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# A FRAMEWORK FOR GUIDING THE BRIEFING PROCESS IN PUBLIC-PRIVATE PARTNERSHIPS IN THE UAE CONSTRUCTION INDUSTRY

Rauda Saeed Ali Saif Al-Saadi

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United Arab Emirates University

College of Engineering

A FRAMEWORK FOR GUIDING THE BRIEFING  
PROCESS IN PUBLIC-PRIVATE PARTNERSHIPS IN  
THE UAE CONSTRUCTION INDUSTRY

Rauda Saeed Ali Saif Al-Saadi

This dissertation is submitted in partial fulfilment of the requirements for the degree  
of Doctor of Philosophy

Under the Supervision of Dr. Alaa Abdou

June 2015

### Declaration of Original Work

I, Rauda Saeed Ali Saif Al-Saadi, the undersigned, a graduate student at the UAE University (UAEU), and the author of this dissertation entitled “*A Framework for Guiding the Briefing Process in Public- Private Partnerships in the UAE Construction Industry*”, hereby, solemnly declare that this dissertation is an original research work that has been done and prepared by me under the supervision of Dr Alaa Abdou in the College of Engineering at the UAEU. This work has not been previously formed as the basis for the award of any academic degree, diploma or similar title at this or any other university. The material borrowed from other sources and included in my dissertation has been properly cited and acknowledged.

Student’s signature: \_\_\_\_\_ Date: \_\_\_\_\_

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## Abstract

Public-Private Partnership (PPP) is a procurement method that employs a long-term contractual arrangement between public and private sectors with the intention of developing a public facility. A PPP brief must supply information that not only particularizes the project requirements but also specifies its program, risk management, expected performance output and payment mechanism. Many challenges currently face the briefing process of PPP projects in the UAE. A uniform briefing process has not been agreed, because there is no unified tender law or PPP procurement process in the country.

The main aim of this research is to develop a framework for guiding the development of PPP briefing stage in the UAE construction industry. To this end, a process framework for PPP briefing with special reference to UAE construction projects was developed first, on the basis of an intensive literature review and analysis of case studies. This framework was validated through interviews with PPP experts and professionals in the UAE. Following this, the Critical Success Factors (CSFs) in PPP briefing, with special reference to UAE construction projects, were investigated and identified through a literature review, expert interviews, and a questionnaire survey. This step led to developing another framework for CSFs in PPP briefing with special reference to UAE construction projects. With these in mind, CSFs were modelled to develop a Decision Support System (DSS) the main aim of which was to guide the of the briefing stage for PPP projects in the UAE. Its main objectives focused on assessing the readiness of public and private organizations for successful briefing development, highlighting areas for improvements and helping to develop action plans to improve the briefing process.

In order to validate the developed model and assess its performance as a decision-making tool, two mega construction projects (real case studies) were assessed by means of the proposed model. The outputs of the implemented evaluation validated the major aspects of this model and its developed prototype, together with its performance for its stated purpose.

**Keywords:** Public-Private Partnerships (PPPs); Construction Projects, Briefing, Critical Success Factors (CSFs), United Arab Emirates (UAE). Decision Support System (DSS).

## Title and Abstract (in Arabic)

### إطار توجيهي لعملية استخلاص متطلبات مشاريع الشراكة بين القطاعين العام والخاص في قطاع البناء والتشييد في دولة الإمارات العربية المتحدة

#### الملخص

الشراكة بين القطاعين العام والخاص (PPP) هي نظم عقود توظف ترتيبات تعاقدية طويلة الأمد بين القطاعين العام والخاص بهدف تطوير وإنشاء المرافق العامة. إن عملية استخلاص متطلبات مشاريع الشراكة تعتبر من العمليات ذات الأهمية القصوى، إضافةً لكونها عملية معقدة. حيث أنها يجب أن توفر معلومات ليس بشأن متطلبات المشروع فحسب، ولكن كل ما يختص ببرنامج المشروع، وإدارة المخاطر، والمخرجات المتوقعة للأداء، إضافة إلى آلية السداد و الدفع لتكاليف تلك المشاريع.

هناك العديد من التحديات التي تواجهه عملية استخلاص متطلبات مشاريع الشراكة في دولة الإمارات العربية المتحدة في الوقت الراهن. حيث أنه لم يتم الاتفاق على عملية موحدة لاستخلاص متطلبات مشاريع الشراكة، نتيجة عدم وجود قانون موحد لمناقصات وعمليات التعاقد الخاصة لتلك النوعية من المشاريع .

يهدف هذا البحث بشكل رئيسي إلى وضع إطار توجيهي / إرشادي خاص باستخلاص متطلبات مشاريع الشراكة في قطاع البناء والتشييد الإمارات العربية المتحدة. وتحقيقاً لهذه الغاية، تم أولاً تطوير إطار لتلك العملية خاص بدولة الإمارات، وذلك بناءً على المراجعة المكثفة للبحوث ذات الصلة ودراسة و تحليل الحالة لمشاريع واقعية محلية. وقد تم التحقق من صحة هذا الإطار من خلال إجراء مقابلات مع الخبراء والمهنيين في المجال محل الدراسة في دولة الإمارات العربية المتحدة. وفي أعقاب ذلك، تم بحث واستقصاء عوامل النجاح الحاسمة الخاصة بعملية استخلاص متطلبات مشاريع الشراكة، بوجه خاص على مشاريع الإنشاءات في الإمارات، وذلك من خلال مراجعة البحوث ذات الصلة والمقابلات مع الخبراء والمهنيين ذوي الخبرة في مجال الشراكة في الدولة على مراحل مختلفة بالإضافة لاستخدام استبيان لاستطلاع آراء الخبراء والمهنيين. وأدت هذه الخطوة إلى تطوير إطار آخر يختص بعوامل النجاح الحرجة لعملية استخلاص متطلبات مشاريع الشراكة في دولة الإمارات العربية المتحدة في قطاع التشييد و البناء.

تلى ذلك تم نمذجة اطار عوامل النجاح الحرجة لتطوير نظام لدعم القرار، والذي يهدف إلى توجيه وتطوير مرحلة استخلاص متطلبات مشاريع الشراكة محل الدراسة. وقد تم بناء النظام ليخدم أهداف رئيسية تركز على تقييم مدى جاهزية المؤسسات العامة والخاصة لمرحلة استخلاص متطلبات مشاريع الشراكة بشكل ناجح، وإبراز مجالات التحسين والمساعدة على تطوير خطط عمل لتطوير وتحسين استخلاص متطلبات تلك المشاريع.

من أجل التحقق من صحة النموذج المطور وتقييم أدائه كأداة لاتخاذ القرار، تم تقييم مشروع شراكة كبيرين في الدولة عن طريق النظام المقترح. مخرجات ذلك التقييم أمكنت من التحقق من قدرة النظام على دعم القرار، وتقييم تنفيذ الجوانب الرئيسية الخاصة بالنظام جنباً إلى جنب مع أدائها للغرض المطور من أجله.

كلمات رئيسية: الشراكة بين القطاعين العام والخاص، مشاريع البناء والتشييد ، عملية استخلاص متطلبات المشاريع، عوامل النجاح الحاسمة، دولة الإمارات العربية المتحدة، نظام دعم القرار.



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## Dedication

*I dedicate this dissertation to the souls of my parents  
I really miss you*

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## List of Abbreviations

ADWEA	Abu Dhabi Water and Electricity Authority
AHP	Analytic Hierarchy Process
AIA	The American Institute of Architects
ANOVA	Analysis of Variance
AP	Architectural Programming
BBO	Buy-Build-Operate
BDO	Build-Develop-Operate
BGDSS	Briefing Guide Decision Support System
BLOT	Build-Lease-Operate-Transfer
BLT	Build-Lease-Transfer
BOO	Build-Own-Operate
BOOT	Build-Own-Operate-Transfer
BOOT	Build-Own-Operate-Transfer
BOT	Build-Operate-Transfer
BROT	Build-Rent-Own-Transfer
CI	The Consistency Index
CIB	Construction Industry Board
CPM	Client Project Manager
CR	Client Representative
CR	The Consistency Ratio
CSFs	Critical Success Factors
DB	Design-Build
DBFO, DBFM or DBFO/M	Design-Build-Finance-Operate/Maintain
DBM	Design-Build and Maintenance
DBO	Design-Build and Operate
DCMF	Design-Construct-Manage-Finance
DoF	Department of Finance
DSS	Decision Support System
EC	Executive Council
EIB	European Investment Bank
EoI	Expression of Interest
EU	The Hong Kong Efficiency Unit
FA	Financial Advisor
FC	Financial Controller
GCC	The Gulf Cooperation Council Countries

IC	Insurance Company
IWPPs	Independent Water and Power Projects
KPIs	Key Performance Indicators
LA	Legal Advisor
LAs	Legal Advisors
LDO	Lease-Develop-Operate
MADM	Multiple Attribute Decision Making
MDC	Mubadala Development Company
MENA	Middle East and North Africa
NAO	National Audit Office (UK)
NOCs	No Objection Certificates
NSW	The States of New South Wales
O&M	Operations and Maintenance
OECD	Organisation for Economic Co-operation and Development
OGC	Office of Government Commerce
P	Programmer
P3	Public Private Partnership (North America)
PD	Project Director
PFI	Private Finance Initiative
PFP	Privately-Financed Projects (Australia)
PM	Project Manager
PPI	Private Participation in Infrastructure
PPP	Public-Private Partnership
PSC	Public sector comparator
PSI	Private-sector involvement
PSP	Private-sector participation
QS	Quantity Surveyor
RFP	Request for Proposals
RI	The Random Index
RIBA	The Royal Institute of British Architects
ROI	Return on Investment
RTA	Roads and Transport Authority in Dubai Emirate
SP	Space Planner
SPV	Special Purpose Vehicle
SSFs	Success sub-factors
TA	Technical Advisor

TOKI	Housing Development Administration (Turkey )
TP	Town Planning
UAE	United Arab Emirates
UAEU	United Arab Emirates University
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNIDO	United Nations Industrial Development Organization
UP	Utility Providers
VfM	Value for Money
VM	Value Management

## Chapter 1: Introduction

### 1.1 Background

The notion of Public Private Partnership (PPP) is often seen as an umbrella term for a broad range of arrangements between the public and private sectors. In these arrangements the part of the services or works that are classified under the responsibilities of the public sector are provided by the private sector, and there is a clear contract on common goals for the delivery of public utilities or services (Thia & Ford, 2009). The demand for PPPs can generally be explained in terms of their expected benefits, including the better mobility provided by the private sector and avoidance of bureaucracy which contributes to cost-saving, access to private finance in order to expand services, clearer objectives, new ideas, flexibility, better planning, improved incentives for competitive tendering, and greater value for money in public projects (Jamali, 2004). By adopting the PPP approach, central and local governmental organizations take an increasingly strong regulatory role, focusing their resources on service planning, performance monitoring, and contract implementation instead of the direct management and delivery of services (World Bank, 2012; Yescombe, 2011).

However, the delivery of a PPP construction project is a highly complex process, involving multiple stakeholders and multidisciplinary inputs provided by a vast number of participants, which contributes to the complexity of communication and coordination for the project. Unlike conventional procurement methods, it raises complex issues that should be addressed by government when it embraces such an approach to procurement. In fact the early stages in construction projects in general



and in PPP projects in particular are often the most important in determining a successful outcome.

Project briefing (also known in the United States as architectural programming) is the first and most important step in the design process of any project. In PPP construction projects, the briefing process can be defined as the process of gathering, analysing and synthesizing the client's needs, and detailing the project's mission, objectives and its expected performance requirements. The briefing document when formulated acts as a tool for communication between the different project stakeholders and forms the basis on which several decisions are taken at different stages of their joint project.

In spite of the significant decisions that this stage produces, which will have a far-reaching impact throughout a project's life cycle, an intensive literature survey of PPP- based construction projects reveals that little has been written about the briefing practices within them. The existing briefing models for conventional projects cannot be effectively applied, because these models are not specifically designed for PPP projects; and are too general, making them hard to adhere to (Tang, 2011). Unlike the brief for conventional procurement, the brief for a PPP project must supply information not only on the project requirements but also on the project program, risk management, output specification and payment mechanism. In addition, having multiple stakeholders involved in the briefing process of PPP projects contributes to the complexity of communication and the difficulty of coordinating the conditions for the project. Moreover, certain procurement-related steps and the complex feasibility study entailed in PPP briefing are all necessary elements.

At the same time, due to the growth in the number of PPPs, the drivers of success of these PPP projects have become a subject for investigation worldwide. Different research methods, i.e. case studies, interviews, questionnaires and literature surveys, have been used to study the success of PPPs in different sectors and countries, and studies provide various lists of critical success factors CSFs (Ernest & Chan, 2013). Nevertheless, in the context of PPP, only a few research works have focused on the critical success factors involved in the briefing of PPPs in particular and applied to countries that are relatively new in adopting PPP, such as the UAE.

There is a need for a clear framework that can guide the PPP briefing process and help both the public and private sectors. This framework should be developed on the basis of and benefiting from proven practices and should take into account the success factors critical in the environment of the PPP project that is envisaged, since every PPP project is delivered in conditions which form a unique combination of physical, political, social, economic and environmental factors.

## **1.2 Problem Identification**

The concept of PPP is not completely new to the UAE; in 1998, Abu Dhabi Emirate, the UAE's capital, successfully launched its PPP program for Independent Water and Power Projects (IWPPs), which became known as the flagship PPP in the GCC region. After this experience, the UAE government started to extend the PPP model not only into IWPPs but into other social and economic infrastructure areas such as education, health care, environmental projects and social housing. Also, governmental and public bodies in the UAE have increased their support of PPPs to encourage greater contributions on the part of the private sector in the country's development (Dulaimi, Alhashemi, Ling, & Kumaraswamy, 2010).

Many challenges currently face the briefing process of PPP projects in the UAE. It has no clear methodology/procedure for the brief development, due to the absence of a unified tender law and PPP procurement process. Moreover, the country has neither distinct decision gates nor a clear process for the involvement of the main stakeholders and user groups in the brief development of its PPP projects.

It was revealed through case studies and interviews in the present research that the decision to choose PPP as the preferred method of procurement is normally taken earlier than the briefing process; hence, the latter does not go through a strategic phase where the decision whether to build or not results from a feasibility study to check whether a normal contract, as opposed to a PPP, should be awarded. Client briefing teams give only limited leadership and control in the UAE public sector as the briefing develops. Additionally, no clear documentation of lessons to learn has a place in its PPP briefing process because the regulations do not call for them. Consequently, several experts and professionals have pointed out that clear brief and client outcomes are not available to the bidder as a main deliverable from the briefing process. As a result, several projects have failed to be executed as a PPP or cancelled in UAE, which increased the reluctance of the private sector to take part in PPPs and affected the credibility of the public sector.

The CSFs, however, are considered vital enablers for the successful brief development of any PPP project. In spite of government support for PPP projects in the UAE, little is known about the factors which lead to the success of briefing in PPP environment of the UAE.

The rationale and motivation for this research stems from the need to develop a PPP briefing framework with special reference to UAE construction projects that

have been developed on the basis of good practice in countries that are mature and much experienced in the PPP market, and can take into account the CSFs related to UAE construction and the PPP environment as essential enablers for brief development.

### **1.3 Aim and Objectives**

The aim of this research is to develop a framework for guiding the brief development of PPP projects in the UAE construction industry. Such a framework needs not only be developed on the basis of the proven practice of PPP briefing in mature markets but also to take into account the existing local conditions and factors critical to the success of such a development.

In order to fulfil this aim, the objectives were set as follows: to

- 1) Explore the use of PPP in the UAE and investigate its importance, future demand and the key success factors of adopting such an approach in the UAE.
- 2) Investigate the PPP briefing practice in the mature PPP markets, with their main characteristics, explore the existing briefing practices in PPP construction projects in the UAE and identify their main problems and challenges.
- 3) Develop and validate a process framework for PPP briefing, with special reference to the UAE construction industry.
- 4) Identify critical factors for the success of PPP brief development and develop a CSFs framework for PPP briefing with special reference to the UAE construction industry.
- 5) Develop and validate a model that can be used to assess the readiness for successful brief development and assist decision-makers identifying the key areas

needed to be addressed in order to carry out a briefing process more successfully. Moreover use decision support system technology to implement this model.

## 1.4 Hypotheses

**The research hypotheses are listed below:**

- 1) There is neither an effective nor unified legal and regulatory framework for the procurement process of PPP projects in the UAE. Furthermore, these projects do not have formal procedures for a briefing process to guide their brief development.
- 2) The disparity between the institutional capacity within UAE public sector and the involvement level of the main stakeholders in the briefing process contributes to the challenges of PPP briefing in the country's construction industry.
- 3) Introducing a systematic process framework for brief development with special reference to the UAE construction industry will contribute by formalizing the briefing processes and controlling its key decision gates.
- 4) Developing a method for assessing the readiness of public and private organizations for PPP brief development will facilitate the diagnosis of key areas for improvement that organisations/professionals need to address so as to develop the briefing process more successfully.

## 1.5 Research Methodology

To achieve the aims and objectives in Section 1.3, above, various methods were implemented, as described in the following sections. The outline of the overall research methodology, the stages of its implementation, the proposed methods and their detailed objectives, are presented in Figure 1-1. The overall research methodology of the present research is divided into three main phases: investigation, synthesis, and evaluation.

## **Phase 1: The Investigation Phase**

The investigation phase in achieving the first objective of this research is to explore the use of PPP in the UAE and investigate its importance, future demand and the key success factors of adopting such an approach. In addition, it provides a comprehensive review of PPP briefing process. This stage ends with a discussion and conceptualization of the research problem. Two methods were adopted in this stage, namely, a literature review and semi-structured interviews. A description of these two methods and their detailed objectives are provided in the following paragraphs (see Chapters 2 and 3 for more details).

**Literature Review:** A critical review of the literature was carried out in order to investigate what is known in this field and learn about two main topics:

- PPP: its background, definitions, types and benefits in general and the use of PPP in various sectors of the UAE.
- PPP Briefing: an overall understanding of construction project briefing, its process and methods are discussed, together with the problems in construction projects. Next, the briefing process and its considerations in PPP projects are discussed.

**Semi-Structured Interviews (A):** The semi-structured interview is a type of interview that uses a combination of open and closed questions. It lies between the unstructured and structured forms of interview. In the course of an interview, the interviewer has a great deal of freedom to raise more questions or investigate more areas. It also allows both the interviewer and the respondent the flexibility to query details or discuss issues (Naoum, 1998). With a qualitative approach, interviews remain a popular technique for data collection. Furthermore, the semi-structured

interviewing technique is considered a good approach for obtaining worthwhile and detailed information, due to its reliability, structure and control, and at the same time, to the flexibility of the responses that can be obtained.

A total of 21 interviews were conducted with key personnel from public and private sectors that had experience in the development of PPP projects in the UAE. The main objectives of these interviews were to achieve objective 1 in order to assess the importance of PPP as a procurement method for UAE construction projects, identify the potential future demand for PPP projects in different sectors of the UAE and investigate the possible critical success factors for PPP projects there.

### **Phase 2: Synthesis Phase**

The task of the synthesis phase is to achieve objectives 2, 3, and 4 and the first part of objective 5 of this research. This stage has three main deliverables: i) a Process Framework for PPP Briefing with special reference to UAE construction industry; ii) a CSFs framework for PPP briefing with special reference to UAE construction industry; and iii) a model for assessing the readiness of UAE organizations for successful briefing development. Decision support system technology was used to implement this model. The methodologies proposed for the above three deliverables and their methods are described below.

### **Methodology of the Process Framework for PPP Briefing**

A Process Framework for PPP brief development with special reference to the UAE construction industry was developed in order to achieve objectives 2 & 3 of this research. The framework was developed in three main steps: conceptual,

preliminary and final. The three methods adopted are described in the following paragraphs (see Chapter 5 for more details).

Literature Review: a critical review of the literature was carried out in order to investigate relevant knowledge. It had two main objectives: to review briefing practice in the mature PPP markets and to conduct a comparative analysis of the briefing frameworks of the top three countries in the PPP mature market (UK, Australia and Canada). This step led to a ‘Generic Conceptual Process Framework for the Development of Briefs in PPP Projects’.



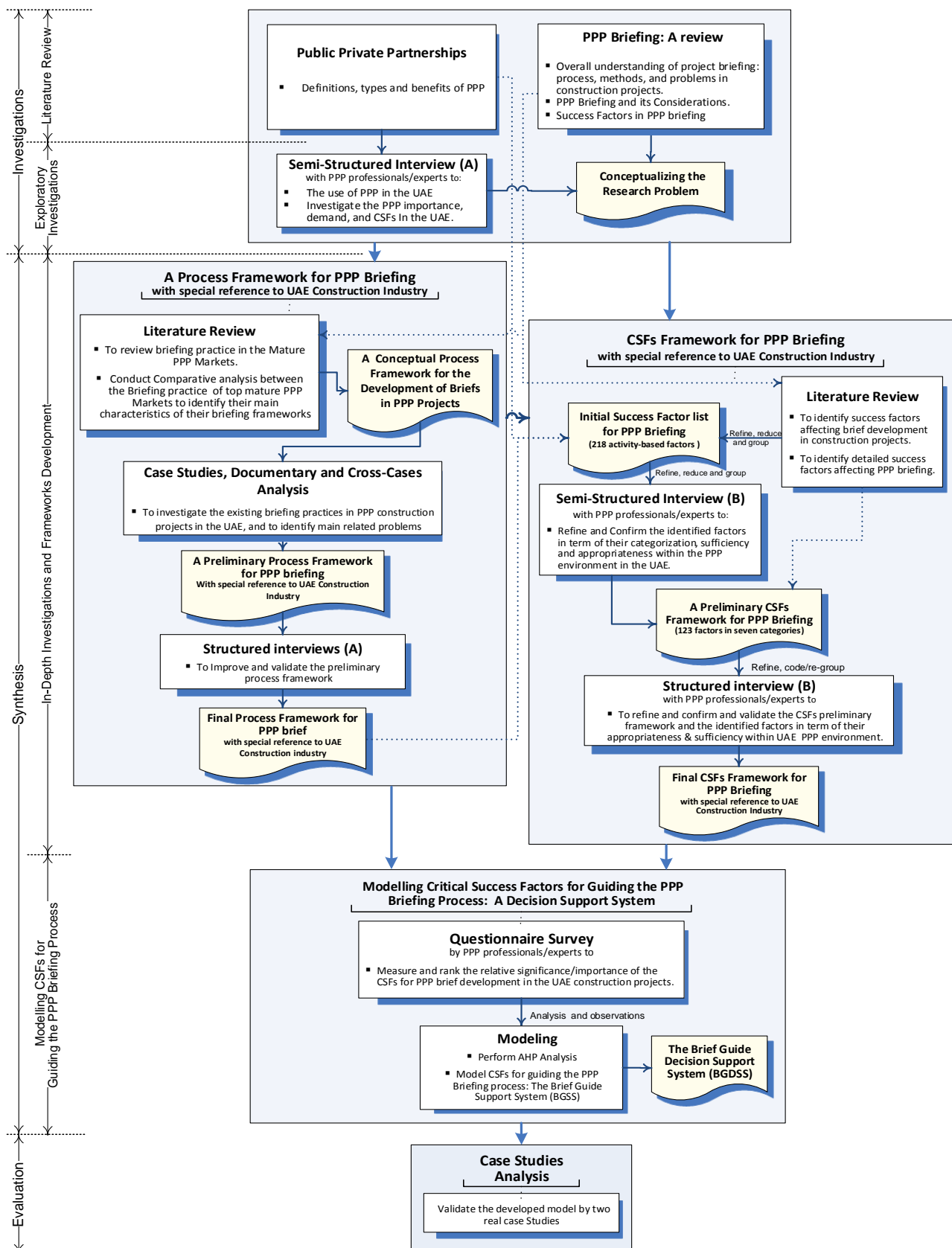


Figure 1-1: Outline of the research methodology

### Case Studies, Documentary and Cross-Cases Analysis

Case studies and document analysis were adopted to localize the developed generic conceptual framework for the PPP market in the UAE. From this, a preliminary Process Framework for PPP briefing with special reference to UAE construction industry was developed. Qualitative data were collected from the case studies of two mega projects as well as an existing governmental procedure (document analysis). The analysis employed single case level techniques first, and afterwards each case was compared with the others (cross-case synthesis). The main purpose of cross-case synthesis is to compare cases and their documentary procedure to find direct replication or contrast while focusing on important issues in terms of similarities or differences.

The case study approach was selected for its ability to cover the contextual conditions of the study. The choice of a case studies approach was driven by the desire to understand a complex social phenomenon. Therefore, the case study approach allowed the researcher to retain the holistic and meaningful characteristics of a real life event (Yin, 2009). Regarding the issue of case numbers, a multiple-case study strategy was selected as the most appropriate research method to determine the best match with the characteristics of the current research. Yin (2003) argues that a multiple case approach (involving two or more cases) strengthens the validity and generalizability of results, providing the researcher with more confidence about the outcomes. However, multiple case design is likely to require more resources and time than a single one would (Yin, 2009). As observed by Knight and Ruddock (2009), a case study affords the opportunity to incorporate different kinds of evidence, for instance, interviews. The researcher took this opportunity to engage in

in-depth semi-structured interviews with members of the briefing teams who had worked on the briefing process of the selected cases.

In total, seven interviews were conducted during this analysis. The interview represented a very important aspect of the case studies since questions were asked in order to gain as much knowledge as possible about the briefing practices used in PPP construction projects in the UAE, and to identify their main problems. Regarding documents, they are sources of data which can be used in various ways in research. In fact, some studies may depend completely on documentary data, while in other studies, case studies, documentary data may be collected in conjunction with interviews and observations (Punch, 2005). Generally, the decision to gather and analyse documents should be linked to the objectives and aims of the research (Marshall & Rossman, 2011).

The above steps led to developing a ‘Preliminary Process Framework for PPP briefing with special reference to the UAE construction industry’.

Structured interview (A): Five face-to-face interviews were held in the UAE to collect empirical information about the preliminary process framework for PPP briefing in construction projects, with the aim of improving and validating this framework. Respondents in structured interviews are generally asked the same types of question in the same order. It is less costly and time consuming than unstructured interviews and the collected data are easier to code and analyse. However, their rigid structure prevents the raising of important issues related to the current topic outside its prepared questions. This type is useful when the interviewer has a clear understanding of the problem under investigation (Knight & Ruddock, 2009). The structured interview was chosen because it was thought more suitable at this stage.

Through the structured interview sessions, the above framework was further developed and was validated with professionals and experts from the PPP market in the UAE. The output was the final ‘Process Framework for PPP brief development with special reference to UAE construction industry (see Chapter 5 for more details).

### **Methodology of the Critical Success Factors Framework for PPP Briefing**

A CSFs Framework for PPP Briefing with special reference to the UAE construction industry was developed in order to achieve objective 4 of this research. The framework was developed in three main steps. A description of the three methods used is provided in the following paragraphs (see Chapter 6 for more details).

Literature Review: A critical review of the literature was carried out in order to investigate relevant knowledge and learn more about two main topics: the success factors of construction project briefing in general, and PPP projects in particular, with emphasis on the briefing stage of PPP projects. Based on the output of the literature review and the ‘Process Framework for PPP briefing development’, developed earlier, an initial Success Factor list for PPP Briefing was developed. 218 significant process-based factors were identified, which became the foundation for the CSF framework developed in this study. (See Appendix C for more details).

Semi-Structured Interviews (B): The items on the above initial list were refined, condensed and divided into groups; a list containing 151 candidate factors was developed, with seven main categories – procurement; stakeholder; risk; finance and economic; public sector capacity; regulatory and legal; and social, cultural and ethical. Following this step, in-depth semi-structured interviews (B) were conducted with experts and key personnel from the public and private sectors who were

involved in the development of briefing for PPP projects in the UAE, the main objective here is to refine and confirm the identified factors in terms of their categorization, sufficiency and appropriateness for PPP in this country. A refined list containing 123 factors was then developed in the same seven categories. Semi-structured interviews were selected for the reasons discussed above.

Structured Interviews (B): In order to develop a framework for the few essential CSFs in a PPP briefing, the 123 factors identified above were refined, grouped and structured as either CSFs or sub-success factors (SSFs). The specific methodology of this part involved exploring and examining these factors and questioning whether they were at the same level of detail/importance; whether some that were not specifically different could be combined; whether some factors could be grouped/sorted/sub-categorized; and whether the previous literature review had suggested any high level of sorting/ grouping among them. Structured interviews (B) were then held with experts and key personnel from the public and private sectors who were involved in the development of briefing for PPP projects in the UAE, the main objective being to refine, confirm, and validate the preliminary framework of CSFs and the factors identified in terms of their appropriateness and sufficiency within the UAE's PPP environment. Through this step, the final CSFs Framework for PPP Briefing, with special reference to UAE construction projects was developed. Structured interviews were chosen for their suitability, as discussed above (see Chapter 6 for more details).

### **Methodology of the Readiness Assessment Model**

A model for assessing the readiness for successful brief development was developed to achieve objective 5 of this study. A decision support system prototype

was constructed to implement the model, which was developed in two main steps. A description of the methods used is provided below (see Chapters 7 and 8 for more details).

The Questionnaire survey: A questionnaire survey was implemented with the main aim of measuring and ranking the relative significance/importance of the CSFs and their SSFs, developed from the previous stage. The first phase of data analysis provided a descriptive analysis of the data obtained. It demonstrated some qualitative insights with which to discuss the data obtained in terms of their value and contribution to the aims of the questionnaire. In addition, it focused on the purification and computational processes of the measuring instruments, where Cronbach alpha was used as an indicator of reliability of the scale measurement. In this phase, the researcher used descriptive analysis, reliability analysis and content validity analysis. The second phase of data analysis concerned the importance and the ranking of the identified CSFs and their SSFs. It provided an overall assessment of these factors and discussed in detail their ranking and the respondents' opinion of each of the seven categories of the developed CSFs framework. Several tests were made, such as: ranking analysis, a one-sample T-test and independent samples T-test (see Chapter 7 for more details).

### **Modelling the Critical Success Factors for Guiding the PPP Briefing Process**

After the analysis of the questionnaire survey, the CSFs were modelled with the main objectives of guiding the brief development of PPP projects in the UAE and assessing the readiness of public and private organizations for such development, highlighting areas for improvement and helping to develop an action plan to improve them even further. The Analytic Hierarchy Process (AHP) was used, and the

different weights of all the seven categories and their success factors were calculated. This was the basis for building the Model Hierarchical Structure of the CSFs (see Chapter 8 for more details).

### **The Brief Guide Decision Support System (BGDSS)**

To implement the above model a Decision Support System Prototype for Guiding the Briefing Process of PPP Construction Projects was developed and named the 'Brief Guide Decision Support System' (BGDSS). Its main aim was to provide a diagnostic tool for identifying the key areas that organisation/professionals need to address in order to carry out a briefing process more successfully. Two options were proposed for the BGDSS. Two prototypes were implemented in Excel, using macros and tables. The first option may be helpful for executive users, since it takes less time than the second option. However, both options assess the readiness of an organization for each of the seven main categories and calculate the overall readiness level. Tables and radar charts can be generated by means of these prototypes (see Chapter 8 for more details).

### **Phase 3: The Validation Phase**

For any given research problem and outcome, it is important to be able to demonstrate validity, because validity is what convinces an audience that the research questions have been answered using appropriate methods (Then, 1996). If validity is assured, it can be accepted that the concepts in use accurately describe a given situation, and that they provide the best fit in the circumstances.

Case Studies Analysis In aiming to validate the developed model and assess its performance as a decision-making tool, two mega projects (real case studies) were

assessed using the developed model, which achieved objective 5 of this research. The case study method was also used, involving structured interviews with senior members of the briefing teams from the two chosen projects. A questionnaire survey was used to let them assess the availability/extent of the practice of identifying CSFs during the briefing stages of the two projects and each respondent discussed the reasons behind his/her assessment. Following this, the developed BGDSS prototype was used to analyse the assessment results. The outputs of these two cases validate the developed model and its performance of its stated task (see Chapter 8 for more details).

## **1.6 Structure of the Dissertation**

This research contains ten chapters.

Chapter 1 introduces the research area investigated. It includes the background of the study, the aim and objectives of the research, the research design and methodology, and the organization of the thesis.

Chapter 2 presents the findings of the literature review on PPP, its definitions, types and benefits.

Chapter 3 presents the importance of and demand for PPP and the CSFs in PPP implementation in the UAE, using the findings from the semi-structured interviews (A).

Chapter 4 presents the findings of the literature review on PPP briefing, together with the project briefing, definitions, process, methods, problems in construction projects and briefing in PPP environment and its considerations.

Chapter 5 presents the conceptual foundation for developing a process framework for PPP briefing with special reference to UAE construction projects. The



methodology uses a comparative analysis between the briefing processes of mature PPP markets; semi-structured interviews and case study analysis, as well as structured interviews are used to develop and validate the proposed framework.

Chapter 6 identifies the CSFs which affect the brief development in PPP construction projects. An in-depth literature review, semi-structured interviews and structured interviews are used to identify, refine and confirm the factors of the CSFs framework for PPP briefing. Seven groups of CSFs are identified and a framework for the critical success factors in PPP briefing with special reference to UAE construction projects is developed.

Chapter 7 presents an in-depth analysis of practitioners' views on the relative importance of CSFs for PPP brief development in UAE construction projects. The methodology uses a questionnaire survey.

Chapter 8 follows, refining and confirming the results of a questionnaire by structured interviews with PPP professionals/experts/ practitioners. Then this chapter presents the modelling of the identified CSFs and develops a decision support system prototype. The used of the Analytic Hierarchy Process (AHP) in the modelling is discussed in this part of this chapter. Next, the aims and objectives, design and construction of the Decision Support System Prototype for Guiding the Briefing Process of PPP Construction Projects is described in detail.

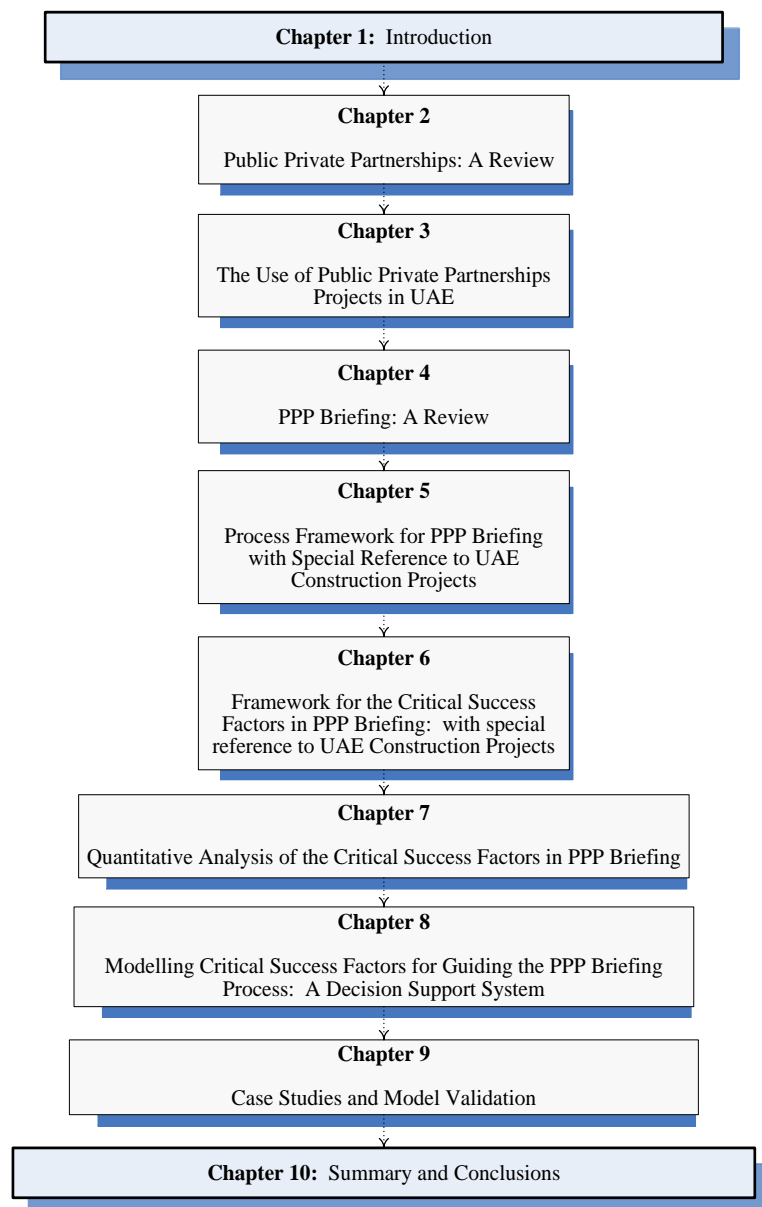


Figure 1-2: Outline of dissertation structure

Chapter 9 concerns the validation of the developed model and assessing its performance as a decision-making tool in PPP briefing. The development and validation process of the framework and the details of the two PPP mega projects, and interviews are presented.

Finally, Chapter 10 summarises the present study, states its main contributions, highlights limitations and suggest new areas for further improvement and future research directions.

## Chapter 2: Public Private Partnerships: A Review

### 2.1 Introduction

Public Private Partnerships (PPP) refer to arrangements between the public and private sectors in which part of the services or works that fall under the responsibilities of the public sector are provided by the private sector under clear contracts that clarify common goals for the delivery of public infrastructure and/or public services (Male & Kelly, 2008; Merna, 2008). It allows the public sector customer and the private sector provider to merge their special skills and to achieve an outcome which neither party could accomplish alone (Kelly, 2003).

The use of PPPs as a strategy for developing infrastructure projects has often been practiced internationally. The emergence of PPPs as a major approach for delivering infrastructure projects has increased substantially in the last couple of decades (Alfen, 2009; Li, Akintoye, Edwards, & Hardcastle, 2005b). The increase in use of the PPP approach can be generally explained in terms of its expected benefits, including access to private financing for expanding services; better management and allocation of risk; clearer project objectives; innovative ideas and flexibility; better planning and improved incentives for competitive tendering; and greater value for the money (VfM) for public projects.

This chapter provides a comprehensive literature review on Public Private Partnerships (PPPs). It starts by providing a background and definitions of PPPs, and, following this, a discussion of the types of PPP. The chapter then explores the different benefits of PPPs, and ends with a summary and conclusion.

## 2.2 Public Private Partnerships (PPP): A Review

### 2.2.1 Background and definition

From a definitional approach, there are a number of alternative names for PPPs that we should mention before embarking upon definitions; these alternative names are as follows (Yescombe, 2007b):

- Private Participation in Infrastructure (PPI): a term which seems to have been created by the World Bank. It is rarely used outside the development-financing sector, except for the South Korean PPI programme.
- Private-Sector Participation (PSP): used in the development-banking sector (but neither PPIs nor PSPs are limited to the definition of PPPs above).
- P3: used in North America
- Privately-Financed Projects (PFP): used in Australia
- P-P Partnership: (to avoid being confused with PPP in the sense of ‘purchasing power parity’, a method of comparing currency exchange rates to reflect the real costs of goods and services in different countries)
- Private Finance Initiative (PFI): a term initiated in Britain and now used similarly in Japan and Malaysia

PPPs have a long history in municipal infrastructure and urban services and in the particular context of infrastructure provision. The term Public Private Partnership (PPP) is used in legal, economic, and financial terminology with several meanings to describe a wide range of contractual arrangements between the public and private sector for the provision of infrastructure (Brinkerhoff & Brinkerhoff, 2011). Indeed, there is no obvious description of what constitutes a PPP. Carmona (2010) provides arguments that show how far this results from the fact that PPPs fill

a massive gap between traditional procurement and full privatization. It results also from the continuous debate about the actual meaning of “partnership”.

Moreover, the term PPP has several definitions that are due to the many forms of PPP projects and conditions in different countries. In the UK, when the United Nations Development Programme (2007) was planning PPPs for the Urban Environment, it indicated that the definition of the PPP should be broad enough to include even the informal dialogues between government officials and local community-based organizations, which are supposed to be essential to successful PPPs. In the US, the National Council for Public–Private Partnership defines a PPP as a “contractual arrangement between a public sector agency and a for-profit private sector developer, whereby resources and risks are shared for the purpose of delivery of a public service or development of public infrastructure” (Li & Akintoye, 2003)

In Canada, The Canadian Council for Public Private Partnerships (2011) defines a PPP as a “cooperative venture between the public and private sectors, built on the expertise of each partner, which best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards.”

According to its own report ,Li et al. (2005b), the Hong Kong Efficiency Unit (EU) has created a new focus on private-sector involvement (PSI) to “assist the government in meeting its priorities, building on the clear recognition that public funds are limited.” It has introduced the concept of PPP for the maintenance of infrastructure facilities in Hong Kong and defined PPP as “arrangements where the public and private sectors both bring their complementary skills to a project, with varying levels of involvement and responsibility, for the purpose of providing public services or projects.”

According to "Building Partnerships" (1996), the report of the Task Force on Private Public Partnerships in British Columbia, the expression "public-private partnerships" has had a very general meaning. Nevertheless, the key element is the existence of a 'partnership' style approach, as opposed to a 'supplier' relationship to the provision of infrastructure. Furthermore, each party as they work together takes responsibility for an element of the total enterprise, or both parties take shared responsibility for each element. Indeed, PPP includes a sharing of risk, responsibility, and reward, and is undertaken in the conditions when there is value for money benefit to the taxpayers (Allan, 1999).

