its purchasing policy and gives preference to those products and services that are most environments friendly (Sahay 2006).

Water efficiency and energy efficiency are other aspects of looking at environmental impact in the external environment. The project has to help the company reduce its use of freshwater and increase the use of recycled water.. In terms of energy usage, the company has to go through an energy audit of its project so that it generates less carbon dioxide (Costello & Cozzone 2013).

Summary. Internal and external organisational success factors for improving business performance include all three aspects of triple bottom line – social, economic and environmental (Figure 3.10). Internal business performance targets for the social factor are to increase employment opportunities in the organisation and to help the organisation train and educate the employees. Environmental factors include helping the company to adopt more environmental project tools and methods. The environmental cost of projects should be reduced. At the economic level, the project has to add financial benefits. At the external level, the project has to help in improving company's relationship with community and government, improve the state of environmental benchmarking and increase market share and competitive position.

Table 3.10 Sustainable internal and external organisation success factors

Sustainable Criteria	Internal Business Performance Targets	External Business Performance Targets
Social	The project has improved the employment opportunities in the organisation. The project helped the organisation to train and educate employee.	The project helped the organisation to improve the organisation's stand towered community and government.
Environmental	The project helped the organisation to adapt more project environmental tools and methodology. The environmental cost such as (Wast, emission, resources, recycling) has been improved than the last year.	The project has helped the organisation to improve its environmental benchmarking position with competitors.
Economic	The project adds financial benefits to the organisation.	The project has helped the organisation to increase the market share. The project has helped the organisation to improve its competitive position.

3.5 Organisational culture

Organisational culture has been defined as a set of values, behaviours and beliefs that are undertaken by the organisation members in striving to achieve task related outcomes. There are many organisational factors that directly affect team effectiveness within an organisation and influence organisational culture. The organisational context is composed of managerial processes and organisational systems, as well as the culture within that specific organisation. Studies in the past 20 years have recognised that those organisations that focus on stakeholders, leadership, employees and their customers outperform those organisations that do not focus on these key cultural characteristics (Eccles, Ioannou & Serafeim 2012; Kotter 2008; Ojo 2010; Schein, E 2012; Sun 2008).

Doolen et al.'s (2003) study of Fortune 500 high tech companies found that production teams identified a positive linear correlation connecting the effectiveness of a team leader and team satisfaction. Furthermore, Doolen et al. (2003) found that organisational cultures that focus on communicating and developing cooperation amongst teams were significantly more effective. In Doolen et al.'s study, those factors that were used to define organisational culture included the level to which organisational culture supported inter team relations, as well as how those teams were included within the organisation, along with the manner in which the organisation's cultural values supported those teams and fostered teamwork (Doolen et al. 2003). The value and

importance of knowledge-centred culture was suggested by Janz and Prasarnphanich (2003), and their work identified the significance of the association between an organisational climate and how it fosters cooperative learning.

Nahm, Vonderembse, and Koufteros (2004) investigated the influence of organisational culture on time-based manufacturing and performance by sampling 224 firms, and determined the value of support that influences high level time-based manufacturing performance. Previously, Schein (1992) had noted the significant influence of organisational culture and the positive relationships that exist between the customer and organisational beliefs. In addition, Schein (1992) found that there was a correlation between organisational beliefs and time-based manufacturing, as well as between time-based manufacturing and organisational performance.

Such is the impact of organisational culture on the performance of the organisation that Eskerod and Skriver (2007) argue that organisational culture may have a weak influence on the transfer of knowledge in processes. In the case of project orientation, Eskerod and Skriver (2007) have pointed out that knowledge transfer was likely to be restrained by a unsabstantial organisational culture, resulting in knowledge silos (Szulanski 2003). Ajmal and Koskinen (2008) also examined the functionality of organisational culture as it relates to the transfer of knowledge in project-based organisations. Their findings emphasise the significance of organisational culture in the creation, utilisation and sharing of knowledge within the organisation.

Schein (1992) describes a hierarchy in organisations that influences their culture. He suggests that there are underlying assumptions and a hierarchy of issues, along with adopted values, that can be used to measure culture. His measurement was founded on the dimensions of support, warmth, risk and reward. Risk was associated with inventiveness and innovation, while reward was the measurement of employee recognition. Warmth, support and interest in employee welfare were considered measures of organisational friendliness (Koskinen, Pihlanto, Vanharanta 2003).

The current research study used the Organisational Culture Assessment Instrument (OCAI) designed by Cameron and Quinn (1999) to identify organisational culture among the study respondents. OCAI has also assisted in the identification of approaches for changing organisational culture, and has been widely used by management researchers as a means for assessing organisational compatibility (Berrio 2003; Ritchie & Eastwood 2005; Zeitz, Johannesson & Ritchie 1997).

Cameron and Quinn (2006) developed the Organizational Cultural Assessment Instrument (OCAI) tool using two foundation disciplines that are prevalent within organisational culture; they were the disciplines of anthropology and sociology. The OCAI serves as a diagnostic tool that recognises and classifies organisational culture. Cameron and Quinn (2006) assert that an anthropological foundation holds the opinion that "organisations *are* cultures" and that the sociological foundation's perspective is that "organizations have cultures". The anthropological and sociological foundations of organisational culture can be further delineated by two methodologies, those of a semiotic and a functional method. A semiotic method holds the assumption that "culture resides in individual interpretations and cognitions" such that it permeates throughout an organisation (Cameron & Quinn 2006). Whereas, the functional method holds the notion that "culture emerges from collective behavior" and that the dissimilarities that prevail within organisational culture can be recognised, classified and transformed (Cameron & Quinn 2006). Cameron and Quinn (2006) used these foundation beliefs to base the OCAI and CVF when assessing organisational culture.

Organisational culture can best be explained through administrative theory. Administrative theory emphasises the best combination of managerial skills for achieving organisational goals and objectives. As explained by Walsh and Brief (2007), better organisational cultures are supported by the features emphasised by administrative theory, which emphasises better management and the behaviour of employees during the execution of their organisational duties. A better organisational culture is able to motivate employees, who tend to be cooperative and decisive (McShane & Travaglione 2007; Miner 2005; Mullins 2007; Rollinson 2008; Thompson 2011). Administrative theory, therefore, is a valuable tool for explaining the best organisational culture criteria, and it was through this theory that the OCAI key aspects were evaluated and examined in respect to organisations in Saudi Arabia.

There are six questions in the OCAI that pertain to the six main aspects of organisational culture (Table 3.11).

Table 3.11 OCAI criteria relating to organisational culture

	Organisation Culture Criteria	Description
1	Dominant characteristics of the organisation	What the overall organisation is like
2	Organisational leadership	Style and approach that permeate the organisation
3	Management of employees	The style that characterises how employees are treated and what the working environment is like
4	Organisation "glue,"	Bonding mechanisms, that holds the organisation together
5	Strategic emphases	Defining what areas of emphasis drive the organisation's strategy
6	Criteria of success	Determining how victory is defined and what gets rewarded and celebrated

The six dimensions are all significant since they illustrate the organisation's and management's values in terms of how they define success as well as those characteristics of leadership and the work environment and from that these measures can be used to diagnose the current cultural environment. The next section of this chapter explores the relationship between the model's constructs and identifies the study hypothesis relating to the model components, starting by identifying the sustainable development issues facing the modernisation agenda in Saudi Arabia. The rest of the model variables and latent variables are the isolated for analysis later in this study.

3.6 Relationship between constructs

The purpose of this section is to identify those relationships connecting business performance, project performance, project management maturity and the latest concept of sustainable development, as well as those factors that impel the progress of sustainable project management maturity.

The preceding section suggested there is still a great need to understand more about the level of project management maturity and its sustainable development applications in order to create sustainable business performance, and that organisational culture is a factor in how successful a firm is in achieving project management maturity.

The analysis is presented in two sub-sections. The first sub-section discusses a group of 34 variables that affect the sustainable project management maturity of an organisation and its culture. The second sub-section discusses a group of 19 variables that can be used to measure the sustainability of project and business performance in organisations.

Clearly, a number of concepts form a conceptual model that represents the focus of the empirical research. The key elements were translated into a number of hypotheses that help explain the underlying assumptions that were tested by the research. The study hypotheses were:

- ***H1:*** *High levels of (economic, social and environmental) Project maturity will influence positively sustainability of project management maturity.*
- ***H2:*** *High levels of sustainable project management maturity will influence positively sustainable project performance.*
- ***H2:*** *High levels of sustainable project management maturity will influence positively sustainable business performance.*
- ***H4:*** *High levels of organisational culture will influence positively sustainable project performance.*
- ***H5:*** *High levels of organisational culture will influence positively sustainable business performance.*
- ***H6:*** *High levels of Sustainable Project Performance will influence positively Sustainable Business Performance.*
- ***H7:*** *High levels of organisational culture will influence positively (economic, social and environmental) project maturity.*

Figure 3.6 illustrates the overall model of the concepts and variables.

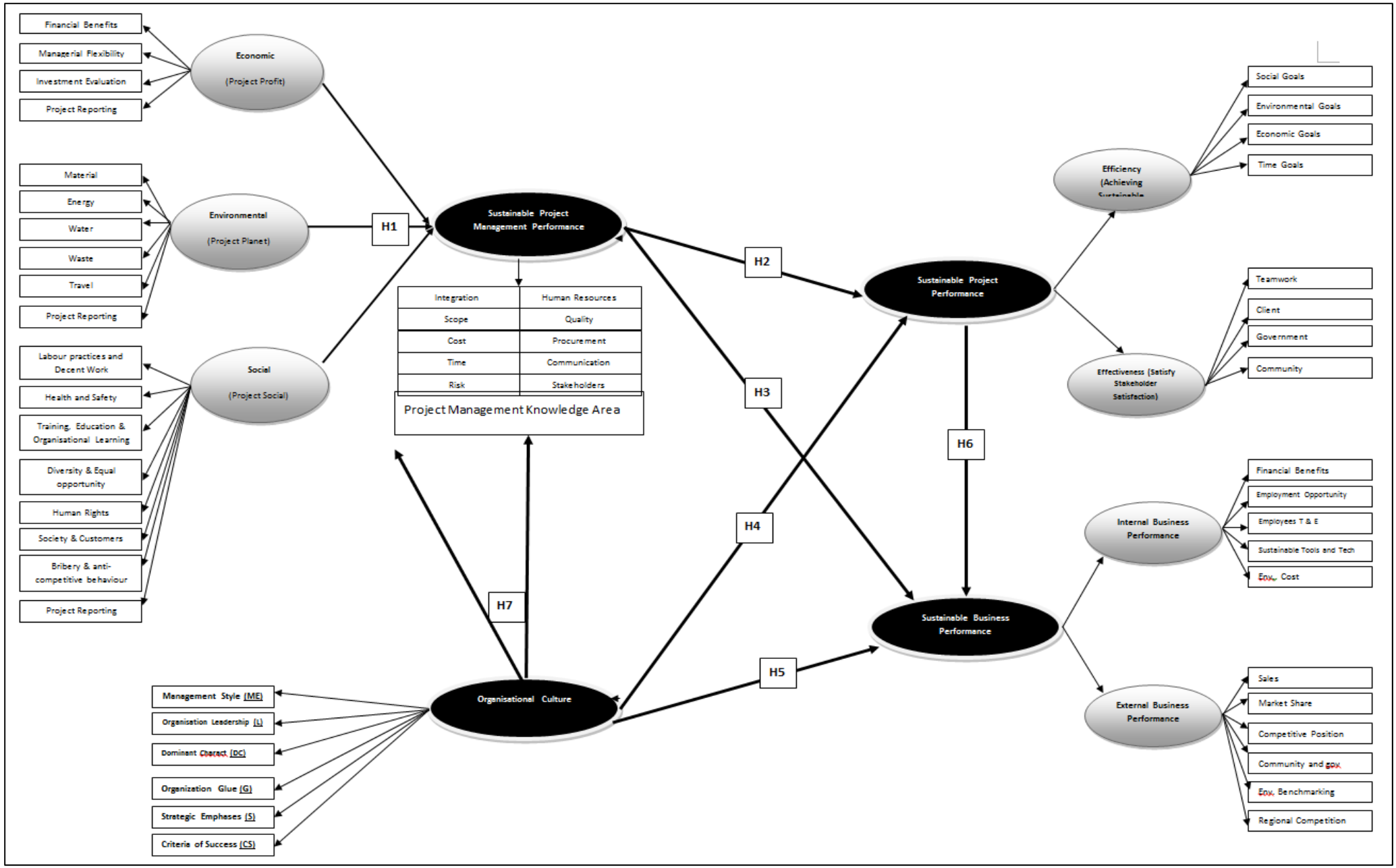

Figure 3.6 Summary of the overall model variables and constructs

The following sections develop seven themes that indicate the development of the hypotheses.

3.6.1 Development of Hypothesis 7
Variables affecting the sustainability of project management maturity

Organisational culture. Organisational culture is an important variable in the achievement of sustainable project management maturity. As identified by Yazici (2009), quality management practices usually fail because of failure to change organisational culture. Failure of change in organisational culture includes too many unresolved policy issues, no commitment from the side of the employee, poor human relations and morale, showing resistance to change and lack of vision. When all these organisation cultural characteristics are present, project management cannot be made sustainable. Corporate culture creates different kinds of patterns of behaviour in different companies and has a significant impact on the outcomes of a project. It relates to the degree of openness for hearing and dealing with the issues in the project. And the project manager must be committed to the ultimate success of the endeavour and capable of delivering the desired outcomes (Yazici 2008), although it must be acknowledged that organisational culture can stifle the most enthusiastic project manager and handicap their leadership.

Organisational culture also decides the amount of information shared between functional groups working on the project. Face-to-face communication between the project manager and the team members is essential, and responses to information reveal the maturity of the organisation and the openness of the culture.

Open communication, when integrated into the organisational culture, includes use of various assessment tools, such as conducting face-to-face interviews, conducting written surveys of members and observing the corporate culture. Conducting face-to-face interviews leads directly to talking with the employees who are engaged in completing the project on a day-to-day basis. It leads to the creation of people oriented business, opportunities for observing the corporate culture and revealing actual as well as intended behaviours..

Eccles et al. (2012) argue that a written survey of employees leads to the gain of an impartial and anonymous assessment of specific topics of project management when it is included in research on project management with an organisation. The advantage of the tool is that it enables the company to reach a broad pool of members. However, the method is impersonal and participants

can give answers that they perceive to be right or desired rather than what is true. Nevertheless, observing corporate culture helps a company to observe morale, communications and interactions between members of the project. Although the interaction may be limited in duration, it helps in the assessment of the inclination of team members towards sustainable project management practices.

Towards this end, it was hypothesised that:

- *H7: High levels of organisational culture will influence positively (economic, social and environmental) project maturity.*

3.6.2 Development of Hypotheses 1, 2 and 4
Variables affecting the sustainability of project performance

The relationship between sustainable project management maturity and sustainable project performance. Sustainable project management maturity and sustainable project performance share a positive relationship. Sustainable project performance includes meeting sustainability targets for triple bottom line assessments, including economic, social and environmental dimensions. By meeting targets for project time, cost and quality, economic efficiency is identified, which in turn leads to the successful attainment of the sustainability targets of the project of interest. With succeeding stages of project management maturity, sustainable project management practices get integrated into the organisation. At the first level, no sustainable practices are in place. However, every succeeding level creates more understanding and integration first at the project level and then at the organisational level. It leads to the attainment of targets of sustainable project performance.

Project management provides benefits to the bottom line and companies give high priority to the need for strategic planning for project management. As project management is no longer seen as a quantitative tool for managing the organisation's workforce, but an effective and efficient source of benefits for the organisation on an overall basis, a project management maturity model helps in the integration of sustainability in all the life cycle stages of the project (Kerzner 2011).

Thus, it was hypothesised that:

- ***H1:*** *High levels of (economic, social and environmental) project maturity will influence positively sustainability of project management maturity.*

- ***H2:*** *High levels of sustainable project management maturity will influence positively sustainable project performance.*

Organisational culture. As per Yazici (2009), organisational culture is an important indicator of the success path of the organisation towards attainment of sustainable project performance. A project management assessment tool, such as a project management maturity model, leads management towards setting sustainable goals and helps in the prioritisation of areas that require improvement. It further provides the baseline by which the organisation can make tracking of the progress of its project possible. Thus, organisational culture ultimately helps in building a corporate culture of project management excellence (Yazici 2008).

Kerzner (2011) argues that the inclination of organisational culture towards attainment of sustainable targets of project management helps to increase and improve the level of sustainable project performance. With respect to the orientation of organisational culture, clan culture shows significant positive relationships with project performance. In clan culture, emphasis is laid on teamwork, mentoring, consensus and participation. It also emphasises human development through openness, high trust and participation. All these characteristics of clan culture were covered in the triple bottom line for the project. Therefore, an effective organisational culture is necessary for establishing positive, sustainable project performance (Kerzner, 2011).

Thus, it is hypothesised that:

- ***H4:*** *High levels of organisational culture will influence positively sustainable project performance.*

3.6.3 Development of Hypotheses 3, 5 and 6
Variables affecting the sustainability of business performance

Sustainable project management maturity. Kohler et al. (2012) note that sustainable project management maturity includes handling all three aspects of triple bottom line – economic, social and environmental. When sustainable policies and practices are integrated into project management, internal and external business performance also gets affected. With the increasing maturity of the project, the organisation also gets inclined towards attainment of goals of sustainable business performance both at the internal and external level. Organisations start reducing waste, generating employment opportunities, and using energy optimally, adhering to

labour laws and international labour standards, and making internal business processes compliant with the company's sustainability goals. As project management is now seen as the part of strategic initiatives that are designed to enhance stakeholder value, a project management maturity model for the company aligns project goals and objectives with organisational goals and objectives. It covers all three aspects of sustainable development – people, planet and profit (Kohler et al 2012).

Thus, it is hypothesised that:

- ***H3:*** *High levels of sustainable project management maturity will influence positively sustainable business performance.*

Organisational culture. According to Eccles et al. (2011), companies with a strong culture of sustainability are more likely to make executive compensation a function of social, environmental and economic performance. Furthermore, a strong sustainability culture is more likely to establish a process of formal stakeholder engagement with identification of risks and opportunities. It trains project managers in stakeholder management, and results from such engagement processes are then reported at both external and internal level. Subsequent feedback from stakeholders is submitted in the form of the report to the board of directors. Thus, a long-term orientation is established which is also the target of sustainable business performance. Subsequently, firms create an investor base that has more long-term orientation and communication is facilitated by the inclusion of more long-term information in their regular conference calls. Adoption of sustainable policies reflects substantive changes in the processes of the business (Eccles et al. 2011).

Thus, it is hypothesised that:

- ***H5:*** *High levels of organisational culture will influence positively sustainable business performance.*

Sustainable project performance. Sustainable project performance involves assessing and handling the impact of social, economic and environmental dimensions of sustainability in the context of project management. Project level drivers for sustainability are the expectations of stakeholders and the development of the local community, the management of local reputation, policies and practices at the corporate level, the developmental plans of the government, and local

economic development (Spreitzer & Porath 2012). All these drivers also drive business performance aimed at sustainability.

Internal and external business performance indicators include regulatory indicators, performance indicators, economic, quality and ecological indicators. As projects are an important element of business operations and include a variety of projects ranging from product development to organisational process changes, and so on. When projects are sustainable, the performance of the business is also impacted.

Thus, it is hypothesised that:

- ***H6:*** *High levels of sustainable project performance will influence positively sustainable business performance.*

3.7 Summary

At a high level of performance the most competent kind of project management allows the company to lower its cost of operations by accomplishing more work in less time with fewer resources and without making any sacrifice to the quality of the project. The present view of project management increases profitability. It also makes the organisation more effective with the help of better organisational behaviour principles. The purpose of having a project management maturity model is to assess whether the company is going in the right direction with its project(s).

It has been observed that the organisation becomes inclined towards integrating sustainable business practices in the long term, going through different levels of maturity in terms of project management. Organisational culture plays a significant role in the company attaining sustainable project and business performance.

Factors, such as open communication, facilitation of interaction among project members and stakeholder engagement contribute to driving the organisation towards sustainable project and business performance. The maturity model allows organisations to monitor and report the development of their projects through the establishment of their own ambitions and standards that are in accordance with the values of the company. Projects contribute to sustainable the development of the organisation. The maturity model helps the organisations to translate theoretical aspects and concepts of sustainability into prescriptive actions. Thus, there are relationships among various variables – project management maturity model, organisational culture, project sustainability performance and business sustainability performance. An analysis of

relationships among these variables gives an idea of how a company can become successful on the path of sustainable development.

Given the modernisation agenda taking place in the KSA, as demonstrated by many large-scale infrastructure building projects, it is a matter of importance that project management plays an effective role by maximising its organisational and professional capabilities. The model designed in this research enables an analytical perspective to be obtained on how project management is actually performing and whether it has reached a required level of maturity.

Having made these assumptions and translated them in a number of hypotheses, the point is reached where they may be tested. This follows after the next chapter that explains the research methodology.

Chapter Four

Methodology and methods

This chapter outlines the research methodology that guided the research and the methods that were used to investigate the hypotheses and the relationship between variables identified and discussed in Chapter 3.

The overall aim of this study was to develop a model to evaluate the sustainability of project management practices implemented by organisations in Saudi Arabia. The study was prompted by a review of the literature and consultations with academics and business practitioners. To the researcher's knowledge, no previous studies have been conducted on sustainable project management practices in Saudi Arabia, nor have there been any evaluations of the factors affecting the sustainability of project management. This kind of research is new in the region and it was anticipated that it could provide very interesting results since Saudi Arabia, unique in its culture, geography, politics and religion, has not been subject previously to this sort of study. It was considered likely that the results would be very important, not just to academic research, but to the understanding and development of project management best practice in Saudi organisations. The research has provided an opportunity to identify the actual and possible sustainable project management practices in the KSA.

The conceptual model variables were extracted from the detailed literature review in order to investigate the sustainability of project management best practice in Saudi Arabia and identify influences like organisational culture affecting the sustainability of project management under any current or future modernisation plans. Using quantifiable measurement of sustainable project management maturity and the CVF six dimensions added to the validity of the current research. There is no record of other empirical research having been undertaken.

This chapter presents the research design and method, the research questions and hypotheses, the sample selection developed, the data collection procedures, specifications about the variables involved, and justifies the procedures used to collect and analyse the data.

4.1 Research methodology

The four areas that were the basis of the conceptual model of the study were also the basis of questions answered by project managers in Saudi Arabia who are working in project-driven organisations:

- sustainable project management maturity
- organisational culture
- sustainable project performance
- sustainable business performance

Each of these concepts was extremely important for data collection and analysis. Preliminary results revealed a vast collection of information related to factors influencing sustainable project maturity levels in Saudi Arabia, including many correlations among variables.

4.1.1 Quantitative research

Quantitative research using a questionnaire method is representative of positivism as the underlying philosophy for the research (Pather & Uys 2008; Sobh & Perry 2006). Positivist research is grounded in objectivity and researcher independence, meaning that the validity and reliability of the findings can be generalised (Remenyi & Pather 2006). The scientific method(s) employed in positivist quantitative research make us of reduction.

The evaluation of how organisations function has long been grounded in scientific method (Pather & Uys 2008). Positivism holds that the scientific objectivity of the research is fundamental in ascertaining honest and valid conclusions, which can contribute valuable knowledge to the existing body of knowledge about a topic (Roode 2003). Positivism was chosen as the underlying philosophical doctrine given its scientific methodology and the capacity to use surveys (Sobh & Perry 2006).

Constructivism was eliminated as a methodology because the researcher was not associated directly with the field of investigation and unstructured field interviews were not going to be used. This is due to logistics and practicality as well as political sensitive reasons. Critical theory was also discarded as no participant observation was taking place (Sobh & Perry 2006), as was interpretivism as it is commonly associated with qualitative research using unstructured interviews and often involves participant observation (Livesey 2006), which was recognised as prohibitive in the circumstances of the study.

4.1.2 Research questions and hypotheses

The research questions were written with an emphasis on investigating the functionality of sustainable project management maturity within the current model of modernisation in Saudi Arabia. Data relating to the effect organisational culture has on project management practice and performance were also sought. The research questions and hypotheses were:

- **Question 1.** What are the challenges face Saudi Arabia as the country seeks to achieve sustainability in its projects?

To address the question, an intensive literature review was conducted as reported in Chapters 2 and 3. The review of the sustainable development literature revealed the sorts of challenges and opportunities facing the KSA in the three critical dimensions: economic, social and environmental.

- **Question 2.** What is the role of sustainable project management maturity as a part of the modernisation process in Saudi Arabia?
- **Question 3.** How important is organisational culture in fostering the introduction of sustainability ideas into project management in Saudi Arabia?

To address the second and third research questions, and test the hypotheses listed in Table 4.1, a questionnaire was developed to collect empirical data in order to operationalise the variables associated with the sustainable project management practices in Saudi Arabia's projects.

Table 4.1 Hypotheses

H1:	There is a significant positive correlation between sustainable project management knowledge area (SPMKA) and the three dimensions of sustainable project management maturity (SPMM-En; SPMM – Ec, and SPMM -So);
H2:	There is a significant positive correlation between sustainable project management knowledge area (SPMKA) and sustainable project performance (SPP);
H3:	There is a significant positive correlation between sustainable project management knowledge area (SPMKA) and sustainable business performance (SBP);
H4:	There is a significant positive correlation between organisational culture (OC) and sustainable project performance (SPP);
H5:	There is a significant positive correlation between organisational culture (OC) and sustainable business performance (SBP);
H6:	There is a significant positive correlation between sustainable project performance (SPP) and sustainable business performance (SBP);
H7:	There is a significant positive correlation between organisational culture (OC) and the three dimensions of sustainable project management maturity (SPMM-En, SPMM – Ec, and SPMM - So).

4.2 Methods

The researcher considered various quantitative statistical techniques such as IBM *SPSS* version 20 and a structural equation modelling (SEM) approach via partial least squares analysis (PLS-SEM) and ANOVA to scrutinise the data and retrieve as many conclusions as possible and describe recommendations for attaining higher sustainable maturity levels in Saudi Arabian projects. *SPSS* (version 20) was used to analyse the demographic data and then further analysis was conducted using structural equation modelling (SEM), a statistical method for testing causal correlations between variables and for testing theories. Additionally, *Smart-PLS* was used to perform statistical analysis as the graphical user interface is user-friendly and provides tools that can be used to edit the layout (Temme, Kreis, & Hildebrandt 2006).

Prior to commencing this research, a pilot study was undertaken involving a single organisation in Saudi Arabia and similar research methods. The intent was to refine the methods and establish the groundwork for the larger study. The preliminary project involved a Saudi Arabian organisation and was focused on a project to which a sustainable maturity assessment tool could be used, identifying variables and aiding in the design for the major questionnaire.

As quantitative research is predominantly driven by numerical analysis, the use of an online questionnaire (Appendix A) prepared with the online tool *SurveyGizmo* was considered a valuable method for driving the research since it was primarily focused on individual perceptions. Questionnaires can gather numerical data using closed questions and a Likert scale. While the questionnaire length was not long (20 minutes), it contained 74 questions and generated a considerable amount of data. *SurveyGizmo* was able to dump the data into a Microsoft *Excel* file for convenient analysis.

Using a web survey development instrument greatly increased the ease of the physical design and delivery of the questionnaire. Both time and cost savings were realised. The tool was selected from some 20 choices based on the needs of the researcher, ease of use for the respondents and the low cost of use. Furthermore, it was easy to fit into the timeframe of the research project.

4.2.1 Study population

The study population for the main research project was provided by two Saudi Arabian governmental departments, the Ministry of Commerce and Industry and the Ministry of Municipal and Rural Affairs and they were 4,948 business project-driven organisations across KSA. Thus, defining a suitable target sample posed certain challenges, such as the fact that many project leaders in the organisations served multiple managerial functions. Sample selection focused on the project managers who were working in organisations where the work was project-based, since they were more familiar with project management implementation Alreck and Settle (1995) state that with populations of significant size, a sample of 10% of the target population is acceptable. An acceptable sample for the current study from the targeted population of 4,948 organisations was, therefore, 494 responses.

The participants were associated with either or both of the two Saudi ministries participating in the research, and had specific knowledge of the area being investigated. Over two thirds of the respondents worked for Saudi organisations, while the remainder worked for multinational or international companies. About half of the projects were located in central Saudi Arabia, and about one quarter in western Saudi Arabia. The remainder were in eastern, southern, or northern Saudi Arabia. The majority of the organisations did not have sustainable or green certificates. The respondents had worked in the industry from one year to over 25 years. Over three quarters of the respondents had worked in the industry for six to 25 years. The respondents reported that they had experience in a wide range of projects in a variety of sectors of which the majority included building and construction, information technology, operations and maintenance.

There was an administrative list that provided the sampling frame for those units being solicited to participate. The sampling method employed was purposive, as the general desire of the researcher was to select a relevant group of experts and to select a population that would have particular characteristics that could yield answers to the research questions (Tongco 2007).

By selecting purposive sampling, the researcher was ensuring that the research data is fundamentally reliable and reflects a high degree of competence on the part of the respondent, thereby increasing the data quality (Tongco 2007). Creswell (2009) has noted that selecting participants that understand and can add value to the research through their explicit knowledge

can be achieved using purposive sampling. The nature of the current research and the targeted approach reflected Maxwell's (1998) observation that purposive sampling was beneficial when particular settings, persons or events are deliberately selected for the important information they can provide that cannot be gotten as well from other choices.

4.2.2 Sample size and method

The sample size posed several restrictions for the confidence levels as the researcher had to determine a range of acceptability for degrees of uncertainty so as to have confidence and provide validity to the results derived. The following formula dictated the minimum sample size with a 95% confidence level with confidence intervals at +/- 10%:

$$\boldsymbol{n = \frac{(1.96)^2\, X\, (.25)\, X\, (Population)}{(1.96)^2\, X\, (.25)\, +\, (Population\, -\, 1)\, X\, (10\%)^2}}$$

Where; n represents the number of respondents, (.25) represents the standard error of distribution and 10% is the confidence level (Rea & Parker 2012).

Applying this formula to the existing population, the following output of sample size was determined.

$$\boldsymbol{n = \frac{(1.96)^2\, X\, (.25)\, X\, (4948)}{(1.96)^2\, X\, (.25)\, +\, (4948\, -\, 1)\, X\, (10\%)^2}}$$

$$\boldsymbol{n = 94\ repondents\ at\ a\ minimum}$$

Since 664 completed responses were received from the selected population, it could be determined that the margin for error on the 95% confidence interval was not 10% as stipulated in the formula, but rather reflected a 3.54% from the completed surveys. This lower percentage of error provides a higher level of confidence in the results since the sample size had increased. From the responses received, analysis could be undertaken with regards to project management practices in Saudi Arabia. The number of responses was enough to be considered representative of the population of project managers; and, since the respondents answered all sections of the questionnaire – sustainability, maturity, organisational culture and demography– the samples were considered adequate for the study.

4.2.3 Developing and delivering the online questionnaire

A descriptive correlational research design was implemented, defined as research to explore the relationships between two or more variables, when it is not possible for the researcher to experimentally manipulate any of the variables (Saunders et al. 2011). An online questionnaire was developed as a means by which to measure a population once from which data collection and analysis followed. A preliminary pilot study focused on project management maturity within a single organisation, which enabled a suitable choice of questionnaire tools and instruments to be selected in order to conduct the larger study reported in this thesis. The preliminary study also informed the development of the research questions and the refinement of the hypotheses. Data for the main study were collected by means of a questionnaire delivered online, distributed across the Saudi Arabian region via the Ministry of Commerce and Industry and the Ministry of Municipal and Rural Affairs network to selected staff members. The questionnaire was launched on June 15th 2013, and was kept online for four months. Reminder notices were sent, one on the 15th of July and another in mid-August. The questionnaire was officially closed on September 15th and the item scores were downloaded. Analysis started immediately afterwards.

A covering letter explaining the research's rationale was sent by email (Appendix B) where the access code and security code to the questionnaire were provided. In the covering letter, the sponsors (University of Adelaide) were presented and designs were followed with the support of the Department of Entrepreneurship Commercialization and Innovation Center (ECIC). Each company received the covering letter asking to direct this questionnaire to their senior project managers and providing information for the participants (Appendix C), along with a consent form (Appendix D) and a list of people to contact at the University of Adelaide (Appendix E) if any participant or employer had any concerns. All these techniques were applied with the intention of getting the attention of the responders and also encouraging questionnaire completion (Newby et al., 2003).

Relevant information was included in the covering letter, such as an explanation of the research and the purpose of the questionnaire, the importance of participating in the questionnaire, expected outcomes, the privacy and confidentiality policy and the people involved in the process with contact details in case the respondents had queries. Newby et al. (2003) explains that this sort of information also increases the response rate.

Using online questionnaires/surveys as research tools. An online questionnaire is a valuable research tool that can be used to generate data from a large and geographically separated population. They have been progressively adopted as means of data collection by researchers due to the low cost and the fact that the delivery and collection of data is extremely efficient. Administered appropriately, they have been shown to attract high response rates while affording a confidential environment for respondents (Andrews, Nonnecke & Preece 2003).

Web-based surveys offer the capability of easy transfer of information into a database(s) for manipulation and analysis. This is particularly advantageous in eradicating transcription inaccuracies, as well as preventing alterations to questionnaire responses (Andrews, Nonnecke & Preece 2003). For the current study, online distribution of the questionnaire was deemed both a financially and logistically sound approach, as was online data collection and transmission to a database for analysis.

The pilot investigation provided insight into questionnaire development and administration while assisting with the development of the research model that enabled hypothesis testing. The researcher designed initial questions to generate general information about the practice of sustainable project management, from which the pilot run of the questionnaire was devised and revised with the assistance of academic advisers and colleagues and project managers to produce an instrument that was eventually distributed to the target population with an invitation to participate sent by email.

In the pilot study, a dozen participants provided feedback and suggestions to improve the questionnaire in order to hone the questions to a concise and informative length. Based on the pilot run, any ambiguous questions were rephrased and certain questions were eliminated, resulting in a final questionnaire that was deemed suitable to be sent to Saudi Arabian project management practitioners. This approach enabled observations of the sample pilot population to be consulted when the researcher prepared to administer a similar questionnaire to a larger population (Babbie 1990; Fowler 1998).