In the same vein, the "Green Paper on Public-Private Partnerships and Community Law on Public Contracts and Concessions" document which was presented by the European Commission (2003), indicates that: "in general, the term refers to forms of cooperation between public authorities and the world of business which aim to ensure the funding, construction, renovation, management, or maintenance of an infrastructure or the provision of a service." According to the European Investment Bank (EIB) (European Investment Bank 2004), the term PPP covers a wide range of conditions. It should be taken as a "generic term for the relationships formed between the private sector and public bodies often with the aim of introducing private sector resources and/or expertise in order to help provide and deliver public sector assets and services." From the EIB's point of view, the "key feature of a PPP is that it involves a risk sharing relationship between public and private promoters, based on a shared commitment to achieve a desired public policy outcome." Accordingly, a core distinguishing feature that decides if a project should be considered as a PPP or as a traditional procurement depends on whether or not an

appropriate amount of risk has been transferred to the private partner on a long term basis (Carmona, 2010).

From an institutional and formal perspective, the Dutch public management scholars Van Ham and Koppenjan define PPP as: “cooperation of some sort of durability between public and private actors in which they jointly develop products and services and share risks, costs, and resources which are connected with these products.” According to Hodge and Greve (2007), this definition has a number of advantages: First, it points out cooperation of some durability; this collaboration cannot take place in short-term contracts. Second, it stresses risk sharing as a dynamic component and other shared factors also. Third, it states that the public and private actors conjointly produce a product or a service and, implicitly, want to gain from their mutual effort.

Most of the different PPP definitions that can be found in the literature thus describe the combined efforts of the public and private sectors to provide a facility for use by the public.

It is defined as follows:

- i. “a combination of resources of the public and private sectors in the quest for the more efficient service provision.” (Li & Akintoye, 2003)
- ii. “in project finance [it] involve[s] both the public and private sectors working together to develop large scale infrastructure projects. Their joint involvement necessitates the creation of collaborative arrangements to deliver essential infrastructure.” (Thia & Ford, 2009).
- iii. “a means of public sector procurement using private sector finance and best practices. PPPs can involve the design, construction, financing, operation and

maintenance of public infrastructure and facilities, or the operation of services to meet public needs. They are often privately financed and operated on the basis of revenues received for the delivery of the facility and/or services. One key to this is the ability of the private sector to provide more favourable long term financing options than may be available to a government entity and to secure the financing in a much quicker time frame (NCPPP, 2003). Such contracts are long-term in nature and typically last for 25 to 30 years.” (Jefferies, 2006)

- iv. “a corporate venture between public and private sectors, built on the expertise of each partner that best meets the clearly defined public need to the appropriate application of resource risks and rewards,” or “...an arrangement between two or more entities that enables them to work cooperatively towards shared or compatible objectives and in which there is some degree of shared authority and responsibility, joint investment of resources, shared risk taking and mutual benefit.” (Allan, 1999)
- v. "an approach to delivering public services that involves the private sector, but one that provides for a more direct relationship between the public and private sector than would be achieved by a simple (legally-protected) market-based and arms-length purchase” (Jane & Richard, 2003).

It should be noted that the concept of PPP is sometimes confused with conventional contracting-out arrangements, privatization and the outsourcing of services. A classic contracting-out arrangement involves a private-sector party providing a commercial service previously provided by the public sector itself. In this case, there is little or no transfer of responsibility and control to the private sector partner, and no essential involvement in decision making. This departs from the PPP arrangement which is characterised by some delegation of control and



authority and by the participation of the private-sector partner in decision making. Furthermore, the private sector would probably be a provider of capital assets along with services (Allan, 1999).

However, the Hong Kong Efficiency Unit (EU) defines the service outsourcing as “an arrangement where a government department contracts with an external service provider for the provision of services specified and paid for by the department. Outsourcing is being encouraged within the civil service as a means to improve the efficiency and quality of services” (Allan, 1999). According to Allan (1999), outsourcing differs from PPP in that the service provider has little if any involvement in decision-making regarding the service to be provided, and the length of the service contract is normally short.

Privatization involves a private sector organisation providing a facility to the public at a price that is set by the market’s ability to pay for such a service. The government has no participation in the provision of such a service, except when regulation becomes necessary. The key difference is that privatization involves a permanent transfer of a previously publicly owned facility to the private sector, while a PPP essentially involves an on-going role for the public sector as “partner” in a continuing relationship with the private sector (Allan, 1999; Carmona, 2010; Dima, 2004; Farquharson, Torres de Mastle, Yescombe, & Encinas, 2011; Lynne, 2007).

### **2.2.2 Types of PPP**

There are several types of PPP, each involving the provision of a public service facility under some combination of the following functions:

- Project initiation and planning

- Design
- Financing
- Construction
- Ownership
- Operation
- Revenue collection

Consequently, central and local government organizations have become more and more involved as regulators; they focus resources on service planning, performance monitoring, and contract implementation instead of the direct management and delivery of services. Table 2-1 summarises the main types of PPP; it was developed on (Massoud, El-Fadel, & Abdel Malak, 2003; Nyarku, 2009; Quium, 2011; Ribeiro & Dantas, 2006; Seader, 2004; World Bank, 2012; Yescombe, 2007a, 2007b).

Table 2-1: Types of Public Private Partnership

Types of PPP	Description
<b>Greenfield Projects:</b>	
Design-Build (DB)	A private partner provides both the design and construction of a project to the public agency. The public sector partner pays an agreed contract sum on completion of the construction phase and owns the assets and is responsible for operation and maintenance.
Build-Lease-Transfer (BLT)	This technique is similar to the DB option, but the public sector organisation pays for the project over a long-term lease. Once the lease is fully paid, the facility is conveyed to the public sector at no extra cost. The public sector operates the facility throughout the term of the lease.
Design-Build-Finance-Operate/Maintain (DBFO, DBFM or DBFO/M)	A private sector partner enters a contract to design, construct, finance, operate and/or maintain a public facility. At the end of the lease term, the facility is transferred to the public sector. In some countries, DBFO/M covers both BOO and BOOT
Build-Operate-Transfer (BOT)	The government turns over (as a concession contract) the development and initial operation of a public-sector project to the private sector. The private-sector contractor or consortium of contractors finances the project, undertakes the construction, and operates the new facility over an agreed period after which it is expected to transfer ownership to the government, so it eventually can retain control of the public service.  This method of procurement is also referred to as Design-Build- Operations and Maintenance (DBOM) which combines the responsibilities of designing, building, and procurements with the operation and maintenance of a facility for a specified period by a private sector partner. At the end of this period, the operation of the facility is restored to the public sector.

Types of PPP	Description
<b>Greenfield Projects:</b>	
Build-Own-Operate (BOO)	The contractor enters a concession contract to design, build, finance, and operate a public sector facility for as long as the economic operating life of the facility permits. However, there is no transferring of ownership to the private sector
Design- Build- and Maintenance (DBM)	This model is similar to Design-Build except that the private sector also maintains the facility. The public sector retains responsibility for operations.
Design- Build and Operations (DBO)	Under this model, the private sector designs and builds a facility. Once the facility is completed, the title for the new facility is transferred to the public sector, while the private sector operates the facility for a specified period. This procurement model is also referred to as Build – Transfer – Operate (BTO).
Build-Own-Operate-Transfer (BOOT)	The government grants a franchise to a private partner to finance, design, build and operate a facility for a specific period of time. Ownership of the facility is transferred back to the public sector at the end of the period.
<b>Existing Services And Facilities</b>	
Concession	<p>The government grants private entity exclusive rights to provide, operate, and maintain an asset for a long term in accordance with performance requirements set out by the government. The public sector retains ownership of the original asset while the private operator retains ownership over any improvements made during the concession period.</p> <p>This type of private sector involvement is very old; it began in the 17<sup>th</sup> century. After the 19<sup>th</sup> century, as the role of the state expanded, the use of concessions for constructing new infrastructure faded away in many countries, but franchises continued to be important, e.g. in the French water sector. The decline of concessions began to reverse only at the end of the 20<sup>th</sup> century, as interest started to grow in this and other types of PPP as an alternative funding mode. Similarly, franchises have been revived, e.g. in the British rail sector.</p>
Lease	The government grants a private entity a leasehold interest in an asset. The private partner operates and maintains the asset in accordance with the terms of the lease.
Service Contract	The government contracts with a private entity to provide services which the government would have previously performed.
Management Contract	A management contract differs from a service contract in that the private entity is responsible for all aspects of operations and maintenance of the facility under contract.
Partial/Full Divestiture	The government transfers a public infrastructure asset, either in part or in full, to the private sector. Generally, the government imposes certain conditions with the sale of the asset to ensure that improvements are made and citizens continue to be served.
Operations and Maintenance (O&M)	A public partner contracts with a private partner to provide and/or maintain a specific service. Under a private operation and maintenance option, the public partner maintains ownership and whole management of the public facility or system.

It is worth noting that full and partial divestitures are not defined as PPPs from the World Bank's perspective (Carmona, 2010). Moreover, studies show that 50% of the completed PPP projects in the GCC between 2005 and 2010 were management contracts (Markab Advisory, 2012). However, it is also worth noting

that there is disagreement about considering management contracts or (longer-term) lease or Affermage arrangements with limited private sector investments as types of PPP (World Bank, 2012). Here, Farquharson et al. (2011) provide the arguments that show how far these projects share some features with capital-intensive PPPs in several of their steps. The transfer of risks to the private sector is limited in its effects on the incentives and nature of the partnership. Specifically, while the private party's profit could be at risk under a management contract, only limited private sector capital is at stake, and consequently, the vital disciplinary mechanisms found in capita-intensive PPPs, such as lenders' due diligence and following the exposure of capital investment to performance risk, are absent or lowered (Farquharson et al., 2011). This does not depart from the view of Yescombe (2007b), who points out that "A franchise is not considered to be a PPP as previously defined, because it does not involve the provision or upgrade of infrastructure, but only its operation. However, the contractual and financial basis is similar in some respects." (Yescombe, 2007b)

Given that there is no commonly accepted terminology for the various arrangements for PPPs, other abbreviations can be found in the literature, such as (Carmona, 2010):

- Build-Develop-Operate (BDO)
- Design-Construct-Manage-Finance (DCMF)
- Buy-Build-Operate (BBO)
- Lease-Develop-Operate (LDO)
- Build-Own-Operate-Transfer (BOOT)
- Build-Rent-Own-Transfer (BROT)
- Build-Lease-Operate-Transfer (BLOT)

## 2.2.3 Advantages and disadvantages of PPP

### 2.2.3.1 The advantages of PPP

As well as the injection of private sector capital, PPPs can bring other significant benefits for governments. One of the main advantages is that they use the private sector's principles of enterprise in the provision of public services (Gunnigan, 2007), where private sector participation leads to greater levels of efficiency in the project being built and the services being provided. In this regard, researchers suggest the following benefits for using the PPP in public projects. They:

- **Enhance the government's capacity to develop integrated solutions**

Due to limited budgets, under the traditional procurement process, governments have usually broken down broad scope projects into small parts, and managed these parts as separate units that have to be executed sequentially over a long period. Consequently, there is a limited chance to develop integrated solutions that can effectively meet public sector needs (Li & Akintoye, 2003). However, PPP with its broad mandate and with the allocation to the private partner of responsibility for design and construction with that for on-going service delivery, operation, maintenance and refurbishment, along with payments tied to the availability service, incentivizes the private sector to deliver an innovative and fully integrated solution European Commission (2003).

- **Manage the project and the allocation of risk better:**

Unlike conventional procurement methods, under PPP the risks are allocated to the party which is best able to manage them (Allan, 1999; Seader, 2004; UNIDO, 1996). Therefore, as a part of the planning process of PPP projects, a proper risk

transfer strategy requires to be developed, wherein the risks best managed by the private sector are transferred to it, and risks best managed by the public sector are retained by it (Li & Akintoye, 2003). In so doing, the risks in PPP schemes related to project delivery should be transferred to the private sector partner (Gunnigan, 2007; Li & Akintoye, 2003; Li, Akintoye, Edwards, & Hardcastle, 2005a). Shen et al. (2006) have observed that development risks, market risks, financial risks and force majeure may be shared effectively between public and private partners. But transferring site acquisition, legal and policy risks to the public sector is more effective. The private sector can effectively manage the design and construction risks, while the operation risks and industrial action risks are borne by the private sector (L.-Y. Shen, Platten, & Deng, 2006). However, Gunnigan (2007) indicates that the public sector should retain the ultimate responsibility for the operation of the services that are critical to society, to avoid the failure of such services, wherever the risks are allocated (Gunnigan, 2007).

It must also be borne in mind that in infrastructure PPP projects most of the risks come from the complexity of the arrangements, such as documentation, financing, taxation, technical details and agreements. Thus, before competitive tendering, an expert analysis of all risks and proper contractual arrangements is needed. In this context, there are two broad categories of risk, global and elemental. Global risks include risks that are usually allocated through a project agreement, such as political, legal, commercial and environmental risks. Elemental risks comprise all the risks related to the construction, operation, finance and revenue generation components of the project (Grimsey & Lewis, 2002).

- **Facilitate creative and innovative approaches:**

It can indeed be argued that moving away from the narrowly defined technical specification of traditional procurement to the broad mandate of partnership for the sake of a clear objective can provide greater opportunity for innovation. Thus, PPP process incentivises bidders to compete according to their capacity to deliver the project in a unique and creative approach (Li & Akintoye, 2003). PPP generally encourages the use of innovation in a bid to increase value for money or in other words to maximise the financial return over the whole-life cycle of the project (Allan, 1999). In the construction industry, innovation may be introduced to shorten schedules, reduce construction costs and enhance operating efficiency (UNIDO, 1996). Under PPP schemes both parties must be prepared to think of the project with a wider vision. The private sector should deal with PPP projects as a long-term business (Gunnigan, 2007; Leiringer, 2006). But a significant change in mind-set for public sector project teams is required to accept the new ‘hands-off’ role instead of the tight control of the design and construction under traditional procurement procedures (Gunnigan, 2007). However, as in any other kind of project, in PPP there are several inhibitors in the process that may limit the amount of innovation achieved (Leiringer, 2006). This is often clear in the design of standard PPP projects, where the design is specified by public authority. Innovation in PPP projects can also be discouraged by lenders if it creates additional or unknown risks (Yescombe, 2007a).

- **Reduce the cost of implementing the project:**

One of the crucial benefits of using PPPs is their reduction of lifecycle costs or providing higher quality for the same cost (Li & Akintoye, 2003; Seader, 2004). PPP usually does not allow for the contract price to be adjusted for changes in costs,

and private financiers have more scrutiny over a project's specifications. Indeed private companies' returns on a PPP depend on constructing and implementing the project on time and within budget, which in turn creates stronger incentives than under public procurement, where the contracting authority bears the cost of changes. This leads to more careful and conservative cost estimates so as to reduce the optimism bias. Construction companies interviewed by the UK National Audit Office (NAO) showed that the PPPs "impose a greater discipline" with respect to cost certainty for projects (World Bank, 2012). Furthermore, supporters of PPPs argue that innovative solutions and full integration under the responsibility of one party of the design, construction, operation and maintenance, can reduce the total project costs (Allan, 1999; The Efficiency Unit, 2005b). The reason is that, under a PPP, the designers and builders have an incentive to use design features and construction standards that can mitigate the long-term costs of maintenance and operational requirements (Katz, 2006).

Moreover, as indicated previously, PPP involves proper identification, quantification, and allocation between the partners of the risks related with the partnership project. Risk is a project cost in its own right. Given these facts, this structured approach to its management can result in greater economic efficiency than public sector conventional procurement can, where risk is often ignored as an element of cost (Allan, 1999). As a consequence, by allocating specific risks to the partner who is more capable of managing it at least cost and with faster delivery of the project, the costs associated with risk management can be reduced (Cuttaree & Mandri-Perrott, 2011; Li & Akintoye, 2003).

Nevertheless, it has been shown that PPP leads to the reduction of lifecycle costs, although the issue of cost saving using PPP is still being debated. In 2000



Arthur Andersen and Enterprise confirmed that private finance initiative (PFI) projects are on average delivering savings of 17% over traditional forms of procurement (Gunnigan, 2007; The Stationery Office, 2000). This departs from what was argued earlier by the National Audit Office (NAO), which indicated it as 20% (Li & Akintoye, 2003). In addition, Kumaraswamy and Zhang (2001) provide several cases of BOT, which is one mode of arranging PPP project that had come across problems caused by cost overruns, unrealistic price and income projections, and legal disputes between private operators and the government. Furthermore, when PPP is being chosen as a procurement path, 4% of capital costs must be expected by reason of the lengthy procurement process (Gunnigan, 2007) .

- **Reduce the time needed to implement the project**

In the traditional procurement process, the government construction of major infrastructure projects is classically broken down into small parts and executed over an extended period, while the initiation of every phase is tied to a multi-year capital plan (Li & Akintoye, 2003). Furthermore, the bureaucracy and financial burden make the securing of funds for major public construction projects something that frequently involves a complicated and lengthy process with an uncertain outcome (Utt, 1999).

However, with PPPs partners are free from bureaucratic “red tape” and financial and administrative burdens; thus they can operate more flexibly and effectively than government entities (Allan, 1999) (Cheung, Chan, & Kajewski, 2009). Additionally the full integration and allocation of design and construction responsibility to the private partner, along with payments tied to the service availability, incentivizes the private sector to deliver capital projects within a shorter

construction timeframe European Commission (2003). Broadly speaking, a PPP set-up allows the implementation and construction of the project to be speeded up whenever the project is considered beneficial to society. In this case, it is less dependent on budgetary resources, a condition which frequently causes the postponement of a project, because it takes on a more political dimension (French Ministry of public works transport and housing, 2000). Indeed, PPP projects have a track record of delivering more projects on time and within budget than other forms of procurement. Research from the National Audit Office (NAO) shows that whereas 69% of PPP projects were completed on time and 65% on budget this fell to 63% on time and 54% on budget with traditional procurement (Royal Institution of Chartered Surveyors, 2011). Generally, this accelerated construction schedule can be achieved because a PPP: (a) allows design and construction to be done simultaneously instead of sequentially, (b) it creates motivations in the project that reward the private partner for completing the project on time, (c) decreases the number of times a government project or proposal goes out to tender, and (d) reduces on-going changes to the project design, which can both cause delays and create cost overruns (Li & Akintoye, 2003). It is worth noting that the faster implementation of infrastructure projects under a PPP set-up provides a win-win solution for both private and public sectors, because it makes it possible for both parties to recognize benefits more quickly. This perspective remains valid regardless of the level of development of the countries which implement PPP projects (French Ministry of public works transport and housing, 2000).

- **Access skilled, specialized expertise and proprietary technology:**

Technology and soft resources transfer are significant potential benefits that governments can gain by undertaking a PPP project. Soft resources include

managerial and technical skills, information, contacts, and credibility/legitimacy (Brinkerhoff & Brinkerhoff, 2011). Given that the public services can be delivered more satisfactorily by the proper use of these skills and technology (Tang, Shen, & Cheng, 2010), the PPP procurement process requires a strict analysis of the project, including an analysis of opportunities for innovation. In turn, this can develop more public expertise than is associated with a conventional procurement process (Li & Akintoye, 2003). Davies and Eustice (2005) claim that besides creating useful economic investment opportunities across a range of public sector areas, PPP has encouraged the expansion of a facilities management sector capability, skilled in PPP projects' life cycles. In addition, because we live in an era of unprecedented technological progress, the private sector, which has a high rate of take-up of this technology, takes full advantage of its application. It is quite different from the case of the public sector; where such a level of progress is not usually a feature. This is inevitable when the governments cannot afford to provide or maintain such know-how in-house (Gunnigan, 2007; Seader, 2004). Here, Gates (2008 ) provides an argument that under PPP partners can solve specific challenges much more quickly by developing and deploying effective information technology solutions. At the same time, PPP has the virtue of being a catalyst for generating a “vibrant technology industry” that provides the basis for new jobs and significant economic growth.

#### **2.2.3.2 Disadvantages of PPP**

In spite of the aforementioned advantages, practice showed that PPPs have not proven to be “low hanging fruit”. Indeed, a number of problems/disadvantages encountered with the implementation of PPP.

One of the important reported problems is the perception of ‘risk transfer’, which has played a significant role in justifying PPPs as discussed earlier in this chapter. In fact transferring risks to private sector is not free, as in order to increase their profit, the private sector prices these risks into their tender price, which result in a higher risk premium being charged to the public sector. Hall (2008) asserted that according to the recommendation of an economic analysis of risks and PPPs, it is most efficient to keep the demand risk with government even under PPP scheme. He gave the example of the UK major PFI hospital projects that looked more expensive than public sector option when the estimate of ‘risk transfer’ was introduced. However, no effort is made to overlook the risk transfer or the benefits of such transfer (if happens) in reality. The UK National Audit Office (NAO) has audited only 10 PFI contracts (signed up to 2007) out of 622, and in the term of ‘value of the risk transfer’ only 3 out of these 10 contracts had been examined (Pollock & Price, 2008).

Furthermore, Eadie, Millar, and Grant (2013), investigated the managers’ perceptions for risk allocation in transport (highway infrastructure) and healthcare PPP/PFI projects in the UK, which attracted the largest capital-spending for private sector in PPP/PFI schemes in the UK. They found that the problem of risk allocation is the highest ranked disadvantage in both sectors. They further concluded that in PPP projects, risks are unpredictable and difficult to be allocated effectively to the right parties. Moreover, even if the majority of risks are transferred to the private partner, in practice, government is the responsible entity for providing services to the public. Thus in case of the private partner’s failure, government retains a large portion of the transferred risks (Jakutyte, 2012).

Cost overruns and legal disputes are some common problems that were also reported in PPP projects. Kumaraswamy and Zhang (2001) reviewed a number of BOT projects in Hong Kong that had run into problems because of cost overruns, unrealistic price and income forecasts, as well as legal disputes between private and public sector. Their research acknowledged that the government and the general public shouldered the cost of failure of all these cases. Likewise, the study by HM Treasury (2012), revealed that UK Experience in PFI is not that satisfactory because of several weaknesses, which included: slow and large PFI bidding and contractual costs for both government and private partner, which resulted in cost increase and value for money reduction for the taxpayer; widespread concern about flexibility of PFI contracts to make modifications during the operational period; a higher risk premium being charged to the public sector due to inappropriate risks transfer; a lack of transparency due to confidentiality agreements in project financial performance, investors' returns and taxpayer future liabilities by PFI projects; and finally the concern about value for money for projects.

### **2.3 Summary and Conclusion**

This chapter provides a comprehensive literature review on Public Private Partnerships. It starts with providing a background and definitions of PPP, and, following this, discusses the types and potential benefits of PPP.

Several types of PPP are available and can be widely adapted. The selection of the appropriate type depends on the project's aim and objectives, type and size, and its expected benefits. It also depends on the level of acceptance of each party (public and private) for the amount of risks that will be allocated between them.

Advantages and disadvantages are investigated. Advantages that can be gained by adapting PPPs include: the enhancement of government's capacity to develop integrated solutions; better management and allocation of risk; creative and innovative approaches; reduced costs and time for implementing the project; access to skill, specialized expertise and proprietary technology. On the other hand, a higher risk premium; value for money issue; rigidity of PPP contracts; and high bidding cost are widespread concern by number of researchers.

The following chapter discusses the use of PPP in the UAE in particular, using in-depth semi-structured interview sessions with experts and key personnel from the public and private sectors of the GCC region who are involved in the development and life cycle of PPP projects in the UAE.

## **Chapter 3: The Use of Public Private Partnerships in the UAE: Experts Perceptions**

### **3.1 Introduction**

During the last decade, the United Arab Emirates (UAE) has been the biggest market for Public Private Partnerships (PPPs) among the Gulf Cooperation Council countries (GCC). Currently, PPPs are increasingly being used in the rapid development of UAE infrastructure projects. Despite this fact, little is known about the future demand and the key success factors of adopting such an approach for infrastructure projects in the UAE. This chapter seeks to fill this research gap, using in-depth semi-structured interview sessions with experts and key personnel from public and private sectors within the GCC region who are involved in the development life cycle of PPP projects in the UAE. The study is guided by a comprehensive literature review (see previous chapter).

The above interviews were held with PPP experts and key personnel who have experience in the development life-cycle of PPP infrastructure projects in order to investigate the UAE's use of PPP and explore their perception of the importance, future demand and key success factors of PPP projects and examine the relative importance of these factors. The chapter starts by providing a background to this topic, before presenting the findings from the interviews in light of findings from other countries that have adopted the PPP approach. The chapter then explores the experts' perceptions according to their sector (public and private) of the importance of the surveyed success factors; it ends with a summary and conclusion.

### 3.2 The USE of Public Private Partnerships in the UAE: Semi-Structured Interviews

The Gulf Cooperation Council (GCC) countries have since 2007 accounted for over 80% of private project financing in the Middle East and North Africa (MENA) countries. According to Salisu, Bousrih, and Harrabi (2012), over 54.4 billion USD dollars has been spent on PPP infrastructure projects. The United Arab Emirates (UAE) was the biggest market in the GCC for PPPs, followed by Saudi Arabia, in terms of the number of PPP deals. These two countries account for approximately 37% and 30%, respectively of the PPPs under way in the GCC countries. as shown in Figure 3-1 (Gavin, 2011).

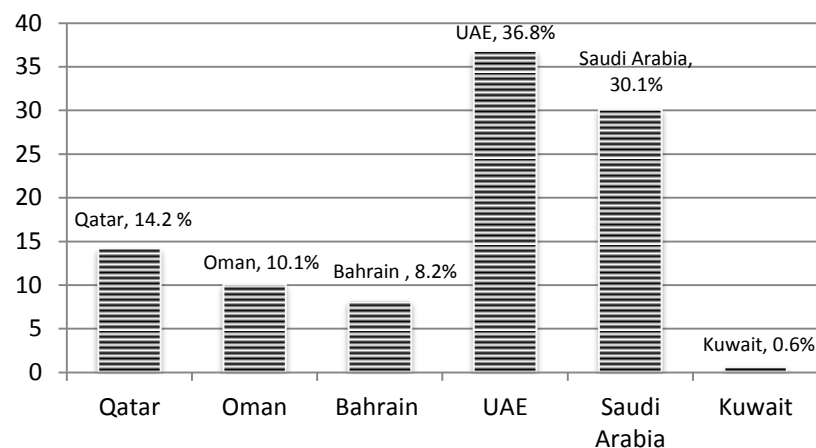


Figure 3-1: Breakdown of PPP deals in GCC by country – adapted from (Gavin, 2011).

The concept of PPP is not completely new to the UAE; in 1998, the Abu Dhabi Emirate, the UAE capital, successfully launched its PPP program for Independent Water and Power Projects (IWPPs), which became known as the flagship PPP in the GCC region. This was called the Taweelah A-2 project. The implementation of this PPP by the then newly created Abu Dhabi Water and



Electricity Authority (ADWEA) succeeded in dispelling many of the myths surrounding the build-operate concept in the Gulf (Dubai Chronicle, 2011). After the Taweelah A-2 project experience, the UAE government started to extend the PPP model not only into IWPP but into other social and economic infrastructure areas, such as education, health care, airports, environmental projects and social housing.

According to Marcus Evans (2010), the UAE Government Strategy 2011–2013 looks forward to encouraging the private sector more strongly in order to improve the skills of the national workforce and to develop an institutional framework for PPPs. In spite of this government support, little is known about the factors which lead to the successful adoption of PPPs in infrastructure projects in the UAE. Because of the growth in the number of such projects, research worldwide is trying to discover what leads to the success of PPP projects. A range of research methods, i.e. case studies, interviews, questionnaire and literature surveys, is being devoted to the task in different sectors and countries, and studies have provide a series of lists of Critical Success Factors (CSFs) (Ernest & Chan, 2013). For countries that are relatively late in adopting PPP, such as the UAE, it is especially important to identify these factors and so reduce the risks for all parties.

The research work presented in this chapter seeks to fill this research gap. The perceptions of the interviewees are presented together with their opinions in light of findings from other countries that have adopted the same approach. Then the experts' perceptions according to their sector (public or private) concerning the importance of the surveyed success factors are explored.

### 3.2.1 Development of the semi-structured interviews

Although the UAE is the biggest market for PPPs in the GCC, the country is a newcomer, with less market exposure to, experience of and maturity in PPP as a procurement method than most other countries. Thus the research sample is too small for a reliable quantitative approach. For a qualitative approach, however, interviews remain a popular technique for data collection. Furthermore, the method of semi-structured interviewing is considered a good approach, yielding worthwhile and detailed information, due to its reliability, structure and control, and at the same time, to the flexibility of responses that can be obtained from it. The form of “interviewing elites” was chosen to achieve the objectives of this study, gathering the varied opinions of personnel in key positions from both the public and private sectors with knowledge of PPP. All of them had experience in the development of PPP infrastructure projects in the UAE. For Marshall and Rossman (2011), interviewing elites is a special case focusing on a specific type of interviewee. They consider it to have unique benefits due to the respondents’ valuable information and insights. However, gaining access to such interviewees is a great challenge because of their busy schedules and their responsibilities.

This study chose interviewees on the basis of their experience and instrumental role in the domestic development of PPP infrastructure projects. A variety of methods were used to conduct their interviews. They were first sent soft copies and hard copies of the questionnaire survey to show the basic questions for discussion. Then face-to-face interviews and/or Skype meetings were held to discuss the main topics and to document any other issues that might arise in discussion. A simple mathematical means average calculation was used to rate the level of importance to the interviewees of each identified CSF.

### 3.2.2 The implementation of the semi-structured interviews

After the first draft of the questionnaire was developed, it was piloted by two academics and two PPP advisors in the GCC, who commented on ways to improve it; it was then revised in light of these. In its final draft, the questionnaire consisted of two parts. The first part collected background information on the interviewees. The second part assessed the importance and demands of the PPP infrastructure projects in the UAE and asked respondents to discuss and rate the importance of the possible critical success and failure factors of its PPPs. A combination of closed and open-ended questions was used. Where appropriate, a five point rating scale was adopted. The respondents were offered adequate space after each question to add information or comments. Such questions were easy to answer and made a good starting point for discussion. More details of the questions used are given in the analysis section.

Out of 41 invitations issued to PPP experts, a total of 21 personnel agreed to be interviewed, with 12 (57.14 %) from the public sector and 9 (42.86 %) from the private sector. The public sector group included senior/key personnel with practical experience with the PPP schemes of relevant government bodies. The respondents from the private sector comprised industry practitioners experienced in PPPs, such as developers, consultants, contractors and investment bankers. The sample aggregation according to the years of practical experience shows that 47.5 % of the respondents had more than 20 years of industrial experience. The respondents' overall years of experience are shown in Figure 3-2. Regarding their experience in PPP development, 66.7% of the respondents had between 5 and 10 years of overall experience in PPP projects, 23.8% had 10–15 years, and 9.5% had more than 20 years, as shown in Figure 3-3. The types of PPP project they had worked on were also varied.

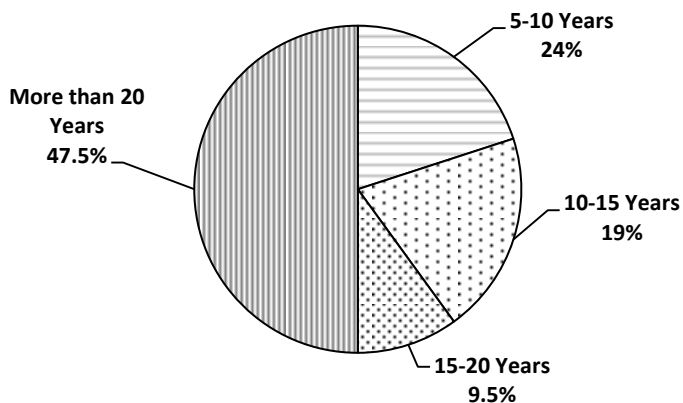


Figure 3-2: Respondents' years of overall industry experience

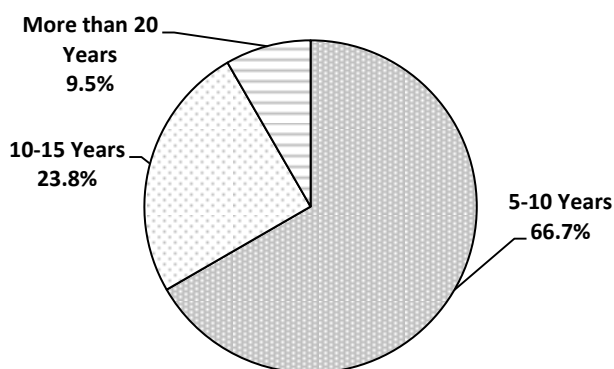


Figure 3-3: Respondents' years of overall PPP experience

### 3.2.3 Findings and discussion

#### 3.2.3.1 PPP importance and appropriateness

The respondents were asked whether they thought PPP was a better and more effective method for infrastructure procurement in this area of the world the more traditional ones. Analysis of the results revealed that 90% of the respondents believed that PPP is a better and much more effective way to secure infrastructure than its predecessors. During the interview discussions, the respondents identified several benefits and advantages of the PPP approach to justify their opinion. The key benefits are listed below:

- PPP facilitates creative and innovative approaches. It encourages the injection of private sector capital, and can remove costly projects from a government's balance sheet, while also delivering value for money. Moreover, PPP can reduce the cost of implementing infrastructure projects by its more efficient use of resources.
- PPP delivers budgetary certainty and provides better management and allocation of risks.
- The PPP approach provides access to talented and specialized expertise and provides a way to transfer proprietary technology. With PPP, the quality of service has to be maintained for the life of the project.
- The PPP set-up allows the implementation and construction of the project to be speeded up.

The first three mentioned benefits are generic and support the findings of several researchers, who have identified the benefits and advantages of the PPP approach (Allan, 1999; Cuttaree & Mandri-Perrott, 2011; European Commission, 2003; Grimsey & Lewis, 2002; Gunnigan, 2007; Katz, 2006 ; Kumaraswamy & Zhang, 2001; Leiringer, 2006; Li & Akintoye, 2003; Li et al., 2005a; Seader, 2004; L.-Y. Shen et al., 2006; Singh, 2009; The Efficiency Unit, 2005a; The Stationery Office, 2000; UNIDO, 1996; World Bank, 2012). The last benefit is related more to the GCC context; this part of the world needs a fast-growing infrastructure and the traditional procurement methods take too long to produce results of the required magnitude.

However, one of the interviewees argued the reverse. He said, 'From evidences and experience, since the last economic crisis, there is less appetite for risk in this part of the world. Governments in this area will invest only in projects that

provide a safe return'. It is the author's opinion that PPPs can offer a viable alternative to traditional procurement methods; however, a number of conditions must be met to ensure its success. These include environmental and project-related critical success factors such as the availability of an effective, proper and regulatory framework for PPP; the availability of a suitable financial market (local and international), political support and stability; proper risk allocation and sharing among the project stakeholders; and finally, a clear project brief and client outcomes.

### **3.2.3.2 The potential future demand for PPP projects in the UAE**

To investigate the future demand for PPP in the UAE, respondents were asked to rate the potential future demand for it in eight sectors beyond a five-year window. They were also invited to add new sectors if necessary.

As shown in Figure 3-4, the respondents identified "energy" as the highest potential future demand sector to be delivered under the PPP approach, with a means average calculated at 3.7 out of 5. This was expected because of the high rate of population growth and because of the high per capita electricity consumption in these countries. According to Deloitte (2011), per capita electricity consumption in the GCC over the period 2007-2035 is expected to increase at an annual rate of 2.5%. according to Markab Advisory's report (2012). Independent Power Projects (IPPs) and Independent Water and Power Projects (IWPPs) as PPP models are well established in the GCC countries. In 2012 there were 44 planned power and water projects worth \$31.9 billion; where the UAE has most – 11 projects valued at \$10 billion. Moreover, the report noted that the PPP will continue to play an active part in the energy sector, where the demand for power is expected to triple over the next 25 years.

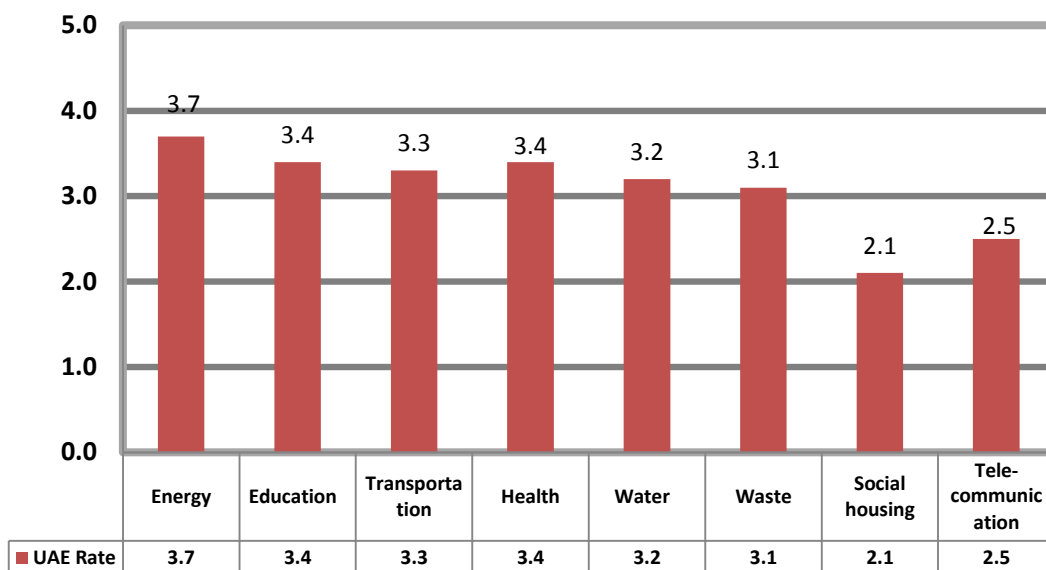


Figure 3-4: The potential future demand for PPP projects in the UAE

This was closely followed by the education sector, rated by the respondents at 3.4. Broadly speaking, the experts noted the rapid changes in the educational systems in many GCC countries. These countries are adopting ambitious strategic plans to be achieved within 5–10 years, and are thus committing increased public and private spending to this sector. In fact, the PPP model has already offered quick-win results to the GCC’s education system in terms of constructing, managing and operating public educational institutions in the United Arab Emirates, Qatar and Saudi Arabia in particular, which has encouraged other GCC countries to consider this model in the development of their education sector also.

Similar results to the above apply to healthcare, which the respondents rated at 3.4 out of 5. During the interview discussions, the respondents highlighted the extensive efforts by the UAE government to invest in this sector. In fact, a report by Frost and Sullivan (2012) showed that the UAE has been a pioneer in PPP deals in the GCC countries, as shown in Figure 3-5.

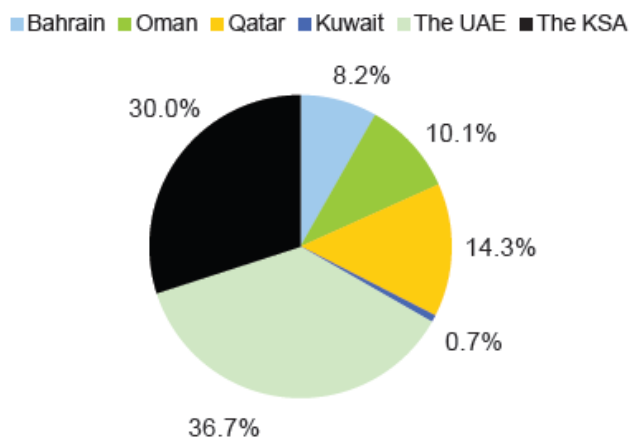


Figure 3-5: Market share percentage in 2010 of PPP Healthcare projects in GCC countries. Source: Key Hospital Indicators in the GCC (Frost and Sullivan, 2012)

The transportation sector received a rating of 3.3. The respondents indicated that the UAE is particularly interested in improving the rail, road, air and shipping network to cope with national and global demand. As a result, transportation has become a key demand sector under the current and future prospects of economic and demographic growth. According to (Kuwait Financial Centre S.A.K - Markaz, 2011a), the direction and nature of trade between the GCC and the world is shifting; most of the trade of the GCC's has moved from the Organisation for Economic Co-operation and Development (OECD) countries to the emerging markets, which were rising from 1980 to 2009 by 11% per year. According to this report, the bulk of the investments will be in the UAE.

Following healthcare, respondents rated water at 3.2 out of 5. According to (Kuwait Financial Centre S.A.K - Markaz, 2011b), the Middle East is known to be among the most waterless regions in the world. While the countries contain 6% of the world's population, it contains less than 1% of the total fresh water in the world. At the same time, population growth in the GCC region is among the highest in the world; the forecast was that it would grow by about 3% in the five years between 2009 and 2013, while in 2011 the world's population growth fell by 1.1%, as shown



in Figure 3-4. In 2020 the countries' population is expected to have grown from an estimated 39.6 million in 2008 to 53.4 million. This growth is due both to high birth rates and an improving life span due to investment in the healthcare sector (Hyslop, 2012). Meanwhile the average citizen of the GCC countries (some of which were rated as the world's most water-stressed countries) uses less than half as much water as the average American. Therefore high population growth can be considered the main driver for the momentum of water projects in the GCC region (Kuwait Financial Centre S.A.K - Markaz, 2011b).

Similarly, most of the interviewees believe that the waste sector faces almost the same expected demand as the water sector does, and rated it at 3.1 out of 5. The social housing sector receives the lowest rate (2.1 out of 5). During the interview discussions, some respondents highlighted that PPP is considered a new method which is currently emerging in the affordable housing sector in this region. Examples such as Bahrain and Abu Dhabi in the UAE were discussed; the former has recently launched a social housing PPP project with a private developer and the latter has numbers of social housing projects completed under the design and build (DB) scheme (e.g. Al Falah and Al Ghuraibah projects). Furthermore, one executive director for financial affairs in one of the UAE national housing institutions noted that there is already an agreement to re-energise PPP between the public and private sector, to provide better housing solutions for UAE nationals through improved cooperation.