Disadvantages of online questionnaires. While online questionnaires are relatively inexpensive and easily administered, they can present some disadvantages that should be taken into consideration. For example, if there is any difficulty in answering a question, there is no

interviewer to help. Questions must, therefore, be absolutely clear and unambiguous, and the questionnaire should include a telephone number and an email address so that respondents' queries can be addressed.

Response rates for online surveys are notoriously low. As motivation to participate in an online survey, incentives can be provided. In this study, a personalised report for each respondent was afforded, as well as a chance to win an Ipad-mini by random selection upon completion of the questionnaire (Newby et al., 2003).

4.2.4 Questionnaire design

For the purposes of this research study, a questionnaire with structured questions was chosen to derive relationships between variables and expedite data collection and analysis (Creswell 2008) (Appendix A). Using questionnaires to conduct research enables a deductive approach to analysis (Saunders et al. 2011) and in social questionnaire design, a primary instrument for research is a questionnaire that is completed independently by sample participants (Bryman & Bell 2011).

Close-ended questionnaires. Quantitative research has been grounded in the natural sciences as it elucidates a fundamental principle of objectivity (Thomas, Nelson & Silverman 2011). Closed questions were used in the questionnaire and the responses from the population enabled generalisations to be formed from the comparative results (Creswell 2009). Close-ended questions facilitate statistical analysis but limit the respondent's choice of answers, whereas open-ended questions offer latitude for responses, but are time consuming to analyse statistically. The study questionnaire used closed questions answered by reference to a Likert scale in order to support statistical analysis (Jackson 2009).

Likert scales are a means of providing interval scales on which respondents can select a number that most correctly reflects their response to a question (Madsen 1989; Schertzer & Kernan 1985). Commonly the numbers range from one to five or seven, with the negative responses anchored by the lower numbers and the positive responses by the higher numbers. The Likert scale adopted in the study questionnaire was constructed as a simple type, as noted by Aldridge and Levine (2001). The scale ranged from 1 to 5, with 'strongly disagree' anchored by 1 at the lower end and 'strongly agree' anchored by 5 at the upper end of the scale. Neutral answers were expected to be scored at 3, in the middle of the scale. Additionally, factual yes and no questions were included.

First research question. For the first research question, an intensive literature review was performed regarding the sustainable development applications for project management relating to the modernisation agenda in Saudi Arabia by identifying and categorising the challenges facing the modernisation process in achieving sustainability. This step has been explained earlier in this study by exploring the up-to-date global and local sustainable issues (economic, social and environmental) taking Saudi Arabia's projects as the core application in this study, so that impacts from these projects can be identified.

However, the Sustainable Project Management Assessment Model by Silvius (2012) was used for the purpose of this objective in order to identify and categorise the sustainable issues for the assessment model. These sustainable challenges were integrated into the questionnaire for assessing the sustainable maturity of project management practice in Saudi Arabia.

Second and third research questions. In order to fully answer the second and third research questions, the questionnaire was divided into four sections (Table 4.2):

Table 4.2 The four sections of the questionnaire designed for the study

	The Target of Section
Section (1)	The sustainable maturity assessment for project management practice in Saudi Arabia.
Section (2)	The influences section, which is organisational culture factors that influence the sustainability of project management maturity and project management best practice in KSA.
Section (3)	The sustainable project and business performance.
Section (4)	Demographics questionnaire.

The four sections are equally important for data collection. For the sustainable project management maturity influence portion, the researcher used five project management sustainable maturity assessment levels as defined in Chapter 3 since they are the most efficient, practical and comprehensive tools for measuring organisational maturity in projects. In addition, the organisational culture model OCAI was used to identify potential variables coupled with the PMI knowledge core content for best practice that is deemed necessary to achieve maturity. Content knowledge was used in order to develop a theoretical model that correlated those attributes that impacted on maturity levels.

With regards to the sustainable maturity assessment section, the questionnaire contained 28 customised questions dealing with sustainable project management maturity assessment for respondents' organisations. These questions were organised into four groups – social, environmental, and economic and project management knowledge area.

In order for participants to provide accurate answers, the term 'sustainability' was defined clearly in the beginning of the questionnaire before starting to answer any question. At the same time, the sustainable project management maturity levels for the assessment model have been defined and categorised into five levels or measures for the participants' convenience using the Likert scale as shown in Table 4.3.

Table 4.3 Shows the sustainable project management maturity levels used in this study

The Scale Design of Project Management Sustainable Maturity Level	Description for each Maturity Level (Project Management Best Practice)
Sustainable Maturity Level 1	No established sustainable practices and standards exist
Sustainable Maturity Level 2	Some sustainable practices and standards are in place such as project resources selection but not across the organisation.
Sustainable Maturity Level 3	Sustainable practices and standards are instituted, and followed through the Project execution process using established reporting forms and documents.
Sustainable Maturity Level 4	Sustainable practices and standards are instituted and mostly followed throughout the project life cycle until the project deliverable using established reporting forms and documents. The targets of the project deliverable are included only in the project operation activities but not included in the long-term strategy of the organisation.
Sustainable Maturity Level 5	Continuous improvement regarding sustainability through the efficient collection, use, and decimation of data obtained in level 4 is in place. The organisation uses benchmarking metrics regarding sustainability as a means to rate itself against commonly accepted/expected standards and/or against others. The project's goals are included in the long-term organisational strategy.

*Note: (Level 1) is lowest sustainable maturity, whereas (Level 5) is the highest, and they are following:

Section 2

The second section of the questionnaire is the influences section. Participants were asked questions about their organisation's culture. These questions were customised and divided into six main categories; each category has four questions about maturity in Saudi Arabian organisations. The research study utilised the six dimensions of Cameron and Quinn's (1999) Competing Values Framework (CVF) as a template for the questionnaire used in the research. The CVF six dimensions measured assumptions and key values held by individuals within an organisation. These six dimensions made up one section of the questionnaire and covered the areas of:

- dominant characteristics of an organisation
- organisational leadership
- management of employees
- organisational glue
- strategic emphasis
- criteria of success.

Cameron and Quinn (2011) developed the Organisational Cultural Assessment Instrument (OCAI) tool using two foundation disciplines that are prevalent in studies of organisational culture – anthropology and sociology. The OCAI serves as a diagnostic tool that recognises and classifies organisational culture. Cameron and Quinn (2011) assert that 'organisations *are* cultures' and that the sociological foundation's perspective is that 'organisations have cultures'.

The anthropological and sociological foundations of organisational culture can be further delineated by two methodologies – semiotics and a functional method. Semiotics holds that 'culture resides in individual interpretations and cognitions' such that it permeates throughout an organisation (Cameron & Quinn 2011). Whereas, the functional method holds the notion that 'culture emerges from collective behavior' and that the dissimilarities that prevail within organisational culture can be recognised, classified and transformed (Cameron & Quinn 2011). Cameron and Quinn (2011) used these foundation beliefs to develop the OCAI and CVF when assessing organisational culture.

Section 3

The third portion of the questionnaire was designed to validate the research outcome and to draw a methodical conclusion about project management practices, capabilities, maturity and assessed influences driving project management maturity levels of a sustainable project and business performance.

Section 4

The final portion of the questionnaire comprised the demographic section, which helped the researcher assess correlations and create a variety of cross-tabular data to elucidate other project management practices in the region (Table 4.4). This section of the questionnaire contained a demographic information survey. The participants were required to provide general background information about themselves, their projects and their organisations. A demographic profile of the 664 respondents was constructed, based on the answers to the following questionnaire items, stored in the data editor of IBM *SPSS* version 20:

Table 4.4 Demographic questionnaire

Area of Question	The Question
project managers in Saudi Arabia	working experience in the field (years)
projects in Saudi Arabia	type of projects projects' locations
organisations in Saudi Arabia	the nationality of the origination if the organisation has any sustainable certificate

The demographic part of the questionnaire also dealt with the project managers' awareness of the concept of sustainable development and project management in Saudi Arabian projects. Respondents were asked about their maturity level in terms of integrating the concept of sustainable development into project management practice and its relationship to business strategy. This part of the analysis was to investigate the concept of sustainable development in the project managers' minds in Saudi Arabia. This section of the analysis was included to investigate the projects managers' understanding of sustainability in project management and their willingness to apply sustainable ideas to project management practice.

The five questions in the questionnaire that measured the project managers' awareness of sustainability were:

- project managers' awareness in the concept of sustainable development (SD)
- the need for integration of SD ideas into PM practice
- sustainable development applications vs. project success
- sustainable project management vs. business strategy
- the level of sustainability in the strategy of the organisation regarding its projects.

4.2.5 Response rate

The validity of web-based surveys is threatened when response rates are low, as the sample respondents will yield a low representation and bias could exist, potentially invalidating conclusions drawn from the data (Barriball & While 1999; Atif, Richards & Bilgin 2012). The response rate of a questionnaire is a measure of how many people who were approached, (i.e. 'sampled') actually completed the questionnaire (expressed as a percentage from 0% to 100%). It is usually assumed that the higher the response rate, the more likely the results are representative of the population, provided the sampling is appropriate in the first place. An acceptable response rate for online surveys is deemed to be 11% or more (Saunders et al. 2011). To encourage as many responses as possible, two reminder notifications were sent to the administering governmental agencies and subsequently two email reminders were sent to the target population to increase the likelihood of a response, as suggested by Nulty (2008). Taking these two steps helped achieve a 13.78% responses rate.

Neuman (2000) suggests that the total response rate is equivalent to the total number of responses divided by the total number in the sample less the number ineligible to respond. In this questionnaire, the result of this equation was 13.78%.

Total response rate = total number of responses / (total number in sample – ineligible)
Total response rate = 664 / (4948 – 132)
Total response rate = 13.78%

The actual data collection began with *SurveyGizmo* tracking the distribution of responses as shown in Figure 4.1.

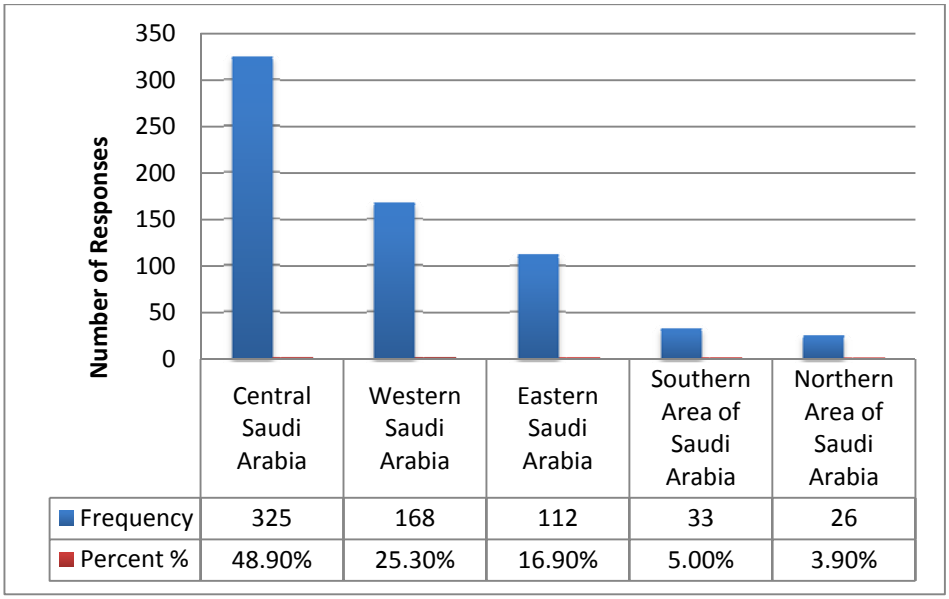

Figure 4.1 Distribution of completed responses from questionnaire

Response rates were continually recorded by *SurveyGizmo* so that when reminder emails were sent, they were only directed to those who had not replied to date. Figure 4.2 shows the progression of response rates over the time period the questionnaire was available.

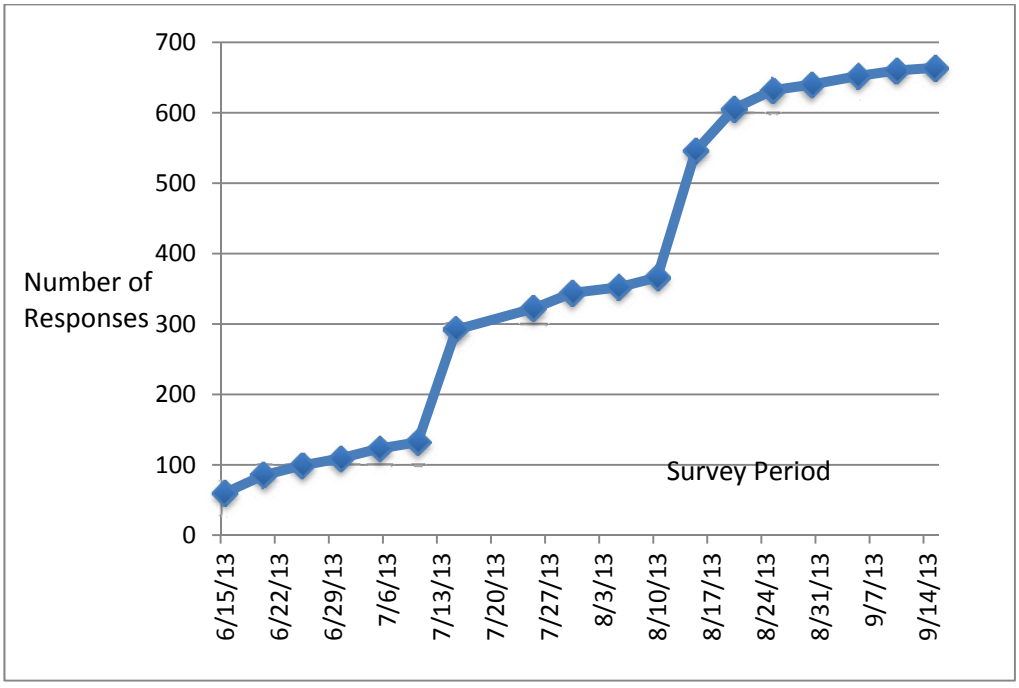

Figure 4.2 Evolution of the successful responses

SPSS was used to analyse the demographic profile of the 664 respondents who answered the questions about geographic, sustainable ranking, levels of experience, project types, what sector have projects taken place and organisational questions. Furthermore, the questionnaire item scores were analysed for any missing or erroneous values or data, and no such values or missing data were found. *SPSS* was used to conduct the second stage of the analysis and the third stage was conducted using partial least squares and structural equation modelling (PLS-SEM).

4.2.6 Costs

This research was underwritten solely by the researcher and there was no benefit or compensation received by the researcher other than the published outcome of the PhD dissertation. The research approach mitigated against any potential conflict of interest that could result from compensation for participation in the study. The potential gain from participation was access to the study results that may benefit a participant.

The use of the *SurveyGizmo* website cost $20 per month for four months, totalling $80. The use of the *SPSS* in data analysis was provided by the University of Adelaide.

4.3 Data analysis

The statistical analysis proceeded in three stages. In the first stage, a **descriptive analysis** of the data was conducted. In the second stage, **structural equation modeling** (SEM) was conducted to test all of the hypotheses. In the third stage, **analysis of variance** (ANOVA) was conducted for demographic comparisons.

4.3.1 Descriptive analysis

Data analysis was conducted in the preliminary phase. Data were extracted from *SurveyGizmo* in the form of a MS *Excel* file of collated data and the secondary phase was begun using a form of SAV using *SPSS* software to analyse the descriptive and demographic data. *SurveyGizmo* provides basic real-time charts and graphs and offers the capacity to filter data and use cross tabs, coupled with several export options enabling data manipulation and expanded analysis. However, this feature was not utilised because *SPSS* provided the ability for extensive data-handling, including: the exclusion of irrelevant data, the ability to transform variables and to handle missing values. For the structure equation modelling analysis phase, the collected data were imported into *Smart-PLS* in the form of a CSV. *Smart-PLS* is eligible to test the study hypotheses across the model's variables. After completing the preliminary and secondary phases of research, the next phase involved analysis of the four dependent variables of the study:

- sustainable project management maturity, which included four independent variables (social, environmental, economic and pm knowledge area)
- the two components of sustainable business performance (external and internal)
- the two components of sustainable project performance (effectiveness and efficiency)
- organisational culture.

This analysis was undertaken using *SPSS* and the operationalisation of these four variables was initially achieved by averaging the item scores for each variable. A descriptive analysis of the scores was conducted, using frequency distribution histograms, and the computation of descriptive statistics (mean and standard deviation). A correlation matrix was constructed using Pearson's r coefficients to evaluate the strengths of the relationships between the variables. A non-parametric analysis (e.g., Spearman's rank correlation) was not used because the assumption of normality is irrelevant in correlation analysis when the sample size is larger than about 100 (Cohen et al. 2013).

4.3.2 Structure equation modelling analysis (SEM)

CB-SEM. Covariance-based structural equation modeling (CB-SEM) using AMOS software was initially considered as a potential method to test H1 to H7. The key assumptions of CB-SEM are:

- a large sample size
- a valid specification of the model
- reliably measured normally distributed indicator variables, measured at the scale/interval level
- the data fit a predefined model, indicated by goodness of fit statistics. (Kline 2010)

The sample size requirements for CB-SEM are extremely stringent. Westland (2010) suggests that over 80% of research articles based on the use of SEM drew false conclusions due to insufficient sample sizes. It is generally recommended that there should be a minimum of 10 cases for each measurement to conduct SEM effectively (Kline, 2010). In this study, 53 item scores were included in the analysis (see Tables 2 and 3). Therefore, the minimal sample size for CB-SEM should be 530 respondents (i.e., less than the 664 who responded to the questionnaire in the current study).

The problem with CB-SEM, however, is that if the data violate its many theoretical assumptions, a meaningful solution is not possible, and the goodness of fit statistics are not statistically valid (Hair et al., 2010; 2011). Consequently, an alternative approach to SEM was used.

PLS-SEM. Partial least squares structural equation modelling (PLS-SEM), otherwise known as PLS path modelling, was considered to be a better method than CB-SEM to test H1 to H7, because the data requirements are less restrictive (Hair et al., 2010; 2011). PLS-SEM is not underpinned by so many theoretical assumptions, which are dependent on the sample size, the distributional and measurement characteristics of the variables, and the need to confirm the goodness of fit of the data to a predefined model. PLS-SEM is called a 'soft' technique because it makes minimum demands on the researcher, in comparison to 'hard' techniques, such as CB-SEM, which are much more difficult to implement in practice (Monecke & Leisch, 2012). For this reason, PLS-SEM has been called a 'silver bullet' (Hair et al., 2011) and has become increasingly more popular in the last decade, particularly for business and marketing research involving the analysis of data collected in questionnaires (Anderson & Swaminathan, 2011; Henseler et al., 2009; Temme et al., 2006; Wetzels et al., 2009).

PLS-SEM involves two stages:

- the construction of the measurement model (i.e., the computation of the latent variables from indicator variables using factor analysis)
- path analysis to evaluate the structural model (i.e., the statistical relationships between the latent variables) The main assumption of PLS path modeling is that the latent variables have been reliably measured (i.e., that the indicators were strongly inter-related to define a unidimensional factor, or unifying concept), and that each factor exhibits convergent validity (i.e., a high proportion of the variance can be explained).

The measurement model and path analysis for the study were sound in both of these stages of PLS-SEM. *Smart-PLS* was chosen to conduct PLS-SEM. This popular software is based on a graphic user interface (GUI), including tools to edit the path diagram (Temme et al., 2006). The following procedures were used to construct the PLS path model using *Smart-PLS*, exactly as described in the user's instruction manual (Ringle et al., 2005). The procedures were carried out automatically by the software, with no intervention from the researcher.

The data collected in the questionnaires were imported into *Smart-PLS* in the form of a comma delimited (CSV) file, with the questionnaire item scores in the columns, and the respondents in the rows. Prior to the analysis, all the data were transformed so that they conformed to a standard normal distribution with a mean of 0.0 and a variance of 1.0. The transformation was performed automatically by *Smart-PLS* to standardise the latent variables, so that their units of measurement were equivalent. The relationships between the variables were defined by the hypothetical model illustrated with a path diagram in Figure 4.3.

The construction of the hypothetical model facilitated the testing of the seven hypotheses. Each hypothesis predicted significant positive relationships between two or more variables. The word 'significant' in the hypotheses implied:

- statistical significance (i.e., that the relationships between the variables were probably not caused by chance)

  Statistical significance was indicated by the use of inferential statistics, applying the 0.05 significance level, implying a probability of ≤ 5% that the relationships were caused by chance.

- practical significance (i.e., that the relationships between the variables were large enough to have practical implications in reality)

  Practical significance was indicated by effect sizes, measuring the proportions of the variance explained.

A 'significant positive correlation' implies that the variables have a co-varying or conjoint distribution, such that if one of the variables increases in magnitude, then the other variable also increases in magnitude. The limitation of descriptive correlational design was that correlation does not imply causation; consequently, it was not possible to confirm the existence of cause and effect relationships between the variables (Huck, 2009; Pearl, 2009).

The hypothetical model consisted of two components: **a structural model** and **a measurement model.** The structural model defined the relationships between the seven latent variables included in the hypotheses (i.e., the constructs that could not be measured directly by the researcher, but which could be inferred from analysis of empirical data). The measurement model consisted of the empirical data collected by the researcher in the form of indicators to operationalise the latent variables**.**

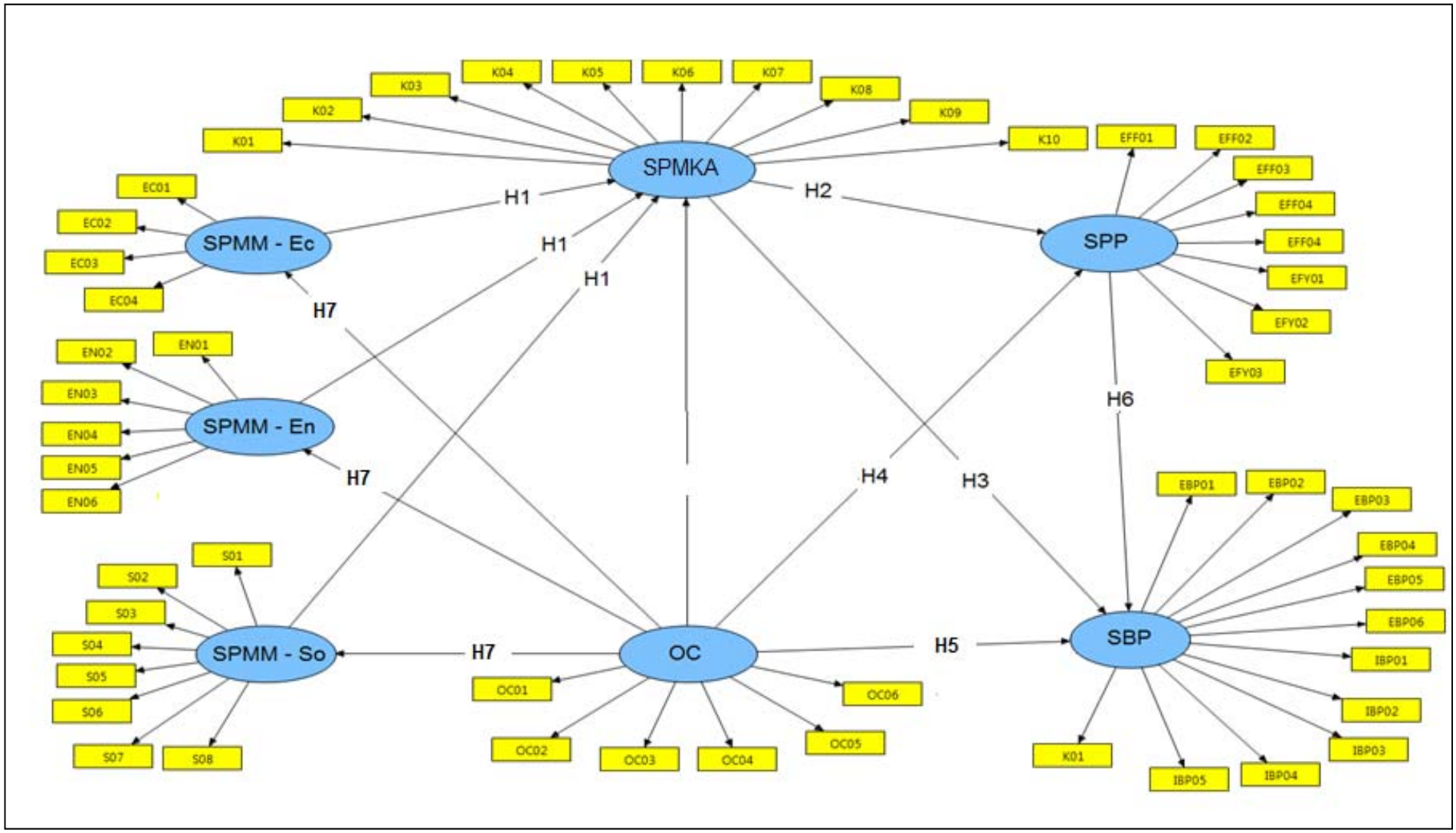

Figure 4.3 Hypothetical model of sustainable management practices in Saudi Arabia

Structural Model (oval symbols): SMPKA = Sustainable Project Management Knowledge Area; SPP = Sustainable Project Performance; SBP = Sustainable Business Performance; OC = Organisational Culture; SPMM = Sustainable Project Management Maturity; EC = Economic; En = Environmental; So = Social. Measurement Model (rectangular symbols):. H1 to H6 = Hypotheses (See Table 4.1). Questionnaire item scores denoted by alphanumerically coded indicators (see Table 4.2)

The latent variables are symbolised by oval symbols in Figure 4.3 as follows:

- Sustainable Project Management Knowledge Area (SPMKA)
- Sustainable Project Performance (SPP) indicated by efficiency and effectiveness
- Organisational Culture (OC)
- Sustainable Business Performance (SBP) indicated by internal and external performance
- Sustainable Project Management Maturity (SPMM) composed of three independent dimensions: Economic (SPMM-Ec); Environmental (SPMM-En); and Social (SPMM-So).

The measurement model consisted of multiple indicator variables, symbolised by rectangular symbols in the path diagram, linked by fans of arrows to the latent variables. The indicator variables were item scores, measured by use of a questionnaire. Each latent variable consisted of a linear combination of multiple indicator variables labelled alphanumerically using the questionnaire items listed in Table 4.3.

The path diagram was constructed using the GUI, consisting of indicator variable and latent variables. The indicators, represented by rectangular symbols (Figure 4.3), were the item scores measured by the questionnaire using 5-point ordinal scales. The latent variables were represented by oval symbols. The arrows leading out of a latent variable into a cluster of indicators represent a reflective relationship, in which multiple item scores cumulatively, but with measurement error, mirror the responses to each of the questionnaire items, to infer a unifying construct. The arrows between two latent variables represent the path coefficients, measuring the relative strengths and directions (positive or negative) of the partial correlations (i.e., the correlations between the two latent variables after the correlations between them and the other latent variables in the model had been removed or partialled out). The seven latent variables incorporated in the structural equation model (Figure 4.3) were operationalised using the indicators (questionnaire item scores) listed in Table 4.3.

Table 4.3 Summary of measures and operationalisation of latent variables (Appendix F)

Latent Variable	Indicator	Focus of the Question	The Question	The Question Assessment Scale
Sustainable Project Management (SMPKA) – PM Knowledge Area	K01	Communication	What is the level of sustainability in the project management tools and techniques of the organisation?	maturity level scale from 1 to 5
	K10	Stakeholders		
	K02	Cost		
	K03	Procurement		
	K04	Quality		
	K05	Risk		
	K06	Scope		
	K07	Time		
	K08	Human Resources		
	K09	Integration		
Sustainable Project Management Maturity -Social (SPMM-So)	S01	Bribery/Antisocial Behaviour	What is the level of sustainability in the project policies or standards of the organisation regarding the following social elements?	maturity level scale from 1 to 5
	S02	Diversity/Equal Opportunity		
	S03	Human Rights		
	S04	Health and Safety		
	S05	Labour Practices		
	S06	Project Social Reporting		
	S07	Safety and Customers		
	S08	Training and Education		
Sustainable Project Management Maturity -Environmental (SPMM-En)	EN01	Energy	What is the level of sustainability in the project policies or standards of the organisation regarding the following environmental elements?	maturity level scale from 1 to 5
	EN02	Travel		
	EN03	Material		
	EN04	Project Environmental Reporting		
	EN05	Water		
	EN06	Waste		
Sustainable Project Management Maturity - Economic (SPMM-EC)	EC01	Financial Benefits	What is the level of sustainability in the project finance of the organisation?	maturity level scale from 1 to 5
	EC02	Evaluation		
	EC03	Flexibility		
	EC04	Project Finance Reporting		

Sustainable Project Performance (SPP)	EFY01	Economic Goals (Efficiency)	Questions regarding the project outcome expectations in different aspects	Likert scale 1 to 5 (strongly agree or strongly disagree) (strongly agree) is most similar to your organisation
	EFY02	Environmental Goals (Efficiency)		
	EFY03	Social Goals (Efficiency)		
	EF704	Time Goals (Efficiency)		
	EFF01	Client (Effectiveness)		
	EFF02	Community (Effectiveness)		
	EFF03	Government (Effectiveness)		
	EFF04	Teamwork (Effectiveness)		
Sustainable Business Performance (SBP)	EBP01	Regional Competition (External)	Questions if the projects have helped the organisation to in different aspects	Likert scale 1 to 5 (strongly agree or strongly disagree) (strongly agree) is most similar to your organisation
	EBP02	Community and Government (External)		
	EBP03	Competitive Position (External)		
	EBP04	Environmental Benchmarking (External)		
	EBP05	Market Share (External)		
	EBP06	Sales (External)		
	IBP01	Employment Opportunity (Internal)		
	IBP02	Financial Benefits (Internal)		
	IBP03	Environmental Cost (Internal)		
	IBP04	Sustainable Tools and Technology (Internal)		
	IBP05	Employees T and E (Internal)		
Organisational Culture (OC)	OC01	Criteria of Success	Each organisational culture criteria has 4 questions asking participants about the current situation of the organisation's behaviour	Likert scale 1 to 5 (strongly agree to strongly disagree) (strongly agree) is most similar to the organisation
	OC02	Dominant Characteristic		
	OC03	Organisational Glue		
	OC04	Leadership		
	OC05	Management Style		
	OC06	Strategic Emphasis		

Validation of the measurement model. The first stage of the analysis was to validate the measurement model (i.e., the relationships between the latent variables and the indicators). The quality criteria to establish valid latent variables for PLS path analysis, as recommended by Chin (1998), were applied. The criteria are:

(a) The loading coefficients computed for all of the items in each factor must be strong ($\geq +.7$).

(b) Collectively, the factors must explain at least 50% of the variance in the data.

(c) The internal consistency reliability (Cronbach's alpha coefficient) for each factor must be $\geq .7$.

These criteria ensured that a linear combination of items contributed to each latent variable, and that the items consistently measured a unifying construct in one logical direction. Smart-PLS does not include any goodness of fit statistics, because all of the variance is considered useful, and no information is extracted from the variance/covariance matrix (Hair et al. 2010; 2011).

Evaluation of the structural model. After checking the validity of the measurement model, there was sufficient justification to run the Smart-PLS algorithm to compute the model parameters (β coefficients and R^2 values) in order to evaluate the structural model (i.e., the relationships between the latent variables). Because the data were standardised, the β coefficients between each pair of latent variables ranged in value from −1 to +1.

The R^2 values were also computed, indicating the effect sizes, reflecting the proportion of the variance explained in a latent variable by the variance in one or more of the latent variables flowing into it. The final stage was to estimate the statistical significance of each β coefficient, which was done using bootstrapping. This involved drawing 1000 random samples from the data with 300 cases in each sample. The mean and standard error (SE) of each β coefficient was computed. Two-tailed one sample t-tests (where $t = \beta/SE$) were then conducted, to determine whether the β coefficients in the population were significantly different from zero error, assuming an infinite number of degrees of freedom. The six hypotheses were supported if all of the β coefficients in the model were significantly greater from zero at the conventional 0.05 significance level (indicated by d by anyone other than the researcher. A summary of results of the research will be made available to participants upon request.

4.6 Limitations

A government email list was used to acquire the contact information of the potential respondents. Accessing personal contact data in this way posed a risk to the quality of the sampling frame (Wright 2005). It has been shown that organisational lists that are used repeatedly to target individuals about surveys have a tendency to eventually encourage negative or non-responses online (Wright 2005). The high response rate in this instance was an indication that the respondents were not negatively affected.

Control of all variables was not possible in this research, as humans respond differently to the same circumstances. Quantitative research, being mechanistic, does not afford much latitude or freedom of choice, and as such does not allow individuals to convey and construct their own interpretation of their experiences, so that the facts discerned can be fairly assumed to be true for all types of individuals in every case. Quantitative research can produce predictive and marginal outcomes due to the limitation and control of the variables. Objectivity is diminished by the researcher in the choice of research topic, scope of questions and interpretation of the findings under investigation.

4.7 Summary

A descriptive correlational research design was implemented to explore the sustainable project management practices reported by senior level project managers associated with organisations in Saudi Arabia. The instrument developed following a pilot study was completed by 664 participants. The statistical analysis to test the seven hypotheses proceeded in three stages. In the first stage, a descriptive analysis of the questionnaire item scores was conducted. In the second state, structural equation models were constructed to test seven hypotheses based on variables operationalised from the questionnaire item scores.

Partial least squares structural equation modelling (PLS-SEM) was considered to be a better method than covariance based - SEM to test the hypotheses because the data requirements were less restrictive. In the third stage, analysis of variance was conducted to compare the sustainable maturity levels of project management and the projects managers' mind sets and responsibilities for applying sustainable ideas with respect to the five geographic regions of Saudi Arabia and different type of project and the type of organisation.

Chapter Five

Analysis and results

Chapter 5 describes how the proposed model, hypotheses and the theories presented in Chapters 2 and 3 were tested. The results are presented in four sections:

- **demographic profile** of respondents, which helps to understand the principal characteristics of the group
- **descriptive analysis of questionnaire item score**s, which helps to develop the model by the use of structural equation modeling (SEM) using the PL-Smart program for the statistical analysis to test the hypothesis
- **testing the model** through the study hypotheses
- **group comparisons analysis** using the control questions in the survey.

The survey was not compulsory and a great number of organisations only answered part of the survey, which caused problems with missing data that could generate distortions in the analysis. As a result, the organisations that failed to answer all of the questions in the survey were not included in the analysis. The total responses to the questionnaire were 4,948 organisations were 644 organisations only answered successfully the complete questions. The sample analysis conducted in the initial pilot suggested that 100 responses were adequate for research using a survey, thus the response rates were considered satisfactory and representative of the whole population. The questionnaire targeted project managers in project-driven organisations in Saudi Arabia. After removing all partially answered questionnaires, the 644 completed questionnaires were subdivided into groups for comparison analysis

5.1 Demographic profile of respondents

Analysis began with a demographic profile of the 664 respondent based on the answers to the following questionnaire items, stored in the data editor of IBM *SPSS* version 20. Understanding the characteristics of the professionals aided understanding of the other results, and allowed results to be compared to national statistics.

5.1.1 Country of origin of the organisation

Table 5.1 presents the frequency distribution of the responses to the question *Your organisation's nationality?* Over two thirds of the 664 respondents (451, 67.9%) worked for Saudi organisations. The remainder worked for multinational or international companies.

Table 5.1 Frequency distribution of responses to: *Your organisation's nationality?*

Nationality	Frequency	Precent %
Saudi Arabian	451	67.9%
Multinational*	133	20.0%
International*	80	12.0%
Total	664	100.0%

*Multinational organisations are Saudi local organisations operating with multi-workforce's nationalities. *International organisation are overseas organisations located in KSA.

5.1.2 Geographic location in Saudi Arabia

Table 5.2 presents the frequency distribution of the responses to the question *Which geographical regions in Saudi Arabia have the project/s been located?* About half of the projects (325, 48.8%) were located in central Saudi Arabia, and about one quarter (168, 25.3%) in western Saudi Arabia. The remainder were located in eastern, southern, or northern Saudi Arabia. The majority of the organisations (469, 70.6%) did not have sustainable or green certificates.

Table 5.2 Frequency distribution of responses to: *Which geographical regions in Saudi Arabia have the project/s been located?*

Geographic Region	Frequency	Percent
Central Saudi Arabia	325	48.9%
Western Saudi Arabia	168	25.3%
Eastern Saudi Arabia	112	16.9%
Southern Area of Saudi Arabia	33	5.0%
Northern Area of Saudi Arabia	26	3.9%
Total	664	100.0%

5.1.3 Project manager's experience in the field

Table 5.3 presents the frequency distribution of the responses to the question *How many years experience have you had in the industry?* The respondents had worked in the industry from one year to over 25 years. Over three quarters of the respondents (462, 69.6%) had worked in the industry for 6 to 25 years which enhanced the validity of the survey.

Table 5.3 Frequency distribution of responses to: *How many years experience have you had in the industry?*

Years	Frequency	Percent
6-15	292	44.0%
16-25	170	25.6%
1	108	16.3%
>25	94	14.2%
Total	664	100.0%

5.1.4 Type of project

The industry breaks down into a wide spectrum of industries that practice project management. Table 5.4 presents the frequency distribution of the responses to the question *In what type of project have you had most experience?* The respondents reported that they had experience in a wide range of projects in a variety of sectors. The vast majority were in building and construction (415, 62.5%). Information technology (60, 9.0%) and operations and maintenance (59, 8.9%) formed the next two largest groups of respondents.

Table 5.4 Frequency distribution of responses to: *In what type of project have you had most experience?*

Type of Project	Frequency	Percent
Building and Construction	415	62.5%
Information Technology	60	9.0%
Operations and Maintenance	59	8.9%
Consulting	30	4.5%
Energy	25	3.8%
Industry	18	2.7%
Organisational Change	15	2.3%
ICT and Communication Services	12	1.8%
Research and Development	10	1.5%
Public Administration	6	0.9%
Healthcare	4	0.6%
Logistic Services	3	0.5%
Education and Training	3	0.5%
Facility and Real Estate Services	2	0.3%
Agriculture	1	0.2%
HR services	1	0.2%
Total	664	100.0%

5.1.5 Organisational sustainable standards

The survey revealed that the majority of Saudi organisations do not have any sustainable certificates, such as ISO, LEED, Green Project or any international quality standards. The majority of respondents (70.6%) reported that their organisation did not have project management standards. However, over a quarter (29.4) did report that they did. Table 5.5 shows the frequency with which the respondents provided feedback regarding the organisations' standards.

Table 5.5 Frequency of quality standards

		Frequency	Percent
Valid	Yes	195	29.4
	No	469	70.6
	Total	664	100.0

5.1.6 Responses to education and awareness

The survey revealed that the majority of professionals had a higher awareness of the concept of sustainable development with a (3.54) mean and (0.897) standard deviation, as well as project management knowledge, with a (4.0) mean and (0.788). Table 5.6 shows clearly that the respondents believed in the concept of sustainable development as a significant contribution to project success and, therefore, felt sustainability should be connected to organisational strategy.

Table 5.6 Awareness of the concept of sustainability

Items	N	Min	Max	Mean	Std. Deviation
The concept of sustainable development	664	1	5	3.54	.897
The project management	664	1	5	4.00	.788
The need for integrating SD into PM	664	1	5	4.28	.840
The importance of sustainable development for project success	664	1	5	4.25	.860
The need to integrate the concept of sustainable development into business strategy	664	1	5	4.47	.761
Valid N (listwise)	664				

5.2 Descriptive analysis of the model variables

The purpose of the study was to develop a model that can help investigate the sustainability of project management best practice in Saudi Arabia by examining the relationship between the model variables. Therefore, a project management maturity assessment scale was prepared for the questionnaire to measure project management maturity. The project management maturity model

was divided into four sections. Three sections represent the three dimensions of sustainable development, which are the project's economics, the project's social impact and the project's environmental impact (based on the triple bottom line). The fourth group is about measuring the maturity of project management knowledge in the organisation using the 10 areas of project management knowledge in PMBOK 2012. Figure 5.1 illustrates each variable and its relation to others in the model that included in the analysis.

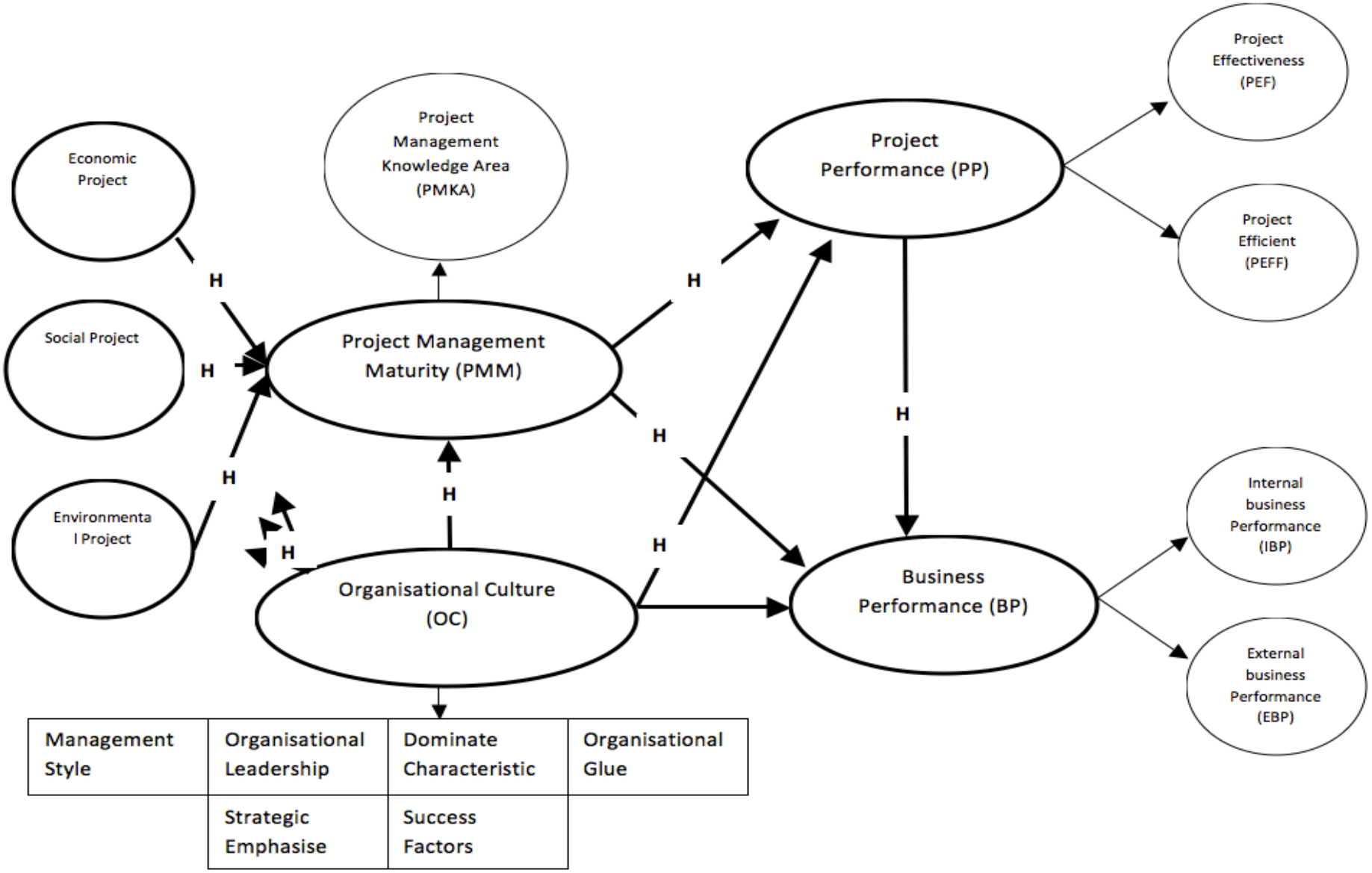

Figure 5.1 **The sustainable project management model**

The questionnaire item scores were checked for missing or erroneous values. No such values were found. The first stage of the analysis was to operationalise the four components which represent the four dependent variables of the study model, which were:

- sustainable project management performance, which included four independent variables (social, environmental, economic and PM knowledge)
- the two components of sustainable business performance (external and internal)
- the two components of sustainable project performance (effectiveness and efficiency)
- organisational culture

The variables were initially operationalised by averaging the item scores that constituted each variable. Summary of frequency distributions of the average item scores for the components of sustainable project management maturity is presented in Table 5.7.

Table 5.7 Summary of frequency distributions of the average item scores for the components of sustainable project management maturity

	Frequency	Percent %	Maturity Level
PMKA	237	35.7	Between 3-4
Economic	210	31.6	Between 2-3
Social	197	29.7	Between 2-3
Environmental	199	29.9	Between 2-3

The frequency distributions of the variables are then illustrated with histograms. Figure 5.2 shows that the frequency distributions for the components of project management maturity (knowledge area, social, environmental and economic) measured on a 5-point scale from 1 = Level 1 to 5 = Level 5 were not bell-shaped curves. The modes were between Level 3 and Level 4 for knowledge area (237, 35.7%) (Figure 5.2); and between Level 2 and Level 3 for social (197, 29.7%) (Figure 5.3); environmental (199, 29.9%) (Figure 5.4) ; and economic variables (210, 31.6%) (Figure 5.5).

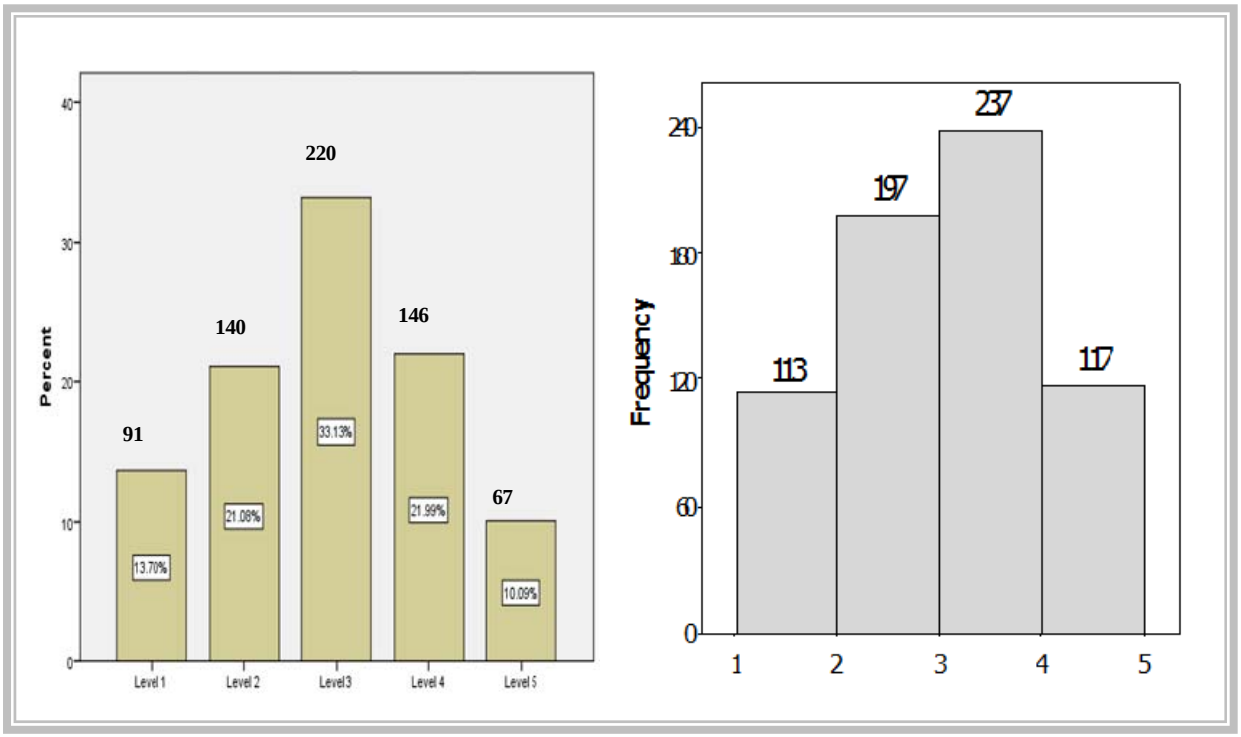

Figure 5.2 The project management sustainability level in Saudi Arabia (project management knowledge area)

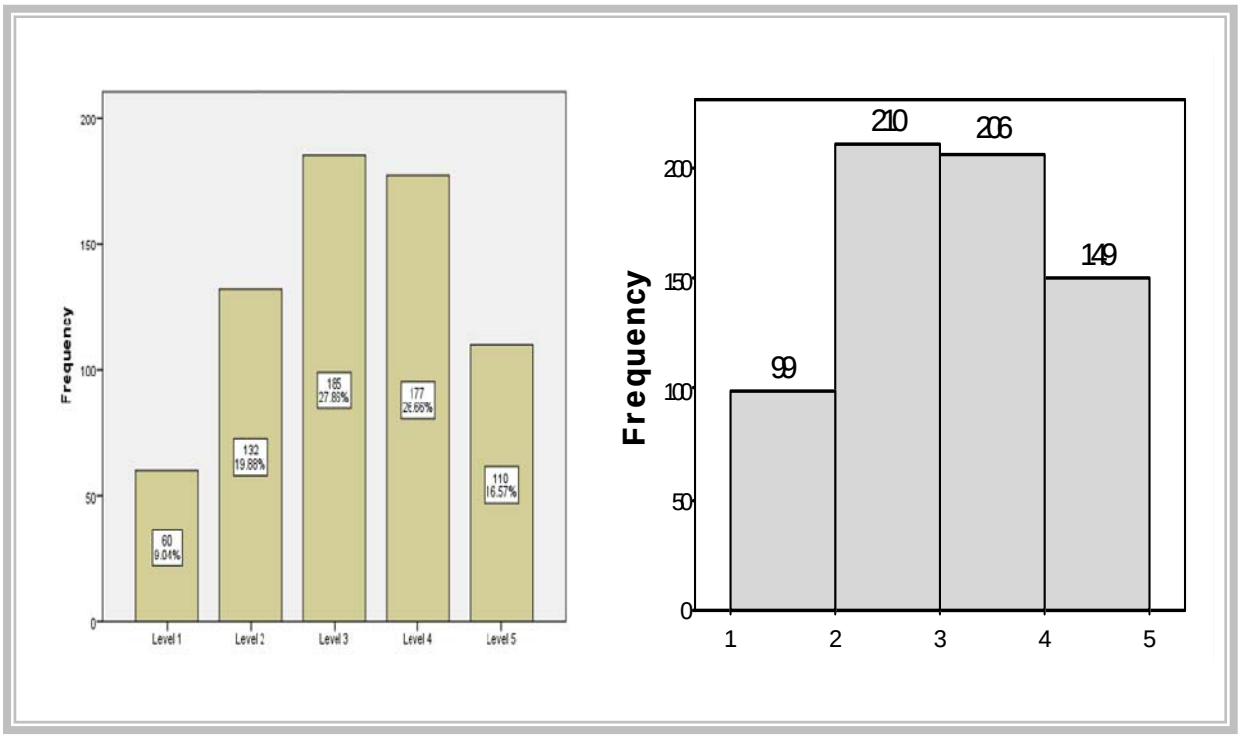

Figure 5.3 The project management sustainability level in Saudi Arabia (project economic)

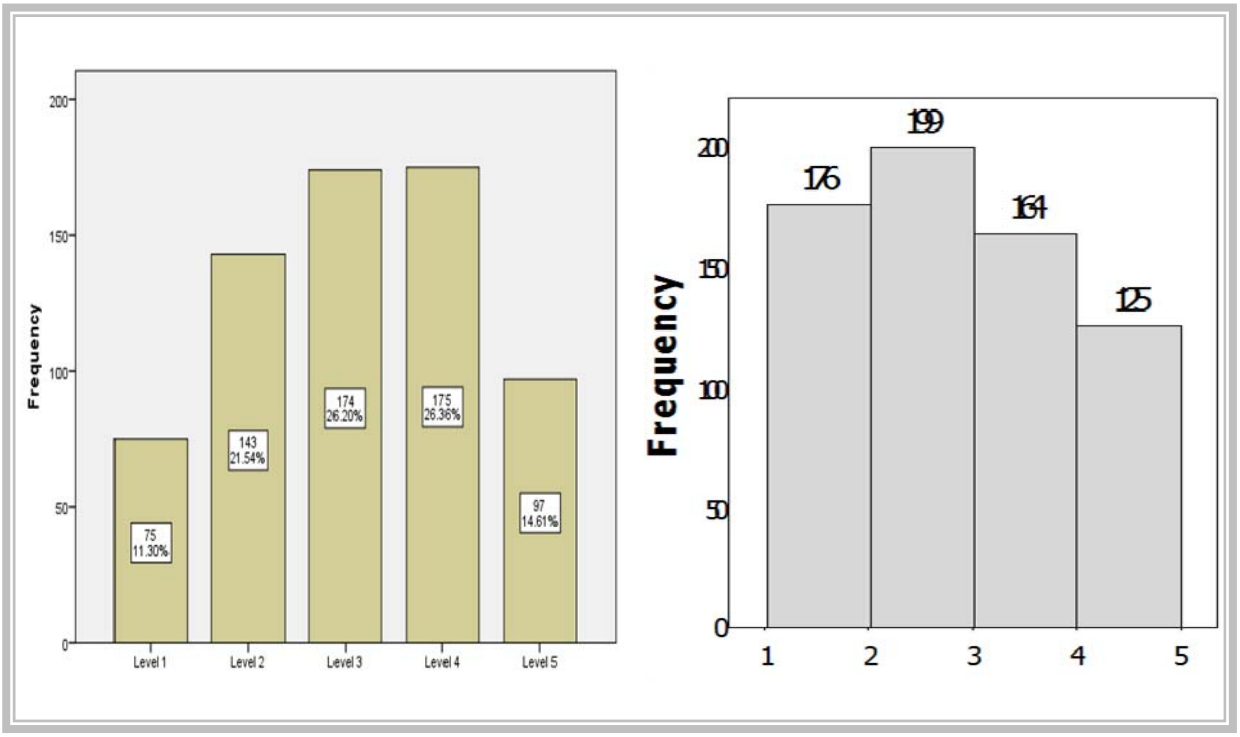

Figure 5.4 The project management sustainable level in Saudi Arabia (project environmental)

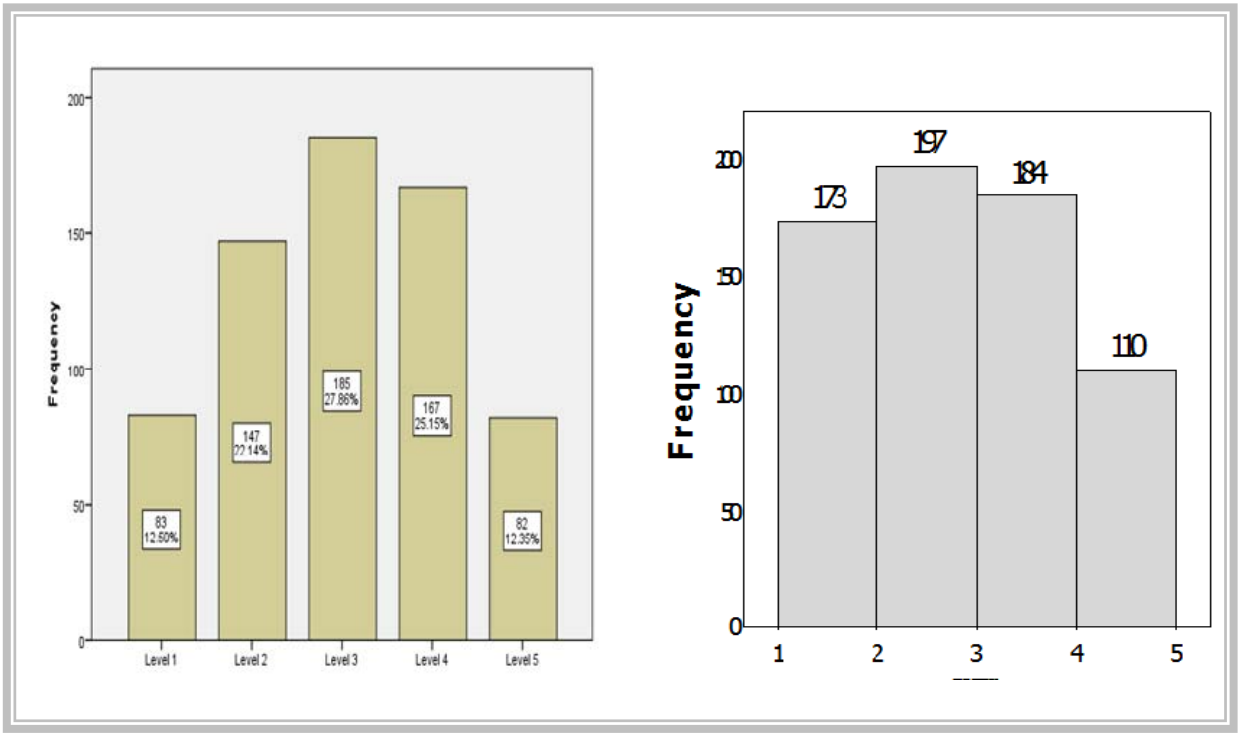

Figure 5.5 The project management sustainable level in Saudi Arabia (project social)

Figure 5.6 shows that the frequency distribution for organisational culture, measured on a scale from 1 = strongly disagree to 5 = strongly agree, tended towards normality, with the mode (293, 44.1%) between 3 and 4, and a high proportion of scores between 4 and 5 (174, 26.2%) reflecting agreement with the items.

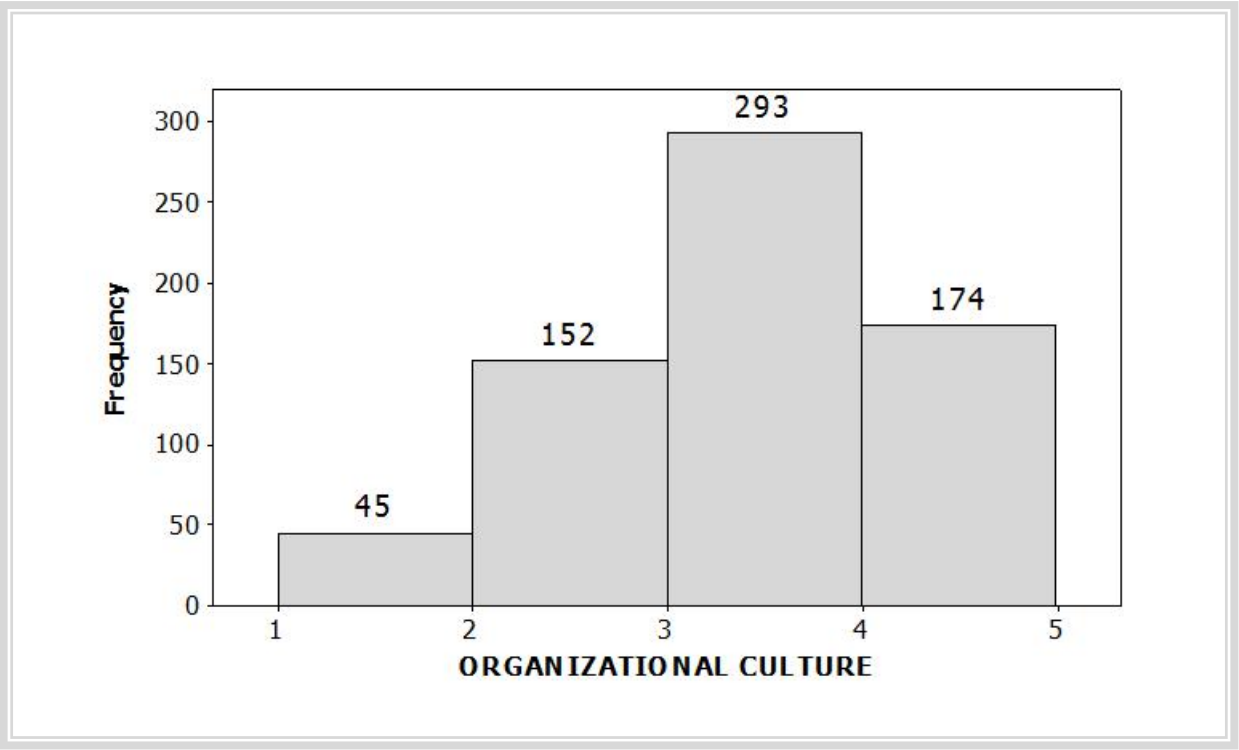

Figure 5.6 **Frequency distribution of average item scores for organisational culture**

Figure 5.7 shows that the frequency distributions for the components of sustainable business performance measured on a 5-point scale from 1 = strongly disagree to 5 = strongly agree were positively skewed. For external business performance, the mode was between 4 and 5 (281, 42.3%) with a high proportion (269, 50.5%) scoring between 3 and 4. For internal business performance, the mode was between 3 and 4 (270, 40.7%) with a high proportion scoring between 4 and 5 (216, 32.5%). This pattern of responses reflected consistent agreement with the items measuring sustainable business performance.

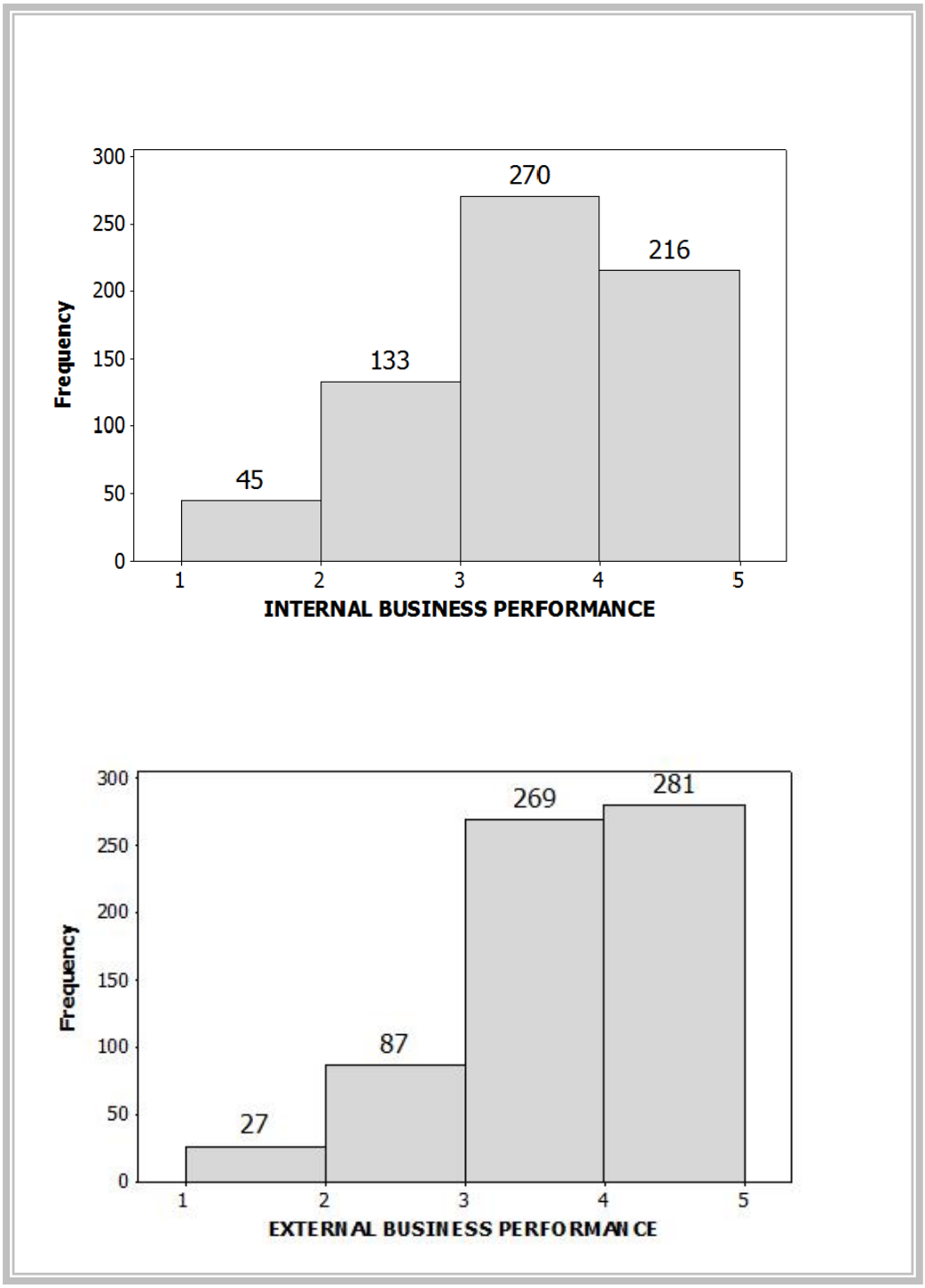

Figure 5.7 **Frequency distribution of average item scores the two components of sustainable business performance**

Figure 5.8 shows that the frequency distributions for the components of sustainable project performance (effectiveness and efficiency) measured on a 5-point scale from 1 = strongly disagree to 5 = strongly agree were also positively skewed. For effectiveness, the mode was between 4 and 5 (271, 40.8%) with almost the same proportion scoring between 3 and 4 (269, 40.5%). For efficiency, the mode was between 4 and 5 (248, 37.3%) with almost the same proportion scoring between 4 and 5 (234, 35.2%). This pattern of responses reflected consistent agreement with the items measuring sustainable project performance.

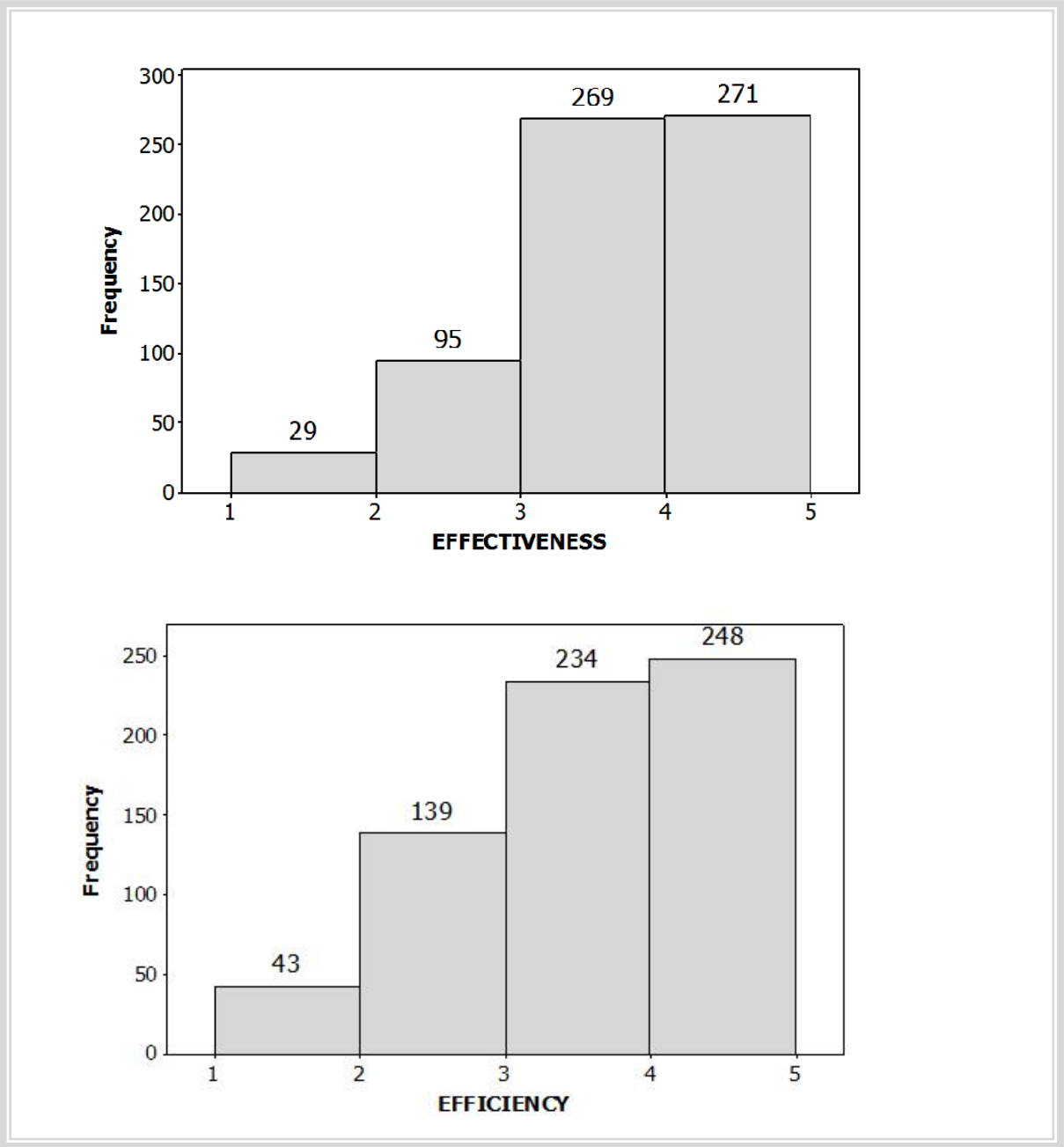

Figure 5.8 **Frequency distribution of average item scores the two components of sustainable project performance**

The descriptive statistics (means and standard deviations) in Table 5.8 indicate that the mean scores for the components of sustainable project management maturity were consistently about 3, reflecting a tendency towards neutrality. The mean scores for organisational culture and the components of sustainable project performance and business performance were consistently > 3, reflecting a tendency towards agreement with the items.