In general, the primary driver of housing demand in a market is the rate of household formation, Plumb et al. (2011) noted that population growth and age structure are the major factors that determine the rate of this household formation. As noted above, in the GCC, the growth forecast for nationals is double the world

average, accompanied by a relatively young age profile, as shown in Figure 3-6. The GCC population boom throughout the 2000s was extraordinary by both global and historical standards (Hyslop, 2012). All of these factors are driving the increased need for housing across the GCC countries.

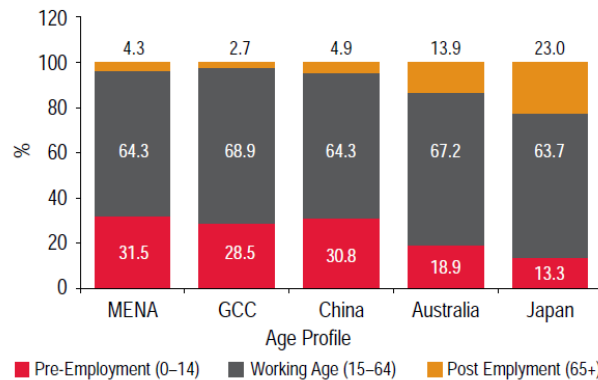


Figure 3-6: Age structure in the GCC countries compared to the MENA countries and other countries (Plumb et al., 2011)

According to Plumb et al. (2011), affordable housing for the MENA countries has an estimated shortfall of 3.5 million units. Saudi Arabia has the largest shortfall in the Gulf of 500,000 plus homes followed by 40,000 homes in Bahrain, 20,000 in the UAE and 15,000 in Oman. Consequently, the interviewees believed that PPP can be a solution to the shortage, because it solved the housing shortages in Turkey and Morocco. It may be helpful to highlight the experience of Turkey, where the government has made use of PPP to build affordable housing through its Housing Development Administration (TOKI). In the past 25 years, TOKI has delivered more than 500,000 housing units in over 2,000 projects. In Morocco, the government launched a programme five years ago bringing in private developers with a view to reducing its shanty towns and substandard dwellings and to ease the housing shortage. The government offered land and tax breaks and the housing projects proved attractive to the private sector (Plumb et al., 2011).

Finally, the telecommunication sector received a rating of 2.5, the second lowest after social housing, indicating the expectation of average demand.

### **3.2.3.3 The critical success factors (CSFs) in PPP projects in the UAE**

Certain factors can determine the success of a project; these are termed its critical success factors (CSFs). The concept of CSFs was first used in the context of project management and information systems by Rockart in 1982 (Jefferies, Gameson, & Rowlinson, 2002; Li et al., 2005b). Rockart (1982) defines CSFs as the “few key areas of activity in which favourable results are absolutely necessary for a manager to reach his/her goals.” In the context of PPP, CSFs are those factors that must be active if a project is to succeed, i.e. if the objectives of its different stakeholders are to be achieved (Morledge & Owen, 1998). The identification of such factors has been regarded as the first important step in developing a workable and efficient PPP procurement protocol (Zhang, 2005b)

#### **3.2.3.3.1 Critical success factors (CSFs) in PPP projects**

In PPP projects, success can mean different things to different stakeholders. Reviewing the literature, CSFs for PPP have been investigated by a number of researchers, and various lists of CSFs have been proposed through literature reviews, case studies and interviews. Although both the public and private sector parties involved in these projects can agree on some common goals, they also tend to have several long-term aims that are very different (Jefferies, 2006). For example, Tiong (1996) identified CSFs for private contractors in competitive tendering and negotiation for BOT projects as: project technical feasibility; a strong private consortium; a stable macro-economic environment; and a favourable legal framework. Qiao, Wang, Tiong, and Chan (2001), for their part, established eight independent

CSFs in BOT projects in China: appropriate project identification, a stable political and economic situation, attractive package, acceptable toll/tariff levels, reasonable risk allocation, selection of suitable subcontractors, management control and technology transfer. Likewise, other CSFs were identified by Jefferies et al. (2002), using a single case study of the Sydney SuperDome project in Australia; they were a solid consortium with a wealth of expertise; considerable experience, high profile and a good reputation; an efficient approval process that assisted the stakeholder in a timeframe; and innovation in the financing methods of the consortium.

Zhang (2005b) in developing a workable and efficient procurement protocol for improved practices in PPP projects worldwide, compiles a list of CSFs for PPP in infrastructure development for both developed and developing countries. He identifies five main CSFs, each including a number of success sub-factors (SSFs), making a total of 47 SSFs. The five main identified CSFs are: economic viability, appropriate risk allocation via reliable contractual arrangements, a sound financial package, a reliable concessionaire consortium with strong technical strength, and a favourable investment environment. Using a factor analysis approach, Hardcastle, Edwards, Akintoye, and Li (2005) examine the relative importance of 18 CSFs for PPP/PFI construction projects in the UK, where CSFs were put into five major groups, each having a list of its own SSFs. The five major groups were: effective procurement; project implementation; a government guarantee; favourable economic conditions; and an available financial market. Moreover, Li et al. (2005b)'s research identifies the most important CSFs among the 18 CSFs that they examined; they fall under the same five factor groupings as noted above. The results from a review of the literature, then, show that the three most important CSFs are: 'a strong and good private consortium', 'appropriate risk allocation' and 'an available financial market'.

Another factor that can be considered critical to the success of PPP is the implementation of proper Value Management (VM) during different project phases. This is due to the potential benefits of using VM methodology, which have been reported in much of the related literature. See for example (Ahola, 2004; Male & Kelly, 1993, 2008). If properly organized and executed, VM can yield value for money and an improved return on investment (Fan, 2009), one of the main benefits of using PPP procurement. The benefits of VM lie in the fact that it maximizes the functional value of the project by managing its development from an early stage up to completion, where all decisions are audited in relation to an established client value system (Male & Kelly, 1993).

CSFs are usually influenced by the context of the project (Dulaimi et al., 2010). Nevertheless, Kwak, YingYi, and Ibbs (2009) note that, while lists of CSFs for PPP projects vary from study to study, it seems that the success or failure of a PPP project is dependent on the four main aspects on which most PPP-related studies focus. These aspects are: the competence of the government; the selection of an appropriate concessionaire; appropriate risk allocation between the public and private sectors; and a sound financial package. In the context of the UAE, Dulaimi et al. (2010) explore the critical success and failure factors for PPPs, using three case studies. This study reveals that political support is the most important success factor for PPPs in the UAE, followed by a strong private consortium. Moreover, Abdou and Al Zarooni (2011) develop a preliminary list of possible CSFs for the UAE healthcare projects procured under the PPP. Their CSF list includes: a clear and detailed project brief/client outcomes in the early stages, appropriate risk allocation, proper integration of public and customer/end users' needs, and adequate/technical correctness of the design and specifications.

Based on the review of the literature and the many lists of CSFs, and focusing on the UAE context, a final CSF list for the UAE with 13 factors was developed, shown in Table 3-1.

Table 3-1: CSF list for PPP projects in the UAE

Critical Success Factors	Source
F1 - Strong and stable economy	(Dailami & Klein, 1997; Dulaimi et al., 2010; Hardcastle et al., 2005; Li et al., 2005b; Qiao et al., 2001; Tiong, 1996; Zhang, 2005b)
F2 - Available financial markets	(Amponsah, 2010; Hardcastle et al., 2005; Ismail, 2013; Jefferies et al., 2002; Li et al., 2005b; Qiao et al., 2001; Zhang, 2005b)
F3 - Availability and effectiveness of proper regulatory and legal framework for PPP	(Cheung, Chan, & Kajewski, 2012; Cheung, Chan, Lam, Chan, & Ke, 2012; Dulaimi et al., 2010; Hardcastle et al., 2005; Ismail, 2013; Li et al., 2005b; Pongsiri, 2002; Tiong, 1996; Zhang, 2005b)
F4 - Political support and stability	(Cheung, Chan, & Kajewski, 2012; Cheung, Chan, Lam, et al., 2012; Dulaimi et al., 2010; Ismail, 2013; Li et al., 2005b; Qiao et al., 2001; Zhang, 2005b)
F5 - Savings and need for finance	(Dulaimi et al., 2010)
F6 - Well organized and committed public sector	(Hardcastle et al., 2005; Li et al., 2005b)
F7 - Strong private consortium	(Abdou & Al Zarooni, 2011; Amponsah, 2010; Cheung, Chan, & Kajewski, 2012; Dulaimi et al., 2010; Hardcastle et al., 2005; Jefferies et al., 2002; Li et al., 2005b; Tiong, 1996; Zhang, 2005b)
F8 - Effective technology transfer mechanism	(Qiao et al., 2001)
F9 - Opportunities for innovation	(Akintoye, Hardcastle, Beck, Chinyio, & Asenova, 2003; Dulaimi et al., 2010; Tiong, Yeo, & McCarthy, 1992)
F10 - Comprehensive and business viability of project feasibility study	(Abdou & Al Zarooni, 2011; Amponsah, 2010; Cheung, Chan, & Kajewski, 2012; Cheung, Chan, Lam, et al., 2012; Hardcastle et al., 2005; Ismail, 2013; Li et al., 2005b; Qiao et al., 2001; Tiong, 1990; Zhang, 2005b)
F11 - Clear project brief and client outcomes	(Abdou & Al Zarooni, 2011; Jefferies, 2006)
F12 - Proper project value management during different project phases.	By researcher
F13 - Proper risk allocation and sharing among project stakeholders	(Abdou & Al Zarooni, 2011; Akintoye et al., 2003; Amponsah, 2010; Cheung, Chan, & Kajewski, 2012; Dulaimi et al., 2010; Grant, 1996; Hardcastle et al., 2005; Li et al., 2005b; Qiao et al., 2001; Zhang, 2005b)

### 3.2.3.3.2 Overall respondents' perceptions concerning the importance of CSFs

The interviewees were asked to rate the identified 13 CSFs for PPP infrastructure projects in the UAE environment and to discuss their opinions and perceptions in this regard. A simple five point scale was used for questions that involve rating issues (1 not important, 2 somewhat important, 3 important, 4 very

important and 5 extremely important); the factors were then ranked on the basis of their mean scores. A value above “3” would show that the identified factor is of high enough importance to determine the success of PPP project. Amongst the success factors, none was ranked below “3”. The following paragraphs discuss the from interview findings under this heading.

Table 3-2 shows the rank and relative importance of the 13 CSFs as perceived by all respondents. Results show that eight factors scored mean values greater than 4.0 (very important) and the remaining six factors scored mean values between 4.0 (very important) and 3.0 (important), indicating that the thirteen identified factors are considered either important or very important to the success of PPP infrastructure projects in the UAE.

Table 3-2: Relative importance of CSFs for PPP projects for all respondents

Critical Success Factors	All respondents n=21		
	Mean	SD	Rank
F3 - Availability and effectiveness of a proper regulatory and legal framework for the PPP	4.850	0.366	1
F13 - Proper risk allocation and sharing among project stakeholders	4.800	0.410	2
F11 - Clear project brief and client outcomes	4.650	0.587	3
F10 - Comprehensive and business viability of project feasibility study	4.500	0.761	4
F12 - Proper project value management systems during different project phases	4.350	0.813	5
F2- Available financial markets	4.300	0.733	6
F6 - Well organized and committed public sector	4.100	0.788	7
F4 - Political support and stability	3.650	1.461	8
F7 - Strong private consortium	3.650	1.226	8
F1- Strong and stable economy	3.600	1.231	10
F5 - Savings and need for financing	3.400	0.821	11
F9 - Opportunities for innovation	3.200	1.056	12
F8 - Effective technology transfer mechanism	3.000	1.076	13

### 3.2.3.3.3 The top five CSFs as rated

According to the overall results, the top five CSFs, in descending order of importance, are: 1) availability and effectiveness of a proper regulatory and legal framework for PPP; 2) proper risk allocation and sharing among project stakeholders; 3) a clear project brief and client outcomes; 4) the comprehensive and business viability of the project feasibility study; and 5) proper project value management systems during all the project phases. The three factors that were ranked last, in descending order, are: 11) savings and need for financing; 12) opportunities for innovation; and 13) an effective technology transfer mechanism. The following section provides more analysis and discussion of the top five factors.

- **Regulatory and legal framework**

As mentioned in the previous paragraph, the relative importance analysis reveals that the top ranked CSF for all respondents (with a mean value of 4.85 out of 5) is “the availability and effectiveness of a proper regulatory and legal framework for PPP”. This framework should assure the availability and effectiveness of laws related to PPP to handle any legal issues arising in the process as well as offering essential legal systems within which the PPP procurement process can take place (UNESCAP, 2005). It also expresses the importance of good governance, and a competitive and transparent procurement process.

During discussion, all the interviewees agreed that an adequate regulatory and legal framework is a key factor for successful PPP implementation in the UAE. In fact, it is the public sector’s role to provide an independent, fair and efficient legal framework to attract best-in-class partners, who are vital for the bankability and stability of the PPP agreements and contracts. Pongsiri (2002) highlights two major



benefits behind a well-defined PPP regulation framework. First, it allows governments to ensure that the essential partnerships operate efficiently and comply with a country's legal system and policy objectives (i.e. social policy, environmental protection, etc.). Secondly, it provides protection for the private sector from expropriation, allows the arbitration of commercial disputes, and provides respect for contract agreements in general and for the legitimate recovery of costs and profit proportional to the risks undertaken in specific.

The results of this study agree with those of researchers into PPP projects, many of whom have found that effectiveness of a proper regulatory and legal framework is a key CSF for PPP infrastructure. For example Li et al. (2005b) with reference to UK/PFI construction projects and by Ismail (2013) with reference to Malaysia's PPP project. Within the UAE context, Dulaimi et al. (2010) finds that a favourable legal framework was a CSF in two out of their three studied cases. They indicate that the lack of a legal framework or laws for PPP transactions in the UAE had compelled the private party in one examined case study to include conditions in the contract for dealing with unclear issues and arranging arbitration to avoid possible disputes.

Despite the importance of a legal framework for PPP implementation, as perceived by all interviewees, no specific PPP legal framework or law currently exists in the UAE to support the use of such an approach. However, various local governments are investigating initiatives to develop such a framework. For example, in Abu Dhabi Emirate, an initiative has recently emerged from the Department of Economic Development to develop a framework with a proposal to develop a PPP unit in there. Furthermore, the Roads and Transport Authority (RTA) in Dubai has recently finished a draft of a PPP law which is not specific to transport, and it has

been submitted to the Dubai Executive Council for approval. It is worth mentioning here that both of these frameworks were proposed to apply only to PPP projects in the two emirates concerned, Dubai and Abu Dhabi, at the level of local government and not at the federal level of the UAE. As a consequence, the local governments in the UAE are at present still very much involved with such projects on a case-by-case basis.

From the responses of private parties, it seems clear that they are always looking for a unified, clear and transparent legal framework in order to protect themselves. Most of the interviewees from the private sector believed that it is currently not easy to ensure the effectiveness of long-term PPP contracts in UAE without such a framework. They view PPPs in the UAE as risky schemes, unfeasible and unattractive. One of the private investors stressed in his interview that the abundance of legal uncertainties usually make PPPs less affordable for government or public end-user clients, since the private sector tends to charge for these risks and uncertainties, which in turn increases the overall cost of undertaking PPP projects. Another interviewee pointed out that, due to the lack of a legal framework for PPPs in the UAE, the PPP approach is sometimes less attractive to foreign investors. This is because many project details and related uncertainties must be intensively negotiated for a private company's protection, and so the costs saving benefits of a PPP are sometimes difficult to secure. As a result, a number of PPP megaprojects have been abandoned. A good example of such a project is the federal UAE national railway project worth US \$3.8 billion. This project has been delayed and may indeed never see the light as a PPP project because the necessary legal framework in the UAE is not yet in place.

The above findings are supported by the findings from Cheung, Chan, and Kajewski (2012), which reveal that the top success factor according to respondents from Hong Kong was also a “favourable legal framework.” However, the researcher clarified that, although such a framework was ranked highest by the Hong Kong respondents, Australian and UK group’s respondents ranked it of medium importance, implying that in such developed countries legal frameworks are already well developed to enable the formulation of effective contractual vehicles for PPPs. Nevertheless, Pongsiri (2002) indicates that PPPs in most developing countries are still bound by extensive and complex bodies of legal jurisprudence and to legal enforcement mechanisms. If PPP schemes are to be effective, fair and open, those countries must install the necessary legal framework and surveillance system to allow the private sector to develop confidence, to prevent administration expropriation and to secure the long-term maximization of profits.

From the above discussion, it is clear that the availability and effectiveness of a proper regulatory and legal framework for PPP, identified as the top CSF for those with UAE PPP experience, is significant for the effective application of a PPP procurement approach in the UAE. Such a framework needs to be compatible with the country’s legal system and updated regularly as lessons are learned and experience is gained.

- **Proper risk allocation and sharing among project stakeholders**

The second most important CSF, as perceived by all respondents, is “proper risk allocation and sharing among project stakeholders”, (rated with a mean value of 4.80). In fact, PPPs are planned so that risks are allocated to the party which is best able to manage them, i.e. to reduce their impact and/or absorb their consequences. In

general terms, many international and local studies have confirmed this factor as one of the most important CSFs; see for example (Cheung, Chan, & Kajewski, 2012; Li et al., 2005b; Qiao et al., 2001; Zhang, 2005b). The same view was emphasized in a study of some local UAE authorities (Dulaimi et al., 2010), which found this factor to be a CSF in all the three case studies that they examined. ‘Appropriate risk allocation’ has also been confirmed as a CSF in UAE public healthcare projects by Abdou and Al Zarooni (2011), while Cheung, Chan, and Kajewski (2012) find that “appropriate risk allocation and risk sharing”, ranked second in Australia and the US as a factor contributing to successful PPP projects, was in Hong Kong ranked fifth. The research team argue that that this success factor was considered less important in Hong Kong because the island has had experience with different procurement systems that require different risk allocation models.

In the context of the current study, the same view was expressed by all the interviewees in discussion. One interviewee from the private sector argued that in most countries new to the PPP concept, the public sector thinks that maximum risk should be transferred to the private partner, rather than letting the public sector take an appropriate degree of risk. Another interviewee from the private sector asserted that one of the lessons learned from some past PPP project failures in the UAE and other countries in the region is that unrealistic risk transfer made some PPP deals unfinanceable and alienated many potential bidders. In a best-scenario case, it drove up the overall cost of the project to the public sector, since all risk is usually associated with a price premium obliging the private sector to push up its return requirements so as to compensate for the added risk.

Apparently, in the context of PPP, one group of interviewed experts believe that this factor is closely related to the first ranked one – the “availability and

effectiveness of a proper regulatory and legal framework for PPP” – since regulatory risks have caused high-profile delays or perceived failures in a number of major PPP projects in the region. Another observation was that the bidders of some major projects have had to spend significantly on preparing highly detailed technical tender offers, as requested by the procuring agency. When projects have failed to be executed as a PPP or cancelled, they received no compensatory/reimbursement of their bidding costs. But this cost can only increase the reluctance of the private sector to take part in PPPs, or to do so without plenty of reassurance before proceeding with a bid, which may affect the credibility of the public sector.

- **Clear project brief and client outcomes**

“Clear project brief and client outcomes” (with a mean value of 4.65) was rated the third highest CSF. Briefing is in fact considered one of the important stages in PPP projects; it obliges every stakeholder involved in the process to have a clear vision of the approach and the goals to be achieved (Zeegers & Ang, 2007). Akintoye and Donnelly (2003), as well as Tang (2011), claim that, unlike the client brief for a conventional procurement, the client brief for a PPP/PFI project must supply information not only related to the project requirements but also to the project’s program, risk management, output specifications and payment mechanisms.

One interviewee in this study stated that clients in the UAE are sometime vague in their brief, in particular regarding a project’s scope or, in other words, in setting the output specifications. This can cause problems in both conventional and PPP projects. But as he pointed out, experience shows that this is more harmful where PPP projects are concerned; it leads to the inappropriate allocation of risk between the parties, increased project costs, and reduced flexibility and

accountability. In the same vein, previous research demonstrates that a clear PPP project brief and clear client requirements are crucial to reducing transaction costs and minimizing the time spent in negotiation and completing deals (Cheung, Chan, & Kajewski, 2012). Likewise, Zeegers and Ang (2007) assert that the output specifications in a PPP represent a very important element of the contract; they are the basis of the whole project and require major attention. Furthermore, Akintoye and Donnelly (2003) argue that the client group must specify, in unambiguous terms, the output specifications that the facilities must achieve in a manner that can be interpreted by a separate commercial venture called a “special purpose vehicle” (SPV). In the PPP context, the SPV provides a good framework for raising funds, linking participants legally and assuring the supply, production and marketing of products.

Nevertheless, one interviewee was optimistic about the involvement of the end user in brief development and responded that the PPP model provided a good opportunity to address and draft the output specifications more clearly because the performance requirements of a facility with a contract period of 10-30 years needs a special focus on many long term requirements for the public and private parties and end-users. He referred to the first social infrastructure project in the UAE to use a PPP procurement approach: the new campus of the UAE University. The involvement of the UAEU as a client and end-user in the briefing process was obvious from the early stages of developing the brief. Skilled and experienced manpower from the UAE University side shared the task of setting out the client’s needs in the form of clear performance and output specifications with sensible measurable indicators. During the discussion for this project, several aspects related to stakeholders became crucial factors for the success of the PPP briefing process,

including a clear definition of the relationship between the public and private sectors, a clear understanding of the education process in UAE University, and, most importantly, the experience of the client in the briefing process and the output specifications of this type of project. These findings confirm earlier findings by Jefferies (2006), which emphasize that the success of a PPP project is linked to a clear project brief and to the experience of the client/public sector. In the case of the Sydney SuperDome, the government was very well educated and experienced in terms of both the end product and the BOOT process, which contributed to the successful negotiation.

In conclusion, most of the interviewed experts noted that there was no clear briefing process for PPP projects in the UAE, due to the absence of a unified tender law and PPP procurement process. Furthermore, in most of their organizations, there is no clear mechanism for the systematic identification and precise representation of all stakeholders' requirements.

- **Comprehensive and business viability of project feasibility study**

The “comprehensive and business viability of the project feasibility study” was ranked fourth, with a 4.5 mean average. It includes preparing comprehensive technical feasibility studies, with robust financial and economic analyses to form a thorough and realistic assessment of the costs and benefits. In fact, the overall successful delivery of public services and infrastructure projects via PPP schemes is directly influenced by the initial feasibility study (Harrington, 2012). Amponsah (2010) highlights that problems and delays during negotiation and procurement can be obviated by performing comprehensive feasibility studies with strong financial and economic analyses. In a study about emerging markets, on-going fiscal

limitations, poor feasibility assessments and regulatory barriers have been reported as the main causes of delay in the execution of some PPP projects in emerging markets (The Economist Intelligence Unit Ltd. & Asian Development Bank, 2011).

Most of the interviewees claimed that in the UAE, performing comprehensive feasibility studies with robust financial and economic analyses for the PPP projects is a challenge for many sectors. One of the interviewees argued that water and power projects are exceptions, since the government has experience with IWPPs and these projects are compatible with the existing legal and institutional arrangements, features but absent from other sectors of the UAE infrastructure. In the face of such challenges, mature countries such as the UK and Australia have developed robust and efficient institutions and processes, where VfM is tested during well-organized feasibility and business case stages before the release of the tender documents. One process that Germany has instituted is that adequate economic feasibility studies are required by law to support public investment, and private firms may be required to demonstrate clearly the potential of private parties to deliver the required public service or asset with the same standards and for equivalent or lower costs (Grimsey & Lewis, 2005). Another interviewee highlighted the fact that in some cases poor feasibility assessment reports did indeed lead to rejected or failed PPP projects; these feasibility reports were falsely optimistic, due to a lack of experience in the local market of a hired foreign consultant or of the PPP transaction advisors. (Many public entities, in the UAE in particular, require the inputs of such advisory/firms when the capacity within their organization is inadequate to manage the PPP project development process.)

During discussions, most interviewees went on to assert that, in the context of the UAE, local market experience is very important in addition to international



experience with PPP, for feasibility studies of PPP projects are mainly built on specific local assumptions as well as international assumptions, and small changes in these assumptions can impact the whole procurement process and the executed project or service. One interviewee suggested that the government/public side should conduct the feasibility study for PPP projects early, so that it will not be influenced by private sector ideas. This agrees with the proviso of Grimsey and Lewis (2005) that if a PPP feasibility study is conducted early on by the government, it ensures that its outcome will be a 'pure' public sector option. In fact, one interviewee for this study from the private sector noted that by using a clear and well managed feasibility study developed by the public sector, the possibility of realistic bids being made can be increased and the risk of project failure due to future financing problems can be reduced.

Alternatively, another interviewee stressed that the importance of the feasibility study in the PPP context depends on the ways that it is used. She believed that this factor should be considered a CSF only if it contains mainly a VfM analysis, since VfM analysis provides the public information to make decisions based on best value offers. Such analysis includes information about risk allocation, whole-life costs and services provided by the facility. Furthermore, she asserted that in cases where there is a high level of political support and willingness from the private sector, the financial obligation aspects other than VfM will not hinder the success of the project.

It can be concluded from the above that a feasibility study is an instrument commonly used for decision making in the PPP model. However, this instrument should be comprehensive and robust, covering a full analysis and evaluation of a project based on an extensive analysis of the following issues: the project demand

and capacity projections, technical feasibility analysis, financial and commercial feasibility of the PPP, economic feasibility analysis, legal regulatory and institutional feasibility, environmental impact assessment and social impact assessment and PPP output specifications. It is very important that the feasibility study can demonstrate how value for money can be achieved through appropriate risk allocation, since VfM has been found to be the major driver for many governments to adopt PPP to procure public sector projects

- **Proper project value management systems during different project phases**

The fifth ranked CSF, with a mean average of 4.35, is the implementation of “Proper project value management systems during different project phases.” Properly organized and executed value management (VM) methodology can achieve better VfM for a PPP project and improve returns. One interviewee stated that VfM is generally considered the “heart” of the decision making process in the PPP model. Nonetheless, there is no formalized application of value management or value engineering in the execution of projects in the UAE, and there is no law or regulation enforcing such practice. Undoubtedly, value delivery is the key goal of all projects. Male and Kelly (1993) define value management (VM) as “ [a] service which maximizes the functional value of a project by managing its evolution and development from concept to completion, through the comparison and audit of all decisions against a value system determined by the client or customer”. An essential feature of the VM methodology is the expression of client requirements as functions; this approach defines a project’s function as the specific purpose or intended use that makes the project sell, produce revenue, or meet requirements. Therefore, successful projects deliver value for all stakeholders in such a way as to produce value by

ensuring that the scope and objectives set for the project precisely match the needs of the customer (Ahola, 2004).

One interviewee asserted that in developing the scope and requirements of projects, and despite the importance of VM, it is a real challenge to conduct such a methodology, since in most cases, and in the public sector in particular, the client organization is not accustomed to identifying their requirements upfront during the briefing stage; however, integrating the VM methodology at this early stage of the project is crucial to allow the proper consideration of client needs and requirements. The same interviewee also pointed that, in addition to the contribution of VM to establishing client needs for PPP projects, it can be used effectively in evaluating alternatives during the option appraisal stage and in establishing the business case. He added that VM can act as the mechanism that provides review capability to ensure that the public is receiving good value from the PPP transaction. This finding is supported by Kelly (2003), who identifies several potential benefits for integrating the VM approach into the development of PPP projects. Some of the benefits that VM methodology can provide include: creating a strong case for investment and a business case which supports investment and perhaps the PPP approach; assisting in the development of a reasonable price reference for the project and the development of a public sector comparator (PSC) study; and the creation of a complete value management study report, which is considered an auditable record of decision making.

### 3.2.3.3.4 Perceptions of the public and private sectors concerning the importance of CSFs

The importance rankings of the CSF factors for both sectors are shown below in Table 3-3 and Figure 3-7. The results demonstrate that, for both sectors, the thirteen identified factors received an average of above 3, which means that they are considered either important or very important to the success of PPP infrastructure projects in the UAE (except for factor F8, which received 2.917). It can also be observed from Figure 3-7 that there is almost a consensus between the two sectors for the four top ranked factors, with less of a consensus apparent for the other factors.

“Proper risk allocation and sharing among project stakeholders” was ranked first by the private sector respondents and was ranked second by the public sector respondents, which reflects the importance of this factor for both sectors and for the private sector in particular, since risk assessment and management have a considerable impact on project cost estimating and pricing. In fact, the key decisions of a private investor for considering the PPP market in general, and bidding price for any PPP project in particular, are based on the assessment of the investor’s capacity to take certain risks. Hence the PPP contract negotiation would mainly emphasize the risk-sharing arrangement.

Although the factor “available financial markets” was ranked seventh by the public sector interviewees, it was ranked third by the private sector interviewees. This hints at the private party concerns about access to financing, since under several PPP models, the private party is responsible for obtaining the financing. Indeed, the same observation has been noted by Ismail (2013), in examining the importance of the CSFs for PPP implementation in Malaysia. In the UAE context, it was argued by

the interviewees that the successful implementation of a PPP requires easy access for the private partner to the financial market with the associated benefits of lower financial costs. They also noted that, as an oil rich country, the UAE has such financial resources available; however, there are a number of factors that hinder the private sector from having easy access to the financial market. These factors include the high interest rate; several complex conditions insisted on by banks, now more than ever since the recent global financial crisis; and, of great importance, obtaining a guarantee from the government. This view was emphasized by other studies (among others, (Amponsah, 2010; Cheung, Chan, Lam, et al., 2012; Ismail, 2013; Jefferies et al., 2002; Li et al., 2005b; Zhang, 2005b))

In the same vein, the Asian Development Bank (2008) considered project financing a critical factor for the private sector in PPP infrastructure schemes, emphasizing that an accessible financial market is an incentive for the private sector to take up PPP projects, in efficient and mature markets above all. In fact, because one of the main objectives of adopting a PPP approach is to reduce the financial burden of projects on the government, it is essential that the private sector be provided with flexible and attractive financial instruments, such as debt, equity, supplier and purchaser credit, and securities. Li et al. (2005b) provide the same argument in their study of critical success factors in the UK's PPP/PFI environment. The "available financial market" was ranked as third among the 18 CSFs under scrutiny. Nevertheless, this factor has shown only a medium level of importance in the international city of Hong Kong, where Cheung, Chan, Lam, et al. (2012) conclude that Hong Kong has advantages and is full of opportunities, being regarded as a gateway to other big markets, notably China, and is a centre for the offices of many large international organizations.

Table 3-3: Comparison of CSFs for PPP between the two parties

Critical Success Factors	All respondents, n=21		Public sector, n=12		Private sector, n=9	
	Mean	Rank	Mean	Rank	Mean	Rank
F3 - Availability and effectiveness of proper regulatory and legal framework	4.850*	1	4.917*	1	4.778*	2
F13 - Proper risk allocation and sharing among project stakeholders	4.800*	2	4.667*	2	4.889*	1
F11 - Clear project brief and client outcomes	4.650*	3	4.583*	3	4.667*	3
F10 - Comprehensive and business viability of project feasibility study	4.500*	4	4.417*	5	4.444*	5
F12 - Proper project value management systems during different project phases	4.350*	5	4.583*	3	4.000	9
F2- Available financial markets	4.300	6	4.000	7	4.667*	3
F6 - Well organized and committed public sector	4.100	7	4.083	6	4.222	7
F4 - Political support and stability	3.650	8	3.500	9	4.000	9
F7 - Strong private consortium	3.650	8	3.083	12	4.333	6
F1- Strong and stable economy	3.600	10	3.333	10	4.111	8
F5 - Savings and need for financing	3.550	11	3.833	8	3.222	13
F9 - Opportunities for innovation	3.550	11	3.167	11	4.000	9
F8 - Effective technology transfer mechanism	3.000	13	2.917	13	3.333	12

\* Top 5 Critical Success Factors

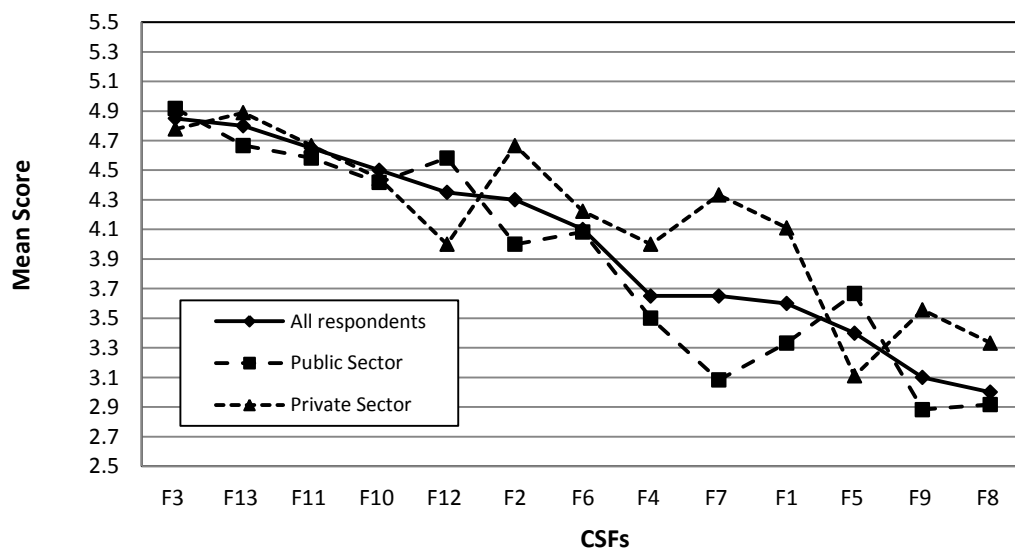


Figure 3-7: Cross-comparison of CSFs' importance between the responding sectors

It can also be observed from Figure 3-7 that F7, a “strong private consortium”, received the least consensus concerning its importance between public and private sectors. It was ranked twelfth by the public sector, and eighth by the private sector

interviewees, with a mean average of 3.1 & 4.3 respectively. This can be justified in light of the fact that the private sector is more concerned with creating a strong private consortium that can enter the PPP market. A number of researchers have drawn attention to the importance of exploring every participant's strengths and weaknesses in forming a private consortium that is capable of synergizing and exploiting individual strengths (Jefferies et al., 2002; Li et al., 2005b; Tiong, 1996; Zhang, 2005b). In more detail, (Zhang, 2005b) specifies that, apart from financial and technical capabilities, the strength of the private consortium lies in managerial capabilities, which include: a leading role by a key enterprise or entrepreneur, a workable project organization structure, a good relationship with the host government, partnering skills, rich experience in international PPP project management, multidisciplinary participants, and a strong project team.

### **3.3 Summary and Conclusion**

The aim of this chapter is to present the perceptions of public and private experts regarding the importance, future demand and key success factors of adopting a PPP approach in the UAE.

Both public and private sectors share the opinion that beyond a five-year window, there is a demand for a PPP approach everywhere in the country's infrastructure development, for example in energy and water, education facilities, transportation, health facilities, waste, telecommunications and social housing. Several factors are driving the demand for these sectors. This demand is expected, due to the current and future prospects of economic and demographic growth in the UAE, and to the expected high rate of growth of its population.

The UAE's adoption of the PPP approach brings a high potential for efficiency gains in the development and implementation of projects. In fact, the UAE does not face financial problems at present; but the most important post-crisis message is still the most efficient use of fiscal resources. Thus, the current focus across the region on the PPP approach is a result of using the scheme as a tool for adding efficiency, used to attract the technical knowledge, skills, and the expertise of the private sector that the public sector lacks. Usually the involvement of the private sector increases the likelihood of finishing infrastructure projects on time and within budget; moreover, it introduces efficiencies and innovations.

The analysis reveals that all of the examined 13 CSFs were rated as either important or very important. These findings should be taken into consideration by public and private partners when developing a new PPP projects in the UAE, in order to increase the success rates of these projects.

The analysis of public and private sector opinions shows that there is almost a consensus between the two sectors in the perceived importance of the top four ranked factors, with a lesser consensus for the others, which can be understood in light of the different concerns and responsibilities of the public and private sectors. Private sector interviewees highlight that the regulator should encourage greater involvement by the private sector in PPP projects, in considering reasonable risk allocation and offering more guarantees. This is especially important in that after the recent global financial crisis, the private sector is less willing to take risks.

The findings further reveal that the availability and effectiveness of a proper regulatory and legal framework for PPP is significant for facilitating the application of the PPP procurement approach in the UAE. Such a framework should be compatible



with the country's legal systems and updated regularly as experience is gained and lessons are learned. In addition, the government should avoid complicated systems and over-regulation, which can burden and frustrate PPPs transactions.

Many challenges are currently facing the briefing process of PPP projects in the UAE. Most of the interviewed experts noted that the country has no clear briefing process due to the absence of a unified tender law and PPP procurement process. In addition, the government has no certain allocated authority for this type of procurement, such as a PPP unit. Moreover, lack of previous experience in PPP procurement has led to a shortage of experienced staff for managing PPPs and an absence of PPP documentation or best practices in the governmental agencies. As a result, some government-related organizations have taken over some of the tasks that would have been allocated to dedicated authorities/units in countries mature in the implementation of PPPs. It is highly recommended that a PPP unit be created to establish and unify a proper regulatory and legal framework for PPP projects.

The following chapter seeks to provide a comprehensive literature review for the briefing process in PPP projects and to conceptualize the research problem of this research.

## Chapter 4: PPP Briefing: A Review

### 4.1 Introduction

The briefing process is the process by which the client's needs are investigated, developed, crystallized and communicated to the supply side of the construction industry (Al Zarooni, Abdou, & Lewis, 2011). The briefing process (known in North America as architectural programming (AP)) is considered the initial step towards establishing an effective client-architect/designer relationship. It is a vital stage of every project and it must be planned and responsive to the client's needs.

According to Othman (2010), the briefing process is considered the keystone for achieving client satisfaction, because of its crucial role in "eliciting and communicating the client's requirements to the design and construction teams." Most of the significant decisions made during the briefing stage of any project will have a far-reaching impact throughout the project's life cycle. This is why the briefing must be well-planned so as to respond to the client's needs. Clients are at the core of all project processes and satisfying them is considered the main measure of project success. Bowen, Pearl, and Edwards (1999) assert that clients' satisfaction can be achieved by meeting two requirements: translating their needs into a design that specifies the criteria and quality standards for the technical characteristics and functional performance of the work; and completing the project on time and in the most cost-effective manner

In PPP projects, briefing is considered one of the most important stages. The parties involved in a PPP scheme are either individuals or organizations who affect or are affected by the development of the project. Their input must be captured, for it

is their views and concerns that will guide the development of a project that will meet the needs of all who are involved.

The main aim of the research presented in this chapter is: in general, to provide an overall understanding of the development of a project brief in construction projects, its process, stages and problems; and in particular, to investigate the briefing process and its considerations in PPP projects. The chapter starts by reviewing various definitions and sets of characteristics; then it reviews the processes of developing a brief in this context. Next it discusses the problems encountered in the briefing process and reviews the process as a whole. Briefing in PPP Construction Projects is reviewed and its considerations are outlined, before the research problem is conceptualized and discussed. In the final section, the chapter is finally summarized and some conclusions are drawn.

#### **4.2 Definitions of Briefing**

The client's requirements are captured in briefing documents, which record them in a documentary form known as the "brief". This is a means of communication in the interaction between client and architect. For architects and others involved in a construction project, the brief should give a clear overview and understanding of the needs and ambitions of the client in accommodating the work of his/her organization. In addition, the brief document functions as a "touchstone" for testing the design proposals, where alternatives can be compared. It helps to structure the debate about the quality and value of the design proposals between client and architect. Hence the importance of this document comes from its serving as the basis of the planning, design and technical work of the facility at different stages (Ann, Chan, Chan, Lam, & Tang, 2010; Nina, 2004). The various definitions of briefing may be categorized,

according to their content, under three headings, dividing the briefing process into three streams (shown below).

### **Producing a document for decision-making and problem-solving**

- A process of research and decision-making aimed at defining the problem that have to be solved through design (Cherry, 1999).
- A process of developing a statement of the architectural problem and the requirements to be met by suitable solution (Peña & Parshall, 2001).

### **Producing a document that records the client's requirements and needs**

- A creative process to inward the design-briefing reciprocal relation. During this process the client's needs and available resources' inventory are thoughtfully comprehend to satisfy briefing's mission and objectives (Blyth & Worthington, 2010)
- A process of producing a statement of client's requirements that comprise all information the a designer needs to know about the proposed project, in terms of: functionality, costs, schedule, quality, etc. (Hansen & Vanegas, 2003)
- An early stage activity of the architectural design process in which related values of the client, user, architect and community are investigated and recognized in order to articulate the project goals and explicit the facility's needs (Hershberger, 1999)

### **Producing a document for communicating and exchanging information**

- An interactive communication channel between client and architect for exchanging information and promoting the decision-making. Where client's organisation interest and actual requirements have to be transferred clearly by

different parties that engaged in design and construction (Newman, Jenks, Bacon, & Dawson, 1981; Tetske, Juriaan, & Theo, 2008)

For this study the briefing process is defined as the process of gathering, analysing and synthesizing the client's needs, and detailing the project's mission, objectives and its expected performance requirements. The formed brief document acts as a tool for communication between the different project stakeholders and forms the basis on which several decisions are taken in different stages of their joint project.