Table 5.8 Summary of the descriptive statistics

Variable	Components	Mean	SD
Sustainable project management maturity	knowledge area	2.97	0.98
	social	2.77	1.07
	environmental	2.74	1.14
	economic	2.99	1.06
Organisational culture		3.37	0.84
Sustainable business performance	external	3.64	0.94
	internal	3.41	0.95
Sustainable project performance	effectiveness	3.56	0.89
	efficiency	3.44	0.99

Table 5.9 presents a matrix of bivariate correlation coefficients (Pearson's *r*) computed between pairs of variables.

Table 5.9 Correlation matrix (Pearson's r) between pairs of variables

	Knowledge Area	Social	Environ-mental	Eco - nomic	External	Internal	Effective-ness
Social	.795*						
Environmental	.763*	.781*					
Economic	.836*	.746*	.728*				
External	.532*	.516*	.511*	.516*			
Internal	.558*	.578*	.539*	.538*	.771*		
Effectiveness	.538*	.563*	.504*	.502*	.686*	.739*	
Efficiency	.577*	.580*	.569*	.526*	.648*	.696*	.720*

Note: * Significant positive correlation at the .001 level

The correlation coefficients (r = 0.502 to 0.836) were all statistically significant at the .001 level. All the variables were positively correlated with each other. Because all the variables were highly multicollinear, partial correlations could compromise the interpretation of the bivariate correlation matrix (i.e., the pairs of variables were not directly related, because the correlations could be spurious, being caused indirectly by correlations with one or more other variables (Aldrich 1995)). Due to the influence of spurious correlations, it was not justified to interpret the bivariate correlation matrix to test H1 to H7. The multivariate partial correlation analysis conducted using PLS-SEM was more appropriate than bivariate analysis to test H1 to H7.

5.3 Testing the hypotheses

For testing the study hypotheses and the proposed model, the analysis involved SEM (structural equation modeling). In this study, partial least squares analysis (PLS-SEM) was used to evaluate the relationships between the seven latent variables included the hypotheses:

- sustainable project management performance (incorporating economic, environmental, social, project management knowledge area)
- sustainable business performance
- organisational culture.

The latent variables were not directly observed but were inferred from the questionnaire item scores using factor analysis. PLS-SEM offers several advantages for this purpose. Unlike other SEM techniques (e.g., using AMOS and LISREL which extract information from the covariance matrix), PLS-SEM is not severely restricted by the sample size, collinearity, heteroskedacity, or deviations of the variables from multivariate normality (Hair Jr et al. 2010). PLS-SEM can incorporate a large number variables simultaneously, with minimal assumptions about their distributional or measurement characteristics.

PLS-SEM assumes that all the variance in the data can be explained, and does not use a maximum likelihood estimate (MLE) to construct the model. Consequently, PLS-SEM never fails to converge on a solution, unlike other SEM methods, which often fail to produce a MLE solution by iteration, usually because the data violate the theoretical assumptions. Furthermore, in contrast to other types of SEM, PLS-SEM requires no tests for goodness of fit. For these reasons, PLS-SEM is described as ‘indeed, a silver bullet’ (Hair, Ringle & Sarstedt 2011) and also as a ‘soft’

technique, because it makes minimal demands on the researcher, in comparison to 'hard' modelling techniques, that are more difficult to conduct in practice, such as MLR, and SEM using AMOS or LISREL (Monecke & Leisch 2012).

The software used in this study was *Smart-PLS* (Ringle, Wende & Will 2005), which is based on a user-friendly graphical user interface (GUI), including tools to edit the layout of path diagram (Temme, Kreis & Hildebrandt 2006). The raw data collected in this study were imported into *Smart-PLS* in the form of a CSV (comma delimited) file. Prior to constructing the PLS-SEM model, all the variables were transformed so that they conformed to a standard normal distribution with a mean of 0.0 and a variance of 1.0. This process was performed by *Smart-PLS* to standardise the variables so that their units of measurement were equivalent.

The variables were defined as either indicators or latent variables. The indicators, represented by rectangular symbols (see Figure 5.9), were the item scores measured by the questionnaire using 5-point ordinal scales. The arrows leading out of a latent variable into a cluster of indicators represented a reflective relationship, in which multiple item scores cumulatively, but with measurement error, mirrored the responses to each of the questionnaire items, to infer a unifying construct. The seven latent variables, defined by oval symbols, were computed from the indicators in the form of principal axis factoring scores. Each latent variable was assumed to consist of only one unidimensional factor. The arrows drawn between pairs of latent variables represented the path (β) coefficients, which were equivalent to weighted partial regression coefficients in an MLR model. The β coefficients indicated the relative strength and direction (positive or negative) of the partial correlations between the latent variables, after the correlations between the other latent variables had been removed or partialled out.

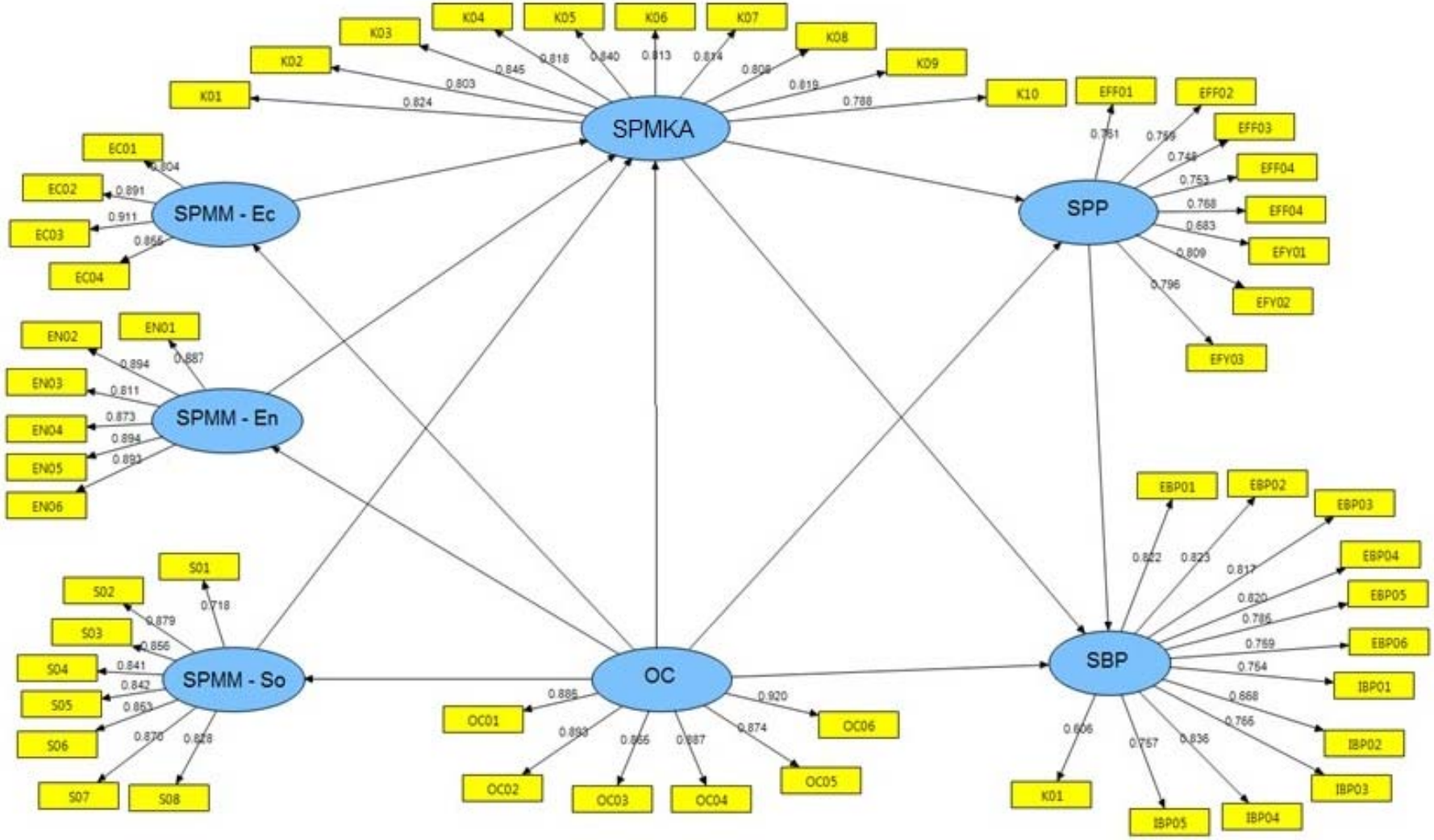

Figure 5.9 **Measurement model of sustainable management practices in Saudi Arabia constructed by *Smart-PLS*For the purpose of testing the study hypotheses using the model developed during this research, several stages in the application of this technique were**

OC = Organizational Culture; SPMKA = Sustainable Project Management Knowledge Area; SPMM – Ec = Sustainable Project Management Maturity – Economic ; SPMM-En = Sustainable Project Management Maturity – Environmental; SPMM-So = Sustainable Project Management Maturity – Social; SPP = Sustainable Project Performance; SBP = Sustainable Business Performance

These stages were:

- validating the PLS-SEM measurement model
- evaluating the PLS-SEM measurement model
- bootstrapping with t-tests (hypotheses testing)

The first stage was to evaluate the quality of the measurement model (i.e., the relationships between the latent variables and the indicators). The quality criteria to establish valid latent variables for PLS path analysis, as recommended by Chin (1998), were:

- The loading coefficients computed for all of the items in each factor must be strong ($\geq +.7$).;
- Collectively, the factors must explain at least 50% of the variance in the data.
- The internal consistency reliability (Cronbach's alpha coefficient) for each factor must be $\geq .7$.

These criteria ensured that a linear combination of items contributed to each latent variable, and that the items consistently measured a unifying construct in one logical direction. After checking the validity and reliability of the measurement model, it was justified to run the *Smart-PLS* algorithm to compute the model parameters (β coefficients and R^2 values) in order to evaluate the structural model (i.e., the relationships between the latent variables).

Because the data were standardised, the β coefficients between each pair of latent variables ranged in value from −1 to +1. The predicted value of a latent variable with an arrow flowing into it (increased by the value of the β coefficient with respect an increase in the value of the latent variables with an arrow flowing out of it. The R^2 values were also computed, indicating the effect sizes, reflecting the proportion of the variance explained in a latent variable by the variance in one or more of the latent variables flowing into it.

The statistical significance of each β coefficient was estimated by bootstrapping. This involved drawing 1000 random samples from the data with 300 cases in each sample. The mean and standard error of each β coefficient was computed. Two-tailed one sample t-tests were then conducted to determine if the β coefficients were significantly different from zero error. The five hypotheses were supported if all of the β coefficients in the model were significantly greater from zero at the conventional 0.05 significant levels.

5.3.1 Validation of the PLS-SEM measurement model

Reliability analysis was tested to validate questionnaires and reflects the internal consistency of the set of variables used to measure correlations. A Cronbach's alpha value between 7 to 8 generally accepted in cognitive research. It is also accepted value for psychologically constructed studies (Field 2009). Although this study cannot be considered as a fully psychological measurement, have a value higher than 0.7 and must be appropriate to be accepted. However, the reliability test of the model components shows great Cronbach values, which are greater than 0.8 for all model components. This gives a fixed validation for the model components, and positive indicators to continue for the model evaluation stage.

Fornell and Larcker (1981) proposed the following formula for reliability (ρη):

$$\boldsymbol{\rho\eta} = (\boldsymbol{\Sigma\lambda i})^2 / (\boldsymbol{\Sigma\lambda i})^2 + \boldsymbol{\Sigma\varepsilon i}$$

$\boldsymbol{\lambda}$= standardised factor loading
i=number of items
$\boldsymbol{\varepsilon}$=error variance terms

Fornell and Larcker (1981) proposed an alternative test, which is discriminant validity. The average of the variance extracted estimates should be greater than the square of the correlation between the two latent constructs in order to show discriminant validity. If the variance extracted is less than 0.50, the validity of the individual indicators and also the validity of the construct are doubtful. However, in all cases, the average variance extracted the respective squared correlation between the two variables, hence the variables show discriminant validity.

Fomell and Larcker (1981) proposed the following formula for the variance extracted (ρve):

$$\boldsymbol{\rho ve} = \boldsymbol{\Sigma\lambda i^2} / \boldsymbol{\Sigma\lambda i^2} + \boldsymbol{\Sigma\varepsilon i}$$

The quality criteria to establish valid latent variables for PLS-SEM were satisfied. The average variance explained by the indicators contributing to each latent variable (AVE) ranged from 55.7% to 78.8%, reflecting good convergent validity. The internal consistency reliability of each latent variable was also excellent (Cronbach's alpha = 0.888 to 0.946). These criteria ensured that a linear combination of item scores contributed significantly to each latent variable, and that the item scores consistently measured the latent variables in one logical direction (i.e., from low to high). There were no reasons to manipulate the data (e.g., by excluding some of the indicator or

latent variables) in order to improve the validity of the measurement model. Therefore, the model is strongly accepted and highly recommended to be evaluated for fitness.

The purpose of undertaking these tests was to assess whether the items were related to the stipulated constructs.

5.3.2 Evaluation of the PLS-SEM structural model

To evaluate whether the individual paths within the model were significant or not, a path coefficient analysis was performed. The path diagram output by *Smart-PLS* calibrated with factor loading coefficients (located between the indicators and the latent variables) is presented in Figure 4.5. The loading coefficients computed for all of the items in each latent variable were strong (ranging from 0.654 to 0.920). A high level of factorial validity was indicated by loading coefficients consistently ≥ 0.7. The other quality criteria for the measurement model are given in Table 5.10.

Table 5.10 Quality criteria for the measurement model

Latent Variable	Indicator	Definition of Indicator	Factor Loading Coefficient	Average Variance Explained (%)	Cronbach's alpha
Project Management: Economic	EC01	Financial Benefits	0.808	75.0%	0.888
	EC02	Evaluation	0.888		
	EC03	Flexibility	0.909		
	EC04	Project Reporting	0.856		
Project Management: Environmental	EN01	Energy	0.886	73.7%	0.939
	EN02	Travel	0.893		
	EN03	Material	0.812		
	EN04	Project Reporting	0.872		
	EN05	Water	0.893		
	EN06	Waste	0.891		
Project Management: Social	S01	Bribery/Anti-social Behaviour	0.715	78.8%	0.946
	S02	Diversity/Equal Opportunity	0.879		
	S03	Human Rights	0.855		
	S04	Health and Safety	0.843		
	S05	Labour Practices	0.845		
	S06	Project Reporting	0.852		
	S07	Safety and Customers	0.869		
	S08	Training and Education	0.829		
Project	K01	Communication	0.824	70.1%	0.938

Latent Variable	Indicator	Definition of Indicator	Factor Loading Coefficient	Average Variance Explained (%)	Cronbach's alpha
Management Knowledge Area	K02	Cost	0.803		
	K03	Procurement	0.845		
	K04	Quality	0.818		
	K05	Risk	0.840		
	K06	Scope	0.813		
	K07	Time	0.808		
	K09	Integration	0.819		
	K10	Stakeholders	0.787		
Organisational Culture	OC01	Criteria of Success	0.877	57.4%	0.937
	OC02	Dominant Characteristic	0.893		
	OC03	Organisational Glue	0.866		
	OC04	Leadership	0.887		
	OC05	Management Style	0.873		
	OC06	Strategic Emphasis	0.920		
Sustainable Project Performance (Efficiency and Effectiveness)	EFF01	Economic Goals	0.761	55.7%	0.899
	EFF02	Environmental Goals	0.759		
	EFF03	Social Goals	0.748		
	EFF04	Time Goals	0.753		
	EFY01	Client	0.683		
	EFY02	Community	0.809		
	EFY03	Government	0.796		
	EFY04	Teamwork	0.768		
Sustainable Business Performance (External Business Performance and Internal Business Performance	EBP01	Regional Competition	0.822	66.8%	0.944
	EBP02	Community and Government	0.823		
	EBP03	Competitive Position	0.817		
	EBP04	Environmental Benchmarking	0.820		
	EBP05	Market Share	0.785		
	EBP06	Sales	0.759		
	IBP01	Employment Opportunity	0.754		
	IBP02	Financial Benefits	0.668		
	IBP03	Environmental Cost	0.765		
	IBP04	Sustainable Tools/Technology	0.836		
	IBP05	Employees Training/Education	0.757		

Table 5.11 lists the effect sizes (R^2 values) for each latent variable. The R^2 value for each latent variable indicated the explained proportion of the variance in the latent variable. (R^2 represents the additive effect size between a latent variable and all other latent variable with arrows flowing into it in Figure 5.6).

Table 5.11. Effect sizes

Latent Variables	R^2 (%)
SPMKA (explained by SPMM –En, -Ec, -So, and OC)	0.807
SBP (explained by SBMP and OC)	0.746
SPP (explained by SBMP and OC)	0.686
SPMM – So (explained by OC)	0.513
SPMM-En (explained by OC)	0.434
SPMM-Ec (explained by OC)	0.419

Organisational culture does not have an R^2 because there were no other latent variables flowing into it. The effect sizes were substantial, ranging from 41.9% to 80.7%. All the effect sizes were > 25% implying the relationships between the latent variables were large enough to exhibit practical significance. The latent variables with the highest variance explained by organisational culture (> 50%) were sustainable management project knowledge area (80.7%); sustainable business performance (74.6%) and sustainable project performance (68.6%). The variables with the least variance explained by organisational culture were the social, environmental, and economic dimensions of sustainable project management maturity (51.3% to 41.9% respectively).

The structural model with the β coefficients excluding the indicator variables (using the 'hide measurement' model feature in *Smart-PLS*) is illustrated in Figure 5.10. The R^2 values are printed in the *Smart-PLS* output within the symbols for the latent variables, and the β coefficients are printed next to the arrows joining the latent variables.

The strongest relationships, with β coefficients ≥ 0.65 were between organisational culture and three dimensions of sustainable project management maturity (β = 0.717, 0.659; and 0.647) and sustainable project performance (β = 0.695). The three dimensions of sustainable project management maturity were less strongly correlated with sustainable management (β = 0.397, 0.276, and 0.158). Organisational culture was not so strongly correlated with sustainable project management knowledge area (β = 0.169) or sustainable business performance (β = 0.369). There was a moderately strong relationship between sustainable business performance and sustainable project performance (β = 0.427). sustainable management knowledge area was weakly correlated with sustainable project performance (β = 0.172) and sustainable business performance (β = 0.136).

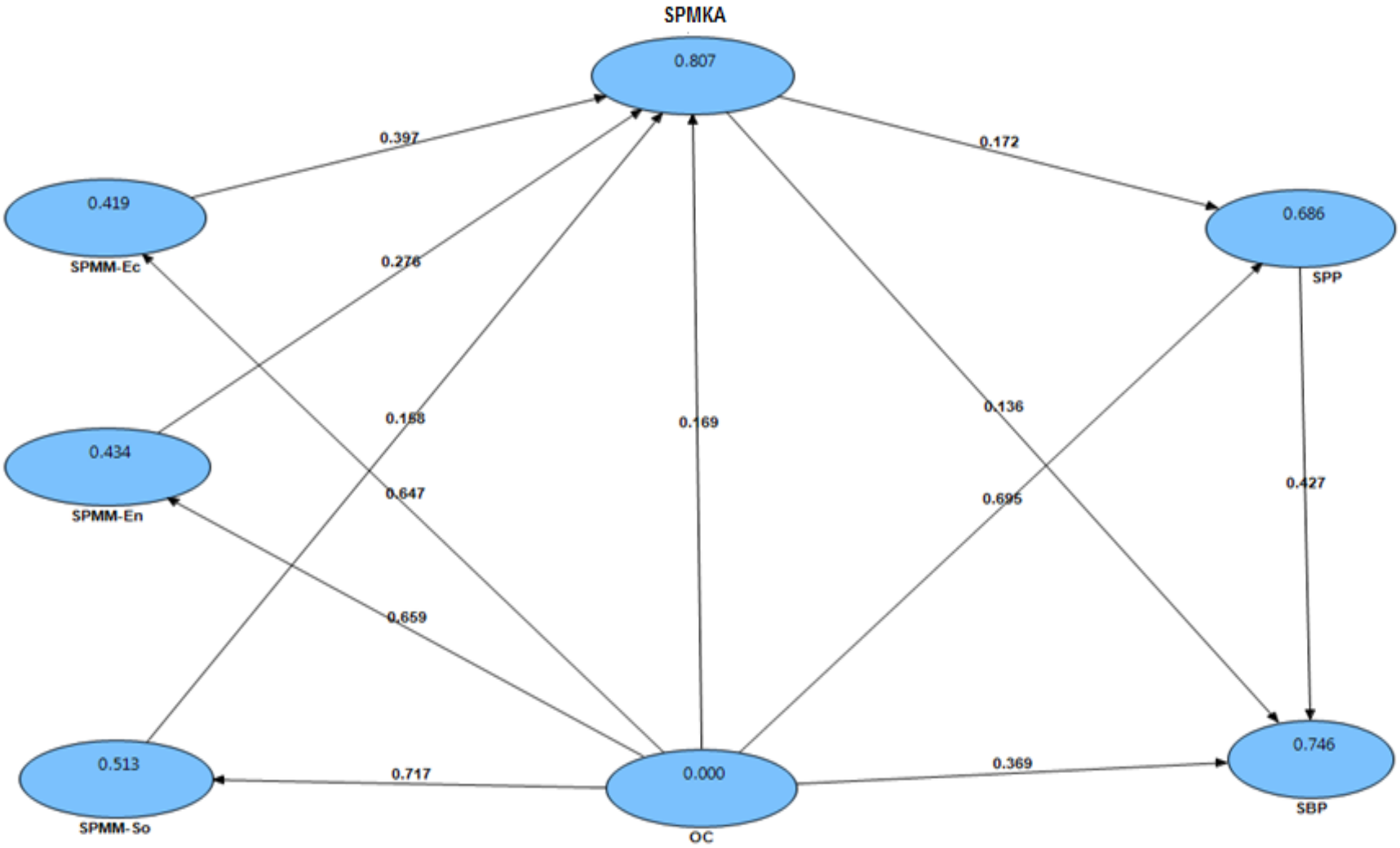

Figure 5.10 **Structural model of sustainable management practices in all regions of Saudi Arabia constructed by *Smart-PLS***

5.3.3 Bootstrapping with t-tests

The study hypotheses of the study (H1 to H7) were tested after bootstrapping by use of two-tailed one-sample t-tests. *Smart-PLS* output the t statistics and standard errors (SE), where t = β/SE. The results of the t-tests with corresponding p-values are presented in Table 5.12.

Table 5.12 Testing H1 to H7 using t-tests

Hypothesis	β	SE	t	p
H1: There is a significant positive correlation between sustainable project management knowledge area (SPMKA) and the three dimensions of sustainable project management maturity (SPMM-En; SPMM – Ec, and SPMM -So):				
SPMM-Ec→ SMPKA	0.397	0.034	11.812	<.001*
SPMM-En→ SMPKA	0.276	0.040	6.876	<.001*
SPMM-So→ SMPKA	0.158	0.042	3.791	<.001*
H2: There is a significant positive relationship between SPMKA and SPP:				
SPMKA → SPP	0.172	0.046	3.732	<.001*
H3: There is a significant positive relationship between SPMKA and SBP:				
SPMKA → SBP	0.136	0.035	3.856	<.001*
H4: There is a significant positive relationship between Organisational Culture and SPP:				
OC → SPP	0.695	0.044	15.861	<.001*
H5: There is a significant positive relationship between OC and SBP:				
OC→ SBP	0.369	0.051	7.300	<.001*
H6: There is a significant positive relationship between SPP and SBP:				
SPP → SBP	0.427	0.050	8.544	<.001*
H7: There is a significant positive relationship between OC and SPMM:				
OC → SPMM-Ec	0.647	0.026	24.840	<.001*
OC → SPMM –En	0.659	0.025	26.809	<.001*
OC → SPMM – So	0.717	0.023	31.006	<.001*
OC → SMPKA	0.169	0.031	5.495	<.001*

Note: * β coefficient is significantly different from zero at the 0.001 level

The t-tests indicated that all of the β coefficients were highly significant at the 0.001 level. Because all the β coefficients were positive, and significantly greater than zero, statistical evidence was provided to support H1 to H7.

5.4 Comparison analysis

Using comparison analysis, the relationships between the variables used to model the sustainable management practices using PLS-SEM were investigated and shown to vary between different group samples. These comparison groups were clarified and sampled earlier in this study using the demographic questions in the survey. The purpose of performing such an analysis was to allow the researcher to study the model under different conditions for better understanding of project management best practice in Saudi Arabia. As a result, critical project management solutions for sustainable performance were able to be generalised, which was the purpose of this study.

5.4.1 Project locations

To conduct the comparisons, five PLS-SEM models were constructed by disaggregation of the data provided by the respondents from the central region (N = 325); the Northern region (N = 26); the southern region (N = 33); the eastern region (N = 112) and the western region (N = 168). The mean β coefficients and variances for five PLS path models were computed. One-way analysis of variance (ANOVA) was conducted to determine if there was as a significant difference between the mean values of each β coefficient across the five regions. Because *Smart-PLS* does not incorporate ANOVA, and *SPSS* only conducts ANOVA using raw data (not means and variances), appropriate formulae were entered into an *Excel* worksheet to compute F statistics and p-values (Pace 2007). The data entered into the worksheet were the five mean values of β, the variances of β, and the sample sizes for each region (see example in Table 5.13).

Table 5.13 *Excel* worksheet used to compare β values using ANOVA

Path	SPMM-EC > SPMKA	
X_1'	mean β central region	0.417
X_2'	mean β northern region	0.376
X_3'	mean β southern region	0.359
X_4'	mean β eastern region	0.442
X_5'	mean β western region	0.326
$S^2 1$	variance central region	0.376
$S^2 2$	variance northern region	0.330
$S^2 3$	variance southern region	0.338
$S^2 4$	variance eastern region	0.329
$S^2 5$	variance western region	0.394
k	number of regions	5
k-1	degrees of freedom (regions)	4
N	total number of respondents	664
N- k	degrees of freedom (error)	659
N-1	total degrees of freedom	663
X_{GM}	grand mean	0.384
n_1	number of respondents central region	325
n_2	number of respondents northern region	26
n_3	number of respondents southern region	33
n_4	number of respondents eastern region	112
n5	number of respondents western region	168
$\sum n_i (X_i - X_{GM})^2$	between regions sum of squares (SST)	1.318
$S^2 B = \sum n_i (X_i - X_{GM})^2/(k-1)$	between regions mean square (MST)	0.330
$\sum (n_i - 1) S^2_i$	with regions (error) sum of squares (SSE)	243.300
$S^2 W = \sum n_i - 1) S^2_i / \sum (n_i - 1)$	within regions (error) mean square (MSE)	0.369
F = MST/MSE	variance ratio	0.893
P	p-value	0.468

The results of ANOVA that compared the β coefficients computed for the 11 paths between the sustainable management practices across the five geographic regions are presented in Table 5.14.

Table 5.14 Comparison of β coefficients between five geographic regions

Path	Geographic Region					ANOVA	
	Central	North	South	East	West	F	p
	N = 325	N = 26	N = 33	N = 112	N = 168		
SPMM-Ec→ SPMKA	0.417	0.376	0.359	0.442	0.326	0.893	0.468
SPMM-En→ SPMKA	0.246	0.243	0.267	0.254	0.275	0.065	0.992
SPMM-So→ SPMKA	0.138	0.147	0.153	0.139	0.137	0.011	1.000
SPMKA → SPP	0.154	0.085	0.086	0.125	0.085	0.501	0.735
SPMKA → SBP	0.136	0.108	0.125	0.135	0.121	0.574	0.691
OC → SPP	0.692	0.746	0.702	0.704	0.675	0.893	0.468
OC→ SBP	0.370	0.298	0.248	0.313	0.347	0.560	0.692
SPP → SBP	0.421	0.500	0.402	0.564	0.542	1.259	0.285
OC → SPMM-Ec	0.665	0.567	0.560	0.711	0.702	2.842	0.024*
OC → SPMM –En	0.673	0.586	0.630	0.691	0.708	1.301	0.268
OC → SPMM – So	0.728	0.649	0.672	0.700	0.719	1.192	0.313
OC → SPMKA	0.207	0.197	0.135	0.156	0.207	0.570	0.684

* Significant at α = 0.05

The only relationship with a significant difference between β coefficients across the five regions at α = .05 (F = 2.842, p = 0.024) was the relationship between organisational culture and the economic dimension of sustainable project management maturity. The strength of this relationship was weakest (β = 0.560 and 0.567) in the northern and southern regions, stronger (β = 0.700 and 0.719) in the eastern and western regions, and strongest (β = 0.728) in the central region. The mean β coefficients for the other ten paths did not vary significantly across the five regions at α = .05.

This means that the relationships between the variables used to model sustainable management practices did not consistently vary between the different geographic regions of Saudi Arabia. Only the relationship between organisational culture and the economic dimension of sustainable project management maturity varied between the regions at the .05 level of significance.

5.4.2 Sustainability maturity levels of project management practice

The sustainability maturity levels of project management practice were measured by averaging the scores for its four components, specifically the economic, environmental, and social dimensions of sustainable project management maturity and the sustainable project management knowledge area. The composite scores ranging from 1 to 5 provided an indication of the sustainability maturity levels as defined in Table 5.15.

Table 5.15 Sustainability maturity levels of project management practice

Level	Definition
1	No established sustainability practices and standards exist.
2	Some sustainability practices and standards are in place such as project resources selection but not across the organisation.
3	Sustainability practices and standards are instituted, and followed through the Project Execution process using established reporting forms and documents.
4	Sustainability practices and standards are instituted and mostly followed throughout the project life cycle until the project deliverable using established reporting forms and documents. The targets of the project deliverable are included only in the project operation activities but not included in the long-term strategy of the organisation.
5	Continuous improvement regarding sustainability through the efficient collection, use, and decimation of data obtained in level 4 is in place. The organisation uses benchmarking metrics regarding sustainability as a means to rate itself against commonly accepted/expected standards and/or against others. The project's goals are included in the long-term organisational strategy.

Compositing the scores was essential because the four components were significantly positively correlated with each other at $\alpha = 0.001$ (see Table 5.10) and they exhibited a very high level of internal consistency reliability (Cronbach's alpha = 0.931). The four components were not independent, but represented a single unifying construct. Because the four components were very closely inter-related, analysing each of the components separately was pointless. If one of the four components varied significantly with respect to different groups of respondents, then the other correlated components would vary in the same way.

Figure 5.11 shows that the frequency distribution of the sustainability maturity levels of project management practice was a normally distributed bell-shaped curve (mean = 2.96, 95% confidence interval = 2.89, 3.04). Consequently, parametric statistics to compare the mean values between different groups of respondents, using ANOVA, was justified.

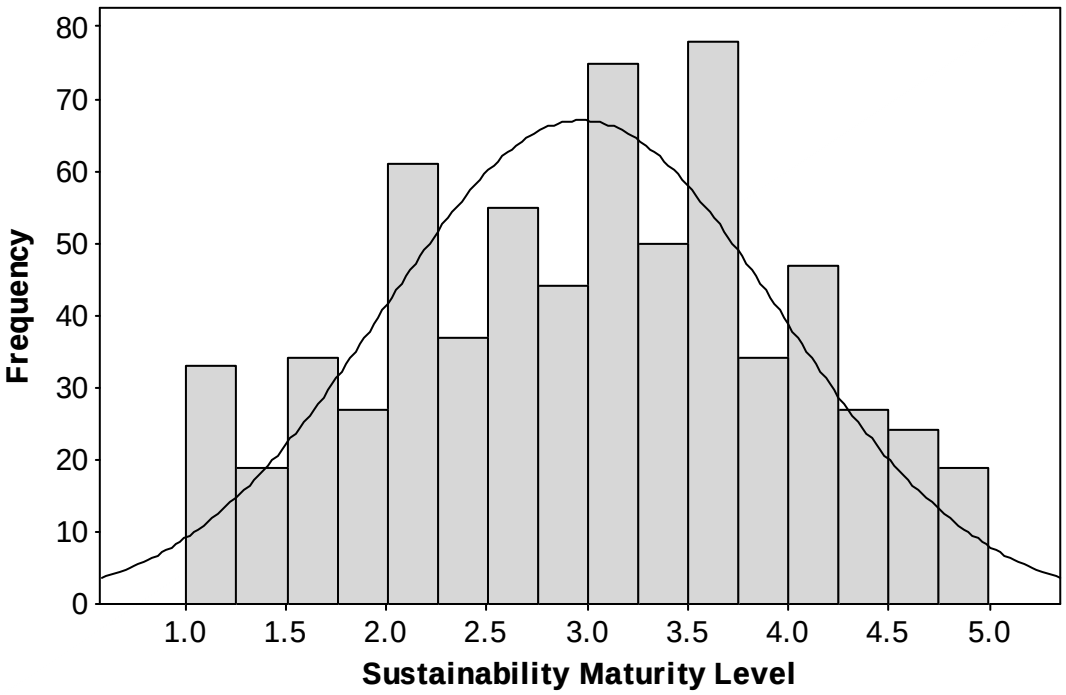

Figure 5.11 Sustainability maturity levels of project management practice

Error bar charts (mean scores ± 95% confidence intervals) were constructed and ANOVA was conducted to compare the sustainability maturity levels of project management practice between projects located in five geographic regions of Saudi Arabia; between the three largest projects; between Saudi, multi-national, and international organisations; and according to whether or not the organisation had a sustainability/green certificate/rank. The project managers' attitudes and responsibility for applying the principles of sustainability to project management practice between projects located in five geographic regions of Saudi Arabia were also compared.

5.4.3 Testing sustainability maturity levels of project management practice by region

The mean scores ± 95% confidence intervals to compare the sustainability maturity levels of project management practice between the five geographic regions are illustrated in Figure 5.12. The mean scores ranged from 2.85 in the southern region to 3.05 in the eastern region. ANOVA indicated no differences in the mean scores by region at the .05 level ($F = 0.37$, $p = 0.828$). In conclusion, the statistical evidence was not supported.

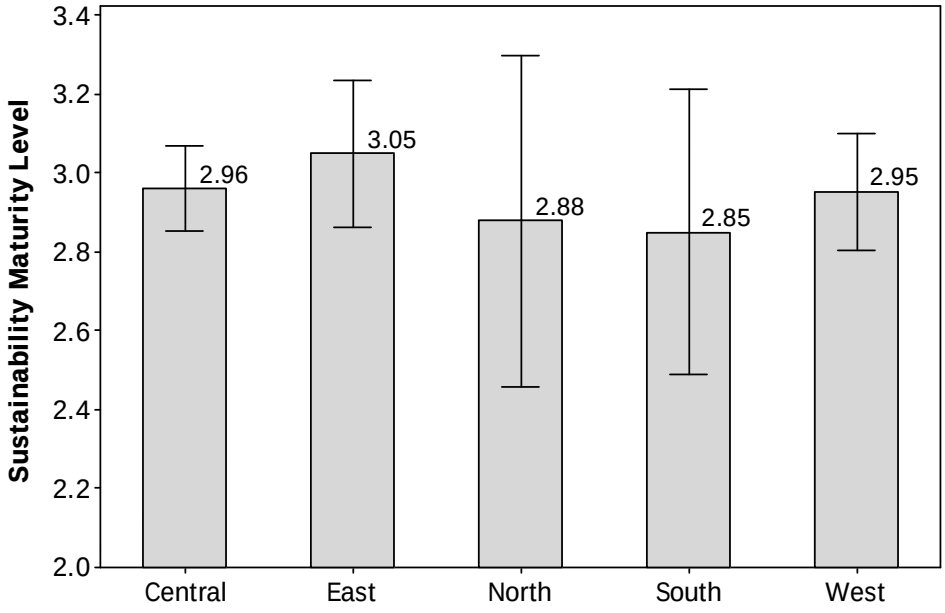

Figure 5.12 Sustainability maturity levels of project management practice by region

5.4.4 Testing sustainability maturity levels of project management practice by project type

The mean scores ± 95% confidence intervals to compare the sustainability maturity levels of project management practice between the three largest types of project are illustrated in Figure 5.13. The mean scores ranged from 2.91 for building/construction to 3.11 for information technology. ANOVA indicated no differences in the mean scores by project type at the .05 level ($F = 1.07$, $p = 0.345$). In conclusion, the statistical evidence was not supported.

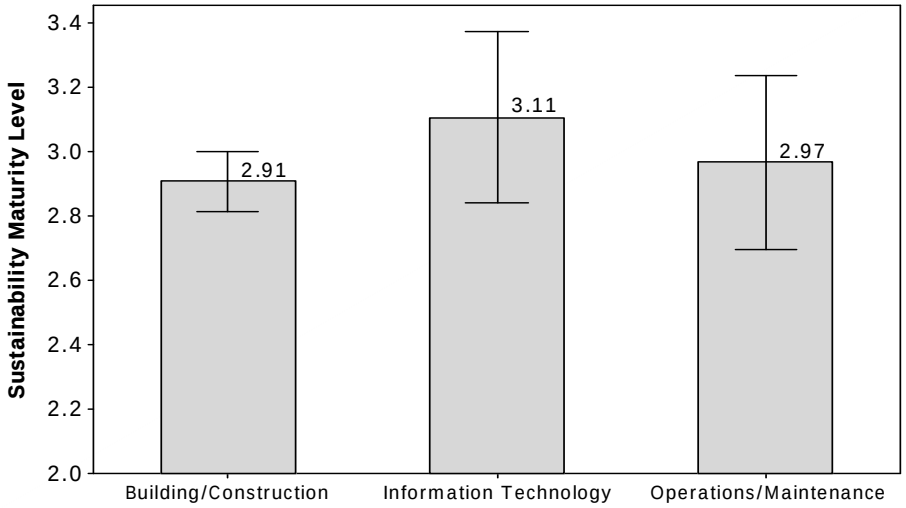

Figure 5.13 Sustainability maturity levels of project management practice by project type

5.4.5 Testing sustainability maturity levels of project management practice by organisation

The mean scores ± 95% confidence intervals to compare the sustainability maturity levels of project management practice between the three types of organisation (Saudi Arabian, multinational, and international) are illustrated in Figure 5.14. The mean scores ranged from 2.95 for Saudi Arabian to 3.0 for multinational. ANOVA indicated no differences in the mean scores by project type at the .05 level (F = 0.10, p = 0.907). In conclusion, the statistical evidence was not supported.

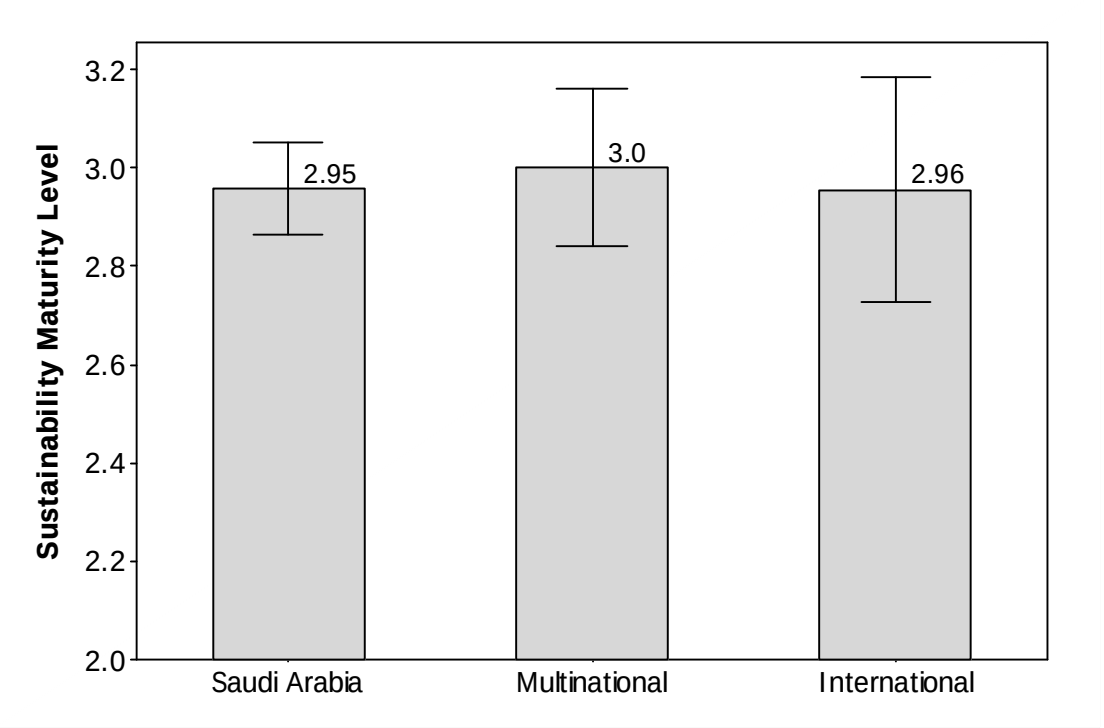

Figure 5.14 Sustainability maturity levels of project management practice by organisation

5.4.6 Testing sustainability maturity levels of project management practice by certification/rank

The mean scores ± 95% confidence intervals to compare the sustainability maturity levels of project management practice between projects with or without a sustainability/green certificate or rank are illustrated in Figure 5.15. The mean scores ranged from 2.91 for projects with no certification/rank to 3.11 for projects with certification/rank. ANOVA indicated no differences in the mean scores at the .05 level (F = 2.10, p = 0.148). In conclusion, the statistical evidence was not supported.

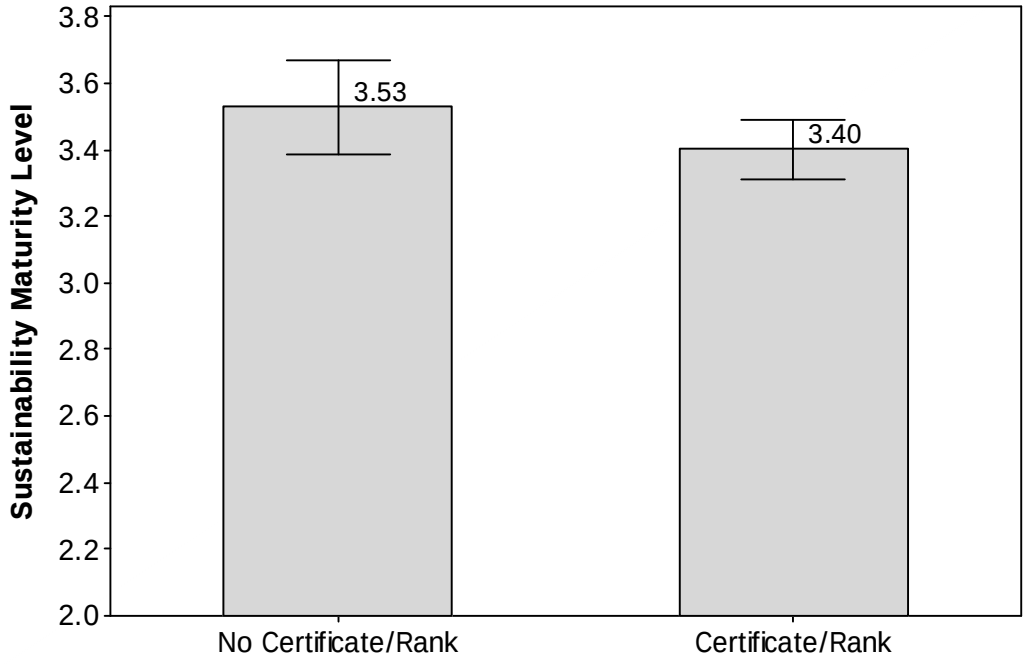

Figure 5.15 **Sustainability maturity levels of project management practice by certification/rank**

5.4.7 Testing project managers' mind-sets and responsibilities for applying sustainability ideas

The project managers' mind-sets and responsibilities for applying sustainability ideas were measured using the five questionnaire items listed in Table 5.16 (coded SD1 to SD5). Each item was scored using a 5-point response format where 1 = very low, 2 = low, 3 =neutral, 4 = high, and 5 = very high.

Table 5.16 presents a matrix of Pearson's correlation coefficients to determine the strengths of the associations between the scores for the five items. All the scores were significantly positively correlated with each other at $\alpha = 0.001$ (Pearson's r = 0.299 to 0. 708). The scores for the five items consequently exhibited a high level of internal consistency reliability (Cronbach's alpha = 0.801). The items were not independent, but represented a single unifying construct. Because the item scores were very closely inter-related, analysing each of the scores separately would be pointless. If one of the five items varied significantly with respect to different groups of respondents, then the other correlated items would vary in the same way.

Table 5.16 Project managers' mind-sets and responsibilities for applying sustainability ideas

Projects managers' mind-sets and responsibilities for applying sustainability ideas	Questionnaire item
SD1. Project managers' awareness in concept of SD	To what extent are you familiar with the concept of 'sustainable development'?
SD2. Project managers' awareness in project management content	To what extent are you familiar with project management knowledge contents?
SD3. The need for integration of SD ideas into PM practice?	To what extent do you think there is need for the integration of sustainable development ideas into project management techniques and practice?
SD4. Sustainable developments applications vs. projec success	To what extent do you think sustainable development ideas contribute to project success?
SD5. Sustainable project management vs. business strategy	How important do you think it is for project managemen to create sustainable project as part of business strategy?

Table 5.17 Correlation matrix between the scores for the five items in Table 4.16

	SD1	SD2	SD3	SD4
SD2	.463*			
SD3	.406*	.427*		
SD4	.360*	.299*	.708*	
SD5	.300*	.345*	.556*	.611*

Note: * Significant positive correlation at the .001 level

The project managers' mind-sets and responsibilities for applying sustainability ideas were measured by averaging the scores for the five items in Table 5.16. The composite scores ranging from 1 to 5 measured this unifying construct from 1 = low to 5 = high.

Figure 5.16 shows that the frequency distribution of the composite scores for the project managers' mind-sets and responsibilities for applying sustainability ideas was not an asymmetric bell-shaped curve. The frequency distribution was very strongly skewed, with a conspicuous mode in the right hand tail, because most of the respondents (69.1%) replied 'high' or 'very high' to the five items, scoring 4 or 5. Nevertheless, it was still possible to compare the mean values between different groups of respondents using ANOVA, because when the sample size is very large (664 respondents) deviations from normality do not comprise the statistical inferences of ANOVA (Schmider et al. 2010).

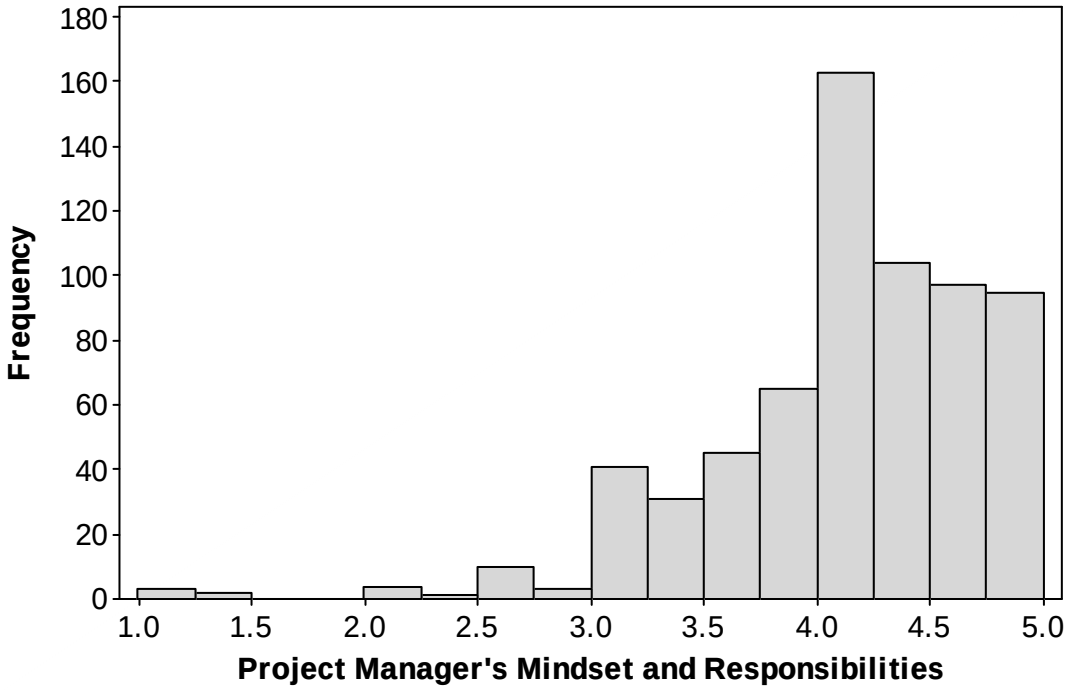

Figure 4.16 **Project managers' mind-sets and responsibilities for applying sustainability ideas**

The error bar chart (mean scores ± 95% confidence intervals) in Figure 4.17 compares the projects managers' mind-sets and responsibilities for applying sustainability ideas between projects located in five geographic regions of Saudi Arabia. The mean scores ranged from 3.93 in the southern region to 4.20 in the eastern region, implying that the project managers' mind-sets and responsibilities for applying sustainability ideas were consistently high. ANOVA indicated no differences in the mean scores at the .05 level ($F = 1.65$, $p = 0.160$). In conclusion, the statistical evidence was not supported.

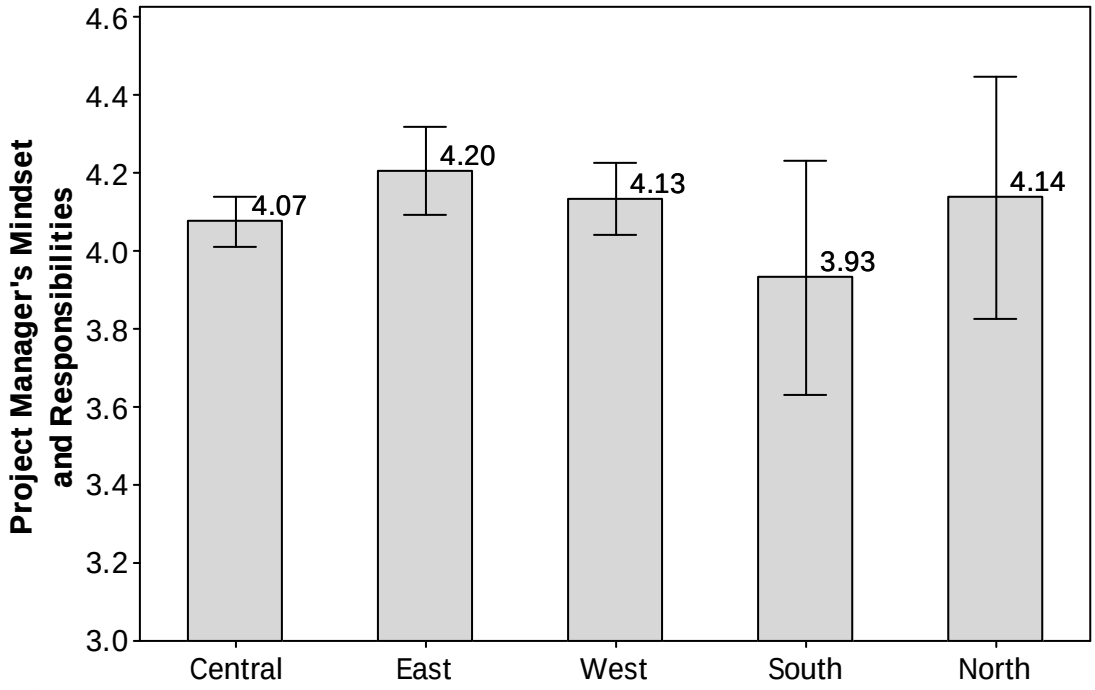

Figure 5.17 Project managers' mind-sets and responsibilities by region

5.5 Summary

The statistical evidence to support (or not support) the hypotheses is summarised in Tables 5.18 & 5.19. Overall, the role of sustainable project management maturity as a part of the modernisation process in Saudi Arabia (indicated by the positive relationships between sustainable management business performance <> sustainable project management maturity; sustainable business performance <> sustainable project performance) was found to be statistically significant.

The importance of organisational culture in fostering the introduction of sustainability ideas into project management was also found to be significant (indicated by the positive relationships between organisational culture, sustainable management business performance, sustainable project management maturity, sustainable business performance; and sustainable project performance).

Table 5.18 Statistical evidence to support the hypotheses

Hypothesis	Statistical evidence
H1: There is a significant positive correlation between sustainable project management knowledge area (SPMKA) and sustainable project management maturity (SPMM)	Supported by PLS-SEM. (β coefficients = 0.397, 0.276, and 0.158 between SBMP and the three dimensions of SPMM (Economic, Environmental, and Social).
H2: There is a significant positive correlation between sustainable project management knowledge area (SPMKA) and sustainable project performance (SPP)	Supported by PLS-SEM. (β coefficient = 0.172 between SMBP and SPP).
H3: There is a significant positive correlation between sustainable project management knowledge area (SPMKA) and sustainable business performance (SPP)	Supported by PLS-SEM. (β coefficient = 0.136 between SMBP and SPP).
H4: There is a significant positive correlation between organisational culture (OC) and sustainable project performance (SPP)	Supported by PLS-SEM. (β coefficient = 0.695 between OC and SPP).
H5: There is a significant positive correlation between organisational culture (OC) and sustainable business performance (SBP)	Supported by PLS-SEM. (β coefficient = 0.369 between OC and SBP)
H6: There is a significant positive correlation between sustainable project performance (SPP) and sustainable business performance (SBP)	Supported by PLS-SEM. (β coefficient = 0.427 between SPP and SBP).
H7: There is a significant positive correlation between organisational culture (OC) and sustainable project management maturity (SPMM)	Supported by PLS-SEM. (β coefficient = 0.647, 0.659, 0.717, and 0.169 between OC, the three dimensions of SPMM (economic, environmental, and social) and SMBP.

Table 5.19 The results of the comparison analysis

Comparison 1	There is a significant difference in the relationships describing sustainable management practices between projects located in five geographic regions of Saudi Arabia	Not entirely supported by PLS-SEM and ANOVA. The only relationship with a significant difference (p = 0.024) across the five regions was that between organisational culture and the economic dimension of sustainable project management maturity.
Comparison 2	There is a significant difference in the sustainable maturity levels of project management practice between projects located in five geographic regions of Saudi Arabia	Not supported by ANOVA (p = 0.828).
Comparison 3	There is a significant difference in the sustainable maturity levels of project management practice between the three largest types of projects.	Not supported by ANOVA (p = 0.345).
Comparison 4	There is a significant difference in the sustainable maturity levels of project management practice between Saudi, multi-national, and international organisations.	Not supported by ANOVA (p = 0.907).
Comparison 5	There is a significant difference in the sustainable maturity levels of project management practice between organisations according to whether or not they have a sustainable or green certificate or rank	Not supported by ANOVA (p = 0.148).
Comparison 6	There is a significant difference in the projects managers' mind-set and their responsibility for applying sustainable ideas into project management practice between projects located in five geographic regions of Saudi Arabia.	Not supported by ANOVA (p = 0.160).

The relationships were not only statistically significant (indicated by $p < .05$ for the β coefficients) but also had practical significance (indicated by large effect sizes). There was however, little or no evidence for any significant differences between sustainable project management maturity practices across the five geographic regions of Saudi Arabia, or between the different types of project or organisation.

Chapter Six

Discussion

Chapter 6 considers the research activity and some of the significant results, reviewing them in relation to some of the gaps in the literature regarding theories that were covered in Chapter 2. In addition, the chapter looks at the theoretical and practical implications of the study, including its relevance for governments, organisations and project managers. Finally, the limitations of the research are canvassed.

The discussion in this chapter will examine the importance of certain sustainable development indicators for project management in Saudi Arabia on the RBV and CSR. In addition, stakeholder theory will be considered in relation to the results of the project management maturity model as a significant tool for making strategic decisions. Moreover, the current chapter, like the study emphasises the importance of organisational culture and its role in the improvement of project management performance by studying organisational culture theory as it relates to administrative theory.

The chapter also covers the ways in which organisations can gain a sustainable advantage by analysing the interaction between variables. Finally, the chapter discusses the role and responsibility of stakeholders in Saudi Arabia's projects to integrate and apply the concept of sustainable development into project management best practice for better performance. Concomitantly, the model developed for sustainable project management will be compared to current practice in Saudi management channels, to assess whether the existing gaps can be addressed for future sustainability in the country. Therefore, this chapter canvasses statistical findings, supported with the relevant literature sources and the researcher's reflections to explain the results discussed in Chapter 5.

6.1 Discussion of the research process and findings

This section discusses the statistical analysis and findings reported in Chapter 5. The purpose of this study was to develop a sustainable model for project management that encompassed the application of theories and observations of organisational culture. In order to prove the efficiency and application of the model developed for this study, several hypotheses related to the model

were tested. In addition, knowledge gained from the literature has been used explain the reliability of the model. The three research questions proposed in Chapter 1 are answered in this chapter. These were:

1. What are the challenges facing Saudi Arabia as the country attempts to modernise their project management in order to achieve sustainability?
2. What is the role of sustainable project management maturity in the modernisation process in Saudi Arabia?
3. How important is organisational culture in fostering the introduction of sustainability ideas into project management?

6.1.1 The research process

A sustainable project management maturity model was developed and tested through the analysis of the relationship between key latent variables related to the economy, society, environment, project management knowledge areas (PMKA), project performance, business performance and organisational culture. These latent variables have several indicators that are measured and tested via different assessment scales. The relationship between variables through their specific indicators confirms the model for sustainable project management maturity.

To confirm that this was the right sustainable model for Saudi's project maturity, the correlation between indicators was tested against a known assessment scale. Moreover, the relationships between latent variables were tested through specific software and known scales for measurements. Indeed, the model for sustainable project management maturity was tested and confirmed as efficient. The tests for relationships between the indicators and variables were assessed by trailing a combination of test hypotheses. A combination of seven hypotheses was used to describe and define the model for the mature management of internally and externally sustainable projects. All the variables were tested for significant correlations.

Data for analysis were generated using on online, self-administered, structured questionnaire related to sustainability in Saudi Arabian organisations. The aim was to determine whether Saudi Arabian organisations fully utilised aspects of sustainability during project management. The results of the analysis of the data were reported in Chapter 5. One of the important goals was to prove whether the current level of sustainability in Saudi Arabian projects meets the standards of

sustainable project management as discussed in the literature. Respondents to the questionnaire were asked to rate the sustainability of projects in terms of the economic, social and environmental performance using a Likert scale ranging from level 1 (lowest sustainability) to level 5 (highest sustainability).

6.1.2 Reflection on the findings

As demonstrated by the results (Chapter 5), the questionnaire, being online, was available in all parts of the country, including central, eastern, southern and northern Saudi Arabia. This clearly indicates that the results, analysis, and conclusions formed during this study involved the entire country and not a specific location. Over three quarters of the respondents had over six to 25 years of experience in project management. Their responses demonstrate that the results reached by this study are valid and evenly distributed across all respondents. Getting information from experienced respondents provided a clear picture of the culture of project managers in Saudi Arabia. The types of projects the managers were in charge of represented economic, social, and environmental projects across the country. These projects are critical for the society, and, therefore, there is a need to address their sustainability and continued period of service.

Certification and standards. In addition to considering the projects themselves, the issue of certification is considered. The current study revealed that 70.6% of Saudi Arabian organisations exercised no project management quality standards. Examples of certificates for quality project standards include ISO, LEED, and Green Project, among others. These are the standards of operation for every project that has an economic value. Every registered organisation dealing with project management has to reach certain standards of operation and production, in order to ensure a high quality of products and services are met. International quality standards are emphasised in every country to ensure that projects have long-term benefits for the society involved. Failure to meet these standards means that a project will not achieve sustainability.

Furthermore, there must be a balance between the economic, social, and environmental features of the project in order to reach sustainability. The results of this study reveal that most Saudi Arabian projects have a high probability of not reaching maturity and will not attain sustainable project management maturity. This is unfortunate, since project management standards would ensure that finite resources are not exhausted, and also that the social aspects of the society are governed.

These results highlight one of the most pressing problems facing Saudi Arabia as the country tries to modernise. Modernisation in project development and management cannot take place without the adoption of international standards. Without quality standards, features such as resource control, value and application cannot be achieved. Also, environmental and social standards are not met in absence of project management standards. Therefore, it is clear that a large percentage of Saudi Arabian projects are likely to fail, undermining sustainability.

When it comes to education and awareness, the result shows that the majority of the professionals in the project management sector were aware of sustainable project development. The majority believed that sustainable development is a significant factor in the success of every project. When the level of awareness was measured on a Likert scale, over 80% of the respondents were aware of the concept of sustainable project management.

The results reveal an awareness of the concepts of sustainable project development. A mean of 3.54 shows that out of 100 project managers and personnel, 71 were aware of the concept of sustainable development. Over 80 project personnel out of 100 were aware of project management, the need to integrate sustainable project development, the importance of sustainable development as a tool for success, and the need to integrate sustainable development into business strategy. Across all the items measured, the standard deviation from the mean was below one.

This clearly indicates that the data collected were very close to the mean. Standard deviation helps to measure diversity, or the variability of the data points from the mean. High standard deviation indicates that the data were spread over a large range and that the responses were not close to one another. In regards to these findings, the lower standard deviation means that the data were close to average, meaning that almost every respondent replied that they were aware of sustainable project development. Out of the five tested items, the standard deviation and the mean seem close to each other.

There was a greater range of opinions in relation to the concept of sustainable development, but it was clear that most project managers and personnel were aware of the concept of sustainable development. Therefore, over 80% of the respondents saw the importance of sustainable development in their projects and would like to see it implemented in their organisations because they regard it to be a success factor.

Challenges. In spite of the fact that the project managers understand the concept of sustainable project management, and may even desire to have sustainable project standards, there are major challenges to be overcome related to socioeconomic and historical issues. As stated by Bryde et al. (2014), Saudi Arabian organisations are impacted by a number of critical factors beyond the project manager's control. These include low levels of education among the potential workforce, the lack of an at least trade-qualified labour force, lack of professional training, and poor business initiative programs. These are contributing factors towards low application of sustainable project development, despite awareness of how better PM could raise productivity and sustainability. Other factors limiting the success of sustainable development in Saudi Arabian organisations include poor stakeholder management, lack of community involvement, and the lack of coherence and the fractured fabric of Saudi Arabian society (Bryde et al. 2014). Other challenges include environmental issues, and the lack of a clear, consistent organisational structure.

Project manager knowledge areas (PMKA). Although the respondents were aware of the concepts of sustainable project management, the data showed that only 67 (10.09%) of project managers had full knowledge of project management and sustainability tools and techniques based on PMBOK.

This is an indication that knowledge and practice regarding sustainable project development in Saudi Arabia have not been reached to the maximum. Respondents to the questionnaire indicated that the manner in which project managers are made aware of project management knowledge areas (PMKA) are considered about average (between level 3 and level 4 on the Likert scale). PMKA suggests that the right selection of resources, collaboration between participants and managerial skills required for sustainable project management lead to higher project maturity levels, and argues strongly that unless this knowledge area is embedded in effective learning and training programs, Saudi Arabian organisations cannot achieve full sustainability.

Economic attributes of the organisation. In terms of project economics, four variables were tested. These included *financial benefits, future decision-making, evaluation methods for the selection of future projects*, and financial progress report. The study found that only 16.57% of the assessed organisations were nominated by respondents as reaching the highest level of attainment in these areas (as shown by being assigned a level 5 on the Likert scale). Respondents in the majority of organisations assigned them a score between 3 and 4. More than 9% of the organisations were assigned a level 1 ranking, and the largest proportion were scored at 3.

This is a clear indication that most Saudi Arabia organisations have not fully adopted the economic attributes for successful sustainable project development. As described by Al-Ahmad (2009), the economic dimension is one of the major dimensions of business sustainability. Most organisations in Saudi Arabia operate at low profit, a situation that has undermined the growth of projects. A large portion of Saudi organisations failed to score a level 5 due to lack of knowledge on how to manage the economic resources into a reliable source of income.

There is inflexibility in terms of management and a lack of skills for monitoring the financial outcomes of organisational activity. In order to make a profit, it is imperative that organisations realise their potential by looking onto the available opportunities for investment (Al-Ahmad 2009). A good investment evaluation is done when there is a channelled process for reporting project performance and future continuity. Results from the study indicate that most projects suffer from poor reporting mechanisms for project performance. Poor records limit the lessons to be learned for future long-term correction (Mitra & Tan 2012). Therefore, sustainability is undermined. If there is no balance between economic resources and other factors for sustainable project development, maturity of the project cannot be achieved. Sustainable project development is the one that brings benefits to the organisation and the society in which the organisation is operating.

Environmental impact of a project. In regards to a project's environmental performance, the majority of the respondents assigned a score between 3 and 4 for their organisation. At these levels, organisations are not fully adhering to the environmental standards for sustainable project development. Only 14.61% of the organisations met the standards to be awarded a 5 on the scale. 11.30% of the organisations recorded a 2.

Environmental aspects of a project involve the ways in which the organisation is able to balance materials, energy, water, travel, and waste through frequent project reporting. It is the balancing of these elements that leads to a sustainable project management performance. Environmental consideration means that organisations are not only focusing on growth, but also maintaining the environment under in which they are operating. As depicted by André, Delisle and Revéret (2004), focus on growth without paying attention to the natural environment leads to degradation of future opportunities for the next generation, which is ultimately unsustainable (Andre, Delisle and Reveret 2004).

There was no evidence of an even distribution of environmental standards across the organisations involved in the study. Only 14.61% of the respondents' organisations could achieve sustainability,

and therefore project management maturity. Only 14.61% of the organisations promised continuity. The results indicate that many organisations in Saudi Arabia do not pay attention to the ecosystem including land, air and water. With a large number of organisations rated at levels 3 and 4, it is clear that most organisations must have been managing inputs from the environment, as well as the environment itself, poorly, in the eyes of responding managers.

Energy consumption was high, with consequently high levels of greenhouse gas emissions. This reflects poor adherence to international standards of a sustainable project. Organisations scoring 1 and 2 on the scale are very unlikely to achieve achieving sustainability. Waste management was poor, with no recycling of either solid or liquid waste or water. No records of environmental progress or otherwise were being kept in most of the responding organisations.

The results demonstrate clearly that most Saudi organisations are focussed on growth without considering their environment. At the levels indicated by the respondents, sustainability cannot and will not be achieved in Saudi Arabia.