### **4.3 Developing the Brief: Stages and Processes**

The briefing process is, then, considered the initial step towards establishing an effective client-architect relationship. This process is often referred to and developed through:

- A stage or a series of stages in the design or construction process, representing a part of the overall life cycle of the construction project.
- A systematic approach of enquiry by which the client's requirements are made explicit and understandable.

Fundamentally the briefing process itself can be divided into two main stages: strategic briefing and project briefing (Kamara, Anumba, & Evbuomwan, 2002; Kelly & Duerk, 2002; Kelly, Lin, Yu, & Shen, 2006). The aim of the strategic stage is to review the stated requirements in light of the objectives by identifying the organization's identified needs in order to determine if a building(s) of a certain type and in a particular location is the most effective solution to these needs (Male, MacPherson, & Kelly, 1992). According to Yu (2007), a strategic briefing study should describe the mission of the business project and its strategic fit with the

corporate objectives of the client organization. He suggests that the corporate objectives should be explicit in terms of commercial objectives and should usually be implicit in terms of cultural values, the client's value system being formed by a combination of corporate objectives and cultural values. One of the advantages at this stage is the chance to discuss a range of options for delivering the business project to help the strategic management to reach the best decision by providing them with information in a clear and unambiguous manner before advancing to the next stage.

The second stage (project briefing) is the one when tactical decisions are made. The project brief translates the strategic brief into physical terms, according to the design specification (Construction Industry Board CIB, 1997) for execution and specifies the performance requirements for each of the project elements. Yu (2007) considers the project brief to be the "construction industry's response to the client requirements expressed in the strategic brief." Project requirements cover several sets of requirements, including those to do with the client, user, site, environment, regulations, requirements, design, construction and life-cycle (Kamara, Anumba, & Evbuomwan, 2000). It is worth noting that researchers generally agree on this separation of the briefing process (Blyth & Worthington, 2010; Construction Industry Board CIB, 1997; Kamara et al., 2002; Luo, 2010; Newman et al., 1981; Tang, 2011; Yu, 2007).

Figure 4-1 compares the 'outline plan of work' by the Royal Institute of Architects (RIBA) with the 'Schedule of Designated Services' by the American Institute of Architects (AIA), showing the phases/stages through which the project brief is developed. According to the RIBA 2000 outline plan, the development of the project brief starts in the preparation phase through the sub-processes of appraisal

and strategic briefing and continues through outline proposals and detailed proposals early in the design phase. In the AIA schedule, there are four main phases to recognize in the briefing process. The first phase represents the pre-design phase. The second phase is the site analysis followed by the schematic design phase. The final phase of briefing ends when everything is summarized at the end of the design development.

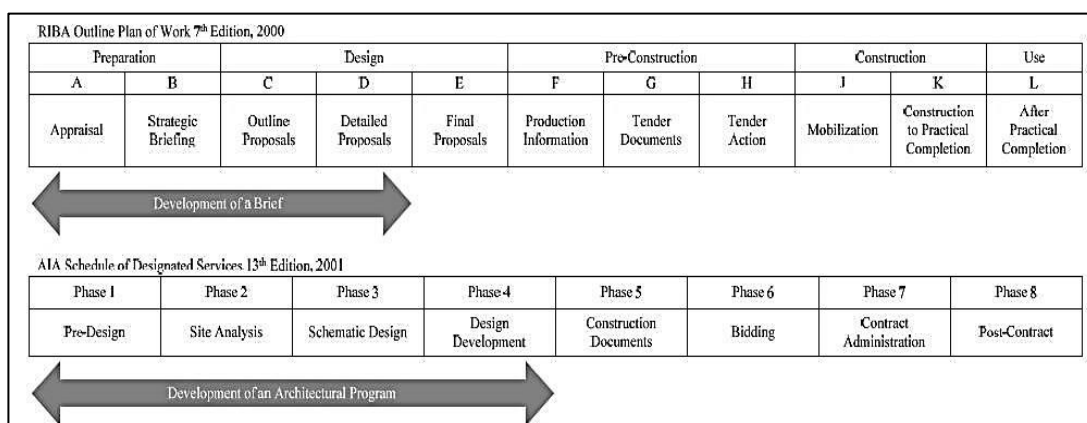


Figure 4-1: Briefing in the construction project development process - source: (Luo, 2010)

Figure 4-2 visually compares the RIBA Plan of Work 2013 with the RIBA Outline Plan of Work 2007. The RIBA Plan of Work 2013 comprises eight stages, defined by numbers 0-7, to which a new stage: Stage 0-Strategic Definition has been added. In this stage the strategic appraisal and definition of the project are conducted before a detailed brief is drawn up. At the end of this stage the information exchange document is the Strategic Brief, which discusses several strategic considerations, such as alternative sites, whether to extend or refurbish an old construction or build new. It also contains the key project outcomes as well as initial considerations for the project programme and for assembling the project team. According to the Royal Institute of British Architects (2013b) “This is particularly relevant in the context of

sustainability, when a refurbishment or extension, or indeed a rationalised space plan, may be more appropriate than a new building.”

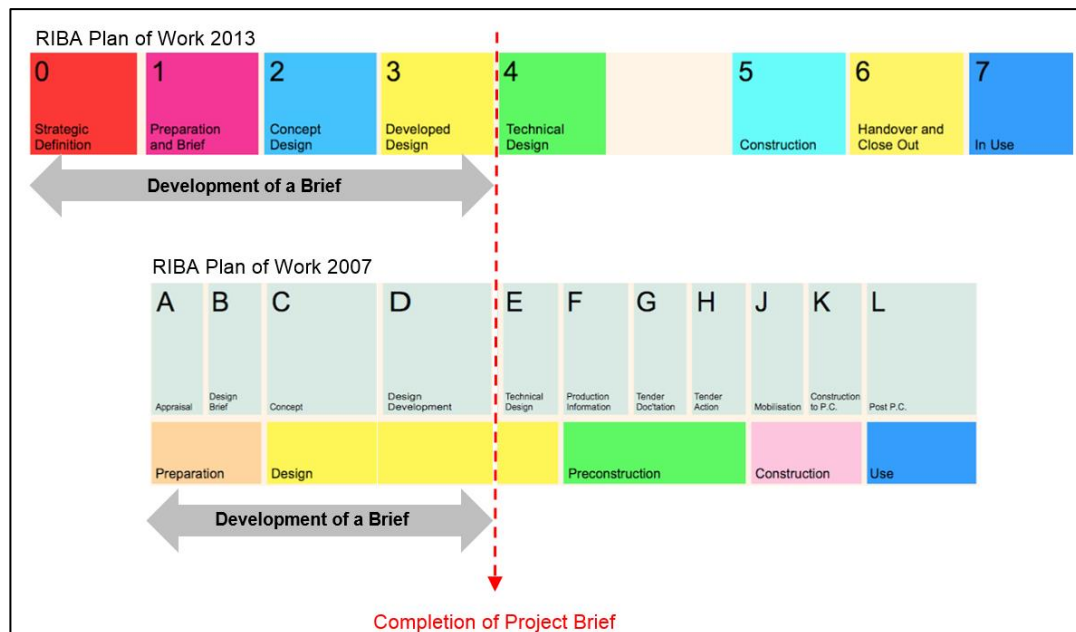


Figure 4-2: RIBA Plan of Work 2013 compared with RIBA Outline Plan of Work 2007 – developed from Royal Institute of British Architects (2013a)

The briefing process usually involves actively archiving the data that would enhance the documentation of lessons learned from the briefing, through collecting, organizing, analysing, identifying, interpreting, compiling and documenting or presenting all the essential information required for a construction project (Yusuf, 2004). Kamara, Anumba, and Evbuomwan (2001) investigated the development of the briefing stage in the construction process; their findings are summarised in Table 4-1 below.

Table 4-1: Development of the briefing stage in the construction process 2007 – developed from (Kamara et al., 2001)

Briefing Issues	Summary
Those involved in briefing	Managers, architects, project managers, project engineers, designers, etc.
Stages in briefing	Initial conceptual, scheme design; specifications; final drawings
Archiving	Gathering of project-associated information in detail; method selection; formal documentation of lessons learned.



Briefing Issues	Summary
Information processing	Following a course of trial and error using the drawings.
Decision-making process	Involves the resolution of conflicts of interest among project partners, using an appropriate approach as value management.
Briefing management	Managing changes to emerging requirements; subsequent stages of the briefing and design process.

Nevertheless, the briefing process frequently suffers from problems which have featured in its execution and can ultimately determine its effectiveness. Although essential for the successful delivery of the projects and client satisfaction, it is widely acknowledged that the process calls for improvement (Q. Shen, Li, Chung, & Hui, 2004). In this regard, it has been observed that many problems pertaining to construction projects may be traced back to the briefing stage (Yu, Shen, Kelly, & Hunter, 2007; Yu, Shen, Kelly, & Hunter, 2008).

#### 4.4 Problems Associated with Construction Briefing

Having sufficient mutual information or understanding within the client-architect relationship to establish *trust* is a crucial factor and the lack of it may hamper the process. This situation can be remedied by encouraging clients to participate actively during the briefing process by increasing their awareness level through the effective demonstration and manipulation of project-associated information and processes. This considerably enhances the knowledge of the client about the entire briefing process (Yusuf, 2004). According to Yusuf (2004), a wide range of weaknesses in briefing practice has been identified in the scholarly literature. These studies have suggested that the client's briefing document is often inadequate, vague, or not explicit enough. These drawbacks may be due to insufficient reflection of the client's requirements, the client's lack of robust experience with respect to construction projects, or a lack of ability on both sides to identify the true needs (Barrett & Stanley, 1996).

However, many studies have been conducted to mitigate such weaknesses. Much of this work has centred on the linked issues of understanding the client, client-industry interaction, communications and team building (Hudson, Kyng, McDermott, & Swan, 2006). The problems that accompany the briefing process have drawn special concern and increasing investigation (Luo, 2010). Oxford Newman et al. (1981) identify six areas manifesting major problems within the context of British briefing practice, as follows.

1. *Client problems*: The client is unfamiliar with briefing and has preconceived ideas about the construction design.
2. *Client/architect relationship problems*: The tension in this relationship is triggered due to each party's misunderstanding of what the other party does.
3. *Cost problems*: The client wants too much to make the cost affordable.
4. *Client organizational problems*: In the client's organization, there are usually many arguments about the way in which the decisions are made, whilst the communication channels between the client's organization and building's users are inefficient and unfit for use.
5. *Regulations/bureaucracy problems*: The client does not understand the causes of the delays, which may be due to authority permission, building regulations, planning procedures, or other bureaucratic requirements.
6. *Site/time problems*: Inadequate site information can create a problem when launching the starting phase of the construction project. This gives too little time for the architect to complete the work and for the client to examine the proposals.

Male, Kelly, Gronqvist, and Graham (2007) identify five areas of problems that may accompany the briefing process: the client's experience with the building industry; representation of the client's interest groups; identification of the client's

needs; interpretation of the client's needs in building terms; provision of sufficient time for briefing. In the same vein, Barrett, Hudson, and Stanley (1999) identify some reasons that may be associated with the failure of a briefing, based on a review of rule-based failures. He suggests that there is a need to overcome brief-takers' reliance on experience. In order to do this, their alternative methods should be subject to tests of workability. This information has to be passed on to the individuals involved in the briefing process. Now that briefing has become an essential part of any construction project, the lack of briefing knowledge can be mitigated by including construction briefing in the university curriculum for architecture and civil engineering programmes (Barrett et al., 1999).

According to Barrett et al. (1999), a review of knowledge-based failures similarly shows that there are many reasons why a particular architect may not be the right one to take a brief. For one thing, briefing may suffer due to bias on the part of the brief-taker. Although the main participants in this process are the client and architect or other designer, clients should perhaps be involved mainly to provide the necessary checklists to ensure that the brief is on the right track and ensure agreement. This would make clients more satisfied with the construction briefing process.

Furthermore, Yu, Shen, Kelly, and Hunter (2006) identify five potential problems during the course of a briefing, namely:

1. *Lack of a comprehensive framework*: Despite the considerable number of guides that have been proposed and developed for briefing, many professionals and researchers in the briefing domain have suggested that the briefing framework still needs further improvements and modification in order to be adequate and reliable. For example, the inadequacies in the

existing briefing framework may divert attention from the requirements of the client, which can result in problems in briefing practice.

2. *Lack of identification of client requirements:* Successful briefing largely relies on a robust analysis of needs, as well as rigorous evaluation of the available options. This reduces the time spent on understanding the underlying needs and requirements of the client and may affect the performance and success of the project.
3. *Inadequate involvement of all the relevant parties of a project:* The review of previous research has revealed that briefs may not be properly treated since those involved in preparing the brief documents are often not qualified to do so. Sometimes the documents are prepared by only a small group of representatives from the client organization or by consultants in the industry. Most public clients reported that such involvement of other stakeholders tends to prolong the time needed for briefing, because difficulties often emerge which need to be identified and researched before a general consensus in meetings can be reached.
4. *Inadequate communication between those involved in briefing:* The use of initial sketches and design drawings to re-state and record changes to client requirements could make it difficult for the requirements to be traced back to the original needs of the client. Moreover, the records of the decisions arising from project meetings may be quite unclear and not explain adequately why such decisions were made.
5. *Insufficient time allocated for briefing:* Previous research projects reveal that, unless enough time is allocated for the task, the client requirements are often inadequately captured. This often occurs because a prompt solution is urgently needed. Thus, time restrictions and a refusal to commit finances have caused briefings to be curtailed, mainly for financial considerations.

The above review concerns the many studies that focus on the briefing process in traditional construction projects. Very few studies have focused on the briefing process within the PPP paradigm. Using case studies and industrial surveys in the construction industry, Kamara et al. (2001) suggest that the general framework for briefing is inadequate for these. Moreover, they conclude that existing briefing practices are inappropriate for integrated procurement strategies such as Design and Build.

In response to the above problems, ((Hudson et al., 2006) refer to Barrett's five key solution areas, which were proposed to improve the briefing processes They comprise: empowering the client; managing the project dynamics; appropriate user involvement; appropriate team building; and appropriate visualization techniques. Furthermore, the investigation of possible critical success factors for construction brief development can highlight certain factors and issues that are essential for successful brief development.

#### **4.5 Briefing in PPP Construction Projects**

The notion of PPP is often seen as an umbrella term for a broad range of organizational arrangements between public, private and civil-society organizations. Hence, the PPP paradigm is seen as a procurement method for construction facilities; along with service delivery, it provides actual opportunities to appreciate the issues and processes that are involved in the briefing process. In PPP projects, as noted above, the clear identification of stakeholder requirements during the briefing stage is critical to project success. In most cases, a PPP project involves several stakeholders in developing its brief, which contributes to the complexity of communication and coordination.

In spite of the significant decisions that this stage produces, which will have far-reaching impact throughout a project's life cycle, an intensive literature survey of PPP based construction projects reveals that little has been written about the briefing practices within PPP-based projects. But briefing is considered one of the important stages in all projects, where every stakeholder involved in the process must have a clear vision of the approach and the goals to be achieved. Tang (2011) asserts that the existing briefing models for conventional projects cannot be effectively applied to PPP projects, because: i) these models are not specifically designed for them; and ii) these models are in any case too general, making it hard for project managers to follow them when they are involved in briefing.

Furthermore the different parties involved in a PPP scheme are mostly either individuals or organizations who affect or are affected by the way in which the project develops. Therefore, it is important to capture their input to determine their views and concerns, otherwise the project may develop in a way that does not meet the needs of them all. In addition, transparency and trust in the development process are vital to success, because stakeholders tend to be sceptical about it if they believe that decisions have been made without their involvement. If stakeholders distrust the process, this will have a negative effect on their level of participation in the programme; individuals may then either tend to participate in a hostile way or refrain from participating altogether (Walker & Smith, 1995). However, having multiple stakeholders involved in the briefing process of PPP projects contributes to the complexity of communication and of coordinating the conditions for the project. Consequently, an effective and efficient framework is needed to guide the briefing process and help both the public and private sectors.

In spite of the benefits of PPP as a procurement method, various problems have been reported on PPP projects around the world that have eventually led to project failure. According to El-Gohary, Osman, and El-Diraby (2006), the World Bank pointed out several major problems which delay private investment in PPP infrastructure. The first on its list is “a wide gap between the expectations of the governments and the private sector on what is reasonable and acceptable” (El-Gohary et al., 2006). Moreover, Levy (1996) believes that major PPP transportation initiatives in the United States have reportedly failed because the public was unaware of the concept of PPP and was denied access to detailed information contained in the consortium’s PPP proposals. All of these factors indicate that systematic identification of client requirements during the PPP project briefing process is an essential step in achieving PPP project success.

According to the definition of briefing introduced in the previous section, the process is carried out in the early stages of the project development process. In the PPP context a briefing session in PPP projects is usually scheduled for approximately halfway through the bid preparation period (Tang, 2011).

Tang (2011) develops a PPP briefing process framework. This framework entails three components: deliverables, briefing activities and procedures for briefing documentation. According to Tang (2011), validating the process framework using case studies showed that the implementation of the framework can enable both the public and private sector to implement the briefing process systematically and can ensure that important procedures and issues will not be overlooked. Figure 4-3 illustrates, with CSFs (see section 4.6) Tang’s framework for the briefing process of PPP projects based on construction practices in Hong Kong and Australia.

However, this briefing framework was developed and validated for the above two regions only, where construction practices were almost compatible. Thus, the generalization of the developed framework is difficult. Moreover, it does not provide clear decision gates for critical briefing outputs.

#### **4.6 Briefing Considerations for PPP Projects**

An intensive literature survey of PPP-based construction projects reveals that there are major differences between carrying out the briefing process for a conventional project and for a PPP project, where many important considerations at the briefing stage need to be clearly understood. These include the following:

- a) Certain procurement-related steps are unnecessary in a conventional project, but needed in the briefing of PPP projects (such as preparing a public sector comparator, (PSC), which is used by a government to make decisions by testing whether a PPP proposal offers value for money (VfM) in comparison with the most efficient form of public procurement; it also enables bids to be compared and allows for the imputed cost of government borrowing) (South Africa National Treasury, 2004b; Tang, 2011; Victorian Government, 2001);



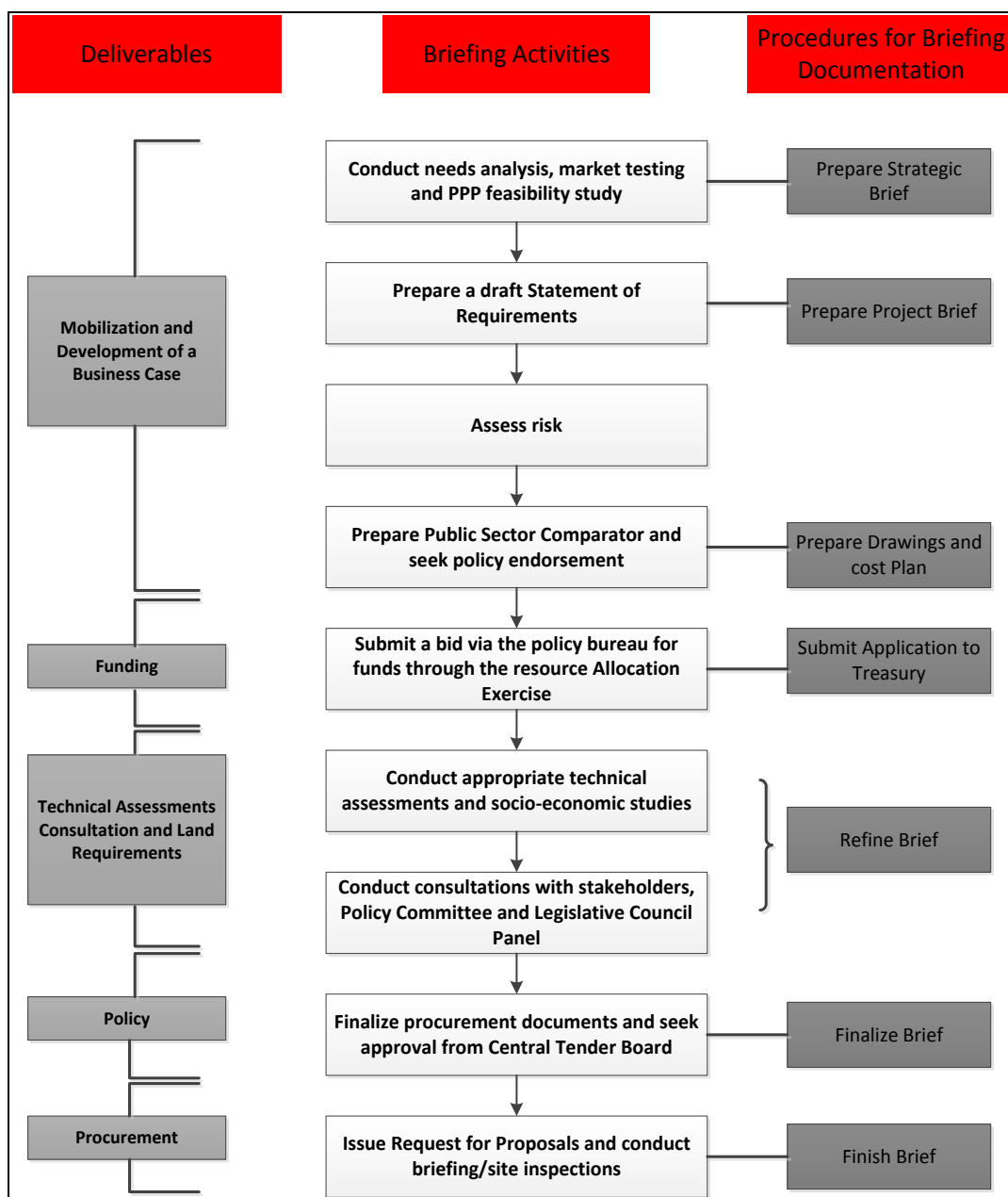


Figure 4-3: Framework for the briefing process of PPP project based on Hong Kong and Australia construction practices: (Tang, 2011)

- b) A feasibility study should be more focused in a PPP project than in a conventional project (Daube, Vollrath, & Alfen, 2008; Harrington, 2012; L.-Y. Shen et al., 2006). Amponsah (2010) highlights the fact that problems and delays during negotiation and procurement can be obviated by performing comprehensive feasibility studies with strong financial and economic analyses. In many countries, the public sector must not definitively choose a

PPP approach before it develops the feasibility study; until then, a PPP is still merely a possible procurement choice. After the feasibility study and once the PPP approach has been chosen, the most efficient financing model for the PPP project can be selected (Daube et al., 2008);

- c) In the PPP briefing process, the special financial and risk-related issues are considered in greater detail than in a conventional project. A considerable number of risks come from the complexity of the arrangements required for PPP projects, such as documentation, financing, taxation, technical details and agreements. A proper risk identification and assessment process should be implemented from the first day of the project. During the risk response stage, the risks in PPP projects, unlike those in conventional procurement methods, are allocated to the party which is best able to manage them (Allan, 1999; Seader, 2004; UNIDO, 1996). Therefore, as a part of the planning process of a PPP project, a proper risk transfer strategy should be developed, in which the risks best managed by the private sector are transferred to it and those best managed by the public sector are retained by it (Li & Akintoye, 2003);
- d) The PPP business case is scarcely ever used exclusively as a client brief, because the disclosure of some confidential financial information contained within the business case could be prejudicial to the tendering process (Akintoye & Donnelly, 2003). In PPP projects, the business case not only defines the scope of the project and its relationship with the institution's activities, but it also contains an assessment of alternative methods of procurement to PPP that could be chosen to meet the needs of the public

sector services. The PPP's business case deals with affordability and financial issues (Victorian Government, 2001);

- e) The client brief in a PPP project must provide effective and robust output specifications. Zeegers and Ang (2007) assert that the output specifications in a PPP represent a very important element of the contract; they are the basis of the whole project and require much attention. They also argue that a good set of output specifications for PPP projects is important for securing value for money, innovation, risk transfer, whole life asset performance with a clear abatement regime and the effective linkage of performance criteria to the payment mechanism;
- f) The client brief must provide an indication of the way in which the performance-related payment in a PPP project will be addressed by the public sector. Payment mechanisms and schedules may be one or a combination of the following: availability of the service, performance quality of the service, use made of the service and sale of the asset at the end of the service agreement.

#### **4.7 Success Factors in the PPP Brief Development**

As discussed in Chapter 3, the concept of CSFs was first introduced by Rockart in 1982 in the context of project management and information systems (Jefferies et al., 2002; Li et al., 2005b). Saraph, Benson, and Schroeder (1989) define CSFs as “those critical areas of managerial planning and action that must be practised in order to achieve effectiveness”. As a result, several researchers, such as (Chan, Ho, & Tam, 2001; Ralf & Kam, 2012; Sanvido, Grobler, Parfitt, Guvenis, &

Coyle, 1992), have focused on CSFs as a method of improving the management performance in construction projects.

In the context of construction briefing, Yu et al. (2006) state that a successful briefing is where “the needs and requirements of the client and stakeholders are identified, understood, defined and represented accurately and communicated effectively to the project team.” According to the (Construction Industry Board CIB, 1997), the factors critical to the success of project briefing include clear and agreed upon objectives; carefully thought-out requirements; provision of the essential information at each stage of the project; a flexible approach that balances the requirements for quality against the concern to ‘freeze’ requirements so as to control costs and meet deadlines; and a relationship of trust.

In the context of PPP, only a few research works have focused on the critical success factors involved in the briefing of PPP in particular. The study by Tang, Shen, Skitmore, and Cheng (2013) investigates the roles of briefing in boosting the CSFs in PPP-based projects with special reference to Australian conditions. Like Tang (2011), this paper identifies 50 factors that are related to PPP briefing, in four main categories (those associated with procurement, stakeholders, risk and finance). It rates the relative importance of these factors by means of a questionnaire survey in southeast Queensland, Australia. The research analysis shows that the most important procurement factors are an experienced brief writer, adequate time, and control of the briefing process by the public sector. The most important of the stakeholder factors is an open and effective communication environment, making sure that both public and private sectors should adequately understand the stakeholders’ requirements in the early stages of the project briefing. Among the risk factors, due to the considerable number of risks associated with PPP projects,

identifying important risks needs to start early, as does the identifying of a proper risk transfer strategy. Of the finance factors, the most important are practical budgeting and the proposed commercial arrangements, including the duration of the contract and payment mechanisms.

However, it is hard to generalize such results for other construction environments, since the identified CSFs were developed and validated for Australia. Moreover, the population of the survey comprises public sector bodies only, including state governments. It is important to note that Chapter 6, specifically discusses the success factors for the development of briefs in PPP construction projects.

#### **4.8 Discussion and Conceptualizing the Research Problem**

The brief in a PPP project forms the basis on which the bidders prepare their proposals and against which the authority carries out tender evaluations and the operational monitoring of long term contracts. Surprisingly little has been written about the briefing practices within these projects, although they are not covered by the briefing models for conventional construction projects

A PPP brief must supply information which not only analyses the project requirements but also specifies the project programme, risk management, expected output and payment mechanism. Moreover, the brief should include certain procurement-related tasks and a complex feasibility study. The multiple stakeholders involved in the briefing process of PPP projects and the resulting complexity of communication and coordination demand a clear outline that can guide the briefing process and accommodate or reconcile the needs of the parties involved.

The CSFs are considered vital enablers for successful long-term briefing. A legal and regulatory framework is one of the most important enablers. According to UNESCAP (2005), this framework should ensure the availability and effectiveness of the laws related to PPP to handle any legal issues arising in the process, as well as offering essential legal systems for the PPP procurement process (UNESCAP, 2005). In addition, good governance, a competitive and transparent procurement process and a range of government guarantees are also important at this stage. Moreover, the governmental agencies involved should have PPP guidelines, documentation and descriptions of best practice to hand.

#### **4.8.1 PPP environment in the UAE: problems and potentials**

Analysis of the exploratory semi-structured interview (A), discussed in Chapter 3, reveals that many challenges currently face the briefing process of PPP projects in the UAE. Most of the interviewed experts noted that a formal briefing procedure has not been agreed, due to the absence of a unified tender law and PPP procurement process. This means that the legal structures necessary for dealing with the PPP process and any legal issues arising from the process are still not available to them. In addition, the government has no officially charged authority, such as a PPP unit, for this type of procurement. Moreover, the lack of previous experience in PPP procurement has led to shortages of experienced staff for managing PPPs and the absence from governmental agencies of PPP documentation or descriptions of best practice. As a result, some government-related organizations in local governments in the UAE have now taken over some tasks that would have been allocated to dedicated authorities/units in other countries more experienced in PPP implementation. These organizations are still very much involved with such projects on a case-by-case basis.

So many institutional gaps in the UAE have precluded clear briefing processes and clear mechanisms for documenting stakeholders' requirements in PPP projects. In consequence, what is needed is a framework with special reference to UAE construction projects; it need be developed on the basis of existing practice in countries with much experience and maturity of the PPP market, which can take into account the CSFs as essential enablers for brief development. This framework needs not only be developed on the basis of the proven practice of PPP briefing in mature markets but also to take into account the existing local conditions and factors critical to the success of the such development.

Managers should look out for more CSFs in brief development with reference to the PPP environment in the UAE to guide subsequent projects. A CSF framework would help public and private organizations in the UAE to appraise and assess the availability of CSFs and the extent to which the target CSFs are practised. These should be improved until practitioners are ready to use them to develop briefs successfully.

#### **4.9 Summary and Conclusion**

This chapter provides an overall understanding of project brief development in construction projects, its process, stages and problems; and investigate the briefing process in PPP Projects and discuss considerations relevant to it.

In PPP context, only a very limited number of current studies focus on the briefing process of PPP projects. The existing briefing models for conventional projects cannot be effectively applied, as these models are not specifically designed for PPP projects; and are too general, making it hard to be followed. Unlike the brief for conventional procurement, the brief for PPP project must supply information not

only on the project requirements but also on the project programme, risk management, output specification and payment mechanism. In addition, having multiple stakeholders involved in the briefing process of PPP projects contributes to the complexity of communication and the difficulty of coordinating the conditions for the project. Moreover, certain procurement-related steps and the complex feasibility study during PPP briefing are needed in the briefing of PPP projects.

The research problem for this thesis was discussed and conceptualized. There is a need for a clear framework that can guide the PPP briefing process and help both public and private sectors in the UAE. This framework can only be successful if it is developed based on and benefited from proven practices of PPP maturity markets and take into account the success factors critical for PPP environment in the UAE. The following chapter describes the development of a process framework for PPP Briefing with special reference to UAE Construction Projects.



## **Chapter 5: Process Framework for PPP Briefing with Special Reference to UAE Construction Projects**

### **5.1 Introduction**

This chapter describes the development of a Process Framework for PPP Briefing with special reference to UAE Construction Projects. The proposed framework is developed the basis of knowledge from the international literature, international and local professional practice as well as case studies and interviews with professionals. The proposed framework was developed in three main stages: conceptual, preliminary and final.

In the first stage, a Generic Conceptual Process Framework for the Development of Briefs in PPP Projects was developed through an intensive review of the literature on the PPP Briefing process and through a comparative analysis of the different briefing frameworks of the top three countries of the PPP Market Maturity chart. Following this, to localize the developed generic conceptual framework for the PPP market in the UAE, two case studies for mega PPP projects from the UAE were analysed. At the same time an existing governmental procedure for developing PPP was examined, in order to learn more about the brief development processes for PPP construction projects in the UAE and possible /problems, together with the role of local government authorities and the private sector in the process . This stage led to developing a “Preliminary Process Framework for PPP briefing with special reference to UAE Construction Projects”. Finally, in the last stage, the above framework was further developed and was validated through structured interview sessions with professionals and experts from the PPP market in the UAE.

Figure 5-1 illustrates the details of methodology proposed for the research work of the present chapter. The following sections describe in detail the three stages that led to the development and validation discussed above

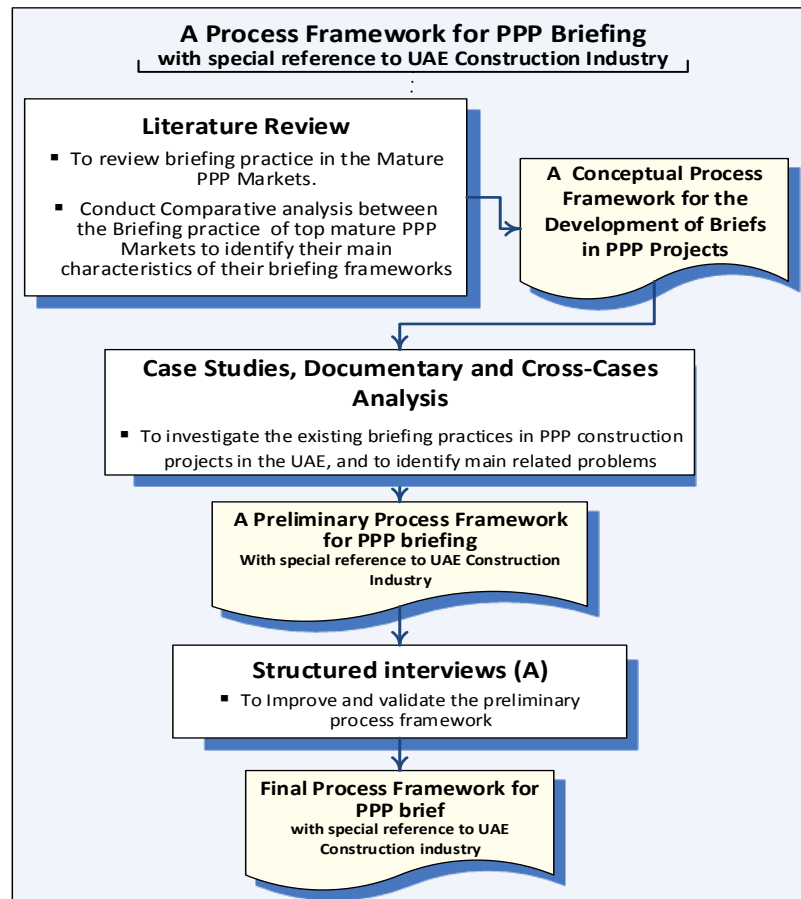


Figure 5-1: The research methodology to develop a systematic process framework for PPP brief development with special reference to UAE construction projects.

## 5.2 The Development of the Conceptual Process Framework for PPP Briefing

### 5.2.1 Briefing practices in the mature PPP markets

Various stages of understanding and sophistication in using innovative partnership models are required to bring a country's PPP program or market to maturity. Around the world, different countries have their own potential, which take their own path in developing the infrastructure for PPP, depending on the local

geography, political climate, the sophistication of the capital market, the forces driving the formation of partnerships and the factors favouring their creation. In 2006, Deloitte published *Closing the Infrastructure Gap: The Role of Public-Private Partnerships* (Eggers & Startup, 2006). This paper included a worldwide “maturity” analysis of PPP programmers. It compared the maturity of the PPP markets in several countries, using typical success factors, on the basis of their levels of sophistication and activity. In 2011, Deloitte reviewed and updated its maturity analysis (New Zealand Office of the Auditor-General, 2011). As a whole, PPP maturity worldwide can be seen to fall into three distinct stages, illustrated as follows in Figure 5-2: 1) Stage one: the developing PPP market; 2) Stage two: the active PPP market; and 3) Stage three: the well-functioning and mature PPP market. The curve analysis of the PPP mature market in 2011, compared with the 2006 curve, generates the following findings:

- The international landscape of the PPP changed due to the global finance crisis in 2008 and its later consequences.
- The UK and Australia are the most mature adopters of the PPP model, outdoing many industrial countries in reaching Stage three, whereas the Canadian market has moved towards Stage three in giant steps.
- Many European countries are either improving their position in relation to the advanced stages or are starting their journey to the stage of maturity.

According to the definition of briefing introduced in the previous section, the briefing process is carried out in the early stages of a project’s development. In the PPP context a briefing session in PPP projects is usually scheduled for approximately halfway through the bid preparation period (Tang, 2011).

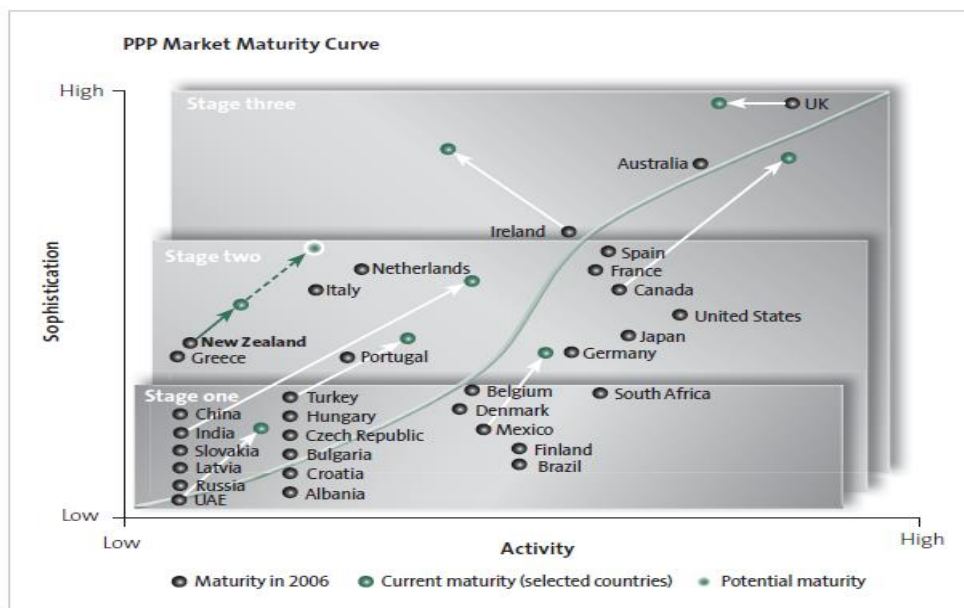


Figure 5-2: PPP Market Maturity Curve - Source: (New Zealand Office of the Auditor-General, 2011)

In essence, to develop the proposed framework, the whole PPP process, including the briefing stage, in the three most mature countries is studied and analysed, in order to divide it into major stages that can be subdivided into phases. Then the relevant main processes within these phases, their inputs and their expected outputs, are identified.

### 5.2.1.1 Briefing practices in the UK PPP project

According to the above maturity curve, the UK is considered the most mature country for infrastructure development in the implementation of PPPs. PPPs in the UK have developed mainly through the Private Finance Initiative (PFI) model; various studies by UK researchers have indicated the high success rate of this procurement model in the UK (Ke, Wang, Chan, & Cheung, 2009). The total capital spending on PPPs between 1992 and 1999 amounted to almost £10 billion (Brown, 1999; Chou & Pramudawardhani, 2014; Li et al., 2005b). In 2002, PPP projects represented 11% of all UK investment in public infrastructure (Li et al., 2005b;

Robinson, 2001). Li et al. (2005a) believe that efficient communication between the involved parties regarding risk allocation is behind the high success rate of this country's PPPs.

Figure 5-3 represents the Outline Plan of Work for a PPP/PFI project; it addresses the activities involved in PFI in four main stages, namely, i) the Preparation stage; ii) the Tender/Negotiations stage; iii) the Construction stage; and iv) the use stage. This Plan of Work, on the basis of the PFI model of the Office of Government Commerce (OGC), was issued in 2008 by the Royal Institute of British Architects (2008). Its stages contain 14 sub-stages (Treasury Taskforce, 1997).

As shown in Figure 5-3, the briefing stage is located within the stages of preparation and tender/negotiations. Those two stages examine such technical and financial issues as preparing the business case for the project, the invitation and pre-qualification of potential bidders, design, finding solutions, evaluation of bids to determine value for money and affordability, selection and negotiation of a contract with the preferred bidder, financial close and development of the full business case for the PFI project.

The UK segments the various phases of PPP projects through gateways (OGC) from 1 to 5, the first three gateways constituting the briefing stage. In the initial phase of Gateway-1, a strategic assessment is made to ensure the business needs of the project. In Gateway-2, the business justification is evaluated and recommendations for improvements are offered. Gateway-3 is the procurement strategic phase which gauges the project's potential and ability to succeed.