Societal impacts. Measured against standards of social responsibility for sustainable development, the study found that only 12.35% of the organisations were assigned a level 5 by the respondents. Level five is the maximum point that shows an organisation's commitment and adherence to the social elements of sustainable project development. The majority of the respondents rated their organisations at level 3 or 4. 12.50% of the organisations paid little or no attention to social aspects for a sustainable project development.

Social issues not being considered sufficiently to attain the mature management of internally and externally sustainable projects included personal education, assets, consumption, employment, experience and skills, among other attributes that affect a society (Ruwanpura 2012). In short, the social dimension entails the institutional arrangement of the organisation towards continuity of the project. According Ruwanpura (2012), with the help of several indicators of social sustainability, the performance of a project can positively increase. Lack of these social indicators in project development leads to immaturity.

Judging from the responses, most of Saudi Arabia's project managers are failing to adhere to desirable standards of social policy as a mechanism for improving performance. Labour practices and working conditions are not scrutinised sufficiently, and standards are low, as is health and

safety. Training, education programs and development of stakeholders are also insufficient in most organisations, given the responses to the questionnaire. Few organisations had educational and training programs for their employees in place, a fact that reflects Bryde et al's (2014) observation that Saudi Arabia has only a small number of education and training programs.

Bryde et al (2014) speculate that the lack of business initiative in the country could be the result of the lack of professional training, and that poor organisational performance reflects the general lack of education and training. This is a social challenge that the government of Saudi Arabia must address in order to meet the proposed agenda for sustainability.

This study also focused on matters of diversity and equal opportunity as aspects of the society in which the organisation is operating. Responses indicated that very few project managers felt that their organisation (or the society) had reached a level 5 in terms of encouraging diversity or offering opportunity for all. Most responses lay between levels 1 and 3.

This is a tremendous brake on the development of project management maturity and mature project development, and this will hinder the achievement of the targets for any modernisation agenda. As depicted by Fatany (2013), despite the modernisation occurring in the country, the government of Saudi Arabia has failed to break the tough laws of social and religious doctrines that have resulted in serious inequality in the country. For example, Saudi women are not allowed to drive cars or vote in the municipal elections. This is evidence of the gender discrimination and inequality that exist throughout Saudi organisations. Gender equality alone puts a brake on the economy and inhibits or prevents the development of the mature management of internally and externally sustainable projects by limiting the participation of half the natural born population of the KSA.

Social responsibility. In terms of social responsibility, few organisations were nominated at level 5 by the respondents. Most organisations ranged between levels 3 and 4, with a substantial number in level 1. This is a clear signal that most organisations are profit oriented instead of balancing profit and the wellbeing of the society.

As found by Sacconi (2012), when organisations get involved with programs that tend to enlighten the society, the society builds trust in that organisation. It is clear from the respondents' answers that trust in their organisations is not as common as mistrust. Too many of the organisations are not thinking of their social responsibilities, nor regarding their responsibility as a

tool for improving the performance of their business. In order to meet the requirements of the modernisation agenda, Saudi organisations and society must come together. This can only be achieved when organisations take social responsibility as a managerial tool for achieving maturity through the support from the society. Coming up with programs that intend to improve the wellbeing of the society is a critical element for corporate social responsibility. These social and economic programs are lacking in Saudi due to lack of managerial skills that would oversee project development and sustainability.

Frequency distributions. The summary of the frequency distributions of the components of sustainable project management (knowledge area, social, economic and environmental) shows positive correlation. The frequency of distribution between economic, social and environmental components is too close to each other. Furthermore, the maturity level for each assessment of the three components ranged between 2 and 3. There is a slight difference in terms of the distribution of PMKA. The frequency of distribution is high compared to other components. This suggests that most project managers in Saudi Arabia have knowledge of sustainable project development, but they are not able to utilise the social, economic and environmental components for reaching sustainability on projects. The study reveals that project managers and personnel know very well that sustainable project development and management are critical to their projects, but lack the education and training on how they could use the economic, social and environmental aspects to reach sustainability and project maturity.

This issue regarding the persistent failure to utilise the components of sustainable project development despite being aware of its importance can be described as one of the major challenges affecting the country. For example, as indicated by this discussion of the results, the following are critical issues in the modernisation of the kingdom:

- There are few and poor training and education programs in the country, a major impediment to achieving project sustainability.
- Managers can be well equipped with knowledge regarding sustainable project management, but due to a lack of a skilled and educated workforce, training employees and tapping into their creative potential becomes difficult. If workers do not possess the right education in

their fields or are unused to lifelong educational concepts, it is difficult to train them in relation to best sustainable practices.

- The social challenge facing the country is also a barrier to the effective management of a project. Discrimination and inequality in the labour force can be a barrier tos decision making processes and the implementation of plans and processes. If the management is too authoritative, there is no room for views from experienced employees.
- Finally, lack of proper equipment for enhancing a sustainable environment can be a barrier to achieving sustainability. Even though project managers are aware that environmental conservation is critical to project maturity, the lack of better equipment and resources can be a barrier to implementing sustainable practices.

Therefore, it can be concluded that project managers and personnel in Saudi Arabian organisations display high levels of awareness regarding sustainable project management and maturity, but due to the lack of an experienced labour force, education, and social barriers they are limited in what they can achieve.

Organisational culture. Organisational culture was tested in regards to factors of management style, organisational leadership, dominant characteristics, organisational glue, strategic emphases, and criteria for success. These factors formed the core elements of a sustainable project management maturity.

In terms of organisational culture, only 26.2% of the examined organisations fulfilled the requirements of a sustainable culture. 44.1% of the respondents rated their organisation at 3 or 4 on the five point Likert scale, while 22.9% were rated between levels 2 and 3 and 6.8% s were rated between levels 1 and 2. The majority of the organisations were rated by the respondents as below level 4 on the assessment scale.

The model asserts that, for a sustainable project management maturity, all the factors regarding organisational culture have to be fulfilled. These factors are not fully utilised in most organisations in Saudi Arabia. The data are, in fact, an indication that over 70% of the organisations did not meet the full requirements of organisational culture required for sustainable project development and maturity.

As explained by Yazici (2009), organisational culture is the channel for organisational goals, the mechanism by which managers guide their subordinates towards the desired outcomes. According to the results got from organisations in Saudi Arabia, organisational goals were not fully met or all the organisational scores would have been 5.

The challenging economic and social environment in Saudi Arabia could be the reason why these organisations are not developing the types of organisational culture that support business improvement and the establishment of sustainable project development. Organisational culture influences how people will be selected for specific tasks and make decisions that affect business performance (Eccles, Ioannou & Serafeim 2012). Lack of appropriate education, training programs, and the inequality in Saudi organisations result in a low level of organisational integration, hampering effective decision making. Furthermore, if there is no equality and respect among employees, effective leadership, decision making and operalisation cannot be achieved. Most Saudi organisations have no flexible workforce, a situation that has led to poor decision making and business performance.

In terms of the components for sustainable business performance, the mode for the distribution was between levels 4 and 5. A close relationship between the flow of internal and external components of business performance was observed, with the majority of organisations rated between levels 4 and 5. The distribution of internal and external components of business performance was observed to converge to the levels required by the model. In terms of components for effective project performance, the study found that the mode for the distribution was between levels 4 and 5 when considering matters of effectiveness and efficiency. These patterns of distributions did not diverge much from what was expected by the model for a sustainable project management maturity.

The summary of the latent variables of the mature management of internally and externally sustainable projects in Chapter 5 highlighted the correlation between the indicators in the model. The mean of the components of sustainable project management maturity were below level 3. The levels for sustainable business performance and sustainable project performance were above 3, but below 4. The levels for sustainable business performance and sustainable project performance tended towards the maximum, whereas, components for sustainable project management maturity were far from the maximum.

The observations are a clear sign that components for sustainable project management maturity in Saudi organisations are less utilised as compared to components of other variables in the model. Even though the data indicate that most Saudi organisations have a nascent, positive organisational culture, along with sustainable project and business performance, sustainability scores were low overall because the critical features of sustainable project management maturity were not usually in place. The results of the analysis of the data indicate that Saudi organisations are below average in terms of matching the parameters of the sustainable project maturity management model. The current levels of the key variables are not promising sustainability. Therefore, the current standards of the organisations fail to meet the requirements of the proposed model for achieving sustainability.

Test of the hypotheses. The model for the mature management of internally and externally sustainable projects assumes that the indicators are positively correlated to latent variables for a project to reach sustainability and the highest maturity level. With this in mind, the study went further to proving whether the results got from Saudi organisations revealed a positive relationship. Where there was no positive correlation between the tested variables, it was assumed that Saudi organisations did not use all the latent variables and indicators to improve the performance of their projects. To be clear on this point, if the tested hypotheses did not reveal a significant positive correlation, then it was safe to conclude that the tested variables were not balanced and that a sustainable project management maturity could not therefore be attained.

The correlation between latent variables in Saudi organisations was tested through partial least squares structural modelling (PLS-SEM) due to the influence of spurious correlations that could not be addressed effectively through Pearson's r correlation matrix. It was found that Pearson's r correlation matrix was not efficient in detecting the bivariate correlations. The bivariate correlation matrix involves pairs of variables that are spurious; correlations that could easily be affected by the correlation from one or more variables (Aldrich 1995; Waliczek 1996). Since Pearson's r correlation matrix proves efficient on partial correlations, PLS-SEM was appropriate for bivariate correlations such as those being examined by the model. Both PLS-SEM and Pearson's r coefficients were used to describe the relationships between variables.

Discussion of the statistical data

According to Chin (1998), the correlation between variables in PLS-SEM is measured and interpreted in terms of strength and weakness. The researcher asserts that, for a positive correlation between variables, the loading coefficients computed must be strong and should be greater or equal to +0.7; the factors must explain at least 50% of the variance in the data; and the Cronbach's alpha coefficient for each factor must be greater or equal to +0.7. Mean and variance between variables were assumed to be normally distributed with a mean zero (0.0) and variance of one (1.0). The factor loading coefficient ranged in value from -1 to +1. The factor loading coefficients were tested at 95% confidence level (0.05 significant levels), which supported the hypotheses if those coefficients were greater than zero. The above descriptions are used to describe the relationship between latent variables and indicators for a sustainable project management maturity model in Saudi Arabia.

Project management economic. The study found that Saudi organisations used almost all the combinations of variables described by the model in the project management area. To begin with, the factor loading coefficients between project management economic and its indicators were greater than 0.8; the average variance was 0.75; and the Cronbach's alpha was 0.888. These results fulfilled the requirements of a positive correlation between variables in PLS-SEM (Hair, Ringle & Sarstedt 2011; Monecke & Leisch 2012). Therefore, it is clear that, despite the lack of sustainability of project management development in Saudi organisations, those organisations used all the factors for sustainable project management economically, conforming to the requirements of the proposed model.

Project management environment. The factor loading coefficients for a sustainable project management environment and its indicators were found to be greater than 0.8, with an average variance of 0.737, and a Cronbach's alpha of 0.939. The results fulfilled the requirements of a positive correlation between variables on PLS-SEM. It was concluded, therefore, that despite the fact that project development as it relates to the environment in Saudi Arabia is unsustainable, Saudi organisations do utilise all the elements of a sustainable project management environment, conforming to the requirements of the proposed model.

Project management social. The factor loading coefficients for a sustainable project management social were greater than 0.7; the average variance was 0.788; and a Cronbach's alpha was 0.946. The study found that there was a positive correlation between indicators of a sustainable project management social on Saudi organisations. Therefore, Saudi organisations utilised all the elements of a sustainable project management social as depicted in the model. Despite the lack of sustainability in Saudi project development, all the organisations applied the elements in management.

Project management knowledge areas. The factor loading coefficients for a sustainable project management knowledge area were greater than 0.8, the average variance of 0.701, and a Cronbach's alpha of 0.937. The results conformed to the requirements of a positive correlation in PLS-SEM (Hair, Ringle & Sarstedt 2011; Monecke & Leisch 2012). Therefore, despite the lack of sustainability of project development in Saudi Arabia, all the organisations utilised the criteria for a sustainable project management knowledge area, hence, conforming to the elements of a sustainable project management maturity model.

Efficiency and effectiveness. Different results were found on the application of elements of a sustainable project performance (efficiency and effectiveness). Despite showing closeness on the application of indicators of a sustainable project performance (0.557), Saudi organisations did not fully utilise factors that enhanced client effectiveness. The factor loading coefficient for client effectiveness and sustainable project performance was 0.683. This value is below the required value of greater or equal to +0.7 in PLS-SEM.

Other indicators for sustainable project performance met the requirements of PLS-SEM. Therefore, there was a positive correlation between indicators of a sustainable project performance in Saudi Arabia, except that there was a weak relationship between client effectiveness and sustainable project performance. The data indicated that organisations in Saudi Arabia do not use the element of effectiveness to improve the performance of their projects. Effectiveness comes when employees are highly motivated. If employees are not motivated, they are generally unable to serve customers satisfactorily. As depicted by administrative theory, motivation is a critical tool for improving the performance of employees. Motivation in an organisation is achieved through effective leadership skills, which project managers in Saudi organisations generally lack. Consequently, employees tend to be poorly led and motivated.

Employees can be motivated by remuneration, engagement in decision making processes, training and workshops. Saudi Arabia is faced with numerous challenges, both economic and social. Lack of better training, education, and business workshops limits the way employees feel about their work. Lack of employee motivation in Saudi organisations is one potent factor that interferes with the achievement of the modernisation agenda since it undermines employee performance. Therefore, motivation through training, education, workshops and effective leadership becomes critical in achieving clients' or customers' satisfaction. In satisfying customers, an organisation puts itself in a position to achieve project performance, including sustainability. However, Saudi organisations are not customer oriented.

Business performance. Similar results were found in relation to aspects of sustainable business performance. Factor loading coefficients for indicators of a sustainable business performance were greater than 0.7, the average variance of 0.668, and a Cronbach's alpha of 0.944, except for the factor loading coefficient for financial benefits. Therefore, there is a positive correlation between variables of a sustainable business performance, except the financial benefits. For the financial benefits indicator, there is a negative correlation with the latent variable for a sustainable business performance. It is now clear that Saudi organisations utilise factors for a sustainable business performance as depicted by the model except for the indicator for financial benefits.

Financial benefits. The value for the financial benefits was rated at 0.668, a level that is below the threshold of the PLS-SEM of greater or equal to +0.7. The results indicate that the projects being initiated by organisations in Saudi Arabia do not offer financial benefits for the organisations. Projects that have no financial benefit for the organisation do not achieve sustainability because the organisation ends up terminating the project. Failure to achieve financial benefits from a project means that there was no effective strategic project planning being exercised in Saudi organisations.

Strategic planning. The data indicate that Saudi organisations employ poor strategic management that is not efficient for generating financial benefits. Henry (2011) describes strategic management as the process of making decisions, conducting analysis, and taking appropriate actions for generating financial benefit. The author further points out that strategic management is a channel through which organisations, using corporate policies and the setting of priorities,

achieves better results for their customer base. Lack of effective leadership skills results in poor planning and achievement. Leaders develop and hone their planning skills through training and business workshops, which are limited in Saudi Arabia. Without strong leadership, projects are more likely to flounder and fail.

In summary. Considering the correlations between indicators of a sustainable project maturity model in Saudi organisations, it is clear that, despite the application of all indicators, project sustainability in the country is still an issue. The current study found that Saudi organisations conform to the model of sustainable project management maturity, even though there were slight deviations on client effectiveness and financial benefit indicators. Despite the employment of these elements of a sustainable project management maturity, Saudi projects have not yet achieved sustainability.

Even where all the indicators of the model were employed, the levels for each indicator did not promise future sustainability. Few organisations (below 11%) achieved the maximum level of sustainability. The reasons for the lack of sustainability is the lack of leadership skills, poor education and training, poor business representation, poor quality standards, inequality characteristics, and poor planning methods, among others. Therefore, sustainable project management maturity will play a vital role in assessing challenges facing Saudi Arabia as the nation attempts to modernise.

The Pearson's r coefficient was efficient in answering the test hypothesis regarding the relationship between economic, social, environmental, knowledge area, and business and project performance. In testing the hypothesis (H1) that there is a significant positive correlation between sustainable project management knowledge area (SPMKA) and the three dimensions of sustainable project management maturity (SPMM-En; SPMM-Ec, and SPMM-So), the study found that there was a strong positive correlation between SPMKA and the three dimensions SPMM-En; SPMM-Ec, and SPMM-So. According to Pearson's r coefficient, if the value of r is equal to or greater than +0.7, there is a higher positive relationship. Therefore, despite the fact that the projects were not sustainable in Saudi organisations, the project managers believed that if they were to apply the economic, social, and environmental features of project development, this would yield positive results.

The results therefore conform to the model of sustainability. When the same parameters were applied to H2 and H3, because the Pearson's r values were above +0.5, the results showed a strong relationship among the variables. Therefore, project managers in Saudi organisations believed that knowledge regarding sustainable project management tools and practice could improve project and business performance. There is conformity to the elements of the model for sustainable project management maturity.

The correlation between organisational culture and other dimensions of sustainable project management maturity were measured through the hide measurement model feature in *Smart-PLS* to determine the values of R2 (refer Figure 5.6). The values for R2 were represented by the symbol β. If the value of β was greater or equal to 0.65, the results showed that there was a strong correlation between variables. The relationship between the β coefficients of business performance and the dimensions of sustainable project management was greater than 0.65. Therefore, the results proved hypotheses H4 and H7 as significantly positively correlated. Therefore, Saudi projects conformed to the requirements of sustainable project management maturity. In addition, the performance levels being achieved so far on project development in Saudi Arabia were a result of the positive correlation between these variables.

Some unexpected results were found in terms of the relationship between organisational culture and sustainable project management maturity and sustainable business performance. The value of β between organisational culture and sustainable project management knowledge area was 0.169. In addition, the value of β between organisational culture and business performance was 0.369. This is evidence that in Saudi Arabia, there is no positive correlation between organisational culture and sustainable project management maturity. In addition, there was no significant positive correlation between organisational culture and sustainable business performance.

The study found that Saudi organisations fail to fully utilise elements of positive organisational cultures to improve business performance. The results also demonstrate that knowledge area in sustainable project management maturity has nothing to do with organisational culture, and that most project managers in Saudi organisations do not believe that organisational culture could yield positive outcomes for projects. Moreover, they do not believe that organisational culture can yield a positive business performance.

The two examples do not fulfil the requirements of the OCAI in terms of organisational culture. The six dimensions discussed in Chapter 3 in relation to the conceptual model of the OCAI showed that organisational culture is important in defining the success and the right leadership to be employed on project management. The indications are that Saudi organisations are failing to adopt aspects of organisational culture that would improve business performance and that knowledge of project sustainability is not consistent with the requirements of the proposed model, meaning that projects were unsustainable. The hypotheses were tested via the t-test method and were found significantly different from zero at 0.001 levels. This is a clear indication that the assessed variables were statistically true and significant.

A comparison analysis of the variables of sustainable project management maturity across the five regions in Saudi Arabia revealed that there was a slight significant difference in terms of the distribution of the mean. Organisations in the eastern region had used more economic resources for enhancing sustainable project development compared to other regions. There was no significant difference between northern and southern regions in terms of the utilisation of economic resources. Therefore, the organisations in the north and south of the country were deemed to have employed less expertise on matters relating to sustainable project management than the central and eastern regions.

Furthermore, relationships between latent variables and indicators across regions in Saudi Arabia revealed that there were no significance differences. The only difference was seen on the distribution and correlation of organisational culture and sustainable project management maturity (economic). The differences were measured in terms of F and P values. A small F and P value revealed significant differences at 0.05 level of significance. This was a clear demonstration that the model worked as an efficient tool for assessing the sustainability of project developments in Saudi Arabia. Therefore, the model is efficient and reliable for guiding Saudi organisations.

In conclusion, no sustainable practices and standards exist in Saudi Arabian organisations because the levels of applicability do not promise future continuity. Organisational culture and sustainable project management maturity do not rhyme across regions. The data revealed that organisational culture has been totally abandoned as a mechanism for managing and enhancing the economic dimensions of sustainable project management.

In addition, latent variables and indicators of sustainable project management maturity were utilised but at lower margins than could guarantee sustainability. Project managers believed that all elements being discussed by this study were necessary for the success of the project but they did not put those elements fully in place. Failure or the incomplete application of the latent variables of sustainable project management produces failure in the long-term reliability and continuity of sustainable project output.

Furthermore, Saudi organisations have no promising sustainable project management arrangements. The distribution of the sustainability levels across regions shows that Saudi Arabia on the whole lacks enough skills in terms of applying the latent variables to enhance project maturity. The model therefore discloses challenges that Saudi Arabia as a nation faces while trying to modernise and complete successfully in a globalised world. Moreover, as the results revealed, Saudi organisations have no future project continuity. Therefore, the model reveals the role that sustainable project management can play as part of the modernisation of Saudi Arabia.

Finally, functional, positive organisational culture was shown to be lacking in Saudi organisations, as disclosed by the study statistics. As described in the model, sustainable project maturity cannot be achieved in the absence of a strong and positive organisational culture. Introduction of effective and inclusive organisational cultures in Saudi organisations could be the most effective means of achieving sustainability. Improving organisational culture, being the heart of management, cannot be abandoned at any cost. Abandonment of elements of organisational culture leads to low motivation, poor performance and inadequate decision making. A modern organisational culture is a tool that should be developed in Saudi Arabian organisations in order for the country to achieve its goal of a prosperous, confident future.

6.2 Discussing the research gaps and literature review

One of the main purposes of research is to explore the gaps in knowledge and attempt to fill them. In Chapter 1, relevant gaps were presented. The following section discusses how some of those gaps were addressed as a result of this study. Moreover, a link between theories and elements of sustainable project maturity will be discussed in this section. The aim of the study was to develop a model that would assess project sustainability in Saudi organisations by examining several sectors of the economy.

Four theories for sustainable project management maturity were discussed in the literature review. More insight of the model was provided in Chapter 3. A link between the findings of the research and theories for sustainable project management maturity was established. The study used RBV theory to explain the link between resources and project management. RBV theory explains both tangible and intangible resources that, when combined appropriately, achieve sustainable project maturity (Jugdev, Mathur & Fung 2007). This study focussed on the selection of tangible and intangible resources as characteristics of sustainable project management and maturity. As noted by Almarri and Gardiner (2014), firms and organisations have found it hard to imitate the best resources in project management and sustainability. Imitability, according to Oakey involves the competitive superiority of a firm's selection of resources that enhance performance and organisational attributes for better project management and sustainability.

6.2.1 RBV theory

The findings from this study are consistent with RBV theory. To start with, the environmental dimension of sustainable project management maturity stresses the best selection of materials and production inputs. Production inputs involve the use of energy and water. As depicted by Barney, Ketchen and Wright (2011), organisations that achieve competitive advantage are those that make better selections and manage resources more effectively. At this level, the model for assessing Saudi organisations in terms of aspects of the environmental dimension relies heavily on RBV. Without better selection and sustainable environmental resources, project maturity cannot be achieved.

When an organisation can rely on resources that can be maintained and extracted for a long time, competitiveness is enhanced. In addition, application of renewable sources of energy and water recycling mechanisms promises future reliability for a project. Therefore, if there is an effective mechanism for preserving resources, energy and water by ensuring the environment is protected, there is a greater probability that projects will achieve sustainability. Management and selection of better resources enhances sustainability. The study shows that only 14.61% of Saudi organisations adhere to aspects of RBV in the environmental dimension. The aspects of the theory are not applicable to Saudi organisations.

RBV also applies to the selection of appropriate labour practices at every stage of project maturity, and a skilled labour force for project development exhibits the characteristics of RBV in terms of the wise selection of intangible resources. Without expert labour, organisations cannot achieve ambitious goals and objectives. The study revealed that most Saudi organisations are faced with a poorly educated and trained workforce, while RBV theory advocates employing expertise in order to achieve project sustainability though value addition.

Furthermore, a capable labour force in an organisation is a competitive advantage. However, the data from the study indicate a poor and inexperienced labour force, which explains why few of the surveyed organisations recorded a level 5 in project sustainability. Since few organisations have achieved level 5 on the test scale, the generalisation can been made that there is no project sustainability in Saudi organisations. RBV theory explains why the mature management of internally and externally sustainable projects is important in the modernisation agenda in Saudi Arabia.

6.2.2 Corporate social responsibility (CSR)

The study also used aspects of corporate social responsibility to explain the best social responsibilities that Saudi organisations can adopt in order to achieve sustainability. Corporate social responsibility has been used in the model to show connections between sustainable project maturity and social dimensions in Saudi organisations. Corporate social responsibility has been used to explain the health and safety, decent work, organisational learning, equal opportunity, human rights, society and customers, and anti-competitive behaviours in Saudi organisations. The study showed that only 12.35% of the organisations fully adhered to the features of corporate social responsibility.

In other words, the data from the survey strongly indicate that currently Saudi organisations, on the whole, are insufficiently attentive to the society in which they operate. They do not promote equal opportunity or observe the rights of the employees or the customers. In Saudi Arabia, equality is ignored, especially in terms of the role of women and the part they can play in the success of sustainable projects.

According to Crowther and Aras (2008), every member of the society has to benefit from the profitability of any organisation operating within its boundaries, and suffer no harm, i.e., they

must operate ethically. When organisations operate ethically in a society while improving livelihood of the community, the organisation wins people's support (Lock & Scott 2013). The most successful projects are those that have support from employees, stakeholders, customers, and the society. Unfortunately, there is little to no cooperation between organisations and the community in Saudi Arabia.

Equality, the observance of human rights and globalisation are targets of the modernisation agenda in the KSA. None of this can be achieved without the support of the organisations at work in the country. Most organisations, both from governmental and non-governmental institutions in Saudi Arabia have not yet revealed any of the desirable changes. On the contrary, the research data indicated that most organisations have paid little attention to matters of human rights, equality, workers' wellbeing or the health and safety of society in general.

Organisations benefitting from their activities in a society have a responsibility to do that society no harm. In Saudi, however, little care is taken to moderate noise, water or air pollution, which does not bode well for the modernisation agenda. Bad organisational behaviour leads to lack of community support, undermining the success and future sustainability of projects, because social responsibility and project sustainability are linked. Corporate social responsibility influences social elements for a sustainable project management maturity, a case that has been abandoned by most Saudi organisations.

6.2.3 Administrative theory

Administrative theory is an organisational design on which project management and sustainability are achieved. Administrative theory emphasises the participants' commitment to project management and sustainability. The theory emphasises the delegation of power through reliable channels of management, and broad administrative principles as guidelines for the rationalisation of organisational activities (Sapru 2013).

Administrative theory acts as avenue by which to assess organisational culture. The study relied upon the OCAI in describing the right aspects of organisational culture that lead to sustainable project management maturity. The OCAI was used to explain the connection between management style and organisational leadership, what held the organisation together, criteria for success, and strategic emphasis in Saudi organisations. The study showed that there was no significant relationship between the OCAI elements across Saudi organisations.

The survey data indicated that Saudi organisations display generally poor organisational culture, deviating from the requirements of the assessing OCAI elements. As noted by Kotter (2008), organisations that have effective interest in their stakeholders, employees and customers, perform better than others, as do those with effective communication and cooperation. Also, Doolen et al. (2003) deemed organisations that focus on organisational culture through effective communication and cooperation as successful.

As revealed by the Saudi Embassy (2009), the modernisation agenda in Saudi Arabia has focussed on plans that would build a modern economy, which would compete internationally in terms of consumer goods. Organisational culture of sustainable project maturity will play a vital role towards achieving competitiveness in consumer goods. This agenda cannot be reached if Saudi organisations do not exercise effective organisational cultures. The criteria for success are linked to leadership and strategic management. Saudi organisations currently lack a coherent delegation of duties due to lack of appropriate education and training. The OCAI proved efficient in assessing the organisational management and flow of power in Saudi organisations, and the survey data indicated that Saudi organisations are failing to use the OCAI aspects of sustainable project maturity and have no plan for a stable sustainable project development maturity.

6.2.4 Stakeholder theory

According to Chinyio and Olomolaiye (2009), the objective of stakeholder theory is to promote sustainability and project maturity through the correct collaboration between suppliers, shareholders, employees, customers and the community. This study applied stakeholder theory to assess sustainable project and business performance. Teamwork, clients, government, and community aspects were assessed in Saudi organisation, to measure whether those organisations adhered to the elements of stakeholder theory.

Through the framework of the theory, the researcher was able to investigate project and business performance in terms of efficiency and effectiveness. The theory was not fully put into practice in Saudi organisations because there was no method for measuring financial standards that were facilitated by the cooperation between stakeholders. As a result, elements such as teamwork and stakeholders' cooperation were assessed through success factors of the organisations in terms of commitment.

Collaboration between stakeholders enhances commitment to organisational goals and objectives, and is a necessary tool for achieving the modernisation agenda in Saudi Arabia. The study found, however, that the existing collaboration between stakeholders was not sufficient to meet market competitiveness. Only a handful of the surveyed organisations reached level 5 of the scale measuring the commitment magnitudes of the stakeholders. The results show that stakeholders' collaboration in Saudi Arabia was not sufficient to meet the standards of the sustainable project management maturity model, and that competitive production of consumer goods remains

6.2.5 Addressing gaps in research knowledge

Apart from answering the research questions, the purpose of this study was to observe the gaps in knowledge regarding the topic being investigated and attempt to fill tthem. In Chapter 1, three gaps were recognised. As a result of this study, these gaps were filled by:

- interconnecting strategic management and project management considering the three sustainable development dimensions (social, environmental and social)
- testing empirically the theories involved with statistical methods
- generating a more holistic model of sustainable development activities into project management in project-driven organisations.

These gaps have been discussed stepwise while explaining how this study has endeavoured to fill them.

Gap 1

Interconnecting strategic management and project management considering three sustainable development dimensions (social, environmental and social).

This study interconnected strategic management and project management theories to explain social, environmental, and economic dimensions that lead to sustainable project development.

Project management is the application of skills, techniques, knowledge and the necessary tools to ensure that projects have achieved the required standards (PMI 2013). These project management tools have long been used to oversee the success of projects by project managers.

Strategic management involves the way of managing activities at each level of project maturity (Mattie 2012).

Given the interconnectedness of strategic and project management, this study has investigated the achievement of sustainability in projects as a complex measure that should be addressed by more than one discipline. **Sustainability** has been defined in this instance as the long-term continual process of a project that should be addressed through the combination of strategic management tools and attributes of project management. Moreover, the study has viewed projects from economic, environmental and social points of view. A combination of theories from strategic management and project management can help achieve sustainable project developments.

In order to explain the relationship between project management and strategic management, four theories were used to develop a model for sustainable project management maturity. Stakeholder theory and resource base theory were linked to aspects of project management, while corporate social responsibility and administrative theory were used to explain strategic management. Project sustainability was described through the success of the four theories.

The collection of data across organisations in Saudi Arabia was inspired through critical questions developed from the four theories. Therefore, the integration of the four theories was used to develop a model for investigating sustainable project management maturity. These explanatory theories come from strategic management and project management disciplines, thereby showing the interconnection of two fields towards the development of a sustainable model.

Further correlations between social, economic, environmental, business and project performance, and organisational culture were examined. These correlations showed a positive significant relationship, while correlations between organisational culture and some aspects of sustainable project management showed negative relationships. The correlations between strategic management and project management were investigated by way of a test hypothesis. For example, there was a positive correlation between sustainable project management maturity (economic) and sustainable project management maturity (social). Project management (economic) comes from the project management discipline, while project management (social) comes from strategic management.

In order for organisations to realise financial benefits and evaluate investment opportunities, social aspects such as training and education, equal opportunities, human rights, health and safety, and decent work should be considered. Even though the levels of this relationship were not enough for sustainable project management in Saudi organisations, the study proved that elements of both are in place and are necessary to achieve the current level of sustainability in the country. Therefore, the correlation was necessary to explain the right standards for sustainability.

The correlation between organisational culture and sustainable project management maturity (economic) showed no significant correlation. Organisational culture is an aspect of strategic management while the economy is an aspect of project management. Even though there were no significant positive relationship between organisational culture and project management maturity (economic), the results did not invalidate the model under consideration. The reason is that the aim was not to develop the model from primary data, but to use the developed model through the critical review of literature to assess Saudi organisations. Therefore, the lack of significant positive correlation revealed that Saudi organisations do not use aspects of organisational culture to enhance the economic sustainability of project management maturity.

The negative results reveald that Saudi organisations did not use elements of organisational culture to improve the economic sustainability of projects. The results do not conform to what Walsh and Brief (2007) state regarding organisational culture, that administrative theory enhances management and improves the behaviour of employees as they work toward achieving organisational goals.

Saudi organisations have failed to achieve sustainability through what Yazici (2009) terms as a failure of quality management practices, and the inability or unwillingness to change organisational culture. Yazici further points out that failure to change an inadequate organisational culture leads to poor human relations, unresolved policy issues, lack of commitment and resistance to change. If Saudi organisations continue ignoring these aspects of organisational culture, project sustainability and continuity will be difficult to achieve.

Gap 2

Testing empirically the theories involved with statistical methods

This study has provided the empirical test of the administrative theory, RBV, CSR, and stakeholder theory in Saudi organisations. These tests were conducted in order to assess whether Saudi organisations conformed to the characteristics found in sustainable project management maturity. Advanced statistical methods were used to test the significance of these variables in Saudi organisations and how often and how well they were used. Variables from the theories were used to structure the questionnaire used to generate data for the study.

Administrative theory provides a scope to study organisational culture based on the OCAI. Administrative theory offers the tools to assesses whether Saudi organisations conform to the attributes of good leadership, better relations with employees, stakeholders, and customers, in order to stay focussed on the future reliability of projects and achieve competitiveness (Kotter 2008). This research used attributes of administrative theory to assess organisational culture through the OCAI. The aim was to determine how and when and at what levels Saudi organisations use elements of organisational culture to achieve sustainable project development.

Questions relating to organisational leadership, strategic emphases, ways of achieving success and what holds organisations together were tested statistically. The results showed low levels of effective organisational culture, a case that nullified the expected results of the test model. No significant positive relationship was realised.