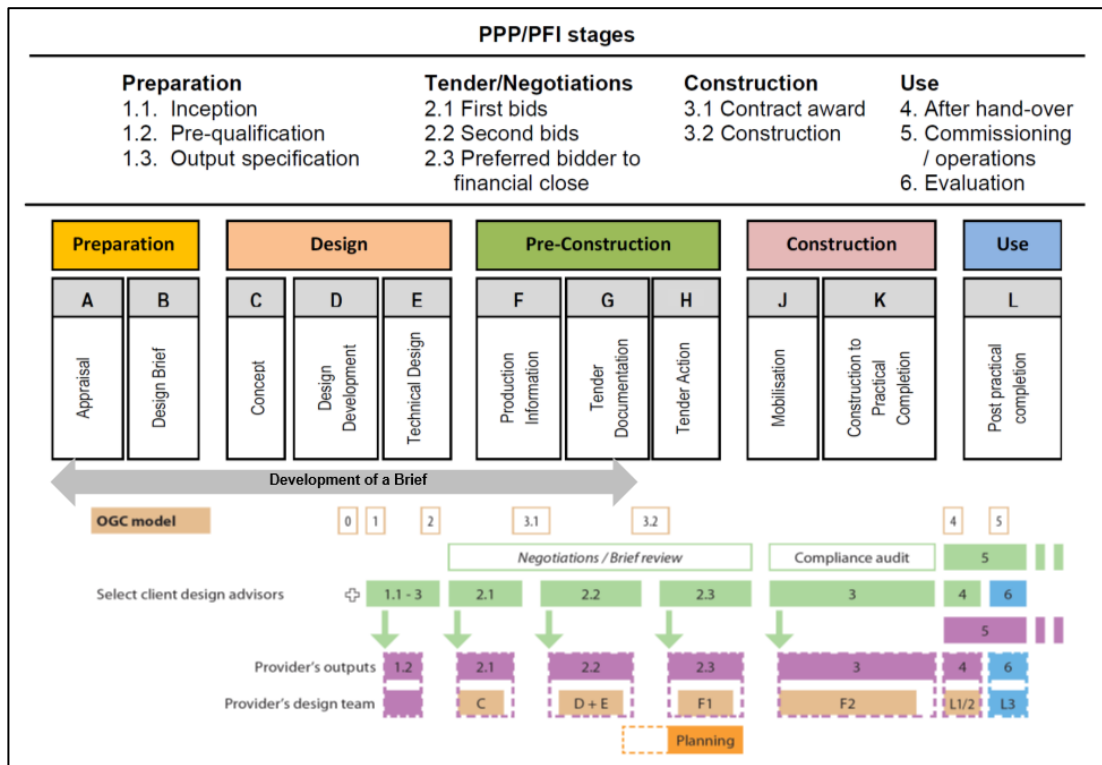


Figure 5-3: The RIBA Outline Plan of Work 2007—developed on the basis of (Mustapa, 2013; Royal Institute of British Architects, 2008)

### 5.2.1.2 Briefing practices in the Australian PPP projects

The Australian PPP market is not as large as the UK’s PFI market; however, it is amongst the most sophisticated PPP markets in the world (Raisbeck, Duffield, & Ming, 2010). PPP in Australia has become an integral part of the Federal and State Governments’ procurement strategies. PPP projects worth A\$35.7 billion were contracted between 1980 and 2005 (Allen Consulting Group, 2007; Javed, Lam, & Zou, 2013), while about A\$400 billion is expected to be spent on infrastructure provision in Australia over the next 10 years. Thus, PPP is likely to be a major approach to future project delivery in Australia. According to Duffield (2001), most PPP projects are undertaken in the States of New South Wales (NSW), Victoria and Queensland. Moreover, New South Wales and Victoria have taken quick action to profit from their accumulated experiences in PPP infrastructure projects, compared

with Western Australia, which preferred to use more PPPs with an alliance agreement (Love, Davis, Edwards, & Baccharini, 2008; Tang et al., 2013). According to *Infrastructure Australia* (2008), which forms part of the Australian National Public Private Partnership Policy and Guidelines, Victorian Government (2001), and *Infrastructure Australia* (2012) New SouthWales Treasury (2012), the PPP project development cycle generally comprises three main stages: i) the project strategy stage; ii) the project options stage; and iii), the project delivery stage. The PPP process content of the activities of *Partnerships Victoria* and the NSW are the same. See Figures Figure 5-4, Figure 5-5 & Figure 5-6.

According to the definition and timing of the process, the development of a brief in Australia should be in operation from the time of identifying a set of service needs up to the end of the bidding process. For example, according to *Partnerships Victoria*, the PPP briefing process should occupy five major phases. These are identifying the services needed, optional appraisal, preparation of a business case, project development and half the distance to the bidding process. During the briefing process, a “gateway” approval of the PPP (by special committee) is required for three major decisions: i) project selection, in order to proceed with the development of the business case; ii) before issuing the requests for expressions of interest; and iii) before issuing project briefs and a contract. In analysing this process it is evident that high priority is given to clear communication to all stakeholders, in particular to the bidders, in order to ensure that all variations are well understood in good time.

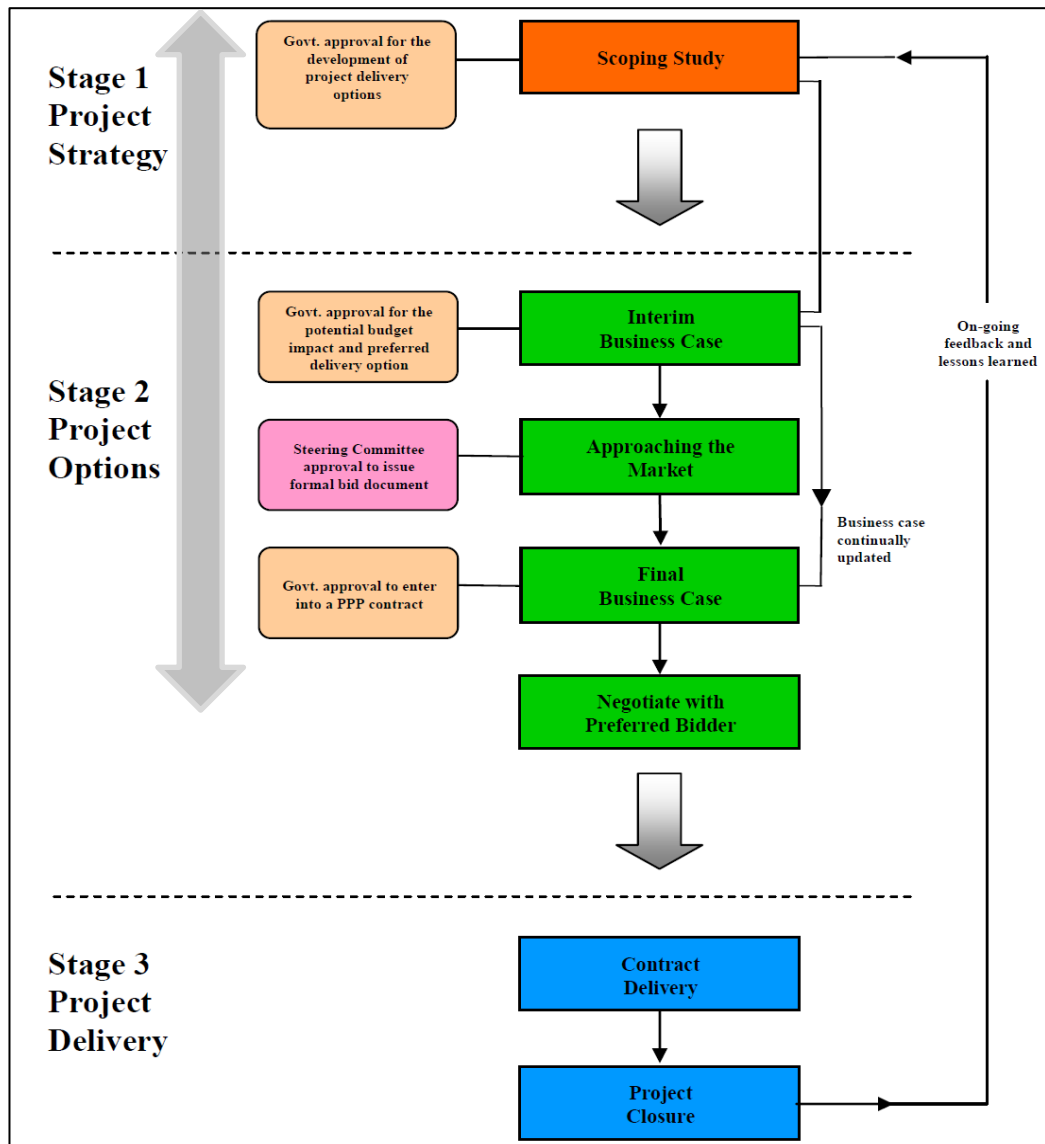


Figure 5-4: Phases and activities of the PPP delivery process in Australia- Stages in the PPP project development cycle—source: (Infrastructure Australia, 2012)



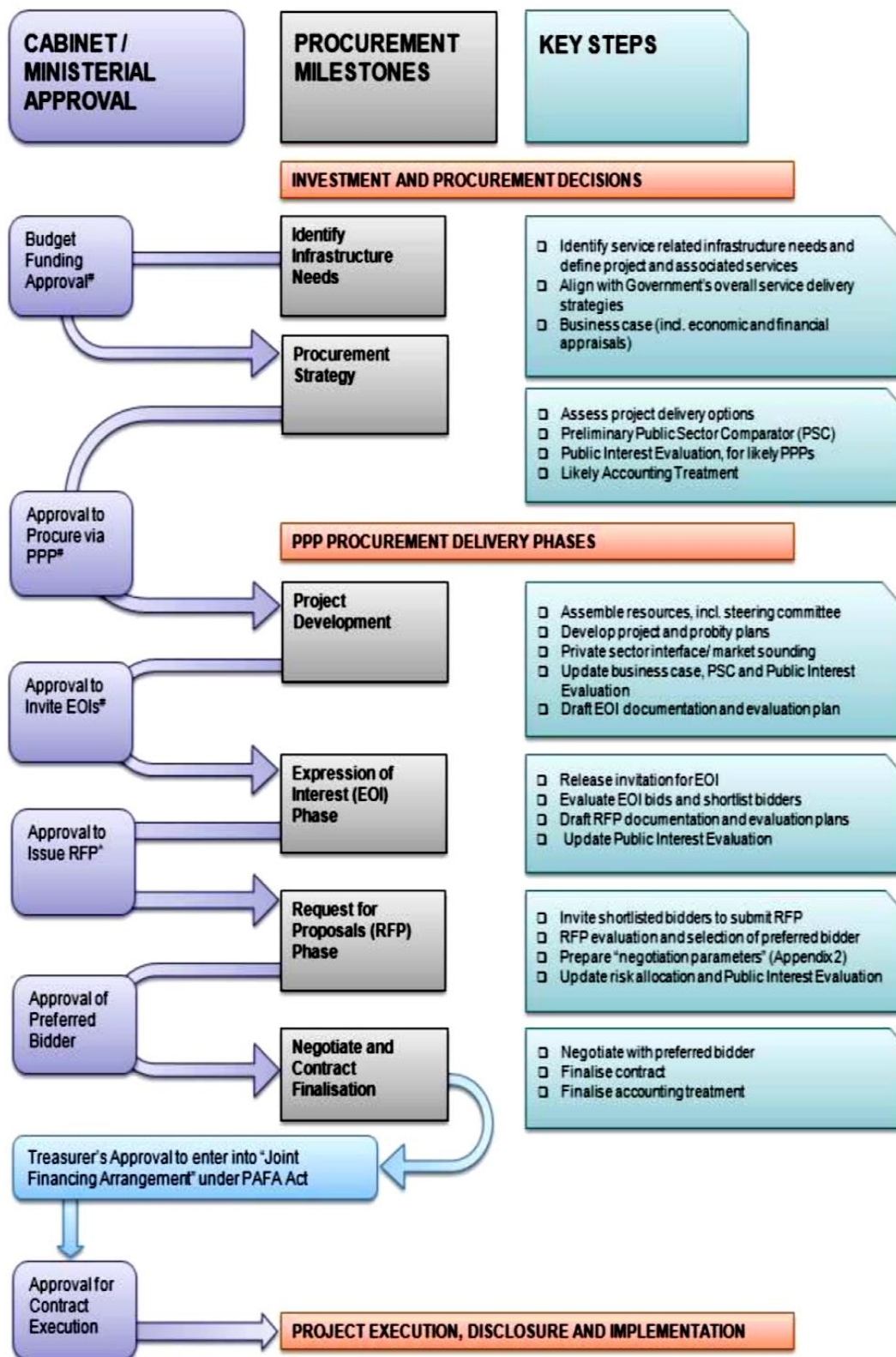


Figure 5-5: Phases and activities of the PPP delivery process in Australia - Phases of Government Approval in NSW—source: (New SouthWales Treasury, 2012).

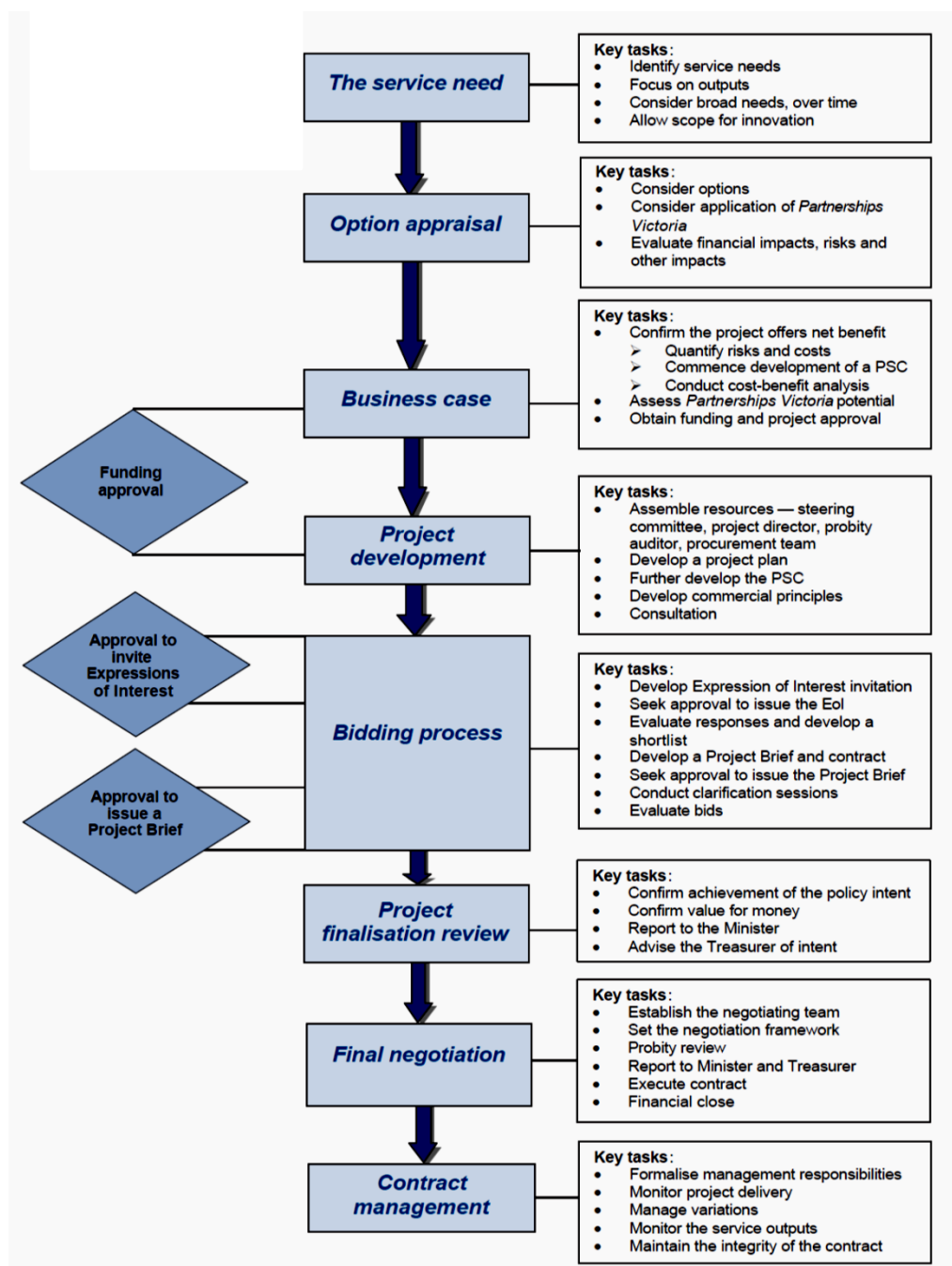


Figure 5-6: Phases and activities of the PPP delivery process in Australia - Major stages in developing a Partnerships Victoria project—source: (Victorian Government, 2001).

### 5.2.1.3 Briefing practices in the Canadian PPP projects

Since the mid-1990s, Canadian governments, like those in Europe and Australia, have been most involved in PPP in capital-intensive infrastructure sectors, such as transportation (roads, airports and bridges), water and wastewater, hospitals,

recreation facilities, power and energy, and for other facilities. Moreover, PPP has been used to provide many other smaller projects (Vining & Boardman, 2008; Vining, Boardman, & Poschmann, 2005).

Like Australia, Canada has a worldwide reputation for its procurement process, in terms of efficiency and its track record of taking transactions through the procurement process to a financial close. Figure 5-7 depicts the entire Canadian Public-Private-Partnership process, which has three key phases in the PPP implementation, namely, i) planning (the pre-procurement) stage; ii) procurement; and iii) contracts management (operation), as extracted from The Canadian Council for Public Private Partnerships (2011). The briefing process can be mapped from the project scoping phase where the actual needs analysis is conducted and all possible solutions are identified and prioritized with their possible economic implications, execution and time frame, all the way to releasing a request for proposals (RFP) and a final project brief.

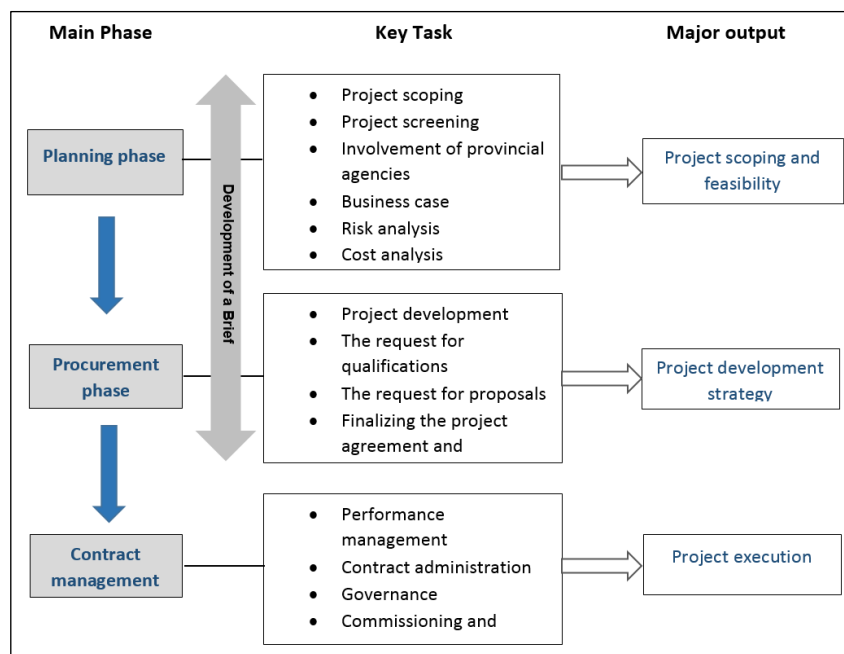


Figure 5-7: Overall Canadian PPP delivery process - developed on the basis of (The Canadian Council for Public Private Partnerships, 2011).

### **5.2.2 Comparative analysis of the briefing processes of the mature PPP markets in light of briefing considerations**

According to (Kamara et al., 2002), briefing is “a process which constitutes of a set of linked activities that take an input (information) and transform it to create an output (brief)”. Therefore, the discussion of the PPP briefing processes in mature countries will compare these interrelated activities of translating inputs into outputs. For the purpose of comparison, it is necessary to map the briefing stages in the three countries discussed above to define the various phases, stages, main processes and activities that constitute the briefing process. To this end, inputs and outputs should also be identified, because if the inputs or the information are inconsistent, inadequate or incorrect, then it is very likely that the activity/process and its outputs will also be deficient. Furthermore, the process content, decision gates and identity of those who take control, within the briefing processes of the three countries are also compared.

The procedure used in the three most mature countries to conduct the whole PPP process, including the briefing stage, was studied and analysed, in order to discern the main stages, which were subdivided into phases. Then the main relevant processes within these phases, their inputs, expected outputs and decision gates and who takes control were identified and analysed. The comparison of briefing processes in the above three countries is shown in Figure 5-8. It is evident from the review of the processes applied during the PPP briefing process in the three countries under review that:

- The management and control of PPP briefing in the above countries are wholly in the charge of the public sector client (the public sector client body).

- In spite of differences in the titles of the main phases in the three countries, the phases have almost the same content in their processes and also share the same decision gates.
- The content of activities in the reviewed processes is almost identical, and the main differences between the processes relate to the timing of the briefing activities.
- Generally, there are three vital decision gates, which can be recognized through the briefing processes of the three countries. These are: i) the decision on the need of physical assets/infrastructure to meet the identified business and organization needs; ii) the decision on the PPP's suitability; and finally iii) the decision whether to issue the final project brief.
- In the UK process, the task of negotiation precedes the evaluation of bids, whereas in Australia and Canada the RFP process allows for negotiation after the preferred proponent is selected.
- Generally, the UK, Canada and Australia use the same multi-stage procurement process, consisting of an Expression of Interest (EoI) stage, an RFP stage involving interaction with bidders, the selection of a preferred bidder and pre-award contract negotiation.

In this review, the above presented analysis has mainly been used to reflect the generality of the PPP briefing processes in the three countries being studied. Figure 5-9 illustrates the main phases and decision gates within the PPP briefing stages in the three most mature countries.

Country	Source	The phases within the PPP Briefing stage												
UK	RIBA, 2008, 4ps, 2006	↑ PPP/PFI stages ↓	Preparation									Brief review/Tenders		
			1.1 Inception				1.2 Pre-qualification				1.3 Output specification	2.1 First bids		
			Establish strategic and business need	Clarify objectives and identify options	Test suitability / market sounding	Appraisal of project and procurement options	Advertisement OJEU (Invitation of expressions of Interest)	Descriptive Document and Pre-qualification Questionnaire	Pre-qualification	Shortlisting	Develop Output specification	Select shortlist of bidders	Revisit and refine the original appraisal	Invitation to Negotiate and finalize the draft contract
		OGC Gateways	OGC 1 (Business justification)	OGC 2 Procurement strategy						OGC 3 Investment decision				

Country	Source	The phases within the PPP Briefing stage																		
Australia	Tang, 2011, Department of Treasury and Finance, 2001	↑ PPP stages ↓	Mobilization and development of business case						Funding	Policy			Procurement							
			The service need			Option appraisal			Business case	Project development			Bidding process							
			Identify service needs	Focus on outputs	Consider broad needs, over time	Allow scope for innovation	Consider options	Consider application of Partnerships	Evaluate financial impacts, risks and other impacts	Confirm the project offers net benefit	Assess partnership potential	Assemble resources	Develop a project plan	Further develop the PSC	Develop commercial principles	Consultation	Expression of Interest invitation	Evaluation and shortlisting	Develop a Project Brief and contract	Issue the Project Brief
		Cabinet Approvals	Funding approval						Approval to invite Expressions of Interest			Approval to issue a Project Brief								

Country	Source	The phases within the PPP Briefing stage																					
Canada	The Canadian Council for Public Private Partnerships, 2011	↑ PPP stages ↓	Planning Phase								Procurement Phase												
			Project Scoping				Project Screening				Involvement of PPP Canada/ Provincial agencies	Business Case			Project Development		Request for Qualification (RFQ)		Request for proposals (RFP)				
			Need Analysis	Identify possible solutions	Select preferred solution	Developed base costing	Analysis of affordability and rescoring	High-level preliminary risk assessment	Determine stakeholder requirements	Select preferred solution		Identify the procuring models	Risk assessment	Value for Money Analysis	Contract Life cycle costing	Assembling resources	Developing a project plan	Defining operational and service requirements	Developing and finalizing the RFQ document	Release of the RFQ	Evaluation and Shortlisting	Develop and finalize the RFP	Further developing the contract
		Decision Gate	Proceed with the project as defined				PPP suitability				Project and Funding approval			Obtaining approval for the release of the RFQ		Obtaining approval to release the RFP							

Figure 5-8: The overall briefing stages in detail for the three countries

Country	Source	The phases within the PPP Briefing stage				
UK	RIBA, 2008	Inception		Pre-qualification	Output specification	First bids
Australia	Tang, 2011, Victorian Government, 2001	Mobilization and development of business case	Funding	Policy		Procurement
Canada	The Canadian Council for Public Private Partnerships, 2011	Planning Phase		Procurement Phase		
Decision Gate		Asset-based solution	PPP suitability	Project and Funding approval	Obtaining approval for the release of the RFP	Obtaining approval to release the RFP

Figure 5-9: Main phases and decision gates within the PPP briefing stages in the three most mature countries

### 5.2.3 The development of a conceptual process framework for PPP briefing

The proposed conceptual process framework consists of three main phases, a strategic phase, a feasibility phase and a procurement phase, with 12 main processes in which the PPP is iteratively developed and appraised during the briefing stage. At each main phase, a key decision is required in the PPP briefing development process, in this way an early and well-defined PPP briefing process can be set up to ensure that development budgets are well spent. Moreover, such a framework enables oversight agencies to be involved in good time in approving projects. It can also provide a clear mechanism for identifying and precisely representing all the stakeholders' requirements in the briefing stage of PPP projects. These phases are as follows:

- i) The Strategic phase, where a list of reasonable alternative options is composed, on the basis of an analysis of the actual strategic and business needs and the decision to proceed with the asset-based solution is made.
- ii) The Feasibility phase, where alternatives are analysed and the decision on the PPP's suitability is made.
- iii) The Procurement phase, where the preferred option is defined and the decision to proceed with the project are made.

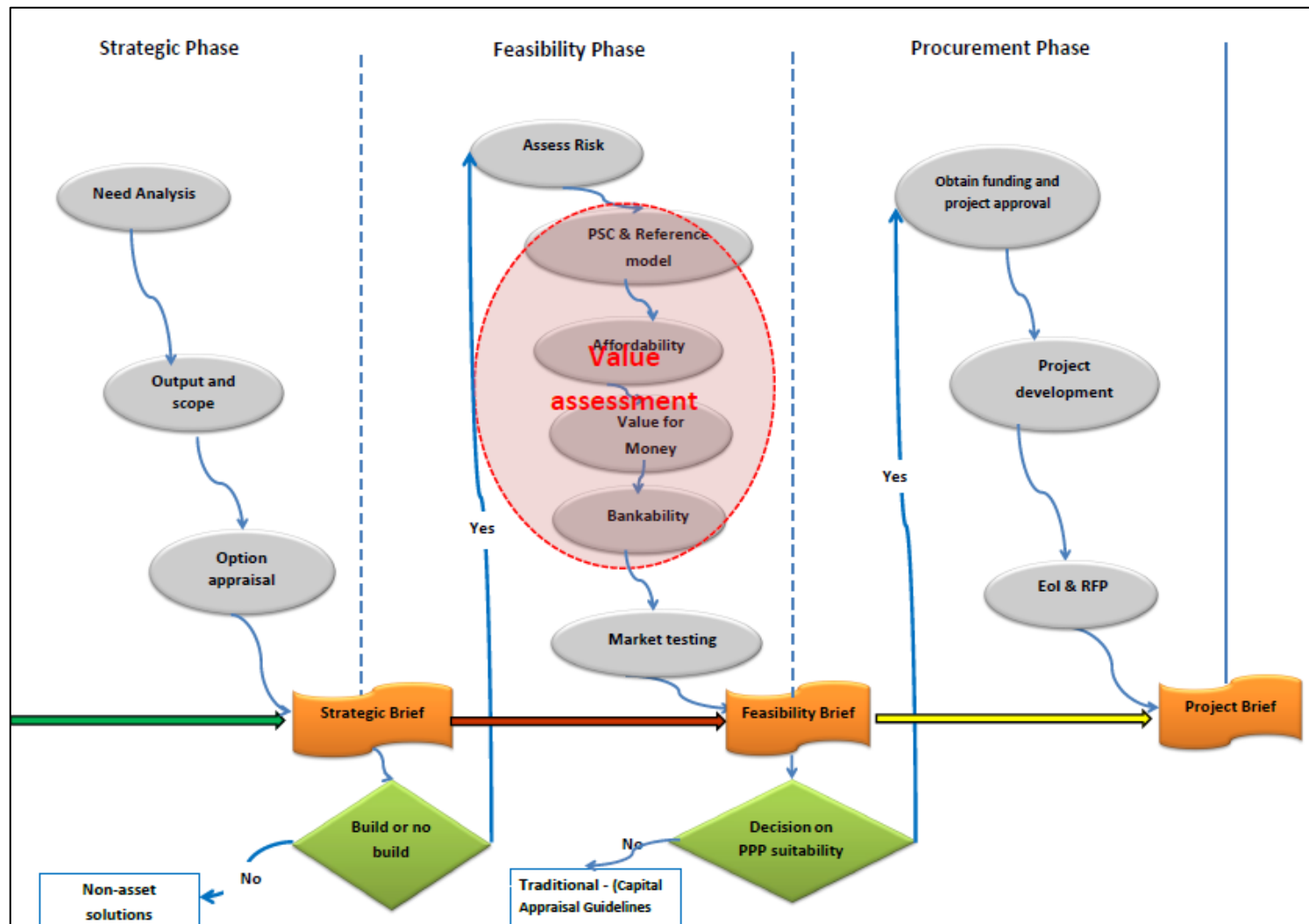


Figure 5-10: The proposed conceptual process framework for PPP briefing



Reflecting what happens in practice, the developed conceptual Process Framework includes nine main processes covering the most common processes within the PPP briefing stage. The main processes to be considered in the PPP briefing stage are: needs analysis, Output and scope, option appraisal, risk assessment, value assessment (which contains PSC, affordability, value for money, and bankability); market testing, funding, project development and EoI and RFP.

To localize the developed generic conceptual framework to the PPP market in the UAE, two case studies for mega PPP projects from the UAE were analysed, along with an existing governmental procedure (documentary analysis) for PPP development; these are discussed in the following section.

### **5.3 The Development of the Preliminary Process Framework for PPP Briefing with Special Reference to UAE Construction Projects**

To localize the developed generic conceptual framework to the PPP market in the UAE, a research methodology using case studies and cross-cases analysis approach was selected. Two case studies for mega PPP projects from the UAE were analysed along with an existing governmental procedure (documentary analysis) for PPP developing. The main aim of the selected approach was to investigate the brief development processes for PPP construction projects in the UAE and the role of local government authorities and the private sector in the process. Next, a cross case analysis was conducted to recognize contrasting or replication elements, focusing on major issues of similarity or difference.

The choice of the selected cases was made on the basis of the willingness of different parties within those organizations to cooperate and make data available to this research. Moreover, due to the complexity of PPP projects and the wish to avoid

diluting the analysis by running more cases (Creswell, 2007) with their long procedures and quantities of data and documentation, only two mega projects were treated as case studies and included, with one documentary analysis, in the present research .

### **5.3.1 Case study 1: the new campus of the United Arab Emirates University (UAEU)**

UAEU was founded by Federal Law number 4 in 1976 by the late president and the founder of the UAE, Sheikh Zayed. It was launched in September 1976 with 500 students in four colleges and separate facilities in Al Ain City. Currently, the university has more than 12,000 students in nine colleges. Due to the expanding operations of the University in size and services, a decision was made in 2004 to develop a new campus according to the PPP model. The public joint stock company Mubadala Development Company (MDC) joined the project as the private partner.

The MDC, whose title includes the Arabic word for “exchange”, was established in 2002, by the Government of Abu Dhabi as a principal agent in the diversification of Abu Dhabi’s economy (Bazoobandi, 2012). The MDC is a catalyst in furthering Abu Dhabi’s ambition to diversify and transform its economy, develop a new generation of business leaders, and build a thriving future for its people. With its expanding role, the MDC has helped to develop the physical and social infrastructure needed for a well-organized and rapidly developing society (Mubadala, 2013). The new UAEU campus was the first educational infrastructure project in which the MDC jointly invested with the University as client and end-user.

### 5.3.1.1 Background to the new UAEU campus project

The idea of the new UAEU campus was first proposed by Sheikh Zayed, in the late 1970s. It was not until late 2002 that the project was revisited, when the decision was made to proceed with the traditional form of procurement. After several attempts by the UAEU to have the project funded by the Federal Government, the local government of Abu Dhabi decided in 2004 to proceed with it, taking a PPP procurement approach. Due to the limited experience of the local market and its willingness to embark on PPP, despite the operational complexity of such procurement model, the UAEU project was assigned by the Abu Dhabi government to the newly established company, MDC, as a way of encouraging the private sector to contribute in the socioeconomic development of the UAE and build capacity in the local market. In April 2007, the MDC signed a 28-year concession agreement on standard PPP terms to develop a new university campus in Al Ain City. This agreement was conducted on a build-own-operate-transfer (BOOT) basis. The \$410 million debt package featured several financial entities: MLAs Barclays Capital, National Bank of Abu Dhabi, RBS, and Société Générale (Project Finance, 2009, September 11). The first stage was completed in 2010, and the last phase was completed in 2012.

A fully gender-segregated campus opened at full capacity in September 2012 with a total of 360,000 m<sup>2</sup> gross area; it was located in the Maqam district, the western part of Al Ain City in the Emirate of Abu Dhabi (Figure 5-11). The facility was designed by Australian consultants to hold a maximum of 17,000 students. It was built in three stages: the female academic zone and the shared laboratories in the first stage, the crescent building for central administration in the second stage, and the male academic zone in the last stage.



Figure 5-11: The new campus of the United Arab Emirates University

### 5.3.1.2 The development of the new UAEU campus project

The MDC was engaged in the project in its early stages, where its contribution in the various tasks of the briefing process was explicit and significant. Thus, the role and responsibility of the private sector (MDC) and the public (UAEU) and the engagement of the user client (UAEU) in the briefing process should be identified and evaluated.

Many potential advantages of the PPP approach have been reported in previous studies and were observed by decision makers in the UAE when the decision was made to build the new UAEU campus. The following paragraph highlights these advantages in the context of UAEU:

1. Accelerated development of the UAEU project, which would otherwise have to wait for sovereign resources.

2. The provision of new capital sources to avoid public borrowing and allow all potential risk to be shared with the private sector.
3. The involvement of the private-sector experience of the MDC, which ensures increased operational efficiency, financial feasibility, and technological transfer.
4. Better integration of the design, construction, operational requirements and facility management for the entire campus, which would enable the university faculty and staff to focus on academic issues and not the management of different buildings and campus facilities.
5. The opportunity to establish a benchmark for further similar projects and to offer opportunities of enhancing the public management of infrastructure facilities. The following Sorbonne and Zayed universities in Abu Dhabi's emirates are good recent examples of this advantage.

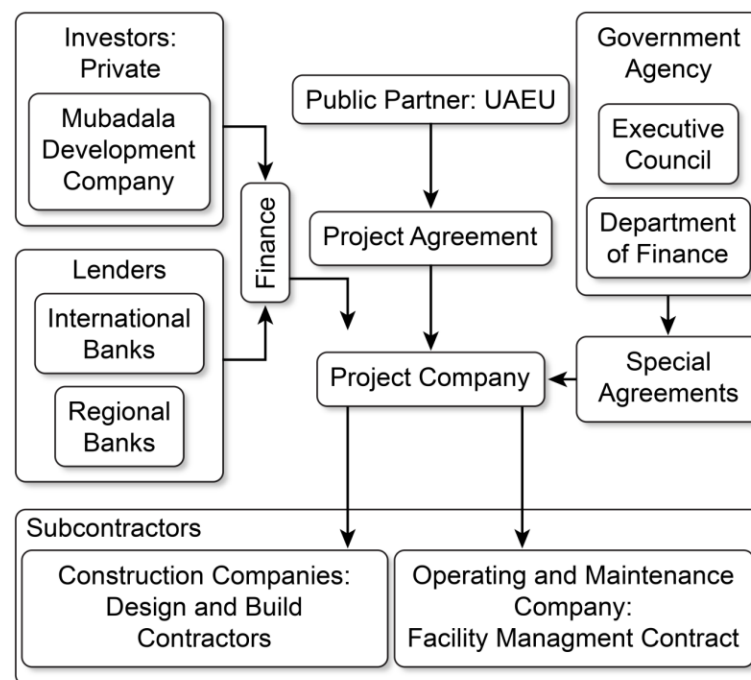


Figure 5-12: Structure of the UAEU PPP project

The MDC as a private partner was involved in almost all the phases of the project lifecycle, including the briefing stage. The project was developed on the lines of the BOOT model and, under the concession agreement; the MDC financed,

designed, and built the facility and became responsible for the facility operation for 28 years, which produced a reasonable return of its investment through annual charges that are paid by its public partner the UAEU. At the end of the 28-year concession period, the MDC would transfer the facility back to the UAEU free of charge. Therefore, the MDC was responsible for designing the organizational structure, capital structure, and capital source. In addition, the design and construction were based on a design-build contract to complete the project on time and within budget and to satisfy the technical performance standards so as to effectively operate the completed campus.

### **5.3.1.3 Background on briefing in the new UAEU campus project**

A long time was set aside for the development of the project brief, in the absence of similar local experiences. The actual briefing process of this project started in 2004, and negotiations between the public and private parties took three years, until 2007.

The briefing process of this project was unique. This negotiation represents the actual briefing stage of this project, but a decision on the private partner was made earlier, to encourage the private sector to contribute to the socioeconomic development and building capacity of the local market. Therefore, all tasks during this stage were conducted to ensure the private sector's capability and capacity to deliver the required project. The negotiation began at the top-management level of the two organizations in question and was subsequently delegated to two dedicated teams, one from the UAEU and one from the MDC, which provided open and effective communication in the briefing stage and clear roles for the representatives of both parties.

In-depth semi-structured interviews were conducted with the members of the two teams engaged in the briefing process of the project. Three members from the UAEU and four members from the MDC were interviewed, on three separate interviews and their input may be summarized as follows. To develop a clear and precise brief, the briefing team was duly selected from both parties, bearing in mind the variety of experiences of the team members. These teams comprised internal and external experts in different areas, including technical, procurement, financial, insurance, and legal practices.

Table 5-1 presents the team members involved in the negotiation and coordination to prepare the project brief, their designation in the parent organization and project, and their major role in the briefing process. Because the UAEU as a user client was greatly concerned with the quality of the project output, the main focus was the output specifications in terms of the size, type, and quality of the target facility. The skills and experience of the engaged team members of each organization in the briefing process support this fact. During the briefing process, as a private partner, the MDC built a multi-disciplinary project team. This team involved internal and external experts, as shown in Table 5-1.

The MDC team performed the diverse tasks of the briefing process. The internal and external members of the MDC team had international experience of PPPs, and their involvement helped to convey their experience to the nationals. During the briefing process, the MDC was mainly concerned over the performance of the targeted facility in addition to other related financial, legal, and procurement issues.

Table 5-1: Representatives of the public and private parties in the briefing process of the new UAEU campus project and their detailed roles

Organization	Position in the organization	Role in the project	Main role in the briefing process
United Arab Emirates University (UAEU)	Deputy Vice Chancellor for Planning	Client Representative (CR)	Recommendations, negotiations with the private partner and the external stakeholders, with power to approve
	Campus Development Director	Client Project Manager (CPM)	Monitoring the overall briefing of the management and the co-ordination of the work performed by other advisors: <ul style="list-style-type: none"> <li>Managing the briefing process from the client side.</li> <li>Providing the appropriate guidance and advice during the briefing.</li> <li>Ensuring proper coordination and effective communications internally in the client organization and externally with the private party.</li> </ul>
	Head of Architectural Engineering Department	Technical Advisor (TA)	User representative who oversaw the development of the project scope, project objectives, and output requirements based on the end-user needs and within the context of the UAEU's strategic plan. He stated the client needs in the form of performance and output specifications with sensible measurable indicators
	External Legal Consultant	Legal Advisors (LA)	Legal consultation, recruited by UAEU and responsible for ensuring the legal compliance of the model with UAEU's existing legal structure.
Mubadala Development Company (MDC)	Senior Director	Project Director (PD)	Overall project monitoring and recommendation: orchestrating the entire process together (internally and externally) and engaging in the development of the strategic brief
	Associate Manager	Project Manager (PM)	Negotiation and monitoring: <ul style="list-style-type: none"> <li>Overall briefing managing and coordinating the work performed by the client team and other advisors.</li> <li>Handling client- and government-related issues.</li> <li>Ensuring sufficient consultation with different stakeholders.</li> <li>Assisting in developing the project strategy and brief in conjunction with other advisors and project staff.</li> <li>Obtaining agreement on the brief from all relevant parties.</li> </ul>
	Programmer	Programmer (P)	Direct oversight: following the contract time frame
	Quantity Surveyor	Quantity surveyor (QS)	Cost monitoring: monitoring the cost of the project at every stage of developing the project brief
	Financial Controller	Financial Controller (FC)	Controlling: overseeing the financial issues, ensuring that everything was smoothly processed and progressed
	External Space Planner	Space Planner (SP)	Operational: translating the brief into functional requirements
	External Legal Consultant	Legal Advisor (LA)	Operational: developing the contract details after the negotiation with the other party's legal advisor



Organization	Position in the organization	Role in the project	Main role in the briefing process
External stakeholders	External Financial Consultant	Financial Advisor (FA)	Consulting and advising on financial issues to achieve the standards of the lending agencies
	External Insurance Company	Insurance Company (IC)	Insurance and risk assessment
	Town Planning	TP	Building licensing and land approvals
	Utility Providers	UP	Ensuring the inclusion of the new campus in the future plans of providing different services
	Department of Finance	DoF	Reviewing the funding mechanism and allocation of funds
	Executive Council	EC	Policy committee: approving the project for endorsement

#### 5.3.1.4 Briefing process in the new UAEU campus project

The MDC was engaged with the public sector client from the development of the business case. From the review of the briefing process of the new UAEU campus project, it was clear that the MDC was leading in some tasks in the process, although the public partner should control the process in general. This analysis also demonstrated that a clear engagement of the facility end-user is considered one of the strengths of the project briefing process. In addition, the absence of a published briefing framework and local similar experience led both the UAEU and the MDC to share responsibilities during this process. Furthermore, no programme or timeframe for developing the brief was available; therefore, adequate time (three years) and resources were allocated for the briefing.

The briefing process of the new UAEU campus project included all the tasks aimed at meeting the requirements of stakeholders, including the client, end-users, and governmental approvals. The first group of tasks prepared a business case that included: defining the need for the facility, agreeing on the new campus location, assessing the willingness of the private partner to carry out the task, developing a feasibility study, ensuring the legal compliance of the model with the existing UAEU

legal structure, developing the output specifications, and defining and assessing the risk. It is also worth noting that the public-sector comparator (PSC) was not performed during the briefing development, as required in many PPP international guidelines and practices, because value for money (VfM) was claimed to be theoretically based on benchmarking with the international experiences and comparison with other traditional procurement models.

The UAEU defined the project requirements based on student intake and strategic plans of the institution. These requirements were translated into functional and technical performance requirements and to instructional and non-instructional spaces. However, as an investor and operating partner, the MDC defined the scope of the project after negotiating with different users of the UAEU, including the colleges and units. With the support of an external space planner, the accurate size and specifications of different functional spaces were provided so that the MDC could prepare the academic schedule and allocate space for the curricular and non-curricular activities using a facility-management company. The negotiations with UAEU to approve the final detailed requirement and scope of the project lasted several months and led to mutual agreement.

To secure funding, a bid which was jointly formed by the UAEU and MDC after consultation with the Department of Finance (DoF) was submitted to the Abu Dhabi Executive Council (EC) for their approval and funding. According to the MDC, the following key factors contributed to securing the EC approval: defining the responsibilities of the different parties, stating the performance-related payment mechanism, demonstrating the achievement of value for money, and government support, which was mainly from the DoF. The approval for funding was for the construction element and for the remaining long-term recurrent financial

commitments, which were obtained under a decree issued by the EC. The choice of payment by the UAEU to the MDC was agreed on the basis of the available charges, which were fixed and not payable until construction was completed and the operation commenced.

The internal UAEU experts from the Campus Development Department made a technical assessment and consulted with the external stakeholders, including town planning (TP) and utility providers (UPs) the technical strength of the client, its acknowledgment of responsibility, and the effective communication and trust of different parties contributed to obtaining the required approvals. The flexibility of the brief allowed some changes to be accommodated during the project development because the focus was on the performance of the output and not on a technical specification input.

The skilled project director (PD) from the MDC and the client representative from the UAEU contributed to the success of the negotiation with the DoF and obtained the approval of the Executive Council (EC) of the Emirate of Abu Dhabi to proceed with the project when the decree was issued by the EC. The appropriate guidance from the project managers of both MDC and UAEU increased the efficiency and control of the process and its tasks, in particular with regard to negotiation with the external stakeholders. A concession agreement between the UAEU and the MDC based on the EC's approval and the completion of the above tasks was signed early in 2007.

According to the UAEU, the technical construction and managerial experience of the team members involved in the briefing process contributed to achieving the goal of the process. In addition, the effective communication and trust

in defining the risk and the responsibilities between the two parties concluded in the preparation of a business case, which is considered a key item in the development of a project brief. Both the UAEU and the MDC agreed that all issues had to be settled before proceeding to approval and allocating a budget. Although there was no regulatory framework or PPP law to govern the process, an internal demand for progress by safeguarding the process and covering all gaps was the driver for success.

Formal governmental laws and the necessary legal structures for addressing the PPP process or any legal issues that arose from the process were not available in the UAE. In addition, the government had no clearly designated authority, such as a PPP unit, for this type of procurement in the construction industry. Moreover, the lack of previous experience in PPP procurement in such an industry has led to a shortage of experienced staff to manage the PPP and to the absence of PPP documentation or a list of best practices for the governmental agencies. For the project examined here, and as a result of previous challenges, governmental bodies assumed some of the tasks that should have been the responsibility of dedicated authorities in other mature countries in the PPP maturity curve. The EC, which is considered the highest legislative authority in Abu Dhabi, was responsible for project endorsement, and the DoF was responsible for allocating the budget; both were engaged in the briefing process.

The engagement of the UAEU community, as end users, in the project extended beyond the briefing stage. Their contribution in the design stage was noticeable because they were required to review the detailed drawings of the various campus buildings, including the design of the interiors and furniture, which required the University's approval. The review team included experts from the Campus

Development Department and the end-users of the facility (faculty members and staff). Because the requested changes were reviewed again by MDC experts, some of these changes were accommodated after negotiation and discussion by the CR and continuous follow-up by the CPM. This statement is supported by the change during the production stage in the design of faculty offices from open-plan offices to private spaces. To further define these needs, the users should be considered a significant source of knowledge of specific requirements (Zwemmer & Otter, 2008). Therefore, the UAEU involvement as client and end-user in the project was strategically introduced at various stages of the project's life cycle, in particular those of briefing and design.

The successful partnership that the MDC had with the UAEU for the development of the first educational infrastructure project enabled two other university campuses to be introduced. This experience was followed by the development of the Zayed University New Campus and the Sorbonne University Campus, both developed jointly with the MDC in Abu Dhabi, using the PPP procurement approach.

#### **5.3.1.5 Lesson learned from the UAEU case study**

The briefing process of PPPs is critical since this process has completely different tasks from those of other traditional procurement models. If the proposal is well developed, it will shorten the period of negotiation by the public and private parties which regularly arises in such a model.

The successful case of the new UAEU campus was considered a reference project in the social infrastructure in general and the educational sector in particular, setting the UAEU-PPP model as a benchmark for future experiences. The lack of

competition in the private sector was a result of the limited experience of the local market in the PPP procurement system. However, the MDC's engagement in this project was considered unique in that it controlled the financing, management, design, construction, and operation in addition to its contribution in the briefing process.

It is important to involve the client and end-users in the briefing stage of the project, to capture their input and to control their opinions and concerns to better facilitate the development of a project which as a result would satisfy their objectives, and reduce the uncertainty with which they might have regarding the outcome. The involvement of the UAEU as client and end-user in the new UAEU campus project at the briefing stage was noticeable in the early stages of developing the brief by skilled and experienced staff. The UAEU team interactively defined the scope of the project and its detailed requirements and further discussed them with the MDC and other stakeholders.

### **5.3.2 Case study 2: the regional highway project**

This case study was estimated to cost around \$3bn, with a 25-year concession. Its main aim was to upgrade, finance, operate and maintain a 327-km highway regional highway (anonymous for reasons of confidentiality). The project consisted of four sections of highway and was planned to meet the world's highest standards of highway design, safety, communications and services to users. In-depth semi-structured interviews were conducted with two senior members of the bidder's team, representing the private sector, and one project manager from the public sector client. The output of discussion may be summarized as follows.

### 5.3.2.1 Background of the regional highway project

The project was initiated to achieve the following strategic objectives:

- Upgrade the existing highway to the standard of an international link
- Improve the highway users' experience with respect to the travelling time, safety and quality of the drive
- Make better use of risk allocation and commercial incentives to maximize quality and efficiency.
- Attract the world's best companies in the fields of infrastructure financing, design, construction and operations to deliver the project, and to manage the life-cycle assessment and innovation

### 5.3.2.2 Background on briefing in the regional highway project

The difference in this case was that the briefing process was conducted exclusively by the public client organization in order to select the preferred bidder from the private sector; thus, there was no involvement of the private sector in the briefing stage. However, the project brief was developed with the assistance of some external advisors, because the capacity of the public organization was not adequate to managing the PPP project development process. During the briefing process, the client organization convened a briefing team that contained a project manager and consultant (specializing in transportation and PPP contracts), together with external financial and technical advisers. All these experts were appointed for especially for this project.

Similar to the New UAEU Campus Project, in this regional highway project, the decision of which PPP to choose was taken internally earlier, before the start of the briefing stage. This project had no formal, distinct briefing stages, resulting in a

lack of clarity on the part of the briefing team (from the public side) about the processes and tasks that the briefing process should follow. Thus some briefing tasks were completed in response to a local government request (sometimes task by task). The main decision gates throughout the initial project stage of this project were technical decisions for the project instead of the solid key decision gates that are normally required in the PPP briefing process. Examples of main decisions in this project were: subsequent approval of the project from the Surface Transport Executive Director; approval of the detailed study from the Roads Division Director; and approval of the outcomes of the detailed study from the Roads Director/Surface Transport Executive Director.

To deliver the project, the client organization carried out an international search to identify the world's best companies in the fields of infrastructure financing, design, construction and operations. As a result, 10 international consortia, or groups of companies, were invited to submit lists of their qualifications. After evaluation, the three international consortia that had the strongest financial and technical delivery qualifications were invited to submit detailed proposals for the project. According to the bid requirements, the winning consortium would be responsible for a period of 25 years for maintaining and operating the upgraded highway while meeting a performance standard relating to safety, availability and quality. The payments to the consortium were proposed as a sequence of equal payments over the concession period. These on-going payments would be subject to deductions for failure to meet the prescribed performance standards and would ensure that the consortium remained accountable for the operational performance of the road over the 25-year period.



### 5.3.2.3 Briefing process in a regional highway project

The briefing stage began when a decision was taken to deliver a project under PPP. There were seven steps in this project briefing:

- a. This stage involved several discussions with some stakeholders and development of an initial brief on the PPP project.
- b. The brief set out all the technical specifications as well as the financial requirements. Moreover, it met the technical evaluation criteria as well as the commercial evaluation criteria.
- c. This brief then went through a number of revisions.
- d. Once the final version was agreed by internal stakeholders, the preparation for a briefing session commenced.
- e. The brief was then a ‘Tender Document’ and a Tender clarification briefing was undertaken. This is the briefing exercise that is referred to in a typical PPP project.
- f. Once the briefing was over, time was allocated for receiving the tender clarifications and for the agency to respond to them.
- g. This was followed through by a tender closing date, which usually allowed more time than a normal tender would, owing to the nature of the project which required both a technical and a financial proposal.

Once the tendering period closed, the second stage commenced where all the technical and financial proposals were received and evaluated by the client agency.

It was reported during the interviews that this project had suffered a series of delays and changes in scope change after tendering to lower costs. After three years of appraisal and negotiations, with several million dollars spent on bid preparation, the project collapsed as a PPP, due to cost escalation and poor stakeholder management.

One interviewee stated that the client's brief was vague, in particular with regard to the scope of the project or, in other words, in setting the output specifications of the type of project. This resulted in an inappropriate allocation of risks between the parties of the bidding consortia. Thus, the private sector tended to charge for risks and uncertainties which in turn increased the overall cost of undertaking PPP projects.

In fact, previous research demonstrates that a clear PPP project brief and clear client requirements are crucial to reducing transaction costs and minimizing the time spent in negotiation and completing deals (Cheung, Chan, & Kajewski, 2012). Likewise, Zeegers and Ang (2007) assert that the output specifications in a PPP represent a very important element of the contract, forming the basis of the whole project and require major attention. Furthermore, Akintoye and Donnelly (2003) argue that the client group must specify in unambiguous terms the output specifications that the facilities must achieve in a manner that can be interpreted by a separate commercial venture called a "special purpose vehicle" (SPV).

One important observation which was expressed is that the bidders of some major projects have had to spend significant amounts on preparing highly detailed technical tender offers, as requested by the procuring agency, and are not compensated when projects fail to be implemented as a PPP or are cancelled. This

can increase the reluctance of the private sector to take part in similar PPP projects, or can incline bidders to insist on being reassured before proceeding with a bid, and ultimately may affect the credibility of the public sector in the UAE regarding similar projects.

### **5.3.3 Documentary analysis: governmental briefing procedure for PPP projects**

This governmental unit is considered one of the pioneer local authorities in the UAE, with several initiatives in implementing PPP projects within the organization mandate. The authority is in the process of assembling a major project aimed at establishing modern infrastructure for the city, including bridges, drainage systems, road networks and a modern transportation system as well as the integration of comprehensive development projects in the city. The investment office in this authority is working on several PPP project initiatives, which in certain cases extend to 25-year concessions. Access to the briefing process document developed under their PPP implementation program was granted.

#### **5.3.3.1 Functions of the PPP investment office**

The functions of the Investment Office are as follows:

- Determining the value of the Authority's assets (physical, intangible or financial).
- Determining if an investment is positive or negative.
- Preparing an annual investment plan for the authority.
- Developing and implementing a real estate asset database.
- Identifying opportunities that increase the Authority's revenues, and analysing the return on investment (ROI) and potential risks.

### 5.3.3.2 Briefing procedure in an organization's investment office

The PPP project's briefing procedure (see Appendix B) is part of the overall PPP development and implementation process in this investment office. The briefing procedure starts with the origins of the project in the form of an external direction from decision makers or the identifying of an investment opportunity. It typically follows the same or a similar process to those of traditional public procurement projects. Thus, the direct evaluation of the suitability of a PPP procurement model is premature and gives no opportunity to the authority to confirm the needs or evaluation of different options in order to decide whether to build or not before using time and effort to evaluate a PPP opportunity. The PPP brief development contains 13 processes in three main phases separated by three main decision gates. These phases are as follows:

- Phase one is concerned with directly evaluating the PPP opportunity through four main processes (evaluating the potential PPP opportunities in line with the authority's strategy, gathering market data that support the valuation, provide an investment opportunity report with recommendations and review this report).
- Phase two describes how the investment office can test the feasibility of the PPP project and its alignment with other government stakeholders for no objection certificates for utilities and infrastructure (NOCs). It is a complex phase containing seven processes for issuing licenses and approvals for construction projects, land developments, and public facilities and infrastructure.
- Phase three should start with the authority's approving the investment project report. There are two processes in this phase, identifying a market investment opportunity and preparing documents for tender.

There are several advantages in this briefing procedure, such as the presence in phase two of the “development of a high level concept master plan for the proposed opportunity”. Before engaging with the market, moreover, the client can gain a better understanding of the project’s cost and affordability as well as site related factors and the regulatory situation. In addition, such a briefing procedure focuses more sharply on integrating the main government stakeholders in the Emirate, as was clear during the briefing stage in phase two for the purpose of NOCs and alignment.

Nevertheless, this briefing procedure does not describes each phase in the PPP briefing process in great detail nor provide links to further guidance for PPP practitioners. For example, it does not provide any detailed tasks when it lists the 13 processes. Moreover, the implementation of many important proposed processes, such as risk assessment and financial/value assessment, is not clear. In addition, the involvement of end-user groups in the briefing process is not clear. It is worth mentioning here that this procedure is not fully entrenched and is still in process of improvement and evaluation. Indeed, the staff of this office were not willing to provide more detailed information about specific cases or challenges.

#### **5.3.4 Cross case studies and documentary analysis: key findings and observation**

This section presents an analysis of the cross case studies that were originally investigated at individual level and then cross-investigated at a multi-case level. The main point underlying cross-case synthesis is to compare the two cases and the documentary procedure while focusing on important issues in terms of similarities or

differences to find direct replication or contrast. The main issues and observation are discussed below.

- **Clear methodology/procedure for PPP briefing**

It can be observed from the two case studies that there is no formal procedure for the briefing process in PPP projects in the UAE. This is due to the absence of a unified tender law and PPP procurement process in the UAE. In line with the type of the client and nature of the project, the briefs are usually prepared either formally or informally. Thus, the briefing process for PPP projects has no fixed procedure and the processes that they went through in the two cases differed.

The investigation of both cases, additionally, has shown a lack of understanding of certain necessary procurement-related tasks in the briefing of PPP projects, such as:

- **Public sector comparator (PSC):** the public-sector comparator (PSC) was not performed during the briefing process in either of the two cases. In the first case, the value for money (VfM) was claimed to be theoretically based on benchmarking with international experiences and to have been compared with other traditional procurement models.
- **Feasibility study with robust technical, financial and economic analyses:** interviewees from both cases stated that in many sectors of the UAE it is a challenge to perform comprehensive feasibility studies with robust technical, financial and economic analyses for PPP projects, due to the lack of experts and the absence of formal procedures. One interviewee also pointed out that the

government/public side should conduct the feasibility study for PPP projects early, so that it will not be influenced by private sector ideas. In fact, local market experience is very important for supplementing international experience with PPP. In the face of such challenges, matured countries such as the UK and Australia have developed robust and efficient institutions and processes, where VfM is tested during well-organized feasibility and business case stages before the release of the tender documents. One process that Germany has instituted is that adequate economic feasibility studies are required by law to support public investment, and private firms may be required to demonstrate clearly the capacity of private parties to deliver the required public service or asset to the same standard and for equivalent or lower costs (Grimsey & Lewis, 2005).

- **Risk analysis and allocation:** one observation was that noted on p.25 (above): the loss of credibility of the public sector when bids fail. As discussed in Chapter 3, above, risk escalation is strongly related to the “availability and effectiveness of a proper regulatory and legal framework for PPP”. In the context of both case studies, the same view was expressed by interviewees during the discussion: that for most countries new to the PPP concept, the public sector thinks that maximum risk should be transferred to the private partner, but not that the public sector should take an appropriate degree of risk. One of the lessons learned from case two is that the unrealistic risk transfer made some PPP deals un-financeable and alienated many potential bidders. In a best-scenario case, it drove up the overall cost of the project to

the public sector, since all risk is usually associated with a price premium, obliging the private sector to push up its return requirements in compensation.

- **Client organization/public sector institutional capacity**

The availability of facets of the public sector, notably the capacity and readiness to carry out successful project briefings is considered crucial to PPP projects. On this point, discussions with interviewees in both case studies reveal that staff who are qualified and experienced in managing the PPP briefing process in government agencies, with adequate technical capacity to ensure successful briefing outcomes is one of these facets, but in UAE such staff are in short supply, according to the findings of the present research. The same applies to the availability of PPP documentation and best practice in the public domain, which can save huge amounts of time and effort for both public and private sectors.

Thus, the capacity and skills of the public sector should be increased to manage and negotiate successful PPP briefing, wherever different potentials of implementation are encountered between the cases under scrutiny. For example, case one had robust briefing teams selected from both parties while the second case lacked staff with sufficient PPP experience to develop the brief, apart from some external advisors with limited experience in the local market. In the second case, the difficulties in the briefing stage were due to a lack of administrative competence in the development and control of the briefing stage, as well as a lack of knowledge of risk management and stakeholder's management.



- **Involvement of the main stakeholders and user groups in the briefing process**

One of the specific features of PPP projects is having more stakeholders than other types of project have. The process of briefing is affected by stakeholder relationships in general, as discussed in Chapter 3; the success of PPP projects is affected by the relationship between organizations within the public and private sectors and poor stakeholder management can lead to misunderstanding and conflict in PPP projects. Case one had a strong stakeholder management in term of involvement, coordination and consultation of both internal and external stakeholders, as well as a suitable involvement of user-groups throughout the briefing process, which resulted in appropriate support from the main external stakeholders and decision makers and the clear articulation of needs and requirements by internal stakeholders. Case two, in contrast, had poor stakeholder management during the briefing stage. The project was developed by the client organization without much involvement from the other key stakeholder, DoF and EX. This resulted in very little support for the project outside the client organization. In the briefing procedure of the investment office discussed above, however, there are two distinct activities during phase two which ensure that the main government stakeholders are involved.

- **Attention to user-groups and project requirements**

For a PPP brief to be effective, it must be developed with a clear understanding of the services that the PPP project will deliver. This understanding is best developed through consultation with users of the project or a similar one, in particular those who will use the new facility once it is built. To secure this input,

project teams typically establish user groups and consult with them through workshops and similar facilities. However, this point was clear only in the case of the New UAEU Campus Project. Neither of the other cases created a close relationship with the user groups, which would normally have engendered a better understanding of the end-user requirements, thereby promoting innovation and enhancing service and facility quality.

- **Clear project brief and client outcomes**

Clear PPP project brief and clear client requirements are crucial to reducing the transaction costs and minimizing the time spent in negotiation and completing deals. The output specifications in a PPP represent a very important element of the contract, for they are the basis of the whole project and require major attention.

As discussed in Chapter 3 and noted above, the client group must spell out, in unambiguous terms, the output specifications that the facilities must achieve in a manner that can be interpreted by a separate commercial venture called a “special purpose vehicle” (SPV). In the PPP context, the SPV provides a good framework for raising funds, linking participants legally and ensuring the supply, production, and marketing of products.

Case study one demonstrated that the involvement of the end user in brief development provided a good opportunity to address and draft the output specifications more clearly. This is because the performance requirements of a facility with a contract period of 10-30 years need a special focus on many long-term requirements for public and private parties as well as the end-users. The involvement of the UAEU as a client and end-user in the briefing process was obvious from the early stages of developing the brief. Skilled and experienced staff from the UAE

University side shared the task of setting the client needs in the form of clear performance and output specifications with sensible measurable indicators. During the outcome discussion for this project, several aspects related to stakeholders arose as crucial factors for the success of the PPP briefing process, including the clear definition of the relationship between the public and private sectors, the clear understanding of the education process in the UAE University, and, most importantly, the experience of the client in the briefing process and the output specifications of this type of project.

- **Control of the briefing process**

As a rule, the public sector client should control the PPP briefing process. The two cases showed that there was limited leadership and control from the public sector client briefing team, which in the first case was controlled by the private partner and in the second case by the external advisors of the public sector client. In fact, the briefing procedure of the investment office is based on the assumption that its staff (the public sector client) will manage and control the whole briefing process.

- **Decision-making**

There was no distinct briefing decision gates in the two cases studied. Furthermore, the decision on PPP as the preferred procurement option was taken earlier; hence, the briefing process did not go through a strategic phase where the decision whether to build or not results from feasibility study checking whether a normal contract, as opposed to a PPP, should be awarded. In both cases, the first and second phase main gates were bypassed. In addition, many missing or inappropriate tasks in the second (feasibility phase) were observed, such as risk assessment, PSC construction and the affordability of a reference model and study.

- **Documenting lessons to learn**

A robust PPP briefing framework needs a process for absorbing lessons and assessing whether the framework needs to be changed to address possible future recurrence. Participants raised the issue that at every phase of the PPP briefing process, practice would show problems and challenges that had not been predicted. Thus, for the sake of improvement and to create and share databases of lessons to learn, briefing frameworks should undergo evaluation and revision in response to experience. The investigation of all cases showed that at present no clear documentation of lessons to learn has a place in the PPP briefing process; regulations in the UAE do not call for them.

Participants clearly expressed the need for such documentation, which would help increase transparency and in turn help both public and private agencies to run better and succeed with PPP projects. Table 5-2 contains an aggregated summary of cross-cases findings.

Table 5-2: Summary of findings for cross case studies and documentary analysis.

Summary of findings			
Briefing Issues	Case study #1 New Campus of United Arab Emirates University (UAEU)	Case study #2 Regional Highway Project	Case study #3: The Documentary Analysis - An investment Office PPP project's briefing procedure
Those involved in briefing	<p>A broad mix of professionals was involved in briefing, such as:</p> <ul style="list-style-type: none"> <li>• <b>Public sector client organization:</b> client representative, client project manager, technical advisor (chair of the architectural engineering department, with more than 30 years of experience), end-users and external legal consultant.</li> <li>• <b>Private partner:</b> project director, project manager, programmer, quantity surveyor, financial controller, space planner, legal advisor, financial advisor and insurance company.</li> <li>• <b>External stakeholders:</b> town planning, utility providers, department of finance.</li> </ul>	<p><b>Public sector client organization only:</b></p> <ul style="list-style-type: none"> <li>• Internal representatives <ul style="list-style-type: none"> <li>○ Roads Division PPP Section (PPP Engineering Consultant, PPP Compliance Advisor, Specialist - PPP Commercial)</li> <li>○ Roads Division Director</li> <li>○ Surface Transport Sector (Executive Director)</li> </ul> </li> <li>• External representatives <ul style="list-style-type: none"> <li>○ Technical Advisors</li> <li>○ Financial Advisors</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Authority staff from investment office:</b> project director, project manager, research manager, head of investment,</li> <li>• <b>Other departments within the authority:</b> urban planning specialist and infrastructure specialist.</li> <li>• <b>External stakeholders:</b> town planning, utility providers, department of finance.</li> </ul>
Stages in briefing	<ul style="list-style-type: none"> <li>• There are no formal distinct stages regulated by laws and regulations.</li> <li>• The briefing process includes all tasks that aim to meet the requirements of stakeholders, including the client, end-users, and governmental approvals; instead, most of the briefing activities are implemented on an unplanned or ad hoc basis.</li> </ul>	<ul style="list-style-type: none"> <li>• There are no formal distinct stages regulated by laws and regulations.</li> <li>• Some briefing tasks have been accomplished according to the local government request (sometimes task by task).</li> </ul>	<ul style="list-style-type: none"> <li>• Three distinct main phases separated by three key decision gates.</li> <li>• 13 briefing processes, with no clear briefing tasks, that might have provided guidance.</li> </ul>

Summary of findings			
Briefing Issues	Case study #1 New Campus of United Arab Emirates University (UAEU)	Case study #2 Regional Highway Project	Case study #3: The Documentary Analysis - An investment Office PPP project's briefing procedure
Decision-Making in briefing	<ul style="list-style-type: none"> <li>Decision on PPP as preferred procurement choice was taken earlier, before the briefing stage.</li> <li>There are no distinct decision gates.</li> <li>Decisions are usually the result of discussions and negotiations between those involved in the briefing process.</li> </ul>	<ul style="list-style-type: none"> <li>Decision on PPP as the preferred procurement choice was taken earlier, before the briefing stage.</li> <li>There are no distinct decision gates.</li> <li>Initial approval of project to be delivered via PPP – Roads Division Director</li> <li>Subsequent approval of project - Surface Transport Executive Director</li> <li>Approval of detailed study - Roads Division Director</li> <li>Approval of outcomes of detailed study – Roads Director/Surface Transport Executive Director</li> </ul>	<ul style="list-style-type: none"> <li>Decision on whether to build is taken earlier.</li> <li>There are distinct decision gates: Investment opportunity approval, Investment project approval and Tender documents approval</li> </ul>
Control of the briefing process	<ul style="list-style-type: none"> <li>The briefing process of this project was unique because the private partner was engaged with the client from the development of the business case</li> <li>The private partner was leading in most of the tasks in the briefing process</li> <li>The appropriate guidance from the project managers of both parties increased the efficiency and control of the process and its tasks, in particular the negotiations with the external stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>Public sector client organization (public sector) was leading in the whole briefing process</li> </ul>	<ul style="list-style-type: none"> <li>Public sector client organization (public sector) through the <b>investment office staff</b> should lead the whole briefing process</li> </ul>

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**Summary of findings**


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Briefing Issues	Case study #1 New Campus of United Arab Emirates University (UAEU)	Case study #2 Regional Highway Project	Case study #3: The Documentary Analysis - An investment Office PPP project's briefing procedure
<b>Limitation and challenges</b>	<ul style="list-style-type: none"> <li>• Lack of a clear methodology or guide on PPP briefing.</li> <li>• Long briefing time ( The actual briefing process lasted three years)</li> <li>• No program or timeframe for developing the brief was available; therefore, adequate time (three years) and resources was allocated for the briefing.</li> <li>• the lack of previous experience in PPP procurement in such an industry</li> <li>• Certain procurement-related steps needed in the briefing of PPP projects was not performed during the briefing process (such as preparing a public sector comparator, or PSC, which is used by a government to make decisions by testing whether a PPP proposal offers value for money (VfM) in comparison with the most efficient form of public procurement.</li> <li>• Decision on the assigned private partner was taken earlier, before the briefing stage to encourage the private sector to contribute in the socioeconomic development and building capacity in the local market.</li> <li>• No 'lessons to learn' documentation/process.</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of a clear methodology or guide on PPP briefing.</li> <li>• The lack of a legal framework or laws for PPP transactions compelled the private party to include conditions in the contract for dealing with unclear issues and arranging arbitration to avoid possible disputes.</li> <li>• Public sector client organization was vague in its brief, regarding a project's scope in particular.</li> <li>• The private sector tends to charge for many types of risks and uncertainties, which in turn increases the overall cost of PPP projects.</li> <li>• Many project details and related uncertainties were intensively negotiated and so the costs saving benefits of this PPP project were scarce.</li> <li>• The feasibility report was falsely optimistic, not covering a full analysis and evaluation of all important project issues (unclear risk analysis and allocation and value for money study).</li> <li>• Inadequate involvement of all the relevant parties in a project.</li> <li>• Inadequate involvement of user-groups.</li> <li>• Limited experience of the briefing staff of the public sector client organization</li> <li>• Lack of staff with sufficient PPP experience to develop initial brief for assessment study</li> <li>• Lack of stakeholder consultation (Dept. of Finance, etc.)</li> <li>• Lack of understanding of the Public Sector Comparator (PSC) and its workings.</li> <li>• Inadequate explanation on the higher cost of undertaking a PPP project vs. delivery via conventional means</li> <li>• No existing 'lessons to learn' documentation/process.</li> </ul>	<ul style="list-style-type: none"> <li>• The procedure is not fully entrenched and is still under improvement and evaluation.</li> <li>• It has been implemented in a limited number of cases under the authority.</li> <li>• Lack of detailed tasks under its processes</li> <li>• Lack of involvement by end-user groups in the briefing stage.</li> <li>• No existing 'lessons to learn' documentation/process.</li> </ul>

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### 5.3.5 The preliminary process framework for PPP briefing with special reference to UAE construction projects

With reference to the previously developed conceptual process framework for PPP briefing, the PPP briefing considerations discussed in Chapter 4, and findings from local practices through the cross case studies and documentary analysis, a Preliminary Process Framework for PPP briefing with special reference to UAE Construction Projects, as shown in Figure 5-13, Figure 5-14 and Figure 5-15, below.

The proposed Preliminary framework has five main components: '*briefing phases*', '*Briefing Activities*', '*Key Briefing Tasks*'; '*Briefing Decision Gates*' and finally '*Briefing Deliverables*', presented in columns in mentioned figures.

- a) The first column indicates the briefing phases which consist of three main phases in the whole briefing process, namely, the Strategic phase, Feasibility phase and Procurement phase, as discussed earlier in (section 5.2.3) of this chapter.
- b) The second column illustrates the 11 briefing activities proposed for the whole PPP briefing framework.
- c) The third column represents the key briefing tasks under each briefing activity.
- d) The fourth column illustrates the main briefing decision gates. The briefing phases are separated by these gates, and at each gate the continuation of the briefing process is decided.
- e) The fifth column represents the briefing deliverables. These deliverables are produced as the output of the previous gate, and are based on the activities and key tasks for each phase.



The proposed preliminary framework sought to rectify the issues that affect the briefing process in UAE, which had earlier been identified and discussed. It can provide guidance on each of the three proposed stages for developing a PPP project briefing, from needs analysis to issuing a request for proposals through the lifetime of a project briefing. While developing the proposed Preliminary Process Framework, a number of areas for localization were considered, in order to accommodate several issues that had been discussed earlier in connection with the PPP environment in the UAE. The proposed framework provides a clear systematic procedure for the briefing process with special reference to UAE Construction Projects, containing all the main required activities and their key tasks in the PPP briefing process in mature PPP markets after consideration of the local UAE environment. This framework is divided into three phases, separated by clear decision gates. At each gate, the continuation of the process is decided on the basis of an analysis of the information available at the time in the documentary form of a defined briefing deliverable. The capture of lessons to learn from different briefing processes is incorporated in one deliverable in the third phase of the proposed framework. Thus, lessons to learn can be used in other PPP projects and other agencies (at the national level in the UAE).

Moreover, a number of important issues in the UAE have been given more attention during the development process of the framework by placing them more distinctly in the developed framework. For example, “Project due diligence” was designated as a distinct main activity in the Feasibility Phase, as a response to the importance of legal and regulatory issues in PPP projects in general and in the UAE in particular, for no PPP legal and regulatory framework exists there. Through this activity, all legal, land, site, socio-economic, and environmental issues related to the preferred project option are researched and analysed.

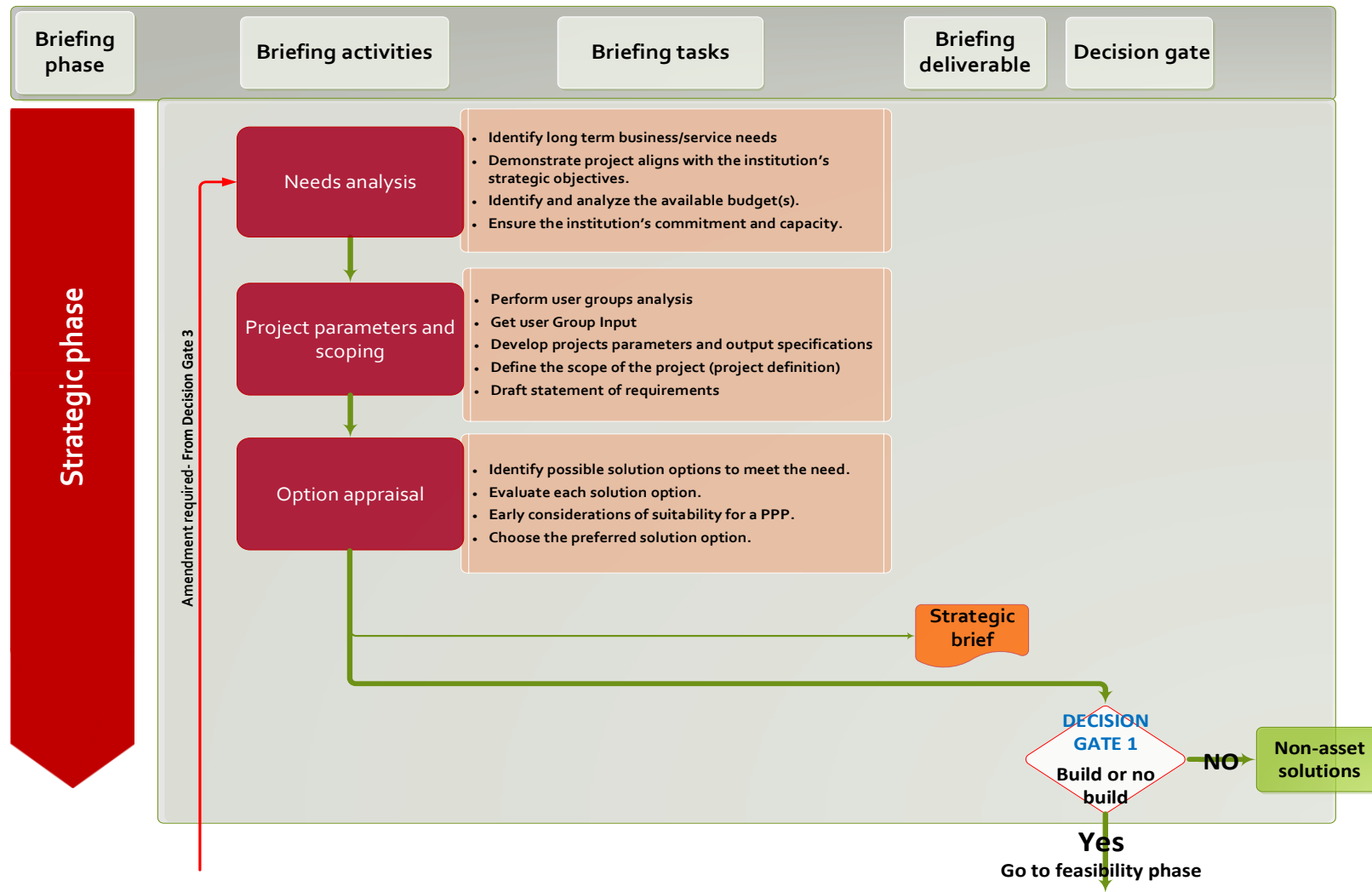


Figure 5-13: Proposed strategic phase -The preliminary process framework for PPP briefing with special reference to UAE construction projects

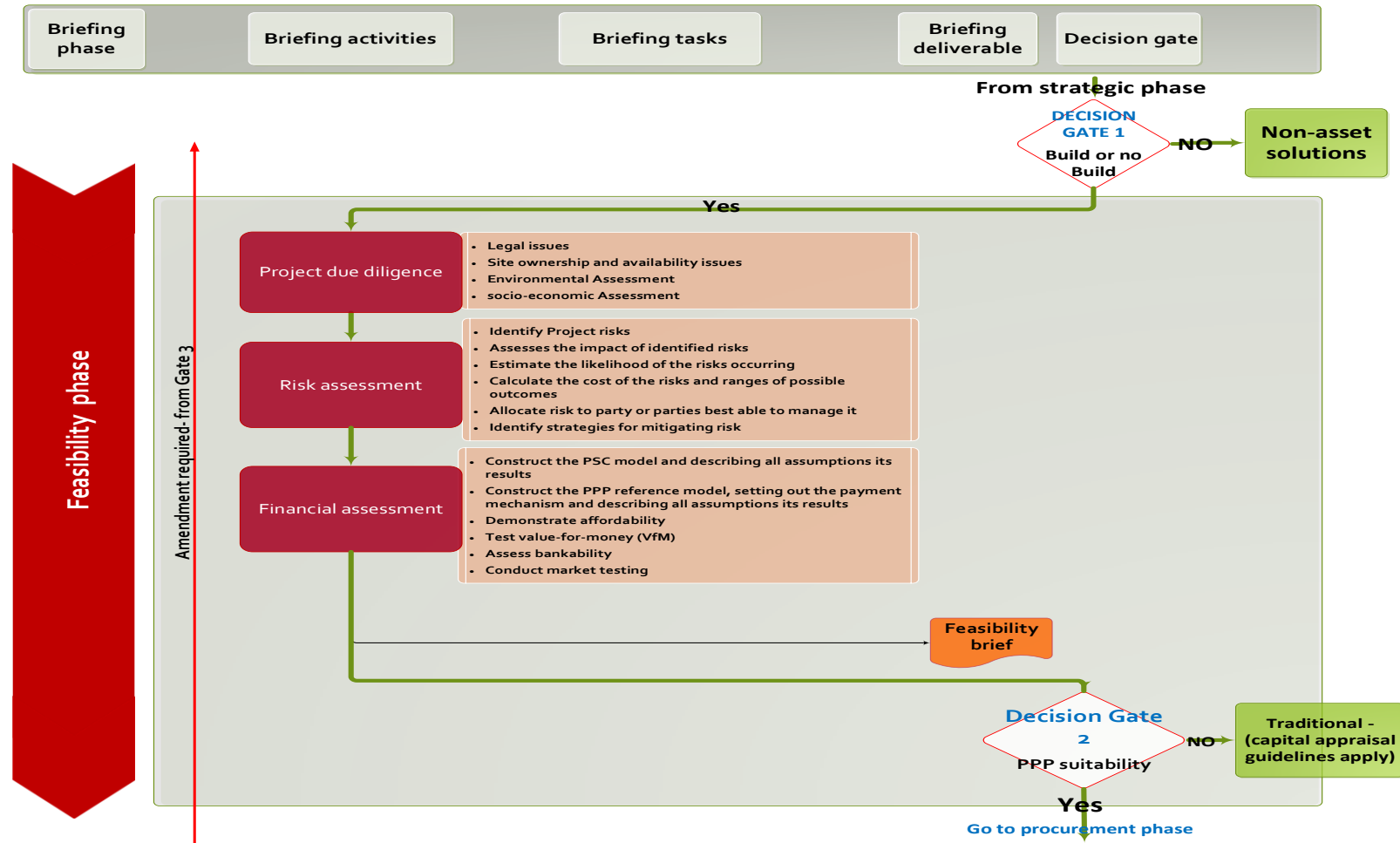


Figure 5-14: Proposed feasibility phase -The preliminary process framework for PPP briefing with special reference to UAE construction projects

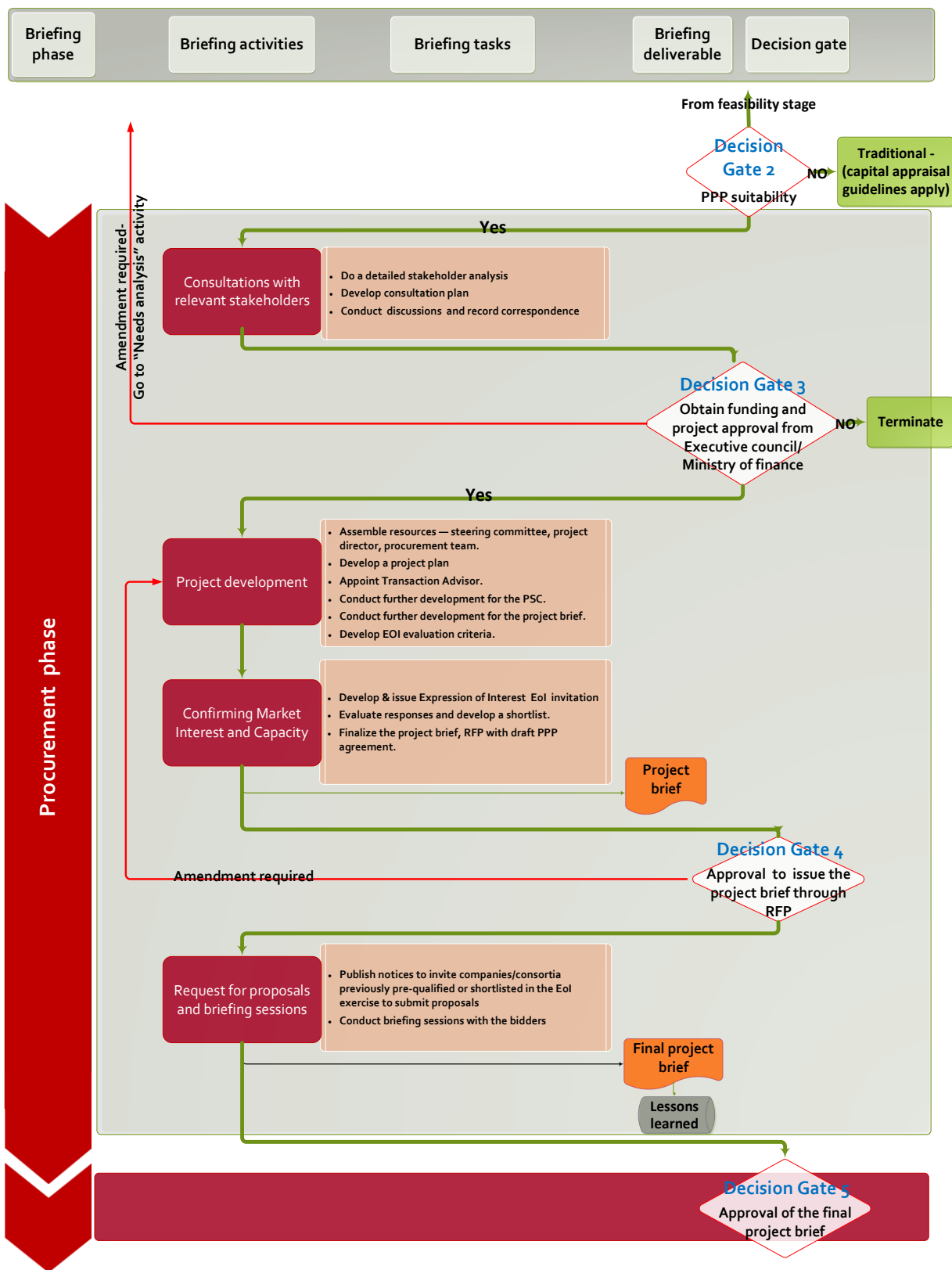


Figure 5-15: Proposed procurement phase -The preliminary process framework for PPP briefing with special reference to UAE construction projects

Moreover, a distinct main activity and its main tasks have been introduced, namely, “Consultations with relevant stakeholders”. This reflects the importance of such an issue in any PPP project and the clear absence of this activity in current UAE practice. Consultations involve the following key tasks: a detailed stakeholder analysis, the development of a consultation plan and discussions and the recording of correspondence. The proposed framework places greater focus on the user-group’s engagement, through the main task, “Perform user-group analysis”, under the heading of ‘project parameter and scoping’ in the strategic phase of proposed framework.