The Organisational Culture Assessment Instrument (OCAI) is widely relied on by management researchers for the purposes of testing compatibility within an organisation (Berrio 2003). The OCAI drivers rely upon the competing values framework (CVF) as a model for testing the

significance of indicators for effective organisations. The OCAI drivers were used to assess employees' perceptions of Saudi organisations in terms of organisational performance, and for examining those aspects of organisational culture that are responsible for organisations achieving their goals and objectives, including sustainability.

The sustainability and competitiveness of projects relies upon the leadership skills and employee skills and motivation in place in an organisation. This research tested the OCAI drivers on Saudi organisations and recorded how they might differ across the country. The empirical results revealed no significance, thereby, deviating from the requirements of the test model. The empirical tests on administrative theory using the principles of the OCAI reveal future challenges that Saudi Arabia as a whole is likely to face in the quest to modernise.

The data showed that Saudi organisations have no future sustainability unless aspects of a more modern organisational culture are fully adopted, not only by organisations, but also by the entire nation. Without good governance, good relations between parties, and employee motivation, projects rarely achieve sustainability.

The **RBV theory** was empirically tested through the selection of better materials, energy, water and use-and-reuse of waste products. These drivers are important for an organisation that aims to achieve competitiveness and project sustainability. This research focussed on sustainability in terms of better selection and management of materials, selection of a better labour force, energy use, water and recycling of waste materials. These drivers fall under the RBV category of sustainable project development.

The results tested significant across Saudi organisations. Saudi organisations found these drivers necessary for achieving sustainability, but the levels of utilisation were low, with few organisations reaching the required level. The empirical test showed that, even when Saudi organisations fully applied the drivers for RBV, sustainability was not achieved due to low levels of conformity. RBV is a major factor to be considered when it comes to the right selection of resources for any project (Barney & Arikan 2001).

The resource of a skilled and motivated labour force is essential, as noted by RBV. Lack of education and training undermines organisational capacity in Saudi Arabia. As stated by Meisner

(2011), project management maturity is achieved through the combination of three elements that include knowledge, assessment and improvement. An organisation that focuses on project sustainability puts these elements into consideration from start-up to maturity. If an appropriately trained labour force is not selected, achievement of the three elements becomes impractical. Therefore, project sustainability relies upon appropriately trained personnel.

Corporate social responsibility emphasises an organisation's conformity to ethical standards and contribution to society. This study has provided an empirical test of CSR with consideration given to the conformity of Saudi organisations to social expectations and norms as an avenue for sustainable project management maturity. The test to determine the significance of CSR drivers on Saudi organisations involved gathering data related to health and safety, decent work, equality of opportunities, human rights, competitive behaviours and societal contributions. CSR theory explains why organisations that take the welfare of the community into consideration are generally able to take their projects into the f uture.

The study not only focussed on ethical standards and the organisation's contribution to the society, but also, how organisations distribute the available opportunity to the community. Health and safety factors go hand-in-hand with organisational measures related to the work environment and the surrounding community. These drivers proved efficient and significantly distributed across the regions of Saudi Arabia. The theory was practised in Saudi organisations, even though the levels were low. Conformity to CSR entails organisational practices and programs that impact citizens and employees (Rashid et al., 2012). As noted by McWilliams and Siegel (2001), organisations are becoming famous in the society through participation or for their efforts in addressing societal demands.

The responses to the questionnaire demonstrate that Saudi organisations have failed to reach project maturity due to poor employment practices and the fact that so much potential talent in the society is discouraged from working. The lack of equal opportunities in Saudi Arabia is a threat to the achievement of sustainable project maturity. For example, a critical literature review revealed that women in Saudi Arabia are not given employment opportunities equal to those provided for males.

Poor health and safety of employees and citizens results to poor performance and lack of support from the community. Poor working condition and pollution have already undermined the success of projects being initiated in the country. Failure to fully observe drivers for social responsibility as advocated by the model leads to the poor performance of projects. Therefore, CSR theory proved efficient in terms of achieving sustainable project management maturity.

Stakeholder theory focuses on collaboration between stakeholders, including employees, shareholders, customers, and the society. This study empirically tested shareholder theory by considering drivers, such as teamwork, clients, government, and community. These drivers were incorporated in the study questionnaire. The aim was to assess whether these drivers were evident in project management and development in Saudi organisations. Even though the test results revealed positive correlations, few organisations had achieved the maximum level of utilisation. The theory proved inefficient in Saudi organisations.

This study focused on the collaboration between employees, shareholders, and the management team of a project, along with clients, government and community cooperation with the organisation. Stakeholder theory is concerned with the interests, needs and viewpoints of key stakeholders in an organisation and how these are met (Friedman and Miles 2006). According to Friedman (2006), project managers ought to employ the principles of stakeholder theory to bring stakeholders closer to the project management in order to enhance the possibility of achieving the strategic goals of the project, including sustainability.

The theory, therefore, is critical for the measurement of performance and future reliability with support from stakeholders. In most cases, organisations view society as an asset for securing their market position. Without loyal customers, product marketing becomes difficult. Therefore, creating loyalty through better services and quality products becomes a necessary marketing tool. The drivers for stakeholder theory determine whether the projects will have support necessary to guarantee sustainability. These drivers for stakeholder theory were proved efficient for sustainability of project development.

Gap 3

Generating a more holistic model of sustainable development activities into project management.

The sustainable project management maturity model was generated through the combination of project management and strategic management theories. RBV, CSR, administrative and stakeholder theories were used to support the model. In addition, the relationships between economic, social, environmental, business and project performance were used as latent variables in the development of the model. Each latent variable had several indicators for supporting the model.

The study model was used to assess sustainability measures in Saudi organisations. Perceptions of sustainability were indicated on a Likert scale of level 1 to 5. Seven test hypotheses were developed to explain the relationship between latent variables, and the relationship between latent variables and their indicators. Correlation between indicators and latent variables proved the model efficient. Lack of correlation between a single pair revealed a negative correlation. The relationship between these variables was tested and discussed in Chapters 5 and 6. With the model in place, it was easier to assess sustainability levels in Saudi Arabian organisations. The sustainability levels have been discussed in detail in this study.

6.3 Theoretical and practical implications

This section introduces suggestions about the applicability of the results of this study. These implications are divided into two main categories, theoretical and practical. Practical implications are divided into two groups, implications for the management of governmental organisations and non-governmental organisations.

6.3.1 Theoretical implications (TI)

This section attempts to draw out the theoretical implications of this study for future researchers. In order to discuss these implications in detail, they have been divided into nine subsections, as follows:

TI.1 measurement of RBV

TI.2 validation of RBV theory

TI.3 measurement of CSR

TI.4 validation of CSR

TI.5 measurement of stakeholders

TI.6 validation of stakeholders theory

TI.7 measurement of administrative criteria

TI.8 validation of administrative theory

TI.9 all previous theories as complementary theories.

TI.1: Measurement of RBV. RBV theories are influential in the field of project management. The theory asserts that competitive projects rely upon the best selection of tangible and intangible resources. Sustainability of projects is achieved when organisations manage the available resources by employing the best selection of resources. The right selection of resources includes ensuring resources are sufficient to achieve its goals, along with managing the available resources at the right levels for a long period. Selection of the right labour force influences the efficient utilisation of resources.

The model presented in this study can be used to measure the right level of materials selected in order to promote continuity. Firms and organisations compete in the market in terms of the quality and time that the organisation will be operational. In most cases, an organisation that diversifies its resources emerges competitive. For example, most organisations have both renewable and non-renewable sources of energy. This type of organisation is able to promote continuity, which an organisation that depends only on non-renewable energy sources cannot do. This is also true for organisations with recycling plants, which promise greater continuity than plants that do no recycle. Therefore, selection of the right resources in this study involves how organisations manage available resources.

Resources for project development require a great degree of expertise. RBV advises on the best selection of labour force and the required amount to be injected in a project at each stage of maturity. A highly trained labour force is effective in the management of resources and the right amount of materials to be used on a project as compared to untrained labour force.

TI.2: Validation of the RBV theory . The next implication is the validation of RBV theory. The validation of RBV theory is complex because it depends on the results and conclusions made by researchers. The theory can either be supported or negated by the findings. This study is based on a model that had been developed through critical literature review, which found that RBV is a critical component of sustainable project management maturity.

In order to prove the efficiency of the model in relation to project management, primary data were collected and it was found that Saudi organisations applied the attributes of RBV theory even though the statistical margins did not match the right levels. This study relied upon right selection of both tangible and intangible resources that are important for validation and generalisation of the results.

TI.3: Measurement of CSR . Corporate social responsibility has long been a component of good strategic management. Most organisations, especially multinational corporations, have employed attributes of CSR to achieve in their targeted markets. The aim of CSR is to win the community's support. Support from outside the organisation for the organisation is more likely to be achieved in the community if the business operates ethically and according to community standards while contributing to community wellbeing.

The model described in this study was used to measure the level of support that organisations can expect to receive from the community in their quest for achieving sustainable projects. CSR can be measured through the proposed model in terms of customer base and the financial benefits gained from the project. The model presented in this research could be used to measure the best social programs initiated by organisations to win the greatest support.

Questions such as: Which programs benefit society the most? Which social programs attract more people? Which programs gain less support? guide an organisation in determining the best social programs that an organisation can get involved with in order to gain the most support from the society. This can involve programs that support the customer base or are aimed at achieving sustainability. Social support assists in achieving sustainability, if that is the business goal. Therefore, CSR is a measure of levels of support and the customer base through the initiation of social programs by the organisation.

TI.4: Validation of CSR theory. In most cases, validation of CSR depends on the goals of the project and the objectives of the organisation. Sometimes, the theory can either be proved as efficient or not, depending on types of social programs. This study was based on the model for sustainable project management maturity. It has been proved that an organisation which considers the social attributes of the community achieves the sustainability of its projects. Sustainability is not assumed to be the effort of the organisation alone, but the effort of the whole community. Therefore, organisations should come up with social programs that tend to attract the most support from the society.

The model asserts that firm commitment to the community in which the project is initiated enables the organisation to win the most support compared to organisations that show no concern to the society. This study proved that CSR is a reliable measure of support for the achievement of sustainable project development and maturity.

TI.5: Measurement of stakeholder theory. Stakeholder theory has for a long time been used to measure business performance. The theory asserts that, for better achievement of organisational goals and objectives, there must be cooperation between key stakeholders. In project management, stakeholder theory is a necessary tool for enhancing sustainability. If there is no cooperation between stakeholders, the planning, financing and decision making process becomes difficult. A sustainable project management maturity is achieved when there is better planning and reliable means of financing.

Shareholders are the major financiers of projects. If there is no cooperation between shareholders and the organisation, financing a project becomes impractical. Furthermore, if there is no cooperation between employees and the management, planning and decision making are confounded by the weakness in employee-management relationships. This study has emphasised better cooperation among stakeholders in order to achieve sustainability.

The model for sustainable project management found stakeholder theory necessary for project maturity. The principles of stakeholder theory can be used to inform prediction of future financing mechanisms and adherence to the enacted planning decisions on a project. The measurement of the theory depends on the results of the research.

The measurement guided by the theory also depends on the type of project ownership. This study asserts that the sustainability of projects depends on the efforts of the stakeholders. Therefore, the activities associated with stakeholder theory can be measured in terms of willingness to finance the project. This measure is got from the cooperation incumbent on shareholders. Also, the realisation of the theory can be measured in terms of employees' adherence to the organisation's goals and objectives. The manner in which employees adapt to changes in the management can be used to measure the reliability of the theory. This study found that project financing and achievement of sustainable goals and objectives depends on cooperation among stakeholders.

TI.6: Validation of stakeholder theory. Validation of stakeholder theory can be achieved in two ways – examining financing capabilities and observing adaptation to change within the organisation. The model found that project maturity teamwork, financing mechanism and the competitive position of projects were necessary for the validation of the model. Project performance and business effectiveness depend on the cooperation among stakeholders. Teamwork ensures that employees work in togetherness while being motivated to achieve the defined goals and objectives. Teamwork helps organisations remain competitive because employees are flexible and more able to adapt to changes developed through planning. Therefore, the theory was validated by the model of sustainability and project maturity, which depends on cooperation among stakeholders.

TI.7: Measurement of administrative theory. Administrative theory is a wide area of study that can be used to assess organisational culture. The measure depends on the elements of organisational culture being assessed. Administrative theory emphasises the leadership skills necessary for an organisation to organise and delegate duties and the flow of power. This study used the ACAI drivers to measure the organisational culture of Saudi organisations. The measurement of administrative theory in this study depended on the conformity of organisations to the ACAI drivers. Features of administrative theory, such as organisational leadership, criteria for success, organisational glue, and strategies emphasised were used to test the theory. The theory asserts that reliable channels for delegation of power within an organisation attract a positive response in terms of project management and sustainability.

Sustainability is a goal that requires commitment from employees. Effective leadership encourages both commitment and motivation, and motivated staff work with passion to meet the set goals and objectives. Meeting these goals and objectives requires delegating power and decision making to other managers and to staff.

The measurement of the successful application of administrative theory depends on the technicality of the project. This study proposes that sustainable project management maturity depends on the tested OCAI drivers of organisational culture. An organisation that realises sustainability for its project development uses organisational culture through effective

communication and cooperation (Doolen et al., 2003). Therefore, the measurement of administrative theory in this study depends on whether organisations conform or deviate from the OCAI drivers for achieving effective organisational culture.

TI.8: Validation of administrative theory. There is no known validation of administrative theory. Validation of the theory depends on the drivers for testing organisational culture. Also, the validation depends on the results got from the study. The model in this study asserts that OCAI drivers are necessary for achieving effective organisational culture for sustainable project management and maturity. Effective leadership and attributes that holds organisations together encourage employees' motivation. Sustainability and project maturity are achieved through effective decisions and planning mechanisms. Decision making and planning mechanisms work well when there is effective communication and delegation of power. Saudi organisations have failed to achieve sustainability due to poor organisational culture; therefore, the model proves the theory as valid and efficient.

6.3.2 Practical and managerial implications of the outcomes of the study

This section discusses the practical implications. Project sustainability is the focus of every government and organisation. Most projects depend on the management of finite resources. In addition, sustainability of projects is complex and depends on several attributes from the project management and strategic management disciplines. Project sustainability requires the combined efforts of the government, organisations and the community, in order to enhance continuity. Failure of one effort leads to the failure of others in the project management. Competition to achieve project sustainability is stiff, and requires effective planning of social, economic and environmental aspects of project development.

First practical implication

The first practical implication is for the organisation's management strategies. A selection of better economic resources and the management of social and environmental aspects of project development require the combination of knowledge from the project management and strategic management fields. The best tangible and intangible resources should be selected for successful project development. The competitiveness and continuity of projects depends on the available resources, and mechanisms for managing and diversifying resources are essential for success. In

addition, cooperation among stakeholders enables the management to fully implement new policies and decisions using the available financing mechanism. Profitability and competitiveness depend on the cooperation existing in an organisation. Thus, managerial flexibility determines the organisation's financial advantages, enhanced project reporting and realisation of the available investment opportunity.

Second implication for the organisation's managerial position

The second implication for the organisation's managerial position is related to strategic management. Management of the social environment should be viewed as a mechanism for achieving sustainability and project maturity. Organisations planning to initiate a project should not view maturity as a single dimension, such as economics. Instead, maturity of sustainable projects should also be viewed from a social perspective. Projects that emerge as competitive in the market are those managed by organisations that consider external support as a contributing factor.

In most cases, project maturity relies upon the cooperation and support from the community. A good reputation comes through support from customers and the society. Enhancing the equality of job opportunities, observance of human rights, maintenance of the health and safety of employees and the society helps in creating the reputation of the organisation. Considering the social needs of the community is the role of the organisation, which will also help to expand its customer base. The larger the customer base and the greater the contribution of the organisation to the community, the better the financial position of the organisation. Organisations whose projects have the highest support from the community emerge competitive. In addition, sustainability and project maturity are achieved easily because of the extended support. Therefore, social responsibility should be considered to be a strategic tool for achieving project maturity and enhancing project continuity.

Third implication of the research results for management

The third implication of the research results for the management of organisations relates to organisational culture. An effective organisational culture contributes to competitiveness and project continuity. Teamwork helps employees conform to the organisation's goals and objectives. Project managers should view the success of a project as the result of the combined

effort of the entire organisation. Teamwork does not come through authoritative leadership, but comes through collaborative efforts in the workplace. Project managers should enhance and promote their employees' skills and abilities to plan and make decisions in their areas of expertise. Sharing of information across the organisation keeps everyone updated, and no one is left behind. Sharing of information should be the organisational glue holding employees together for effective execution of duties and meeting of targets. Organisations that emerge competitive in the market consider organisational culture to be a stepping stone for success. Thus, organisational culture should be viewed as a tool for assessing the organisation's ability to manage projects up to maturity.

Practical implications for governments

The model described in this study did not incorporate the government's and organisations' interactions as ways in which sustainable project management maturity might be achieved. Some aspects of the model have no clear ways of linking the government and organisational roles in project development. Features such as organisational culture and social responsibility are organisational attributes with which the government cannot interfere.

However, some aspects of the model could be enhanced through government intervention. For example, issues highlighted by this study involve challenges facing Saudi organisations, which act as a barrier to the achievement of sustainable project management maturity and the realisation of the modernisation agenda. The quest to achieve environmental project policies and quality standards should be enhanced by the government. The government has the power to establish environmental policies, such as those regulating waste management and pollution, that every organisation should adhere to for sustainable project development.

Furthermore, the government has the power to set quality standards that every organisation should subscribe to in order to enhance quality of products and services. However, the data from the investigation reported here revealed that most organisations in Saudi Arabia do not subscribe to laws of quality standards. This means that the government of Saudi Arabia is not sufficiently concerned about the quality being exercised on projects in the country. Thorough investigation by a governmental body is required in order to maintain the right standards of operation and ensure that organisations adhere to the environmental standards required for sustainability.

The other implication for the government is that the social standards necessary for a project's development must be encouraged and supported. Issues of gender equality and equal opportunities should be a fight of the government concerned. For example, lack of equality in Saudi organisations results from the societal perspectives on women. Saudi women are not allowed to drive cars, a case that has been extended in the workplace environment. Women are given few chances to engage in higher duties in most Saudi organisations. This undermines the effort to achieve mature management of internally and externally sustainable projects. The government also has the responsibility for ensuring organisations offer good working conditions and observe the health and safety of employees. If they were to engage more with communities and staff, employees and the community would be encouraged to be part of the initiated project developments.

Moreover, it has been witnessed by the study that most projects in Saudi Arabia fail to achieve sustainability due to poor education and training. The government of Saudi Arabia is technically in a position to ensure the quality education of its citizens, although there would be cultural barriers to overcome. Achievements of the modernisation agenda require an educated society, however, with knowledge of maths, science and ethics. The government should encourage quality education that would enable the country to reach sustainability levels. Training programs and project workshops should be the responsibility of the government which encourages the organisations to participate. The government of Saudi Arabia should consider project management maturity as an avenue for achieving modernisation.

6.4 Research limitations

This section discusses the limitations faced by this study. These limitations include:

- The generalisations that arose from the research had to be limited to the context of Saudi Arabia.
- There was missing data as a result of unanswered questions.
- There is a possibility that the findings of this study were limited by a very high level of response bias.

6.4.1 Generalisations limited to the context of Saudi Arabia

The first limitation is the generalisation of data in the context of Saudi Arabia. Feedback from sample population taken from different locations in Saudi Arabia were not equal. Few respondents from northern area of Saudi Arabia responded to the study questions compared to respondents from the western part of Saudi Arabia. Therefore, generalisation of the results should be carefully examined.

6.4.2 Missing data

The second limitation is related to missing data. Some respondents failed to respond to questions relating to financial standards and the health and safety of employees. Also, the missing data was a consequence of the fact that most organisations did not undertake all the activities being examined. The study population consisted of 4,948 organisations, but only 664 responses were accepted. The questions that were answered partially were eliminated and only 664 responses were proved efficient as they answered more than 80% of the questions being assessed. Referring from the earlier studies being conducted, it was suggested that 94 responses were enough and adequate for generalisation.

6.4.3 Response bias

There is a possibility that the findings of this study were limited by a very high level of response bias, explaining why there was no evidence for significant differences between sustainable project management maturity practices across the five geographic regions of Saudi Arabia, or between the different types of project or organisation. Response bias is a general term for a wide range of issues that draw participants away from accurate or truthful answers.

Response bias is very prevalent in research that involves collecting data using self-reporting techniques. Response bias creates a high level of variance in the data, so that it is very difficult to compare the responses between defined groups of participants (Paulhus 1991). Consequently, a consideration of the possible impact of response bias is essential to the interpretation of the results of this study.

Social desirability bias may have contaminated the data. This refers to the tendency of many respondents in business and other settings to answer questionnaire items falsely, in a manner that makes themselves and/or their organisations look good, rather than to provide accurate and

truthful answers. Social desirability bias usually takes the form of respondents consistently over-reporting 'good' behaviour or events and under-reporting or evading 'bad' behaviour or events (Holtgraves 2004; Thompson & Phua 2005). Many respondents in business settings may deliberately emphasise desirable issues, and purposely neglect adverse issues, because they want to safeguard their jobs or protect the interests of their organisation (Zikmund et al. 2010).

One of the main limitations of this study was that no attempt was made to control acquiescent response bias or extreme response bias. Acquiescent response bias is the tendency of many respondents to give positive, agreeable, or optimistic answers to most questionnaire items, irrespective of whether or not they actually do agree with the item in reality. They just respond to the items mindlessly, without weighing up the options.

Extreme response bias could also be a limitation. This refers to the propensity of many respondents to consistently provide polarised answer patterns to many questionnaire items (i.e., at one end of the item scale or the other). Acquiescent and extreme response bias are communication styles that are known to be very prevalent among Arab respondents in the Middle East (Baron-Epel et al. 2010; Smith 2004).

The respondents who participated in this study could potentially have provided biased answers for many other reasons, including:

- They are naturally very polite and respectful people, who prefer to avoid any type of argument or social risk-taking, so they provide responses which they think will gratify the researcher.
- They perceive themselves to be of lower educational and/or social status than the researcher, and so they defer to authority by endorsing what they think the researcher believes to be true.
- They do not respond to the items according to their own individual perceptions, but follow the collective perceptions of their own group or culture
- They are too busy, distracted, or bored to provide responses that reflect their own individual perceptions, so they agree to all of the items (Paulhus 1991).

It must also be taken into consideration that the GLOBE survey of 17,300 business managers at 951 companies in 62 countries concluded that the characteristics of managers are embedded contextually in the organisational norms, values, and beliefs of their own culture (House, et al., 2004). The GLOBE survey indicates that many Arab businessmen tend to provide biased responses to certain types of questionnaire item, in order to emphasise their self-protective traits, including self-centredness, status-consciousness, face-saving, and reliance on formal procedures. The responses of Arab businessmen to questionnaires also reflect Hofstede's (2011) cultural dimensions of the Arab world which include high levels of 'power distance' (the extent to which many Arabs accept that power is distributed unequally) and 'uncertainty avoidance' (the extent to which many Arabs are intolerant of insecurity and ambiguity). This creates a situation where many Arab managers may bias their questionnaire responses in order to endorse their power and authority, to reinforce their leadership and control, and to avoid uncertainty.

The questionnaire administered in this study should ideally have been interspersed with conflicting items that were specifically designed to measure and eliminate response bias. Most modern social scientists attempt to measure response bias when administering questionnaires (Babbie 2013), but it was neglected in this study. The standard solution to response bias is to include items that have negated counterparts. For example, 65% of the respondents in this study scored 4 (high) or 5 (very high) for the item 'To what extent are you familiar with the concept of sustainable development'? This could be an example of social desirability bias and/or extreme response bias. The item could have been split into two contradictory items. 'I am not familiar with the concept of sustainable development'? and 'I am familiar with the concept of sustainable development'? Using a 5-point item response format, ranging from 1 (strongly disagree) to 5 (strongly agree). Some respondents may have consistently agreed with such pairs of conflicting items, even though such responses reflect lies rather than truth, and were clearly providing very biased data. Such responses can be deleted from the statistical analysis to avoid contaminating the results with response bias (Paulhus 1991).

Chapter Seven

Conclusion and recommendations

The first part of this chapter reflects on the conclusions of this study, and presents a summative statement of the study. Secondly, the chapter offers recommendations for future directions.

7.1 Conclusion

In a modern society, governmental and non-governmental organisations come up with different projects and activities designed and managed to yield new services, products and results. Ideally, a project achieves positive results as it matures over an estimated period of time, and the goals and objectives of the project are met.

There are many benefits to be enjoyed as a project matures. However, maturity is not always guaranteed, and a major challenge of project planners and developers is how to bring projects to fruition and sustain them over time. To deal with these challenges, project management has emerged as a discipline for managing project developments. The discipline involves the application of skills, knowledge and techniques for enhancing the maturing of the project. Project sustainability involves the ability of the project to remain operational during its estimated life cycle while achieving positive results, benefits and services. Sustainability is defined in the context of the social, economic and environmental outcomes of the project. Many organisations and governments have failed to achieve long-term outcomes with their projects, which prove unsustainable for a variety of complex reasons.

This study was inspired by the current situation in Saudi Arabia. Saudi organisations have failed to achieve project sustainability due to poor management of economic, social, and environmental resources. The study highlighted the fact that in Saudi Arabia project sustainability is a function of both project and strategic management. The combination of the two disciplines defines project sustainability in a wider context.

7.1.1 Sustainable project management maturity model

Due to the lack of project sustainability achieved by Saudi organisations, the study found that it was necessary to develop a model that could be used to assess, scrutinise, define, and offer recommendations to Saudi organisations on matters regarding project sustainability and maturity.

The sustainable project management maturity model combines both project management and strategic management fields to explain aspects of project continuity. In addition, four theories from the two disciplines were selected to reinforce the model.

The aim of the model was to assess the current challenges facing Saudi organisations in the areas of project management and project sustainability. The model variables were tested across Saudi Arabia in organisations that practise or have initiated projects. Finally, the model is used to explain the benefits that Saudi Arabia as a nation would reap if there were sustainable project maturity.

The study found that Saudi organisations have no mature management of internally and externally sustainable projects. Also, the existing projects promise no future continuity due to failure to adhere to the indicators of the model used in this research. The study found that Saudi organisations lack the connection between project management and sustainable development. Also, the organisations lacked the connection between project stakeholders and project management. In addition, the connection between strategic management and organisational culture in Saudi organisations was lacking.

As explained earlier, this study used four theories – CSR, RBV, stakeholder, and administrative – to develop the lens through which organisational activity was observed and interpreted. Corporate social responsibility is regarded as a strategic approach by which organisations participate in the wellbeing of communities, as well as operating ethically through observance of society's values and norms. CSR is perceived necessary for project development and maturity. When organisations participate in building the society in which the project is initiated, those organisations realise the highest support and customer base.

7.1.2 The four base theories

Corporate social responsibility. Corporate social responsibility has been used as a marketing tool by many multinationals. Despite the doubts expressed by many scholars regarding the credibility of CSR, it has helped many organisations win a lot of customers. As discussed earlier, the aim of every project is to achieve the targeted goals by either producing a unique product, service or benefit. In order to achieve these benefits and product support, organisations have to reach potential consumers. Developing programs for benefiting the society is a way to get known.

For the purposes of this study, CSR was used as a channel for assessing whether Saudi organisations applied the principles of the theory to gain support from the community.

The resource based view. The RBV is based on a selection of best resources and better combinations of resources for sustainable project management maturity to outperform and create sustainable performance. The theory asserts that organisations that diversify their resources emerge competitive and achieve the sustainability of their projects. The theory is based upon the selection of both tangible and intangible resources for project development, noting that a diversity of tangible resources enhances stability. Intangible resources, on the other hand, involve that combination of skills and aptitudes that can add value to the project.

For the purposes of the current study, the combination of project materials, energy utilisation, water, waste management and labour force were used as tangible and intangible resources. It was acknowledged that a trained labour force on project management adds value on projects and represents the selection of the best intangible resource. Other resources such as materials, energy, water and waste management represents the tangible resources. The theory asserts that organisations that apply better combination and management of resources achieves project continuity and maturity.

Stakeholder theory. Stakeholder theory focuses on the cooperation between stakeholders in the project to be managed. The success of projects depends on cooperation between employees, the community, shareholders and the management. The project will not mature and be sustained over time if employees are not cooperative and flexible and shareholders cooperative.

For the purposes of this study, the used of stakeholder theory focussed on the elements of teamwork, financing mechanisms, and competitive position. By applying the model to the data, it was found that organisations that achieve project maturity have better teamwork, financing mechanisms and are quicker to achieve competitiveness. It was also found that Saudi organisations did not utilise these drivers to the maximum to achieve project maturity.

Administrative theory. Administrative theory, on the other hand, focuses on leadership skills and flow of power necessary for sustainable project development. Administrative theory asserts that, for a project to achieve sustainability, employees must be motivated. Motivation comes through

effective leadership skills and communication within the organisation. Decision making and better planning at every stage of project maturity require effective communication and flexibility to adjust to any changes affecting the development of the project.

7.1.3 Organisational culture

For the purposes of this study, Organisational Culture Assessment Instrument (OCAI) drivers were used to measure organisational culture. Organisational culture theory asserts that organisations that achieve the targeted goals have effective organisational culture. The model used organisational leadership, criteria for success, organisational glue, and strategy emphasises as the parameters against which the cultures of the respondents organisation could be tested. This test revealed that the concept of a positive, motivating organisational culture was not one familiar to Saudi managers and employees. Respondents on the whole were dissatisfied with the organisational culture of their organisations.

The findings revealed that there was no strongly negative correlation between organisational culture and sustainable project management maturity in Saudi organisations. That is, the respondents to the questionnaire indicated that the culture in their firms was not conducive to developing sustainable projects. Leadership skills were not in evidence, nor were they taught. In addition, attributes that hold an organisation together, such as effective communication skills, were hardly exercised in Saudi Arabian organisations.

Organisational culture is an important tool in fostering the introduction of sustainability ideas into project management. It entirely reflects the manner in which tasks and goals are established and realised (Abbett, Coldham & Whisnant 2010). Above all, organisational culture informs the role of project managers when they are guiding their subordinates towards the set goals. The process for achieving project maturity requires frequent planning and the ability and willingness to change decisions due to various challenges that affect its sustainability. Organisational culture, therefore, explains the driving forces in response to project threats and opportunities.

Since management relies upon decisions made by experts in project management, Abbett et al. (2010) argue that organisational culture could influence the selection of better experts according to their skills. Furthermore, organisational culture is most effective when everyone's views and

suggestions are carefully considered when making recommendation for the progress of the project. In such a manner, project managers get an opportunity to nurture talents and build leadership within an organisation.

Saudi organisations need to build a strong culture where there is effective flow of information and sharing of ideas in order to achieve project maturity. It is through the sharing of ideas that success is realised. Roles and responsibilities should be distributed equally among men and women working in Saudi organisations in order to create a culture that acknowledges and makes use of everyone's talents and abilities. Project success depends on the behaviours, attitudes, and performance inherent in workplace culture.

Individuals can either tarnish or shape culture within an organisation, depending on how employees relate to one another or attach to the goals of the organisation (Yazici 2009). Culture explains the way things are done in an organisation. Saudi organisations can achieve sustainability of their projects if some of the current beliefs and attitudes are abolished. As stated by Fong and Kwok (2009), organisational culture can be affected by beliefs, assumptions, traditions, norms, attitudes, behaviours and expectations within a geographic region, as well as religion, age, gender, class, shared cultural beliefs and education, among others.

As discussed in the literature, Saudi Arabia is guided by the Islamic laws that stress the importance of Islamic religion. This culture has common beliefs that extend their boundaries into the workplace. For example, traditions concerning women undermine their potential and ability to participate in project management. In addition, there is no equality in the workplace, regardless of gender, and the country has no enhanced education and training that would inspire organisations to develop a more positive culture.

Saudi organisations could improve the performance of their projects by breaking these cultural boundaries. It is the responsibility of Saudi organisations to hold seminars and business dialogues with citizens in order to inspire students to take courses that match current job markets. A good example can be found in the United States where learning institutions encourage employers and project managers to visit their institutions to discuss the trends in job markets. By doing this, students are guided to take courses that match their future dreams. Leadership skills, employees'

ethics and aspects of organisational culture are discussed to guide and mould students before they join the job market. Similar strategies and procedures should be practised in Saudi Arabia in order to raise the standard of organisational culture.

The OPM3 model. Organisational culture and project management can better be explained through the OPM3 model. The model stresses the application of knowledge, assessment, and improvement. The model explains attributes related to group projects, such as organisational programs and large-scale organisational project portfolios being attempted in Saudi Arabia. According to Constantinescu and Iacob (2007), the OPM3 can better explain project maturity levels based on competencies and capabilities to be found in an organisation. This is a clear indication that the model emphasises the importance of organisational culture in the achievement of project maturity. Features such as project planning, strategies, management, and the application of better practices are all aspects of organisational culture. The study found that the elements of OPM3 are rarely practised in Saudi Arabia, hence, undermining the maturity of projects being initiated. To this end, organisation culture plays a vital role in fostering the introduction of sustainability ideas into project management in Saudi Arabia.

A variety of results showed that there was a positive relationship between latent variables – economic, social, environmental, knowledge area, business and project performance. These latent variables were discussed in the literature and formed the components of the sustainable project management maturity. When the model was tested against Saudi organisations, few organisations had reached level 5 of sustainability. The findings shows that even though there is significant positive correlation among these variables, the correct standard was not met, leading to a conclusion that Saudi organisations have no sustainable development projects.

The majority of organisations were sitting at level 3 of the sustainability measurement scale. The measurement scale was taken from project management maturity. Project management maturity provides the right measurement and benchmark that allows mapping of strategies necessary for organisational improvements (Susilawati & Al-Surf 2011). Level 3 being the maximum reached by the majority of organisations in Saudi Arabia reveals that no formal organisational focus on project management performance is being conducted. An organisation rated below level 3 is one in which there are no established project management practices being conducted, or project

management implementation is carried out inconsistently at levels that cannot promise the maturity of projects (Wootton & Andrew 2006). The low levels of sustainability in the country promise no successful future developments, totally blocking modernisation.