Nevertheless, the suitability of the developed framework for industry needs to be checked and validated. For this purpose, structured interviews were conducted to seek opinions from PPP experts with experience in the UAE’s PPP environment. The outputs of target interviews were used to improve and validate the proposed preliminary framework. The process and analysis of the interviews in UAE are reported in the following section.

## **5.4 The development of the Validated Process Framework for PPP Briefing**

### **5.4.1 Structured interviews (A)**

#### **5.4.1.1 Sample selection**

Five face-to-face interviews were held in the UAE to collect empirical information about the preliminary process framework for PPP briefing in construction projects, with the aim of improving and validating the preliminary process framework for PPP briefing in UAE construction projects. Three of the interviewees were government officers who each had more than 15 years’ working

experience in the construction industry in the UAE. The other two interviewees were working with major construction developers and had more than 20 years' working experience in construction inside and outside the UAE.

As the first step, soft copies and hard copies of the preliminary framework and questions were sent to the targeted interviewees, and then face-to-face meetings were held to discuss the main topics and to document any other issues that might be raised during these discussions. Each interview lasted between 60 and 90 minutes. The interview questions were related to the developed preliminary briefing framework in PPP construction projects in the UAE. They are as follows:

- Q1. Do you think that the **three main phases with proposed outcomes and decisions gates** introduced in the preliminary framework are proper for the briefing process in PPP construction projects in the UAE?
- Q2. Do you think that the preliminary **framework and the proposed process and tasks** introduced under each phase in the framework are proper for the briefing process in PPP construction projects in the UAE? What modifications should be made?

#### 5.4.1.2 Results and analysis

The responses for the interviewees may be summarized as follows:

(1) Responses to Q1:

All interviewees agreed that the three main phases (Strategic, Feasibility and Procurement) introduced with proposed outcomes and decision gates were useful and significant for developing PPP projects in general and in the UAE in particular. In general the government, as well as the private sector, does not want to incur the considerable cost, time and effort of developing a PPP project unless it knows that

the project meets certain criteria. This is in line with the finding in section (5.2.3) of the present chapter; most interviewees went on to assert that this change would break down the process of briefing into sequentially more intensive phases with solid decision gates and certain deliverables, combined with a check before each phase to make sure that the project would continue to meet the criteria required for any successful PPP project.

(2) Responses to Q2:

The interviewees essentially agreed that the process and tasks in the preliminary framework proposed reflected their expectations of a briefing process for PPP construction projects in the UAE. Nevertheless, they suggested that the framework should provide one distinct process which could guide the public/end user to an acceptable PPP project through the feasibility phase. Moreover, the interviewees thought that government departments and private companies paid more attention to two important enabler/success factors, namely, the proper identification of different types of anticipated risk and the proper risk allocation and share of the planning for the response to risk. This reflects the importance of these factors for both sectors, the private sector in particular, since risk assessment and management have considerable impact on estimating and pricing project cost. In fact, the key decisions of a private investor to consider the PPP market in general, and the bidding price for any PPP project in particular, is based on assessing his capability to take certain risks. Hence the PPP contract negotiation would mainly emphasize the risk-sharing arrangement.

Moreover, some interviewees recommended the clear task of “Marketing the upcoming PPP projects” before the “Develop & issue expression of interest (EoI)

invitation” task under “Confirm Market Interest & Capacity process in the “Procurement phase. Interviewees pointed out that in PPP there is a need to build bidder interest so as to increase competition and minimize the probability of having no firms qualified to undertake a project. Marketing the PPP helps to attract bidders, potential lenders and investors, as well as contractors. Furthermore, documenting the lessons to learn in each of the three proposed phases as a clear deliverable output was recommended, rather than near the completion of the PPP project briefing stage.

At this point the concept of developing a framework for the Critical Success Factors in PPP Briefing, with special reference to UAE construction projects was discussed with interviewees and its potential benefit to successful brief development of PPP project in UAE was emphasized. Interviewees pointed out that such a framework could be an important enabler for the successful development of the brief. Moreover, they agreed that such a framework could be a useful tool for assessing the readiness of the public sector to carry out the development of the brief successfully.

#### **5.4.2 The final process framework for PPP briefing with special reference to UAE construction projects**

Through the empirical studies on the adequacy of the proposed preliminary, a number of areas were identified for improvement. Accordingly, a Final Process Framework for PPP briefing with special reference to UAE Construction Projects was developed, as shown in Figure 5-16, Figure 5-17 and Figure 5-18. Some descriptions of activities were rephrased. One main task “Marketing the PPP project” was added under the heading of “confirm market interest and capacity” in the procurement phase.



Furthermore, unlike traditional practice, the lessons to learn would be identified and documented as a main deliverable at the end of each of three phases in the course of the project's briefing process development. This was to accommodate the huge amount of special information and experience that might be generated during each briefing phase. It encouraged the ability to glean key lessons from experience throughout the life cycle of the briefing development, as well as from its conclusion and provided a cumulative database built of valuable lessons to learn which could be used in the UAE to continually improve the briefing process and its components. The following figures (Figure 5-16, Figure 5-17 and Figure 5-18) illustrate the final process framework for PPP briefing with special reference to UAE Construction Projects.

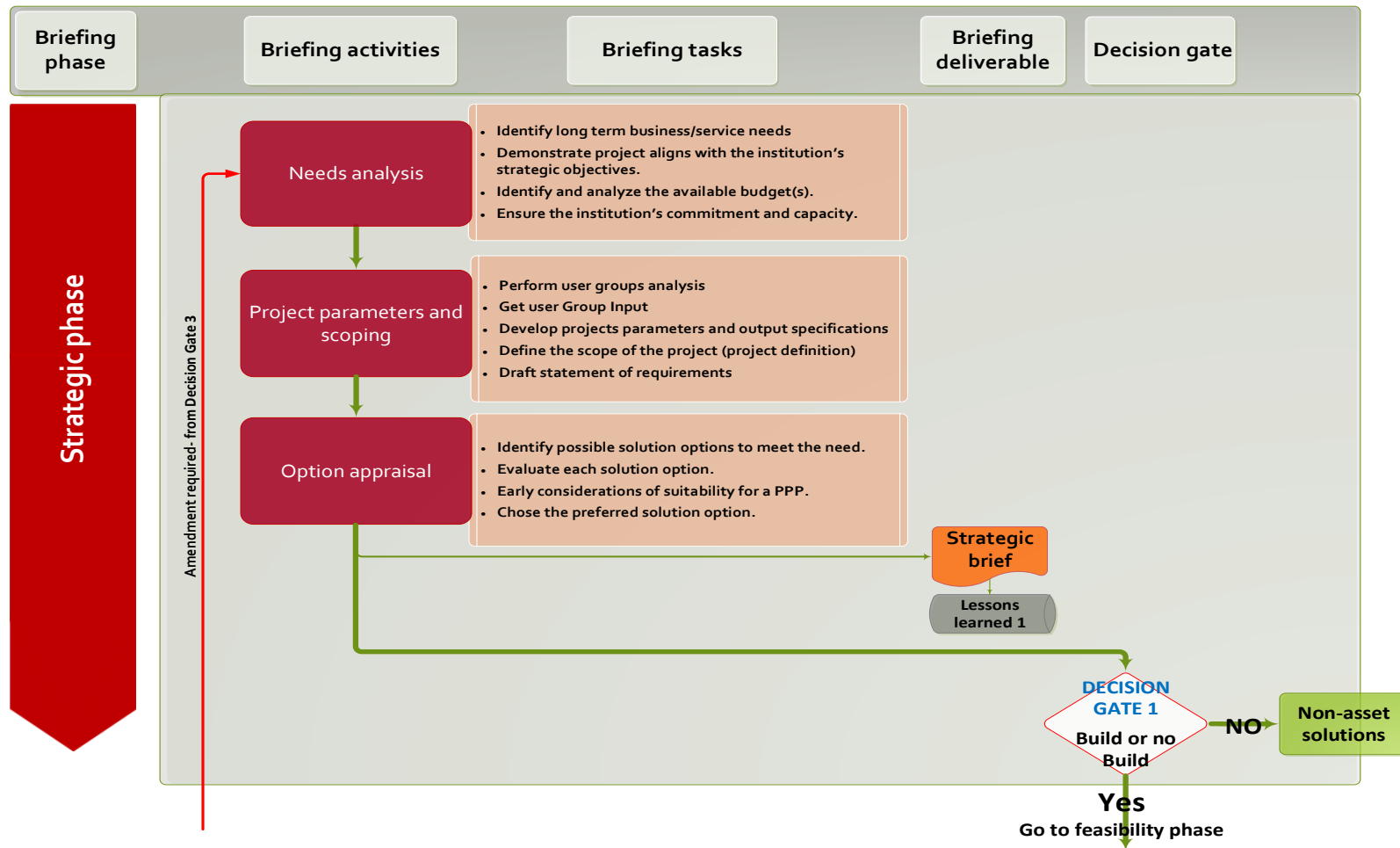


Figure 5-16: Proposed strategic phase -The final process framework for PPP briefing with special reference to UAE construction projects

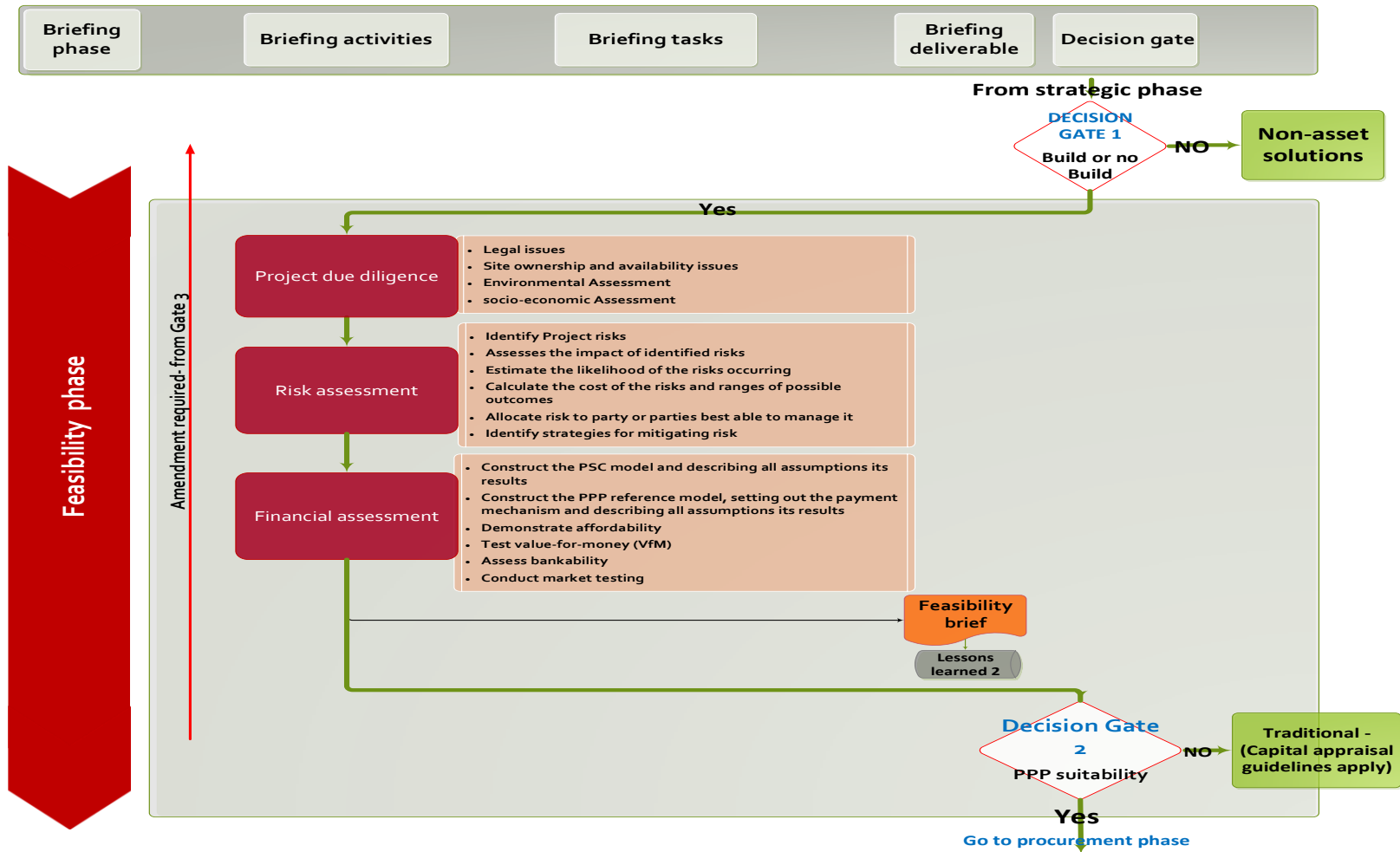


Figure 5-17 Proposed feasibility phase -The final process framework for PPP briefing with special reference to UAE construction projects

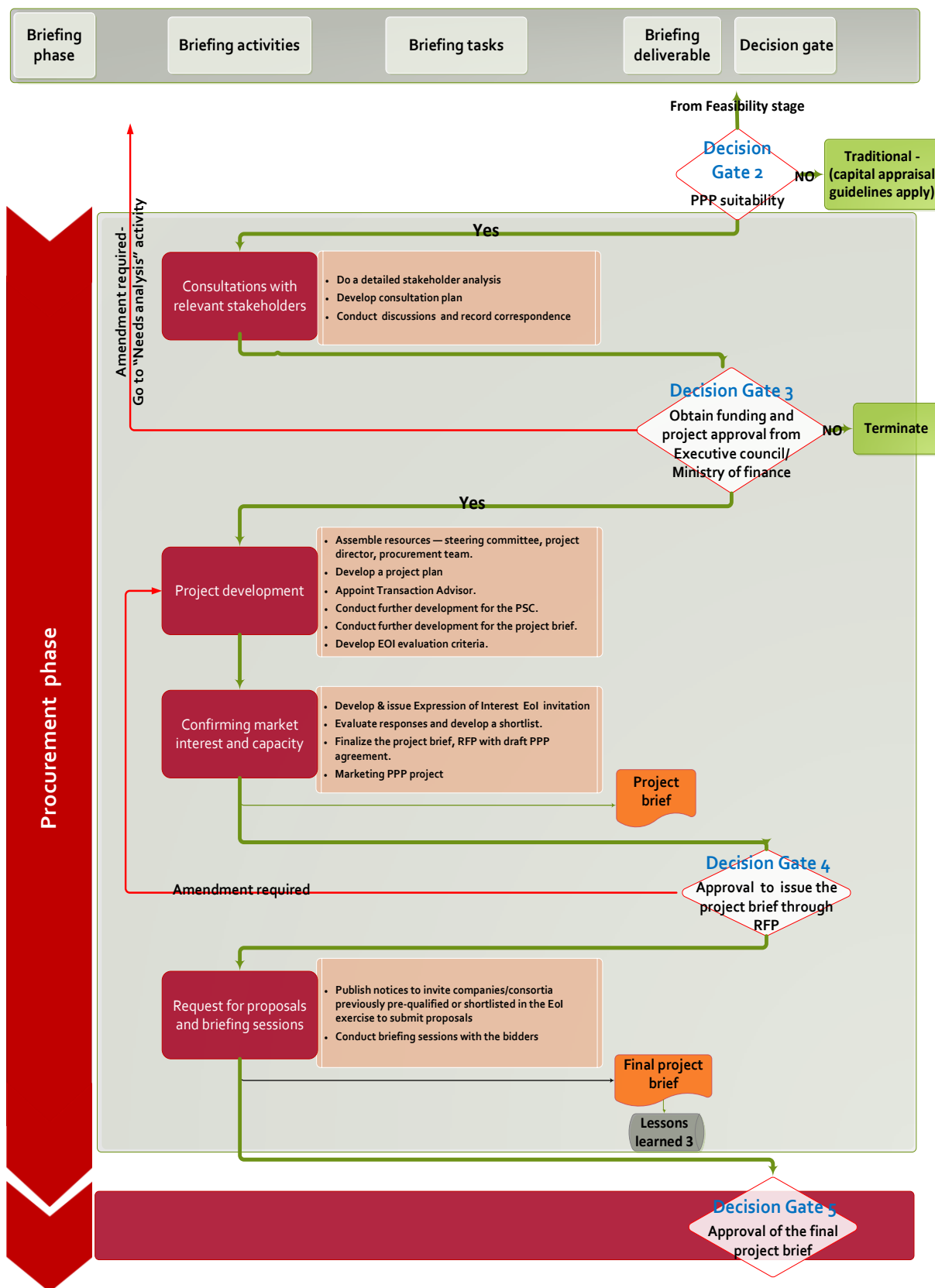


Figure 5-18: Proposed procurement phase -The final process framework for PPP briefing with special reference to UAE construction projects

## 5.5 Summary and Conclusion

A process framework for PPP briefing with special reference to UAE construction projects is developed and presented in this chapter. The proposed framework is developed on the basis of knowledge from the international literature, international and local professional practice and interviews with professionals. The proposed framework was developed on three main stages: conceptual, preliminary and final.

In the first stage, the development process of briefs for PPP projects was investigated to define its main, stages, generic processes, and key decision gates as recommended in the literature and through a comparative analysis of the different briefing process frameworks of the top three countries in the PPP Market Maturity chart. Through this stage a generic conceptual process framework for the development of briefs in PPP projects in general was developed. In the second stage, a preliminary process framework for PPP briefing with special reference to UAE construction projects was developed from an analysis of two case studies for mega PPP projects in the UAE along with the existing governmental procedures for developing PPP briefs. In the last stage, the above framework was further developed and was validated through structured interview sessions with professionals and experts from the PPP market in the UAE.

The analysis of the two cases and the governmental procedures reveals that the briefing by clients in the UAE is sometimes vague, notably regarding a project's scope or, in other words, in setting the output specifications. This can cause problems in both conventional and PPP projects. However, it is more harmful in the case of PPP projects, where it leads to inappropriate allocation of risks between the parties,

increased project costs, and reduced flexibility and accountability. In addition, it was acknowledged, in particular through the second analysed case study, that the capacity and skills of the public sector should be increased to manage and successfully negotiate PPP briefing. Furthermore, when seeking a specialized PPP advisor, the hiring contract should not be project-based, because the continuity of an advisor's contract is in some ways linked to the continuity of the project, where maybe its determination as PPP decision should be taken.

Moreover, both local market experience and international experience with PPP is very important to the feasibility study in a PPP project. The study should be mainly built on specific assumptions from local and international experience; small changes in these assumptions can impact the whole procurement process and the executed project or delivered service.

The framework developed above can be used by clients' organization in the UAE, at the PPP briefing stage to create a platform for a clear understanding of all stakeholders' needs and ensure that the final product meets these wishes, as well as taking into consideration all the required studies and analysis.

The following chapter investigates the possible Critical Success Factors (CSFs) in PPP brief development and describes the development of a CSFs framework for PPP briefing.

## **Chapter 6: A Framework for the Critical Success Factors in PPP Briefing: with Special Reference to UAE Construction Projects**

### **6.1 Introduction**

The conclusions from the literature review (Chapter 4) reveal the need to identify the factors contributing to the success of the briefing process in PPP projects. This task is addressed in this chapter. These factors were identified by means of an extensive search and synthesis of the literature from a variety of sources, which is discussed in Section 6.3. Semi-structured and structured interviews with PPP professionals/experts in the UAE construction industry were used to develop and validate the CSFs, which are presented in Sections 6.5 and 0. Seven categories of the factors having an impact on the PPP briefing process were identified. They include procurement; stakeholder; risk; financial and economic concerns; public sector capacity; regulatory and legal issues; and finally the social cultural and ethical background. These categories contain 38 main candidates for being critical success factors (CSFs) and their sub-success factors (SSFs).

Based on the validated candidate CSFs, a questionnaire survey was developed and implemented, in which the main objectives were to assess the relative importance of those CSFs associated with the development of PPP briefing and to quantitatively prioritize them. This process is shown in the next chapter.

The main aim of the work presented in this chapter is to develop a CSFs Framework for PPP briefing with special reference to Construction Projects in the UAE. To this end, a detailed set of objectives was developed, which included:

- Identifying the success factors affecting the brief development in construction projects.

- Identifying the detailed success factors affecting PPP projects in the construction industry in general and the briefing stage of their evolution in particular.
- Consulting with PPP professionals/experts in order to refine and confirm the identified factors in terms of their categories, sufficiency and appropriateness within the context of PPP in the UAE.

To achieve the above aim, three research methods were implemented, namely, comprehensive literature reviews, in-depth interview sessions and structured interviewing. Figure 6-1 illustrates the details of the methodology proposed for the work included in this chapter.

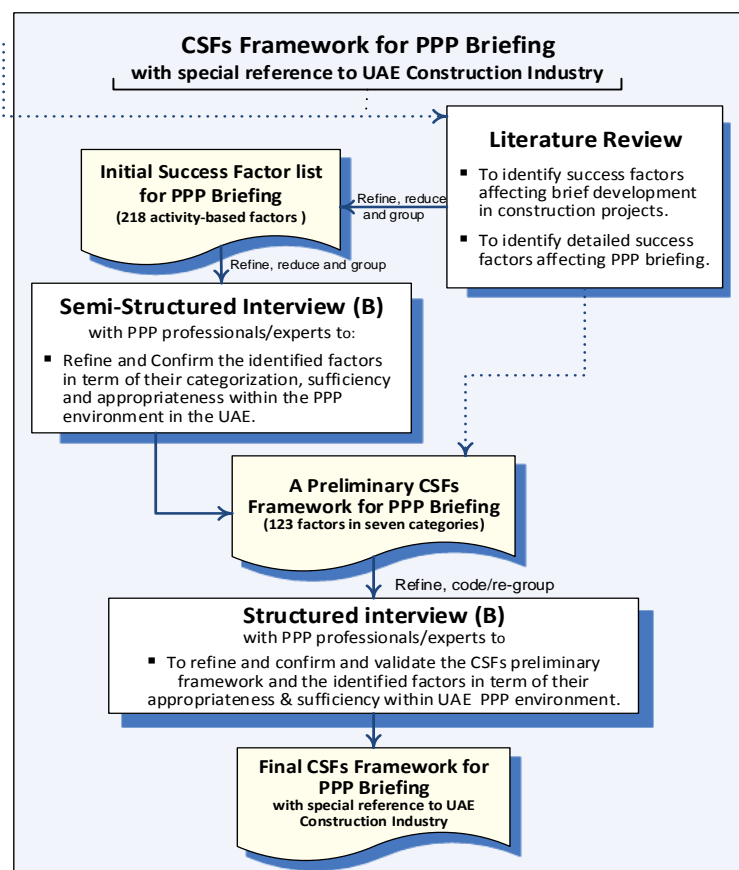


Figure 6-1: The research methodology to develop a framework for the critical success factors in PPP briefing with special reference to UAE construction projects



## 6.2 Success Factors for the Development of Briefs in Construction Projects

As discussed earlier in Chapter 3, the CSFs are those few important factors, including practices and activities, which should be maintained in order to ensure success. In the field of construction project briefing, there are only a limited number of studies in the literature concerning the use of CSFs.

Blyth and Worthington (2010) suggest six key areas essential to briefing success, which include defining the process – which sets the transparent framework for the briefing work and sets out expectations, procedures, and performance measures against which evaluation and improvements can be made; timely decision taking – this is about speedily defining the issues to be tackled and managing the process of making decisions when they are necessary; understanding the underlying agendas – this is about recognizing the actual requirements of the organisation, which can lead to a project solution that takes account of the organisation's current and future work and addressing the possible changes in the built environment of the client's organization resulting from the project. The project brief should tackle such changes, whether in terms of the location of buildings, of work patterns or of the impact of information and communications technology. Clear and comprehensive communication – which successful briefing needs this to ensure the structure and flow of the information through the system; and finally, the feedback of experience – this is about understanding how to carry out such projects and manage the briefing process in the future. The source of feedback may be within the organisation during the project development or from the completed building, or externally from companies or the construction industry.

Similarly, Yu et al. (2006) identifies thirty-seven factors in five main categories that affect the success of construction project briefing. The categories are project-related factors, human-related factors, process-related factors, input-related factors, and output-related factors. Yu et al. used a questionnaire to collect opinions from experienced construction practitioners. Thirty six percent of the respondents identified “open and effective communication” as the most critical factor in briefing for construction projects. Other important factors, in descending order of importance, were “clear and precise briefing documents,” “clear intention and objectives of client,” and a “clear project goal and objectives.”

### **6.3 Success Factors in the Development of PPP Briefs**

As discussed earlier in Chapter 3, several studies have reviewed the success factors in PPP projects. However, not many have focused on the critical success factors involved in the briefing of PPP in particular. The study by Tang et al. (2013) investigates the CSFs for PPP briefing with special reference to Australian conditions. They identify 50 factors, in four main categories (procurement, stakeholder, risk, and finance).

Tang et al. (2013) investigate the roles of briefing in boosting the factors that may help the success of PPP-based projects. To deal with the many related issues that involved in the PPP success. These factors are grouped into four broad categories, namely:

1. Stakeholder-associated factors, which are concerned with achieving efficient and effective mutual relationships between stakeholders during the briefing process. This pattern of relationship is considered a crucial component in

establishing a robust PPP, including professional knowledge of clients, clearly defined requirements, the selection of expert teams, trust, etc.

2. Procurement-associated factors, which are concerned with the ability of the client to allocate the necessary resources; among these factors are the setting of clear aims and goals, professional writing, setting suitable times for briefing, rational setting of priorities, etc.
3. Finance-associated factors, which are the key issues in providing appropriate solutions to the financial challenges facing PPP systems. Among those considered are the cost of the procurement process, length and nature of the negotiations, specifying the quality of service needed, pricing the facilities for managing services, and possible conflicts.
4. Risk-associated factors, which are shown to be the early identification of risk to avoid any loss of continuity in PPP. In this respect, both public and private sectors have to share the responsibility of estimating the possibilities of risk, setting strategies to avert it, and quantifying its magnitude.

The relative importance of these factors was rated by means of a questionnaire survey in southeast Queensland, Australia. The research analysis shows that, of the procurement factors, the most important are the need for experienced brief writers, adequate time, and control of the briefing process by the public sector. An open and effective communication environment is most important among the stakeholder factors; this was for both public and private sectors to adequately understand the stakeholders' requirements in the early stages of the project briefing. Due to the considerable number of risks associated with PPP projects, identifying important risks needs to start early, as does the identifying of a

proper risk transfer strategy. Of the finance factors the most important are practical budgeting and the proposed commercial arrangements, including the duration of the contract and payment mechanisms.

However, it is hard to generalize such results for other construction environments, since the identified CSFs were developed and validated for Australia. Moreover, the population of the survey comprises public sector bodies only, including state governments.

#### **6.4 The Initial Success Factor List for PPP Briefing**

Based on the developed process framework for PPP briefing described in Chapter 5, a number of initial success factors related to the processes included in this framework were identified. The initial list for PPP briefing was developed on the basis of a comprehensive review of the available literature on the success factors of construction project briefing in general, and PPP projects in particular, with emphasis on the briefing stage of PPP projects. 218 significant process-based factors were identified, which have become the foundation for the CSF framework developed in this study. The impact, if any, of these variables on the briefing process of PPP projects was fully considered. The initial list for PPP is presented in C.

#### **6.5 Towards a CSFs Framework for PPP Briefing with Special Reference to UAE Construction Projects: Semi-Structured Interviews**

The initial list was refined, condensed and divided into groups; a list containing 151 candidate factors was produced, with seven main categories – procurement; stakeholder; risk; finance and economic; public sector capacity; regulatory and legal; and social, cultural and ethical. Following this, in-depth interview sessions were conducted with experts and key personnel from public and

private sectors that were involved in the development of briefing for PPP projects in the UAE. A refined list containing 123 factors was then developed in the same seven categories.

The following section elaborates on the conducted Semi-Structured Interviews, and describes in detail the preliminary CSFs Framework for PPP Briefing with special reference to UAE Construction Projects.

### **6.5.1 Semi-structured interviews**

According to Leidecker and Bruno (1984), there are several methods and techniques for determining CSFs, these include environmental scanning, industry structure analysis, opinions of experts in the industry, analysis of competitors, analysis of the industry's dominant firm, a specific assessment of the company, the intuitive judgement or "feel" of insiders, and the profit impact of market strategy (PIMS) data.

Since the impact of experienced key project personnel on project outcomes is widely conceded (Sanvido et al., 1992; Yu et al., 2006), experts' opinions were used in this research to compose a set of PPP project briefing CSFs which would be tested against their experience.

Semi-Structured Interviews were conducted with PPP professionals/experts to refine and identify any missing factors and confirm the identified candidate factors in terms of their categories, sufficiency and appropriateness within the PPP context in the UAE.

### 6.5.1.1 Sample selection

Out of 10 invitations issued to PPP experts in the UAE, a total of 5 agreed to be interviewed, 3 from the public sector and 2 from the private sector.

Five semi-structured interviews, in the form of “interviewing elites”, were conducted in order to consult and consolidate the different opinions of PPP experts and personnel in responsible positions from both the public and private sectors in the UAE. According to Marshall and Rossman (2011), interviewing elites is a special sort of interviewing, in that it focuses on a specific type of interviewee. They consider it to have unique benefits due to the valuable information and insights that these elites can offer. However, gaining access to such interviewees is a major challenge because of their busy schedules and responsibilities.

For this study, interviewees were selected on the basis of their experience and instrumental role in the development of PPP infrastructure projects in the UAE. A variety of methods was used to conduct these interviews. Three face-to-face interviews and two Skype interviews were held between June and September, 2014, the main aim being to refine and develop the desired list. Each interview lasted between 45 minute and one hour, depending on the interviewee. All of the interviewees had had experience in the development of briefing for PPP projects in the UAE.

Two interviewees were from different governmental departments with more than 20 years of working experience in the construction industry. The third interviewee was a PPP expert with 15 years of practical experience in construction, who was working with developers, while the fourth was a financial advisor to major infrastructure and PPP construction projects, with 22 years’ diverse experience in

government and private businesses. The fifth interviewee from a construction company with over 15 years' works experience in the construction industry.

### **6.5.1.2 Results and analysis**

The interviewees were asked to: comment on the candidate success factors identified in terms of their appropriateness and sufficiency; to identify possible new factors, if any, in light of the PPP conditions in the UAE; and to shed light on any other issues that might affect the success of PPP briefing.

The interviewees basically agreed that the presented CSFs framework addressed the actual CSFs of the briefing process in PPP projects and their SSFs. It should be noted that all the interviewees seemed to agree on the seven categories which would broaden the way and angle from which the success factors of PPP project briefing stage could be understood. It was mentioned by most of the interviewees that the introduction of a cultural and ethical dimension was a good new addition for UAE PPP projects, such as would help to understand the backgrounds and values of different stakeholders. Moreover, cultural and ethical differences are very important to consider when international investors (and stakeholders) come from different countries with different cultures, values and business climates. Nevertheless, the interviewees from the government sector and the private sector paid more attention to risk and to regulatory and legal aspects of the subject.

Some interviewees said that one of the risks / key factor for the private sector is the transparency of the agent with the information (in terms of completeness and quality) released to the market investors. They considered also the risks related to the supply chain and how capable it was of delivering PPP projects in the UAE within the cost, quality and time limits set. This would lead, for example, to the question of

how ready the contractors and suppliers were to commit themselves to such new contractual approaches as performance-based contracts for the later O&M stage. The interviewee from the investment company said that in the PPP markets the risk of a client default is always high in a bidder's mind – this is why in many cases he looks to offset this risk in the design and the ability to change it should the market suddenly become difficult. He gave one example, of student housing – “if over the duration of the PPP concession there was to be a downturn in the number of students, could the facilities be changed to something else – a hotel, perhaps?” in response to the risk of a client default and changes in market demand. One factor was thus added in the risk category, that is, “Design flexibility to market demand changes” where the flexibility of a design solution to meet possible changes in market demand should be considered in the briefing requirements.

Moreover, some regulatory and legal aspects were raised by the interviewees. These included a project governance model to set rules for the roles and responsibilities of different stakeholders, which should be approved by the relevant authorities for the PPP venture. Furthermore, property ownership in the UAE is always a concern to bidders, in particular, in a default position. However unlikely. Therefore to increase the level of experienced companies taking part in PPP, the land use regulations applying to the type of project in question should be clearly addressed in the briefing document. As a result, two new factors were added: “approved governance model” and “clear ownership issues”. The first one deals with having governance models for a PPP venture approved by the relevant authorities, while the second deals with land and property ownership issues to address during the briefing stage.



On another point, the interviewees highlighted some procurement-related factors: the importance of the project scope's matching the authorized mandate of the public agency; having the PPP model endorsed by the relevant authorities and appropriate to the type and scope of the project; and having a proper e-documentation system and means of e-based communications between stakeholders (as opposed to paper-based correspondence). These were felt to be key factors for conducting the briefing stage effectively and efficiently. Moreover, "Proper project value analysis during brief development" factor was the other procurement-related factors.

### **6.5.2 A Preliminary CSFs framework for PPP briefing, with special reference to UAE construction projects**

The identified candidate Success Factors were then developed further, guided by the output of the previous interviews. A final list containing 123 CSFs was refined and split into categories using the seven categories mentioned above. The factors in each category are discussed below

#### **6.5.2.1 Procurement issues**

The procurement process and its arrangements are very important to the success of any PPP project. Several procurement-related factors are identifiable from the literature and were discussed during the interview sessions. For example, Akintoye and Donnelly (2003) argue that the client group must specify, in unambiguous terms, the output specifications that the facilities must achieve in a manner that can be interpreted by a separate commercial venture called a "special purpose vehicle" (SPV). Yu et al. (2007) found that the successful briefing depends on understanding the client's strategic goals. Zeegers and Ang (2007) assert that the

output specifications in a PPP represent a very important element of the contract, because they are the basis of the whole project and require major attention. In Australia, Tang et al. (2013) found that the experience of the brief writer, adequate time for briefing and control of the process were considered to be the most important procurement-related factors in PPP briefing. Table 6-1 displays the refined list, including twenty two factors, with their sources.

Table 6-1: Procurement related factors – the preliminary CSFs framework

Factors	Remarks	Source
1. Clarity of project goals set by the client/owner	Identifying and understanding the goals and objectives for the project by the client/owner or his representatives	(Juaim & Hassanain, 2011)
2. Proper project Output specifications	Proper output specifications developed to meet the client's/owner's ongoing service needs and standards	(Harrington, 2012; South Africa National Treasury, 2004b)
3. Integrating of value management	Use/application of the integrating value management approach in the development of the brief	Interview findings
4. A well prepared Expression of Interest (EOI)	Expression of Interest (EOI) stage of the PPP project needs to be well prepared and managed during the brief's development	(Victorian Government, 2001)
5. Strategic alignment	Demonstration of the project's alignment to the client's/owner's strategic objectives	(Foster Infrastructure Pty Ltd, 2012; Harrington, 2012; Yu et al., 2007)
6. Integration of the project with the national and local planning process	Integration of PPP projects with the national and local planning processes	(UNESCAP, 2005)
7. Appropriateness of the selected PPP model	The PPP (DB, BOT, BOOT, DBOT, etc.) model endorsed by relevant authorities and how it is appropriate for the type and scope of the project	Interview findings
8. Development of a framework agreed by the key parties	A framework for the brief's formulation to be agreed by the key partners	(Tang et al., 2013; Yu et al., 2006, 2007)
9. Clear briefing goals/objectives	Briefing process with clear goals and/or objectives	(Juaim & Hassanain, 2011; Tang et al., 2013; Yu et al., 2006, 2007)
10. Objective selection criteria	Clear and applicable criteria for selecting options	(Victorian Government, 2001)
11. Proper setting of priorities	Establishment of priority levels for decisions agreed on by the key parties in briefings	(Juaim & Hassanain, 2011; Tang et al., 2013; Yu et al., 2006, 2007)
12. Brief control	Lead given in the briefing process and continuous	(Tang et al., 2013; Yu et

Factors	Remarks	Source
	control and monitoring of it by the public sector	al., 2006, 2007)
13. Strict management of output specification	Strict control and management of the client/user groups to avoid output specifications becoming a wish list (wish-list syndrome)	(Ann et al., 2010; Foster Infrastructure Pty Ltd, 2012; Yu et al., 2007)
14. Time for freezing the brief documents	A timetable set for the completion of the brief	(Tang et al., 2013)
15. Briefing flexibility	Flexibility in making the brief to allow for possible changes	(Tang et al., 2013; Yu et al., 2006, 2007)
16. Potential changes to the organization	Potential changes to the client's/owner's organization resulting from the PPP project included in the brief	(Yu et al., 2007)
17. Clear and precise briefing documentation	Availability of complete, clear, and precise documentation in the brief as a reference source to all partners	(Tang et al., 2013; Yu et al., 2007)
18. Proper E-documentation system	Proper e-documentation system among all stakeholders for the brief's development and the decisions made	Interview findings
19. Completed Project feedback/lesson learned	Feedback and lessons learned from the completed projects needed to improve the briefing	(Jua'im & Hassanain, 2011; Tang et al., 2013; Yu et al., 2006, 2007)
20. Service fee for briefing	A separate service fee being allocated for developing the brief	(Jua'im & Hassanain, 2011)
21. Sufficient time for briefing	Sufficient time needed for briefing	(Jua'im & Hassanain, 2011; Tang et al., 2013; Yu et al., 2006, 2007)
22. Experience as a brief writer	An experienced writer of briefs	(Tang et al., 2013; Yu et al., 2006, 2007)

### 6.5.2.2 Stakeholder issues

Any PPP project involves several stakeholders in the development of its briefing, which contributes to the complexity of communication and coordination during this stage. According to Tang et al. (2013), achieving efficient and effective relationships between stakeholders during the briefing process is considered by many to be especially important in PPPs. Transparency and trust are also vital issues for PPP success. Walker and Smith (1995), argue that stakeholders tend to be sceptical about becoming involved in a project if they believe that decisions have already been made. Moreover, if stakeholders mistrust the process, it will have a negative effect on their level of participation in the programme; individuals may then either tend to

participate in an antagonistic way or refrain from participating altogether. Consequently, Tang (2011) finds that an open and effective climate of communication is most important for both public and private sectors in Australia.

As mentioned earlier, securing clients' satisfaction and meeting their requirements is considered a main measure of project success. The client can be a person or a multi-headed entity. A multi-headed client could be an organization, or group of stakeholders, which contains individuals with different needs and wishes. However, the situation can be more complicated due to the complexity brought on by having both "user clients" and "paying clients"; thus, the briefing process should effectively capture and satisfy the commercial and/or social needs of all the stakeholders that make up the client (Kirkham, 2007; Yu, Shen, Kelly, & Hunter, 2005). Several other factors related to PPP stakeholders were identified and discussed. Table 6-2 presents the refined list of thirty factors.