Moreover, a variety of results showed that many Saudi organisations do not include sustainability as part of the project management process. This was revealed by the poor methodologies and competencies being employed on project management. For example, low levels of project integration management, project human resource, project stakeholders' management, project communication management, and project costs were found in most organisations. This clearly shows that the levels of sustainable project management tools were not fully incorporated in the organisations.

Despite many project managers revealing that they have a reasonable amount of knowledge of project management tools and techniques, that knowledge was not appropriately used in practice. For example, the financial project evaluation reports that are necessary for project development consistently fail to meet the correct standards. In addition, most respondents indicated that their organisations did not have a plan for material selection at every stage of project development. Moreover, environmental progress reports dealing with waste management, energy consumption, water and environmental issues barely existed in most organisations.

Low levels of sustainability can also be explained in terms of education and training, health and safety, social responsibility, and labour practices. The data showed that project training levels were low in most organisations, and that social responsibility, health and safety measures were not fully observed. These factors explain why Saudi organisations exhibit low levels of the social characteristics necessary for project maturity. Teamwork consensus and employee participation were not effectively exercised, according to the respondents, who also found that mentoring and nurturing talent for innovation in project management were largely overlooked

In essence, the data strongly indicated that Saudi organisations are not currently achieving very highly on the sustainable development indicators developed by Silvius (2012) (Chapter 3). In addition, there is no alternative combination of resources with other indicators of sustainable project development. As Singh et al. (2009) indicate, the effective securing and application of

resources, along with the incorporation of other indicators of sustainable projects, such as an actively motivated workforce, enhance sustainability and stakeholder satisfaction. Few, if any of the requirements for sustainable project development are observed in Saudi organisations.

Low levels of sustainability in Saudi organisations are caused not just by local business decisions based in the social and economic traditions common in the kingdom, but also result from global forces and the Saudi way of dealing with them. As indicated by Freeman (2010), modern Saudi Arabia is characterised by the rapid introduction of commercial architecture, rapid and high volumes of construction, and a great many product and brand innovations. Such rapid change allows a country little time to adjust unless the bulk of its population can become motivated and active in the changes.

In Saudi Arabia, modernisation is undermined by the poor management of people, resources and finance. There are low innovation skills, ICT, quality of education and insufficient development of banking in Saudi Arabia, all major hurdles to the achievement of sustainable projects (NCC) 2009). When Mitra and Tan (2012) conducted a study on the sustainability of project development in Saudi construction companies, they found that large construction companies operated in the absence of sustainability, which resulted to work overloads, greater expenditures, and overlap of responsibilities.

Poor project planning and lack of financial reports on the progress of projects resulted in poor project sustainability, as the lack of project identification, analysis, creativity and evaluation. These results were consistent with the findings of previous studies, such as Al-Yami and Price (2006). Moreover, the findings reveal that Saudi project managers lack entrepreneurial skill and are more risk averse than better trained, better educated project developers and managers in countries with more modern economies and open societies. Lack of entrepreneurial skills and unwillingness to take risks undermine innovation and the adoption of sustainable project development in Saudi Arabia. Due to the lack of quality standards in the country, most Saudi organisations focus on cost reduction and do not care about value enhancement.

Adopting a mature approach to project management and sustainable projects. The adoption of a more mature and sustainable approach to projects in Saudi Arabia is essential as the nation attempts to modernise. The application of the model developed for the current study can help the

country improve its selection of renewable and non-renewable resources, protect water resources and the environment, improve the workforce, waste management and sanitation facilities and practices and diversify the country's economic base. Currently, most of the Saudi national income comes from the export of oil products. Long-term reliability on fewer, higher quality oil products can be achieved through better selection and management of fossil fuels and through diversification. Developing alternative sources of energy, such as the use of solar power, would help to minimise the consumption of fossil fuels and Saudi's great dependency on them while stimulating progress in a wider range of economic activity.

Sustainable project maturity emphasises quality. If Saudi organisations adhere to quality of standards on project development, the country will gain future benefits. For example, the modernisation agenda in Saudi Arabia has been accompanied by high levels of construction and architecture. If construction companies adhere to quality and value development, there will be greater confidence in the long-term dependability of the nation's infrastructure.

The Saudi government is currently urbanising the nation. Several construction companies have already been contracted to build housing. If these construction companies design and operate only to build for the lowest cost without considering the value and quality of construction, the housing schemes will fail to provide serviceable housing that safely outlasts a generation. The same observation applies to the roads, ports, shops, warehouses, schools and industrial premises. If not built to a high standard, this infrastructure will cost the nation constantly into the future for repair and replacement. The adoption of sustainable practices and principles will ultimately help Saudi modernise in ways that benefit the whole of the nation long into the future.

7.2 Recommendations

To this end, it is clear that Saudi Arabia as a nation has a long way to go to achieve sustainable project development. Moreover, a lot has to be done in order to achieve modernisation. In order to achieve the goals of the modernisation agenda, the country has to look upon project development as a way through. Most of the modernisation agenda is centred on project development; therefore, eliminating challenges that would bar sustainability requires the effort of both the government and organisations.

- Lack of appropriate education and training has undermined project development in the country. It is the role of the government to ensure that quality education and training are offered. Achieving quality education and training requires a combined effort from professionals in the country and from developed countries that offer quality education and training in project management.
- Hiring professional experts from developed countries will help the nation structure a standardised curriculum that would improve the quality of education being offered.
- Students can build confidence in the job market and build necessary skills for carrying out their roles with inspiration from professionals in the job market. In order to achieve this target, school leaders should be inspired and updated to the current changes in the job market. Encouraging and inviting professionals from all dynamics in the job market would help achieve this target.
- Inequality and discrimination experienced in the job market should be abolished. The current religious beliefs, customs, traditions and socio-ethnicity undermine the future of the modernisation agenda. Islamic laws being employed in the country should be flexible enough to give equal chances and benefits for all genders.
- Saudi Arabia's government should stress quality standards in the country. Quality standards require all organisations to be registered, meet the right quality of products and services, and to observe the required standards for operation. Quality standards ensure that organisations observe the right environmental measures necessary for achieving sustainability. Through quality standards, organisations will focus on value rather than cost effectiveness. This will ensure all projects are of quality and have a long-term dependability.
- Project managers should exercise effective leadership skills that encourage teamwork and motivation within the organisation. Organisations undertaking project management have a big role to play in modernisation. Project management depends on many elements, such as knowledge, skills, competency, leadership and planning, among others. The management team is the heart of project maturity.
- A flow of information and cooperation among stakeholders is necessary for the success of projects. Without motivation amongst employees, it is difficult to achieve project goals and objectives.

- An organisational culture that promotes quality standards and supports a diverse, well-educated, motivated workforce is necessary for the success and sustainability of projects. Achieving an effective organisational culture requires good leadership skills. Project managers are encouraged to improve the culture of their organisations through effective communication skills and sharing of ideas among employees.
- Project managers should be well equipped with the skills necessary for strategic planning and management. They should know that corporate social responsibility is one of the targets of every project.
- Projects are useless if the organisations do not share the benefits with the community in which they are operating. The impact on the community should be considered at every stage of a project.
- Financing mechanisms and support for project development are required. Sound financing mechanisms for project development have been limited by poor banking systems in the country. The development of projects at each stage of maturity requires financial support, which mostly comes from financial lending institutions. If these institutions are not well established, sustainable project development is impossible.

More recommendations can be generated from the knowledge of theories discussed in this thesis.

7.3 Future research directions

The current study developed a model for assessing project management and sustainability in Saudi organisations. The model has been developed and tested against Saudi organisations. In addition, the model was used to explain how various challenges facing the modernisation agenda affect project sustainability. Finally, the model explained how sustainable project management would help Saudi Arabia modernise, and looked at the role played by project management and maturity in the country. For this purpose, quantitative data from Saudi organisations were collected and used to answer the three research questions. From this research process, some suggestions for further studies arose and are as follows:

- Introduce a different study model.
- Develop a sustainable model from primary data.
- Improve the methodology.

7.3.1 A different study model

Firstly, the application of a different study model for Saudi organisations would be useful. As discussed in this study, the model used was developed from the knowledge gained from a critical literature review. The model was a combination of four theories that were used to explain the aspects of the model. The model was developed from two disciplines that included strategic management and project management. The elements of the model through its latent variables were used to test the current level of sustainability in Saudi organisations. The findings reached by this study model could be strengthened and validated if another model with different variables were developed in the future.

There are other theories that can be developed to explain the current project sustainability in Saudi Arabia. The model discussed in this study made use of all latent variables necessary for sustainable project development. Selected indicators from the literature were used to explain the latent variables of the model. Therefore, the use of different indicators for assessing the latent variables (economic, social, environmental, organisational culture, business and project performance) would be useful. In addition, application of different theories for assessing the model would further explain the current situation in Saudi Arabia. The model used under this study found that organisational culture is poor in Saudi organisations. Therefore, if a future study is developed to assess why Saudi organisations exhibit poor organisational culture, it would help organisations tackle challenges that leads to poor culture within workplaces. In addition, development of more organisational theories would help Saudi organisations achieve effective organisational cultures.

7.3.2 Develop a model

The model used in this study was developed through critical analysis of the literature. The model was used to assess whether Saudi organisations conformed to the elements of the model. The model did not represent the actual events happening on project development in Saudi Arabia. The possibility of future research would be to develop a model using primary data collected from various aspects of project management and sustainability in Saudi Arabia. By taking all aspects of the model into consideration, future research would be guided by several research questions, such as:

- What is the level of project sustainability on Saudi organisations?
- At what levels do Saudi organisations utilises elements of organisational culture on project development?
- At what level do Saudi organisations achieves economic, social, and environmental standards for sustainable project development?

If these research questions are addressed via primary data, future solutions towards achievement of sustainable project management in Saudi Arabia would be realised.

7.3.3 Improve the methodology

This study has focused more on quantitative data than qualitative. A future research would be developed with different measures for gauging sustainability levels on project development. This study has measured sustainability on a scale ranging from 1 to 5. Level 5 is the highest sustainability while level 1 is the lowest. If more measures are proposed in the future research, a lucid measure for sustainability would be achieved. Moreover, a combination between qualitative and quantitative methods is suggested for accurate results.

7.4 Summary

This research studied sustainability of project management and maturity in Saudi Arabian's organisations. Many studies have already been conducted on project management on Saudi Arabia especially on the construction industry. However, those studies did not focus on project management and sustainability via a developed model. The aim was to develop a model that would consider the current challenges facing Saudi organisations that are barriers to sustainable project management. The study found that all the elements defined by the model are being exercised by Saudi organisations except that there was a negative correlation between organisational culture and sustainable project management maturity (economic).

The correlation between variables was just sufficient to indicate that Saudi Arabian organisations use, to a greater or lesser extent, the variables for sustainable project development. Even those sustainable project management variables that showed positive correlations, however, did not meet the highest standards of sustainability.

The correlation between economic, social, environmental, business and project performance showed positive relationships in Saudi organisations. However, there was a negative correlation

between organisational culture and sustainable project management maturity (economic). In addition, business performance and sustainable project performance showed high levels of sustainability in Saudi organisations as compared to other forms of sustainable project management (economic, social, environmental, and knowledge area). The average level of sustainability in Saudi organisations was 3. This level did not guarantee continuity of projects in Saudi Arabia.

The study has shown low application of theories for sustainable project management on Saudi organisations. CSR explains organisation's adherence to ethical standards and promotion of livelihoods in the society. Most Saudi organisations were not linked to societal dynamics. In addition, the RBV theory argues for better selection and management of resources. The study found that there was poor selection and management of resources on Saudi organisations as a result of the various socio-economic challenges facing the country.

Administrative theory asserts that for successful project management and maturity, effective leadership skills are necessary. Project managers in Saudi organisations exhibited few of the managerial skills necessary for project development and sustainability and employees were not motivated. Information sharing and the sharing of ideas among employees was not sufficiently efficient to achieve project sustainability.

Stakeholder theory asserts that better cooperation among stakeholders in project management enhances maturity. Cooperation among stakeholders in projects Saudi Arabia is not sufficient for sustainability. Teamwork during project development is low in most organisations, a clear indication of low cooperation among stakeholders. In summary, the theories investigated as part of the current research were used to form a new model by which Saudi organisations could be assessed by an online survey of project managers. The results demonstrated that the outstanding principles and precepts of the theories were not being applied vigorously enough to achieve the sustainable project management maturity required for the modernisation of Saudi Arabia.

Social and economic challenges facing the country are undermining sustainable project development. There is no aspect of Saudi business and organisational culture that does not need to change to reflect the demands on the country as it attempts to modernise and diversify its economic base. From finance to quality standards, to workforce participation and education, much work needs to be done to move the nation and its people toward a confident, sustainable future.

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Appendices

Appendix A Online questionnaire

Appendix B Email online link

Appendix C Participant information sheet

Appendix D Consent form

Appendix E Contacts for information

Appendix F Study Model

Appendix A

A. Questions Regarding the Assessment of Sustainability aspects in the project

The framework below provides a means of self-assessing the sustainability level reached by projects that your organisation is currently managing. It gives you a chance to assess for yourself in a project of your choice, what level of maturity has been reached in achieving sustainability ideas and practices.

Note: the term ***sustainable*** is used to mean a balance of ***economic, environmental and social*** considerations that does not exhaust finite resources

The framework consists of five sustainability levels, **(Level 1) is lowest sustainability, whereas (Level 5) is the highest**

Sustainable Maturity (Level 1):
No established sustainable practices and standards exist.

Sustainable Maturity (Level 2):
Some sustainable practices and standards are in place in the business case such as project resources selection but not across the organization.

Sustainable Maturity (Level 3):
Sustainable practices and standards are instituted, and followed through the Project Execution Process using established reporting forms and documents.

Sustainable Maturity (Level 4):
- Sustainable practices and standards are instituted, and mostly followed throughout the project life cycle until the Project Deliverable using established reporting forms and documents.
- The targets of the project deliverable are included only in the project operation activities but not included in the long-Term strategy of the Organisation.

Sustainable Maturity (Level 5):
- The project's goals are included in the long-Term Organisational strategy.
- Continuous improvement regarding sustainability through the efficient collection, use, and decimation of data obtained in level 4 is in place.
- The organization uses benchmarking metrics regarding sustainability as a means to rate itself against commonly accepted/expected standards and/or against others.

Based on the definition given above for each sustainability level, assess what level your organization is at for the following elements.

When answering, think about all the projects that you are involved with.

(Level 1) is lowest sustainability, whereas (Level 5) is the highest

A-1. **What is the level of sustainability in *the strategy* of the organization regarding its**

Level 1	Level 2	Level 3	Level 4	Level 5
○	○	○	○	○

A-2. **What is the level of sustainability in *the Project Management Tools and Techniques* of the organisation?** *

	Level 1	Level 2	Level 3	Level 4	Level 5
Project Integration Management *	○	○	○	○	○
Project Scope Management *	○	○	○	○	○
Project time Management *	○	○	○	○	○
Project Cost Management *	○	○	○	○	○
Project Quality *	○	○	○	○	○
Project Human Resource *	○	○	○	○	○
Project Risk Management *	○	○	○	○	○
Project Communications Management *	○	○	○	○	○
Project Procurement Management *	○	○	○	○	○
Project Stakeholders Management *	○	○	○	○	○

A-3. Economic (Project Profit)

What is the level of sustainability in *the project finance* of the organisation? *

	Level 1	Level 2	Level 3	Level 4	Level 5
Financial benefits *	○	○	○	○	○
Future decision-making *	○	○	○	○	○
Evaluation methods for the selection of future projects *	○	○	○	○	○
Financial Progress Report *	○	○	○	○	○

A-4. Environmental (Project Planet)

What is the level of sustainability in *the project policies or standards* of the organisation regarding the following environmental elements? *

	Level 1	Level 2	Level 3	Level 4	Level 5
Materials for the project selected. *	○	○	○	○	○
Energy consumption. *	○	○	○	○	○
Water consumption and pollution. *	○	○	○	○	○
Waste management *	○	○	○	○	○
Environmental aspects. *	○	○	○	○	○
Environmental Progress Reports *	○	○	○	○	○

A-5. Social (Project Social)

What is the level of sustainability in *the project policies or standards* of the organisation regarding the following social elements? *

	Level 1	Level 2	Level 3	Level 4	Level 5
Labour practices and good working conditions. *	○	○	○	○	○
Health and safety. *	○	○	○	○	○
Training, education programs and development of stakeholders. *	○	○	○	○	○
Diversity and equal opportunity that reflects the society it operates in. *	○	○	○	○	○
Respecting and improving human rights like non-discrimination, freedom of association and no child labour. *	○	○	○	○	○
Taking a social responsibility towards the society it operates in. *	○	○	○	○	○
Rejecting bribery and anti-competitive behaviour. *	○	○	○	○	○
Social Progress Report *	○	○	○	○	○

A6. **Does your organisation have any sustainable or green certificate or rank?**

- ○ No
- ○ If Yes. Please specify. [ ] *

B. Questions Regarding the Organisational

Rate your organisation as *it is currently*

(Strongly agree) is most similar to your organisation

B-1. Management of Employees

The management style in the organization is characterized by: *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
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.	○	○	○	○	○

B-2. Organizational Leadership

The leadership in the organization is generally considered to Exemplify : *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Mentoring, facilitating, or nurturing.					
Entrepreneurship, innovating, or risk taking.					
A no-nonsense, aggressive, results-oriented focus.					
Coordinating, organizing, or smooth-running efficiency.					

B-3. Dominant Characteristics

The organization is: *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
A very personal place. It is like an extended family. People seem to share a lot of themselves.					
A very dynamic entrepreneurial place. People are willing to stick their necks out and take risks.					
Very results oriented. A major concern is with getting the job done. People are very competitive and achievement oriented.					
A very controlled and structured place. Formal procedures generally govern what people do.					

B-4. Organization Glue

The glue that holds the organization together is: *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Loyalty and mutual trust. Commitment to this organization runs high.					
Commitment to innovation and development. There is an emphasis on being on the cutting edge.					
The emphasis on achievement and goal accomplishment. Aggressiveness and winning are common themes.					
Formal rules and policies. Maintaining a smooth-running organization is important.					

B-5. Strategic Emphases

The organization emphasizes: *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Human development. High trust, openness, and participation persist. *					
Acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued. *					
Competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant. *					
Permanence and stability. Efficiency, control and smooth operations are important. *					

B-6. Criteria of Success

The organization defines success on the basis of: *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The development of human resources, teamwork, employee commitment, and concern for people.					
Having the most unique or 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.					

C. Questions Regarding Project

This section of the survey deals with your assessment of the performance of your organisation and its projects based on your own experience. How much do you agree or disagree with each of the statements below?

When answering, think about all the projects that you are involved with.

(Strongly agree) is most similar to your organisation

C-1. **The projects meet the expectation of:**

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The completion on time	○	○	○	○	○
The budget requirements	○	○	○	○	○
The social requirements	○	○	○	○	○
The environmental requirements	○	○	○	○	○

C-2. **Meeting stakeholders expectations:**

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The projects team members enjoy working together and seem satisfied	○	○	○	○	○
The projects meet client expectations	○	○	○	○	○
The projects have improved ways and means of collaborating with government bodies	○	○	○	○	○
During the projects, community complaints have decreased	○	○	○	○	○

C-3. **The projects have helped the organisation to:**

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Add financial benefits	○	○	○	○	○
Improve the employment opportunities in the organisation	○	○	○	○	○
Train and educate more employees	○	○	○	○	○
Adopt more sustainable tools and methodology	○	○	○	○	○
Reduce the environmental cost such as (waste, emission, resources, recycling) from previous years	○	○	○	○	○

C-4. **The projects have helped the organisation to :**

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Increase sales	○	○	○	○	○
Increase market share	○	○	○	○	○
Improve its competitive position	○	○	○	○	○
Improve its relationship with the community and government	○	○	○	○	○
Improve its environmental benchmarking position with competitors	○	○	○	○	○
Improve its performance in a ‘Best Practice’ regional competition?	○	○	○	○	○

D. Questions Regarding the Concept of Sustainable Development & Project Management

D-1.Could you please answer the questions below: *

	Very Low	Low	Neutral	High	Very High
To what extent are you familiar with the concept of“Sustainable Development"? *					
To what extent are you familiar with Project Management knowledge contents? *					
To what extent do you think there is need for the integration of sustainable development ideas into project management techniques and practice? *					
To what extent do you think sustainable development ideas contribute to project success? *					
How important do you think it is for Project Management to create sustainable project as part of business strategy? *					

E. Questions Regarding the Project that you have had most experience in :

To complete the survey, it is necessary to collect some data about you (In confidence).

Questions Regarding Projects that you have had most experience in.

E-1. What type of project have you had most experience in? *

- Building & construction
- Organizational change.
- Information technology.
- Research and development.
- Agriculture.
- Industry.
- Energy.
- Healthcare.
- Wholesale and retail.
- Logistic services.
- Financial services.
- Facility and real estate services.
- Legal services.
- HR services.
- ICT and communication services.
- Consulting.
- Public administration.
- Education and training.
- Operations and Maintenance
- Other

E-2. **How many years experience have you had in the industry?**

- <5 years
- 6-15 years
- 16-25 years
- >25 years

E-3. **In which geographical regions in Saudi Arabia have the project/s been located?** *

- Central Saudi Arabia
- Eastern Saudi Arabia
- Western Saudi Arabia
- Southern Area of Saudi Arabia
- Northern Area of Saudi Arabia

E-4. **Your organisation nationality is** *

- Saudi Arabian
- Multinational
- International

E-5.**Please add your email to win iPad mini (Optional)**

Please feel free to add any other comments or information (optional)

Thank You!

Appendix B

Contents of the email that will be sent to the participants in this research

1. **Subject will contain:** "Invitation to participate in the research on "***Developing a Project Management Maturity Model to Initiate Sustainable Project Performance and Modernisation in the Kingdom of Saudi Arabia***"
2. **Text in the body of email/letter**

Dear Participant

We wish to invite you to participate in research about Sustainable Project Management. The research deals with four connected ideas: a sustainable project maturity model, Sustainable Development, organisational culture and performance. The survey will take no more than 15 - 20 minutes to complete.

The research has a particular focus on project-driven organisations in Saudi Arabia.
This survey is under our supervision and it is undertaking by Mr. Sami Alzahrani who is a Saudi scholar doing research for his PhD degree in project management at the University of Adelaide, Australia. He has extensive experience in project management and we are sending this email in his behalf.
All the information will be treated confidentially. No personal identifying information will be collected in this study, and all participants shall remain anonymous.
To participate in the survey, click on the link below.

HTTPS://WWW.SURVEYGIZMO.COM/S/FWSYT3M

3. **Who the email will appear to be from in the recipient's inbox**

- The email will appear to come from the Saudi Industrial Property and it will show that this study is under their supervision.

4. **Text that clearly identifies the researcher**

The standard signature of the University of Adelaide staff member contains information:

Sami Alzahrani, Project Management PhD candidate

Entrepreneurship, Commercialisation & Innovation Centre

The University of Adelaide, AUSTRALIA 5005

Mobile: +61 (0) 424066561

Fax: 08 8303 7512

E-mail: sami.alzahrani@adelaide.edu.au

CRICOS Provider Number 00123M

Appendix C

THE UNIVERSITY OF ADELAIDE AUSTRALIA

ECIC Entrepreneurship Commercialisation and Innovation Centre

Participant Information Sheet

We wish to invite you to participate in an important study to ***develop a project management maturity model to initiate sustainable project performance and modernisation in the Kingdom of Saudi Arabia***, which is being undertaken as a doctoral research at the University of Adelaide, Australia. The research has a particular focus on project-driven organisations in Saudi Arabia. I am a Saudi Arabian scholar doing research for my PhD degree in project management at the University of Adelaide, Australia. I have extensive experience in project management and this research is being supervised by Professor Barry Elsey.

Purpose of the Study

This study investigates whether the sustainable project maturity relates to organisational sustainable performance. At the same time, how the organisational culture is a contribution factor.

About the Survey

The survey includes three factors associated with sustainable project maturity assessment tools which are the sustainable development, organisational cutler and organisational performance. This study aims to investigate whether the sustainable project maturity level relates to organisational sustainable performance. At the same time, how the organisational environment in Saudi Arabia, in relation to the concept of sustainable development, is an open question.

What Will I Be Asked To Do?

This research will ask for your professional opinion on the project management issues related to project-driven organisations projects. If you decide to participate, you will be asked to fill out and submit the survey in the next few pages. The questionnaire will take about 15-20 minutes to complete.

You are being asked to make a voluntary decision as to whether you wish to participate in this study. Your decision to participate (or not) will in no way affect your relations with your employer. Please read and consider the information given in this sheet. If there is any information you do not understand or where clarification is needed, please feel free to ask me or my supervisor for an explanation. If you wish to consult someone who is not associated with this study concerning the research process, please feel free to do so. If you decide not to participate, or if you later decide to discontinue your participation, you decision will not affect your present or future relations with the university of Adelaide.

What Type of Personal Information Will Be Collected?

No personal identifying information will be collected in this study, and all participants shall remain anonymous. You will be asked to provide information about your qualifications, professional experience and the number of projects you have been involved with. Research findings and results will be gathered and presented generically without any personal information or indication of individual responses.

Are There Risks or Benefits if I Participate?

There are no physical or psychological risks involved in the survey. You may choose to withdraw from the survey at any point of time. If you chose to withdraw, please let me know you decision. The online survey is being administered by Surveygezmo©, an online-survey website. The risks associated with participation are minimal, however, and are similar to those associate with many email programs, such as Hotmail© and social utilities spaces, such as Facebook© and MySpace©.

What Happens to the Information I Provide?
No one except the researcher and his supervisor will be allowed to see any of the answers to the questionnaire. There are no names on the questionnaire. Only group information will be summarized for any presentation or publication of results without their identity. The questionnaires are kept in a locked cabinet only accessible by the researcher and his supervisor. The anonymous data will be stored for up to five years on a computer disk, at which time, it will be permanently erased. Hard copies of data also will be destroyed after a period of five years.

What Are The Expected Outputs?
The study would enable us to benchmark the level of sustainability in the most project-driven organisations' projects in Saudi Arabia. This study will investigate whether sustainable project maturity relates to organizational sustainable performance. Also, after analysing the collected data, this study might make recommendations to improve the project sustainability level which might enhance the best practician in project-driven organisations in Saudi Arabia.

Consent
Completion and submission of this survey indicates that you 1) understand to your satisfaction the information provided to you about your participation in this research project, and 2) agree to participate as a research subject. In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation.

Questions / Concerns
If you have any further questions or want any clarification regarding this research and/or your participation, please contact:

Mr. Sami Alzahrani
The School of Entrepreneurship, Commercialization and innovation Centre (ECIC)
Faculty of Engineering, Computer & Mathematical
The University of Adelaide
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Australian Mobile: +61 (0) 424 066 561
Telephone: +61 (0) 8 8313 7422
Facsimile: +61 (0) 8 8313 7512

Dr. Barry Elsey
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Telephone: +61 (0) 8 83037422
Facsimile: +61 (0) 8 8313 7512

Appendix D

Human Research Ethics Committee (HREC)

THE UNIVERSITY of ADELAIDE

CONSENT FORM

1. I have read the attached Information Sheet and agree to take part in the following research project:

Title:	Developing a Project Management Maturity Model to Initiate Sustainable Project Performance and Modernisation in the Kingdom of Saudi Arabia
Ethics Approval Number:	**HS-2013-045**

2. I have had the project, so far as it affects me, fully explained to my satisfaction by the research worker. My consent is given freely.

3. Although I understand the purpose of the research project it has also been explained that involvement may not be of any benefit to me.

4. I have been informed that, while information gained during the study may be published, I will not be identified and my personal results will not be divulged.

5. I understand that I am free to withdraw from the project at any time.

Participant to complete:

I have read the consent form and I agree on what have been written in it, Therefore, I agree to participate in this survey.

Yes ☐ No ☐

Appendix E

The University of Adelaide
Human Research Ethics Committee (HREC)
This document is for people who are participants in a research project.
CONTACTS FOR INFORMATION ON PROJECT AND INDEPENDENT COMPLAINTS PROCEDURE

The following study has been reviewed and approved by the University of Adelaide Human Research Ethics Committee:

Project Title:	Developing a Project Management Maturity Model to Initiate Sustainable Project Performance and Modernisation in the Kingdom of Saudi Arabia
Approval Number:	**HS-2013-045**

The Human Research Ethics Committee monitors all the research projects which it has approved. The committee considers it important that people participating in approved projects have an independent and confidential reporting mechanism which they can use if they have any worries or complaints about that research.

This research project will be conducted according to the NHMRC National Statement on Ethical Conduct in Human Research

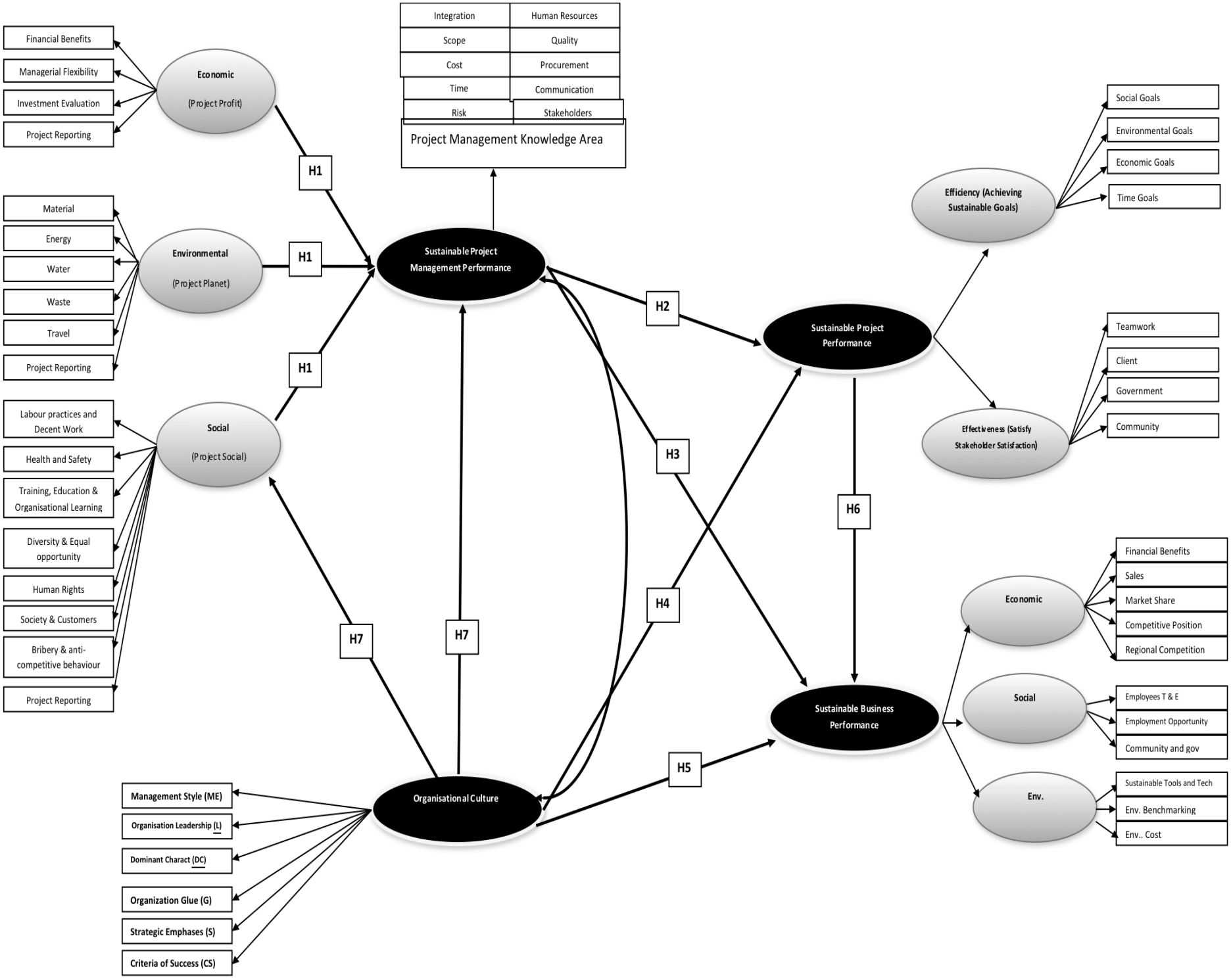
(see http://www.nhmrc.gov.au/publications/synopses/e72syn.htm)

1. If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the project co-ordinator:

Name:	**Dr Barry Elsey**
Phone:	**+61 8 83037422**

2. If you wish to discuss with an independent person matters related to:
   - Making a complaint, or
   - Raising concerns on the conduct of the project, or
   - The University policy on research involving human participants, or
   - Your rights as a participant,

   Contact the Human Research Ethics Committee's Secretariat on phone (08) 8313 6028 or by email to hrec@adelaide.edu.au or Mr. Rami Alzahrani on Phone +966 1 2090180 or by email to rami.alzahrani_z7@gmail.com


Integration
Human Resources
Scope
Quality
Cost
Procurement
Time
Communication
Risk
Stakeholders
Project Management Knowledge Area
Financial Benefits
Managerial Flexibility
Investment Evaluation
Project Reporting
Economic
(Project Profit)
H1
Material
Energy
Water
Waste
Travel
Project Reporting
Environmental
(Project Planet)
H1
Labour practices and Decent Work
Health and Safety
Training, Education & Organisational Learning
Diversity & Equal opportunity
Human Rights
Society & Customers
Bribery & anti-competitive behaviour
Project Reporting
Social
(Project Social)
H1
Sustainable Project Management Performance
H2
Sustainable Project Performance
Efficiency (Achieving Sustainable Goals)
Social Goals
Environmental Goals
Economic Goals
Time Goals
Effectiveness (Satisfy Stakeholder Satisfaction)
Teamwork
Client
Government
Community
H3
H4
H6
H7
H7
Sustainable Business Performance
H5
Economic
Financial Benefits
Sales
Market Share
Competitive Position
Regional Competition
Social
Employees T & E
Employment Opportunity
Community and gov
Env.
Sustainable Tools and Tech
Env. Benchmarking
Env.. Cost
Organisational Culture
Management Style (ME)
Organisation Leadership (L)
Dominant Charact (DC)
Organization Glue (G)
Strategic Emphases (S)
Criteria of Success (CS)

Appendix F