Table 6-2: Stakeholder related factors - the preliminary CSFs framework

Factors	Remarks	Source
1. Inclusion of influential parties to the project	Inclusion of influential parties to the project who may enrich the briefing process	(Juaim & Hassanain, 2011)
2. User group analysis	Identifying key user groups and the nature of their inter-relationships	(South Africa National Treasury, 2004b)
3. Identifying stakeholders	Identifying influential stakeholders properly	(Jing, Shen, Manfong, Drew, & Chan, 2009)
4. Stakeholders' behaviour	Assessing stakeholders' behaviour	(Jing et al., 2009)
5. Predicting the influence of stakeholders	Predicting accurately the influence of stakeholders	(Jing et al., 2009)
6. Stakeholders' attributes	Assessing the attributes (power, urgency, and proximity) of stakeholders	(Jing et al., 2009; Yang, Wang, & Jin, 2014)
7. Clear end-user requirements	Identifying end-user/user-groups' requirements in the briefing	(Juaim & Hassanain, 2011; Tang et al., 2013; Yu et al., 2006, 2007)
8. Clear requirements by the client/owners	Client/owner's requirements should be identified during the briefing	(Tang et al., 2013; Yu et al., 2006, 2007)
9. Balancing the needs/requirements of stakeholders	Needs/requirements of various stakeholders to be balanced	(Tang et al., 2013)

Factors	Remarks	Source
10. Stakeholders' interests	Understanding areas of stakeholders' interests and their constraints	(Jing et al., 2009)
11. Adequate representation of user and client groups	Adequate representation of both the user-groups and client groups in the development of the brief	(Tang et al., 2013; Yu et al., 2006, 2007)
12. The user's value system	Proper use made of users' values and knowledge	(Kelly & Duerk, 2002; Zwemmer & Otter, 2008)
13. Users' engagement	Engaging the users throughout the briefing and design stages of a PPP project	(Zwemmer & Otter, 2008)
14. Identifying appropriate decision-making strategies	Identifying the strategies used to deal with the issues raised by stakeholders	(Yang et al., 2014)
15. Corporate social responsibilities	Manage stakeholders with corporate social responsibilities (economic, legal, environmental, and ethical)	(Jing et al., 2009)
16. A proper consultation plan for user groups and stakeholders	A proper consultation plan for user groups and stakeholders is needed throughout the brief development process	(South Africa National Treasury, 2004b; Yu et al., 2007)
17. Clear stakeholders' roles and responsibilities	The stakeholders' roles and responsibilities needing to be clarified	(Tang et al., 2013)
18. Compromise in cases of conflict	Proper analysis and compromise in conflicts and coalitions among stakeholders	(Jing et al., 2009)
19. Briefing documentation and communication	Using different methods to document and effectively communicate the brief	(Juaim & Hassanain, 2011)
20. E-based communications	Proper means of e-based communication among stakeholders	Interview findings
21. Effective communication	Open and effective communication with stakeholders, the team, and project representatives	(Chan et al., 2004; Juaim & Hassanain, 2011; Tang et al., 2013; Yu et al., 2006, 2007)
22. Good facilitation	Good facilitation of the briefing passed on to the stakeholders	(Tang et al., 2013; Yu et al., 2006, 2007)
23. Communicating with and engaging stakeholders	Communicate with and engage stakeholders properly and frequently	(Jing et al., 2009)
24. Face-to-face communication	Using face-to-face contact as a method of communication	(Juaim & Hassanain, 2011)
25. Knowledge sharing	Facilitating knowledge sharing among the stakeholders	(Yu et al., 2007)
26. Briefing team selection	Select team members with relevant experience to develop an effective brief	(Tang et al., 2013; Yu et al., 2006, 2007)
27. Mutual trust and openness	Build openness and trust among stakeholders and end-user groups	(Chan et al., 2004; Tang et al., 2013; Yu et al., 2006)
28. Participant commitment	Require all parties to be involved and committed	(Juaim & Hassanain, 2011; Yu et al., 2007)
29. Stakeholder empowerment	Empower the stakeholder group as a team to make decisions in the briefing process	(Yu et al., 2007)
30. Team spirit and commitment	Enhancing the staff's achievement and performance	(Chan et al., 2004)

### 6.5.2.3 Risk issues

A proper risk identification and assessment process should be implemented from the outset. During the risk response stage, unlike those in conventional procurement methods, the risks in PPP projects are allocated to the party which is best able to manage them (Allan, 1999; Seader, 2004; UNIDO, 1996). Therefore, as part of the planning process of a PPP project, a proper risk transfer strategy should be developed, wherein the risks best managed by the private sector are transferred to it, and those best managed by the public sector are retained by it (Li & Akintoye, 2003). Furthermore, in PPP schemes, all risks related to project delivery should be transferred to the private sector partner (Gunnigan, 2007; Li & Akintoye, 2003; Li et al., 2005a). Shen et al. (2006) have observed that development risks, market risks, financial risks and force majeure may be shared effectively between public and private partners. But transferring the site acquisition, legal and policy risks to the public sector is more effective. The private sector can effectively manage the design and construction risks, operation risks and industrial action risk (L.-Y. Shen et al., 2006). However, Gunnigan (2007) indicates that the public sector should retain ultimate responsibility for the operation of the services that are critical to society so as to avoid the failure of such services, irrespective of the allocation of risk. Several other factors related to risk in PPP briefing were identified and discussed. Table 6-3 presents the refined list of seventeen factors.

Table 6-3: Risk related factors - the preliminary CSFs framework

Factors	Remarks	Source
1. Commencement of risk register	Commencement of risk register/log early in the briefing stage	(Tang et al., 2013)
2. Partner-related risks identification	Identification of partner-related risks in the PPP projects	Interview findings
3. Proper assessment of supply chain risks	Identification of supply chain risks in the PPP projects	Interview findings
4. Proper estimation of risk probabilities	Proper estimation of anticipated risk probabilities	(Tang et al., 2013)
5. Risk consequences	Proper quantification of the consequences of risks	(Tang et al., 2013)
6. Proper calculation of risk value	Cost of anticipated risks to be calculated in brief	(Tang et al., 2013)
7. Thorough analysis of cash flows and financial risks	Thoroughly analysis of cash flows and financial risks are needed in the brief.	(European Investment Bank, 2012; Victorian Government, 2001)
8. Proper calculation of transferable and retained risks	Project-related transferable and retained risks should be assessed in the brief	(Tang et al., 2013)
9. Risk-related options	Examination impacts of risks/benefits on government's options	(South Africa National Treasury, 2004b)
10. Realistic long-term risk assessment	Realistic demand is needed to quantify long-term risks	(Ozdoganm & Birgonul, 2000)
11. Special risk assessment for the briefing	Comprehensive Special risk assessment should be set for briefing	(Tang et al., 2013)
12. Desired risk allocation	Determination of desired risk allocation	(Harrington, 2012)
13. Proper risk allocation and sharing among project stakeholders	Appropriate risk allocation in the following areas: concession agreement, guarantees/support/comfort letters loan agreement, operation agreement, insurance agreement, design and construct contract	(Tang et al., 2013)
14. Risk mitigation strategy	Set an effective management plan for risk mitigation/reduction	(Tang et al., 2013)
15. Experience in risk mitigation	Expert staff to assess risk mitigation strategy	Interview findings
16. Government Risk guarantees	Government guarantees for political/legal/regulatory risks beyond the control of private investors	(Ozdoganm & Birgonul, 2000)
17. Design flexibility to market demand changes	Flexible design solutions to meet possible market demand changes considered in the brief's requirements	Interview findings

#### 6.5.2.4 Finance and economic issues

According to Harrington (2012), the overall successful delivery of public services and infrastructure projects via PPP schemes is directly influenced by the initial feasibility study, which is developed during the briefing stage. Moreover,

Amponsah (2010) highlights the fact that problems and delays during negotiation and procurement can be obviated by carrying out comprehensive feasibility studies with strong financial and economic analyses. Indeed, in international PPP practice, the feasibility study is used as a common approach to validating “affordability”, through VfM analyses which compare a project realized as a PPP with an equal project procured conventionally. In many countries, the public sector must not definitively choose a PPP approach before it has done the feasibility study; before this, a PPP is still a possible procurement choice. After the feasibility study, once the PPP approach has been chosen, the most efficient financing model for the PPP project can be selected (Daube et al., 2008).

Tang et al. (2013) have found that “practical budgeting and programme” and the “proposed commercial arrangement” to be the most important finance-related factors contributing the successful briefing of PPP construction projects in Australia. For its part, the Asian Development Bank (2008) considered project financing a critical factor for the private sector in PPP infrastructure schemes, emphasizing that an accessible financial market is an incentive for the private sector to take up PPP projects, in efficient and mature markets most of all. In fact, because one of the main objectives of adopting a PPP approach is to reduce the financial burden of projects on the government, it is essential to provide the private sector with flexible and attractive financial instruments, such as debt, equity, supplier and purchaser credit, and securities. Li et al. (2005b) bring out the same argument.

In studying the critical success factors in the UK context of PPP/PFI. The “available financial market” was ranked third among the 18 CSFs examined. Nevertheless, this factor has shown only a medium level of importance in the international city of Hong Kong. Where Cheung, Chan, Lam, et al. (2012) maintains



that Hong Kong has advantages and is full of opportunities, regarded as a gateway to other big markets such as China and a centre for the offices of many large international organizations. Several other factors related to finance-related areas in PPP briefing were identified and discussed.

Table 6-4 : Finance- and economic related factors - the preliminary CSFs framework

Factors	Remarks	Source
1. Prepare bidding for funds through the resource allocation exercise process	Bidding for funds from the government should be prepared through the resource allocation exercise process	(Tang et al., 2013)
2. Demonstration of government's budget commitments	Identifying government budgetary current commitments and long-term fiscal obligations (implicit and explicit) that may result from the PPP project.	(European Investment Bank, 2012; South Africa National Treasury, 2004b)
3. Comprehensive business and economic viability of feasibility study	Comprehensive and business viability of project feasibility study	(Abdou & Al Zarooni, 2011; Amponsah, 2010; Cheung, Chan, & Kajewski, 2012; Cheung, Chan, Lam, et al., 2012; Hardcastle et al., 2005; Ismail, 2013; Li et al., 2005b; Qiao et al., 2001; Tiong, 1990; Zhang, 2005a)
4. Construct robust PPP reference model	Construct a model of market-related PPP reference based on market knowledge and experience	(South Africa National Treasury, 2004b)
5. Reliable public sector Comparator (PSC)	Project's actual cost in the public sector Comparator (PSC) model based on previous similar project	(South Africa National Treasury, 2004b)
6. Conduct Value-for-money (VfM) test	Determining whether and how PPP can yield best value for money.	(Tang et al., 2013)
7. Conduct proper bankability assessment	The willingness of the lenders to finance the proposed PPP project should be evaluated carefully in the brief	(European Investment Bank, 2012; Harrington, 2012)
8. Conduct market intelligence study	Investigation of private sector capability and capacity to deliver the required services	(South Africa National Treasury, 2004b)
9. Rational budgeting and programmes	Realistic budget and programmes are needed	Tang et al., 2012, Yu et al., 2007, Yu et al., 2006)
10. Sound commercial and financial package/arrangement	Proposed commercial arrangements, including contract duration, payment mechanism, and other partnership/financial arrangements, should be formulated in the brief	(Tang et al., 2013)
11. Price regulation	Proposed price regulations should be sufficiently flexible to adjust to major cost changes	(UNESCAP, 2005)
12. Payment mechanism	Setting out a feasible payment structure and mechanism	(Akinoye & Donnelly, 2003; European Investment Bank, 2012; Tang et al., 2013)
13. Ability to transfer profits	Showing the ability to transfer profits out of the country	(Babatunde, Opawole, & Akinsiku, 2012)

<b>Factors</b>	<b>Remarks</b>	<b>Source</b>
14. Thoroughly studying the tariff level	Setting appropriate tariff level(s) and suitable adjustment formulas for investors	(Harrington, 2012)
15. Ability to deal with fluctuations	Showing the ability to deal with fluctuations in interest/exchange rates	(Babatunde et al., 2012)
16. Stable economic environment	A strong and stable economic environment to encourage foreign firms to invest in PPP projects and protect the government from the possibility of project failure due to larger macroeconomic shocks	(Harrington, 2012; UNESCAP, 2005)
17. Effective financial regulatory regime in place	Having an effective financial regulatory regime in place reduces the risk for PPP firms and the government	(UNESCAP, 2005)
18. Availability of proper financial systems	Strength and capacity of the financial system to handle PPP arrangements	(UNESCAP, 2005)
19. Available financial market	There must be a level of market interest in and appetite for the project	(Amponsah, 2010; Hardcastle et al., 2005; Ismail, 2013; Jefferies et al., 2002; Li et al., 2005b; Qiao et al., 2001; Zhang, 2005a)
20. Long-term finance availability	Financing long-term PPP projects with suitable financial systems be considered in the briefing	(European Investment Bank, 2012; Harrington, 2012)
21. Limited competition from other projects	PPP projects are established in the context of limited competition from other projects	(Harrington, 2012)
22. Stable currencies of securitization (debts and equity finance)	There must be a level of stability in currencies which will be used in the PPP project to avoid changes in availability, convertibility, or transferability	(Babatunde et al., 2012)
23. Fixed and low interest rate financing	Stable and reasonable real interest rates	(Babatunde et al., 2012; UNESCAP, 2005)
24. Good private sector financial standing	The financial standing of the private sector must be considered	(South Africa National Treasury, 2004b; Tang et al., 2013)
25. Financial sector experienced in assessing long-term lending decisions	Capacity of bankers to assess long-term finance and coping with risk	(UNESCAP, 2005)
26. Cost-effective technical solution	Showing the ability to provide a cost-effective technical solution in the PPP project	(Babatunde et al., 2012)

### 6.5.2.5 Public sector capacity issues

In the context of the UAE, with limited market exposure to and experience with the PPP procurement method compared to other countries worldwide, the capacity of the public sector is considered crucial. UNESCAP (2005) suggests that the qualifications and process experience of public staff and the technical capacity within government agencies will allow special attention to the challenges, and realistic planning for contingencies. In addition, defined government mechanisms in place to coordinate PPP needs which could be in the form of a PPP Unit, and the availability of PPP documentation/best practices in the public domain are very important for proper PPP briefing and overall success of the project. In the context of the UAE's PPP, Dulaimi et al. (2010) explores the critical success and failure factors for PPPs using three different case studies. The study reveals that political support is the most important success factor for PPPs, followed by a strong private consortium. Several other factors related to the public sector's capacity in the PPP briefing were identified and discussed. Table 6-5 displays the refined list of eight factors.

Table 6-5 : Public sector capacity related factors - the preliminary CSFs framework

Factors	Remarks	Source
1. Political support	Sufficient political support, as a result of an encouraging record or a political "champion"	(Cheung, Chan, & Kajewski, 2012; Cheung, Chan, Lam, et al., 2012; Dulaimi et al., 2010; Ismail, 2013; Li et al., 2005b; Qiao et al., 2001; UNESCAP, 2005; Zhang, 2005a)
2. Public staff qualifications and experience in the briefing process	Public staff having qualifications in and experience of managing the PPP briefing processes and development	(Harrington, 2012; Juaim & Hassanain, 2011; Martin, 2010; UNESCAP, 2005; Yu et al., 2006)

Factors	Remarks	Source
3. Technical capacity within government agencies	Adequate technical capacity in the relevant government agencies to tackle/compile similar PPP projects	(Harrington, 2012; UNESCAP, 2005)
4. Adequate PPP resources and training	Adequate PPP resources/facilities and training in areas of expertise	(UNESCAP, 2005)
5. Governmental assistance during the PPP project	Adequate assistance of line agencies and local government in undertaking a PPP	(Harrington, 2012; South Africa National Treasury, 2004b)
6. Government financial capacity to support a PPP's financial requirements.	Integration of the PPP's financial support requirements in the government's budget process	(Harrington, 2012; South Africa National Treasury, 2004b)
7. Government coordination mechanism	Defined government mechanisms in place to coordinate PPP needs and requirements	(UNESCAP, 2005)
8. PPP practices and documentation	Availability of PPP documentation and best practices in the public domain	(UNESCAP, 2005)

#### 6.5.2.6 Regulatory and legal issues

The availability and effectiveness of a proper regulatory and legal framework for PPP is extremely critical to the brief development of any PPP project. This framework should ensure the availability and effectiveness of laws related to PPP to handle any legal issues arising in the process as well as offering essential legal systems within which the PPP procurement process can take place (UNESCAP, 2005). This reflects the importance of a favourable legal framework, good governance, a competitive and transparent procurement process and a range of government guarantees being available to PPP. In fact, it is the role of the public sector to provide an independent, fair and efficient legal framework to attract best-in-class partners, which is vital for PPP agreements and encourages bankability and stability. Pongsiri (2002) highlights two major benefits behind a well-defined PPP regulation framework. First, it allows governments to ensure that the essential partnerships operate efficiently and comply with the country's legal system and policy objectives (i.e. social policy, environmental protection, etc.) Second, it

protects the private sector from expropriation, admits the arbitration of commercial disputes, and provides respect for contract agreements in general and for the legitimate recovery of costs and profit proportional to the risks undertaken in specific. In the UAE context, (Dulaimi et al., 2010) find that a favourable legal framework existed as a CSF in two out of three studied cases. They indicate that the lack of a legal framework or laws for PPP transactions in the UAE had compelled the private party in one case to include conditions in the contract for dealing with unclear issues and arranging arbitration to avoid possible disputes.

Despite the importance of a legal framework for PPP implementation, as perceived by most of the interviewees, no specific PPP legal framework or laws currently exist to support the use of such an approach in the UAE legal system. However, various local governments are investigating various initiatives to develop such a framework. For example, an initiative has recently been taken by the Department of Economic Development to build a framework for a proposal to set up a PPP unit in the Abu Dhabi Emirate; furthermore the Roads and Transport Authority (RTA) in Dubai Emirate has recently finished a draft of a PPP law which is not specific to transport, and it has been submitted to the Dubai Executive Council for approval. The RTA has also planned projects which have been identified as showing a PPP approach. It is worth mentioning here that both of these last two frameworks were set up only with reference to PPP projects in the two emirates at the level of local government and not at the federal level of the UAE. As a consequence, the local governments in the UAE are at present still very much involved with such projects on a case-by-case basis. Several other factors related to regulatory and legal issues in the PPP briefing were identified and discussed. Table 6-6 displays the refined list of twelve factors.

Table 6-6: Regulatory and legal related factors - the preliminary CSFs framework

Factors	Remarks	Source
1. Applicable codes and standards	Adherence to the applicable codes and municipal standards for each type of project	(Juaim & Hassanain, 2011)
2. Updated regulatory framework in place	Consistency of any analysis with the updated policies and guidelines applying at the time	(Othman, 2010; South Africa National Treasury, 2004b; Yu et al., 2007)
3. Robust legal and regulatory framework for PPP procurement	Available laws for a PPP process and necessary legal structures being prepared to deal with the legal issues arising in the process	(Cheung, Chan, & Kajewski, 2012; Cheung, Chan, Lam, et al., 2012; Dulaimi et al., 2010; Hardcastle et al., 2005; Ismail, 2013; Li et al., 2005b; Pongsiri, 2002; Tiong, 1996; UNESCAP, 2005; Zhang, 2005a)
4. Transparent and sound regulatory framework	PPP regulatory framework is clearly spelled out and available from a single source	Interview finding
5. Clear land planning laws and regulations	Clear laws and regulations governing aspects of the development of land, including land uses, zone exploitation factors, percentage of built-up surface area, building envelope, etc.	(South Africa National Treasury, 2004b; UNESCAP, 2005)
6. Fairness and transparency of the government's procurement system	Procurement system of the government being adequate, transparent and clearly defined	(Ozdoganm & Birgonul, 2000; UNESCAP, 2005)
7. Clear ownership issues	Land and property ownership issues should be addressed during the briefing stage	Interview findings
8. Clear statutory control measures	Clear knowledge of the statutory and lease control measures during the PPP project period are needed in the briefing.	(Tang et al., 2013; Yu et al., 2006)
9. Approved governance model	Approved governance model by relevant authorities for the PPP venture	Interview findings
10. Proper dispute resolution mechanism	Availability of a productive conflict and dispute resolution mechanism	(Chan et al., 2004; UNESCAP, 2005)
11. Clear demarcation of authority and responsibility between the public and private sectors	Clearly allocated authority, rights, and responsibilities of each partner	(Chan et al., 2004; UNESCAP, 2005)
12. Fulfilment of public agency mandate	Project scope matching the authorized mandate of the public agency	Interview findings

### 6.5.2.7 Social, culture & ethical issues

The decision making in the briefing process can be affected by cultural and ethical issue. For the proper management of the PPP briefing team, it is helpful to understand the backgrounds and values of the different stakeholders. In addition, cultural and ethical differences are very important thing to consider when

international investors (and stakeholders) come from different countries with different cultures, values and business climates. According to (Yu, 2007), the impact of such cultural issues as language, time orientation, use of space, and religion must be considered carefully at the briefing stage. Moreover, ethical decision making comes from personal values, the organization, from trade or professional organizations, the government, and society. For example, a survey of Hong Kong, the United Kingdom, and the United States (Yu et al., 2008) finds that Western professionals acknowledge the influence of culture and ethics on decision making in the briefing process. Nevertheless, professionals in Hong Kong and the West disagree about whether the stakeholder group should consist of individuals with a common cultural and ethical outlook. Other factors related to the place of social, cultural & ethical issues in PPP briefing were identified and discussed. Table 6-7 displays the refined list of eight factors.

Table 6-7: Social, culture & ethical related factors- the preliminary CSFs framework

Factors	Remarks	Source
1. Community participation	Ability of the community to participate or initiate PPP projects and coordinate with the government during the project's development according to the brief	(Foster Infrastructure Pty Ltd, 2012; UNESCAP, 2005)
2. Community support and acceptance	Community acceptance, supportiveness, and understanding obtained during the development of the project's brief	(UNESCAP, 2005)
3. Cultural and ethical considerations	Proper consideration and management of cultural and ethical values among different end-users/user groups which affect decision-making in the briefing process	(Othman, 2010; Yu et al., 2007)
4. Rewards	Rewards and incentives for encouraging the PPP staff	(Chan et al., 2004)
5. Long-term job commitment	Long-term job commitment which increases the productivity of project staff	(Chan et al., 2004)
6. Honesty	Honesty among stakeholders and end-user groups critical for the briefing process	(Tang et al., 2013; Yu et al., 2006, 2007)
7. Acceptable tariff level	Level of tariff being socially and culturally acceptable by community	(Harrington, 2012)
8. Proper consideration of socioeconomic aspects	Acknowledgement of the social characteristics and economic impact of the PPP	(Kanakoudis, Papotis, Sanopoulos, & Gkoutzios, 2007)

## 6.6 The Final CSFs Framework for PPP Briefing with Special Reference to UAE Construction Projects: Structured Interviews

In order to identify a framework for the few essential CSFs in a PPP briefing, the 123 factors identified above were considered in order to group and structure them as either CSFs or sub-success factors (SSFs). The specific methodology of this part involves exploring and examining these factors and questioning whether they are at the same level of detail/importance; whether some not specifically different can be combined; whether some factors be grouped/sorted/sub-categorized; whether the previous literature review suggests any high level of sorting/ grouping among them.

For example, in the risk-related category, the 17 factors identified were grouped into 6 CSFs, with their SSFs. Proper identification of the anticipated risks/threats for PPP project is identified as one of the CSFs. This involves focusing on the commencing risk register/log as early as possible in the brief development stage, and properly identifying both partner-related and supply chain risks. Additionally, proper analysis and assessment of anticipated risks/threats is identified as another CSF, which involves paying attention to the proper calculation of transferable and retained risks as well as the value of all risk; a proper and realistic assessment of both special and long-term risks; a thorough analysis of cash flows and financial risks; and finally an examination of the impact of anticipated risks/benefits on different government options. In the risk response stage, two CSFs are identified. First, proper risk allocation and sharing among project stakeholders, which involves paying attention to determine the desired risk allocation to the client side and then proper allocation of responsibilities and risk sharing between the government and the other stakeholder. Second, setting an effective action plan for a mitigating/reducing strategy whereby expert staff anticipates what risks may arise. Another important



identified CSF is the Government Risk Guarantee for political/legal/regulatory risks beyond the control of private investors. Finally the project design needs flexibility to meet possible changes in market demand, as previously identified in the semi-structured interview sessions this is another CSFs identified in this category.

The same re-structuring concept was applied to other categories for other CSFs identified earlier; the output of this process has led to the development of a framework that includes 38 essential CSFs and their SSFs.

The following section elaborates on the Structured Interviews that were conducted, and then describes in detail the Final CSFs Framework for PPP Briefing with special reference to UAE Construction Projects.

## **6.6.1 Structured interviews**

### **6.6.1.1 Sample selection**

Three face-to-face interviews were held in the UAE to collect empirical information about the improved CSFs Framework for PPP Briefing in construction projects. Two of the experts had taken part in more than two PPP projects and were experienced in different project management roles in both the public and private sectors. An additional interview was given by an academic and industrial expert with more than 10 years' experience in UAE construction management.

A range of methods was used in the interviews with PPP experts and key personnel. Soft copies and hard copies of the questionnaire survey were sent to the targeted interviewees as the first step, to indicate the basic questions for discussion. Then face-to-face meetings were held to discuss the main topics and to document any

other issues that might be raised during these discussions. Each interview lasted between 45 minutes and an hour, depending on what the interviewees wished to say.

The experts were asked to comment on the improved CSFs framework, with its 38 essential CSFs and their SSFs, in terms of their appropriateness and sufficiency according to their experience in the context of the UAE's PPP construction arrangements. The interview questions that were asked are as follows:

- Q1. Do you think that the preliminary CSFs framework and the identified factors are appropriate and sufficient for the briefing process in PPP construction projects in the UAE?
- Q2. Do you need to add, remove or modify the attached CSFs framework or any of its components? If yes, what modifications should be made?

#### **6.6.1.2 Results and analysis**

All interviewees agreed that the proposed seven categories were proper and comprehensive; they also made useful comments to improve the use of language and emphasized the most often used PPP terms. Generally, most of the comments were on the language and clarity of some factors.

The experts were also asked to add other factors/categories relevant to the successful PPP briefing and one factor was added in the category of procurement related critical success factors, namely, "sufficient human resources for the briefing to be thorough".

## 6.6.2 The final CSFs framework for PPP briefing with special reference to UAE construction projects

All the comments received were analysed to refine and confirm the improved CSFs framework. As a result of the analysis and interviews, the final CSFs Framework for PPP Briefing was developed containing 38 CSFs and 103 SSFs in the seven categories, and is shown in tables 6-8 till 6-14 below.

Table 6-8: Procurement related factors - the final CSFs framework

CSFs	SSFs
1- Clear project goal, objectives, and deliverables in the brief	<ul style="list-style-type: none"> <li>▪ Clarity of the project goal and objectives set by the client/owner</li> <li>▪ Proper project output specifications developed to meet the client's/owner's service needs and standards</li> <li>▪ Demonstration of the project's alignment to the client's/owner's strategic objectives</li> <li>▪ Integration of the PPP project with the national and local planning processes</li> <li>▪ Adequate preparation and management of the Expression of Interest (EOI) stage of the PPP project in the brief's development</li> </ul>
2- Clear and precise process for formulation and control of the brief	<ul style="list-style-type: none"> <li>▪ A framework for the brief's formulation to be agreed by key partners</li> <li>▪ A briefing process with clear goals and objectives</li> <li>▪ Lead given by the public sector and its continuous control and monitoring of the briefing process</li> <li>▪ Clear and applicable criteria for the selection of options</li> <li>▪ Establishment of priority levels for decisions agreed on by the key parties during briefing</li> <li>▪ Use/application of the Value Management (VM) approach in the development of the brief</li> <li>▪ A realistic timetable set for the completion of the brief</li> <li>▪ Availability of a clear and precise brief at the end of the briefing stage</li> </ul>
3- Appropriateness of the selected PPP model	
4- Adequate resources allocated to the briefing process	<ul style="list-style-type: none"> <li>▪ Allocation of a separate service fee for developing the brief</li> <li>▪ Sufficient time to be allowed for the briefing</li> <li>▪ Sufficient human resources to be allowed for the briefing</li> <li>▪ The recruitment of an experienced writer of briefs</li> </ul>
5- Flexibility of the brief and the management of change	<ul style="list-style-type: none"> <li>▪ Flexibility in development of the brief to allow for possible changes</li> <li>▪ The brief should describe the possible changes to the client organization resulting from the PPP project.</li> </ul>

Table 6-9: Stakeholder related factors - the final CSFs framework

CSFs	SSFs
6- Identifying influential stakeholders properly	<ul style="list-style-type: none"> <li>▪ Identifying influential stakeholders properly</li> <li>▪ Identifying key user-groups</li> </ul>
7- Addressing stakeholders' possible power and influence	<ul style="list-style-type: none"> <li>▪ Assessing stakeholders' behaviour</li> <li>▪ Predicting the influence of stakeholders accurately</li> <li>▪ Assessing the attributes (power, urgency, and proximity) of stakeholders</li> </ul>
8- Identification of the stakeholders' needs, requirements, and interests	<ul style="list-style-type: none"> <li>▪ Identifying the end-user/user-groups requirements in the project brief</li> <li>▪ Identifying the client/owner's requirement in the project brief</li> <li>▪ Understanding the areas of stakeholders' interests and their constraints</li> <li>▪ Balancing the needs/requirements of different stakeholders</li> </ul>
9- Adequate engagement of user-groups throughout the briefing process	<ul style="list-style-type: none"> <li>▪ Representation of both the user-groups and client groups in the development of the brief</li> <li>▪ Adequately engaging the user-groups throughout the briefing and design stages</li> <li>▪ Proper use of the user-groups values and knowledge</li> </ul>
10- Stakeholder management strategies	<ul style="list-style-type: none"> <li>▪ Identifying appropriate decision-making strategies</li> <li>▪ Clarifying the roles and responsibilities of project stakeholders</li> <li>▪ Managing stakeholders with corporate social responsibilities (economic, legal, environmental, and ethical)</li> <li>▪ Publishing a proper consultation plan for user-groups and stakeholders</li> <li>▪ Strictly controlling and managing the client/user-groups to avoid output specifications becoming a wish list (wish-list syndrome)</li> <li>▪ Proper analysis and compromise in conflicts and coalitions between stakeholders</li> </ul>
11- Proper communication and coordination between stakeholders during the brief development	<ul style="list-style-type: none"> <li>▪ Good facilitation in the briefing for stakeholders</li> <li>▪ Open and effective communication with stakeholders, team, and project representatives</li> <li>▪ Communication with and engaging stakeholders properly and frequently</li> <li>▪ Using different methods to document and effectively communicate the brief</li> <li>▪ Proper methods of e-based communications among stakeholders</li> <li>▪ Facilitating the sharing of knowledge among the stakeholders</li> <li>▪ Using face-to-face contact as a communication method in critical decision stages of the brief</li> </ul>
12- Team selection and empowerment	<ul style="list-style-type: none"> <li>▪ Empowering the stakeholder group as a team to make decisions in the briefing process</li> <li>▪ Select team members with relevant experience to develop an effective brief</li> </ul>

Table 6-10: Risk related factors - the final CSFs framework

CSFs	SSFs
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CSFs	SSFs
13- Proper identification of anticipated risks/threats to the PPP project	<ul style="list-style-type: none"> <li>▪ Commencement of a risk register/log early in the briefing stage</li> <li>▪ Identifying partner-related risks in the PPP projects</li> <li>▪ Identifying supply chain risks in the PPP projects</li> </ul>
14- Proper analysis and assessment of anticipated risks/threats to the PPP project	<ul style="list-style-type: none"> <li>▪ Proper estimation of anticipated risk probabilities</li> <li>▪ Proper quantification of the consequences of risks</li> <li>▪ Proper calculation of risk value</li> <li>▪ Thorough analysis of cash flows and financial risks</li> <li>▪ Proper calculation of transferable and retained risks</li> <li>▪ Examining the impact of risks/benefits on government options</li> <li>▪ Realistic long-term risk assessment</li> <li>▪ Special risk assessment</li> </ul>
15- Proper risk allocation and sharing among project stakeholders	<ul style="list-style-type: none"> <li>▪ Determining the desired risk allocation</li> <li>▪ Appropriate risk allocation in the following areas: concession agreement, guarantees/support/comfort letters loan agreements, operation agreements, insurance agreements, design and construct contracts</li> </ul>
16- Proper mitigation/reduction strategy for anticipated risks/threats to the PPP project	<ul style="list-style-type: none"> <li>▪ Setting an effective management plan for risk mitigation/reduction</li> <li>▪ Recruiting expert staff to assess the risk mitigation strategy</li> </ul>
17- Government guarantees for political/legal/regulatory risks beyond the control of private investors	
18- Flexibility of the project design solution to meet possible future changes in market demand	

Table 6-11: Finance and economic related factors - the final CSFs framework

CSFs	SSFs
19- Favourable financial and economic climate	<ul style="list-style-type: none"> <li>▪ Stable economic climate</li> <li>▪ Effective financial regulatory regime in place</li> <li>▪ Availability of proper financial systems for PPP arrangements</li> <li>▪ Available financial market</li> <li>▪ Availability of long-term finance</li> <li>▪ Limited competition from other projects</li> <li>▪ Stable currencies of securitization (debts and equity finance)</li> <li>▪ Financing with fixed low interest rates</li> </ul>
20- Business and economic viability of the feasibility study	<ul style="list-style-type: none"> <li>▪ Constructing a robust PPP reference model</li> <li>▪ A reliable Public Sector Comparator (PSC)</li> <li>▪ A value-for-money (VfM) analysis</li> <li>▪ Proper assessment of bankability</li> <li>▪ Market intelligence study: Investigation of private sector capability and capacity to deliver the required services</li> <li>▪ Practical budget and procurement programme of the project</li> </ul>

CSFs	SSFs
21- Sound commercial and financial package/arrangements	<ul style="list-style-type: none"> <li>▪ Flexible price regulations sufficient to adjust to major cost changes</li> <li>▪ The setting up of a feasible payment structure and mechanism</li> <li>▪ The ability to transfer profits out of the country</li> <li>▪ Appropriate tariff level(s) and suitable adjustment formula for investors</li> <li>▪ The ability to deal with fluctuations in interest/exchange rates</li> </ul>
22- Financial capacity and reliability of private sector	<ul style="list-style-type: none"> <li>▪ Good private sector financial standing</li> <li>▪ Financial sector experienced in assessing long-term lending decisions</li> <li>▪ Cost-effective technical solutions</li> </ul>

Table 6-12: Public sector capacity related factors - the final CSFs framework

CSFs	SSFs
23- Political support: Sufficient political support, as a result of encouraging record or a political “champion”	
24- Qualified and experienced of public staff to manage the PPP briefing process	<ul style="list-style-type: none"> <li>▪ Adequate public staff qualifications and experience in the briefing process</li> <li>▪ Adequate technical capacity in relevant government agencies for undertaking similar PPP projects</li> <li>▪ Adequate PPP resources/facilities and expertise training</li> </ul>
25- Governmental assistance during PPP project undertaking: Adequate assistance of line agencies and local government in undertaking PPP	
26- Government financial capacity to support PPP financial requirements: Integration of PPP finance support requirements with government budget process	
27- Effective government mechanisms for documentation and lessons learned	<ul style="list-style-type: none"> <li>▪ Availability of PPP documentation and best practices in the public domain</li> <li>▪ Proper e-documentation system among all stakeholders for the brief’s development and all the decisions made</li> <li>▪ Availability of feedback and lessons learned from PPP completed projects as a database in the public domain</li> </ul>

Table 6-13: Regulatory and legal related factors - the final CSFs framework

CSFs	SSFs
28- Availability of effective regulatory and legal frameworks for PPP	<ul style="list-style-type: none"> <li>▪ Robust, transparent, and stable regulatory framework for PPP procurement</li> <li>▪ Clear land planning laws and regulations</li> <li>▪ Fairness and transparency of the government’s procurement system</li> <li>▪ Clear ownership issues</li> <li>▪ Clear statutory control measures</li> </ul>
29- Approved governance model by relevant authorities for the PPP venture	
30- Project scope to match authorized mandate of the public agency	
31- Adherence to applicable and up-to-date legal and regulatory frameworks	<ul style="list-style-type: none"> <li>▪ Adherence to applicable design and operation codes and standards for the type of project</li> <li>▪ Updated regulatory framework in place</li> </ul>

32- Clear authority and responsibility between public and private sectors
33- Proper dispute resolution mechanism

Table 6-14: Social, culture and ethical related factors - the final CSFs framework

CSFs	SSFs
34- Community participation, acceptance, and support	<ul style="list-style-type: none"> <li>▪ Ability of the community to suggest PPP projects, coordinate and participate with the government during the development of the project brief</li> <li>▪ Community acceptance, supportiveness, and understanding obtained during the developments of the project's brief</li> </ul>
35- Work environment during the brief development	<ul style="list-style-type: none"> <li>▪ Rewards and incentives to encourage the PPP staff</li> <li>▪ Long-term job commitment to increase the productivity of project staff</li> <li>▪ Openness and trust between stakeholders</li> <li>▪ Commitment of all participants in the briefing process</li> <li>▪ Honesty among stakeholders</li> </ul>
36- Consideration of cultural and ethical values of the end users/user-group during the brief's development	
37- Acceptable tariff level: Level of tariff socially and culturally acceptable by community	
38- Consideration of socioeconomic aspects: Acknowledgement of the social characteristics and economic impact of the PPP	

## 6.7 Summary and Conclusions

With a focus on different aspects of the briefing process in the UAE's PPP construction projects, several aspects of CSFs have been suggested by researchers and presented in the literature.

A CSFs framework for PPP briefing is presented in this chapter. Seven factor categories having an impact on the PPP briefing process were identified. They are procurement; stakeholder; risk; financial and economic issues; public sector capacity; regulatory and legal issues; and finally social, cultural and ethical. These categories contain 38 main factors of critical success CSFs and 103 of their sub-success factors (SSFs). These factors are discussed and summarised in Section 0, based on a comprehensive literature review and then on semi-structured and structured interviews with PPP professionals/experts in construction conditions in the UAE.

A questionnaire survey was developed and implemented and is described in the following chapter its main objectives being to assess the relative importance of the CSFs associated with the development of PPP brief and quantitatively prioritize them.

## **Chapter 7: Quantitative Analysis of the Critical Success Factors in PPP Briefing**

### **7.1 Introduction**

A questionnaire survey was implemented with the main aim of assessing and ranking the relative importance of the Critical Success Factors (CSFs) identified in PPP brief development, as discussed in the previous chapter. This chapter presents the quantitative analysis of this questionnaire survey.

The first phase of data analysis provides a descriptive analysis of the data obtained. It demonstrates some qualitative insights with which to discuss the data obtained in terms of their value and contribution to the aims of the questionnaire. In addition, it focuses on the purification and computational processes of the measuring instruments, where Cronbach alpha is used as an indicator of reliability of the scale measurement. The results of this statistical analysis are used for further analysis in order to interpret the findings in the context of the research aims. The second phase of data analysis concerns the importance and ranking of the identified CSFs. It provides an overall assessment of these factors and discusses in detail their ranking and the respondents' opinion of each of the seven categories of the developed CSFs framework.



## 7.2 The Development and Implementation of the Questionnaire

### 7.2.1 The development of the questionnaire

A standardised questionnaire was developed to collect data from a large sample of PPP experts in the UAE in order to elicit their opinions and perception in regard to identified CSFs. The questionnaire had two types of question:

- Closed-ended: questions that required the respondent to choose from a list of answers.
- Scaled-response questions: Closed-ended questions in which the response choices are calibrated on a rating scale (a five-point Likert scale).

The questionnaire (see Appendix D) had two parts: Part I included the respondent's general information and background, while Part II was dedicated to rating the success factors. Thirty eight (38) CSFs and their Sub-Success Factors (SSFs) were finalized and grouped into seven main categories: to do with (1) procurement, (2) stakeholders, (3) risk, (4) finance and the economy, (5) public sector capacity, (6) regulations and laws, and (7) social, cultural, and ethical aspects.

The questionnaire extended over eight pages. A cover sheet and a letter describing the aim of the study and the procedures for completing and returning it were attached to its front page. At the beginning of the first page were short statements assuring anonymity to the responding organisations and explaining the purpose of the study and the principles on which it was based. Each section had a clear title, making it easy for the respondent to answer. All the questions were set out in tabular form. Finally the end of the questionnaire gave the address to send

completed surveys and a fill-in box for those respondents who wanted to receive the key findings of the survey and were willing to provide their own contact addresses.

To encourage maximum response, all the questions were carefully worded after several revisions to ensure their clarity. An instructional statement of what was required, and the meaning of each scale point in the answers to the questions preceded each group of questions. To increase the response rate, a series of follow-up telephone calls and e-mails was made. The respondents were also able to remain anonymous if they did not wish to receive a copy of the executive report of the study.

### **7.2.2 Pre-Test, revision and implementation**

Having developed the questionnaire survey, it was important to validate the instrument to make certain that it measured what was intended and gave the respondent clear and understandable questions that would elicit clear and understandable answers. This would affirm that the questionnaire could be relied upon for opinions on the issues under study.

In this regard, the questionnaire was reviewed first by five academic researchers experienced in questionnaire design. They were asked to provide feedback on the overall design, the measurement scales in particular. Their inputs were then considered in improving the design. Five doctoral students were also asked to make suggestions for improving the questionnaire.

Next, it was piloted with two PPP Briefing Process experts known to the researcher. The pilot took the form of an interview where the participant was handed a copy of the questionnaire and asked to complete it and then to make comments or questions as necessary. The objective of this pilot was to assess the time required to complete the questionnaire, the clarity of the instructions, the simplicity and

consistency of the questions, the clarity of all the wording and the ease of understanding it.

The questionnaire was developed using an interactive pdf file to make it easier to choose among the options for rating. Expert's database which contains more than (1500) PPP professionals' contacts was used. All experts were conducted and invited to respond to the survey, if only they have experience in PPP UAE market. The administering of the questionnaire took about three months and 104 responses were finally received.

### **7.3 The Analysis**

The flow-chart Figure 7-1 provides an overview of the analysis processes of the received data in the two phases discussed above. The first phase of data analysis had two main objectives:

1. To examine the profile of the respondents and the distribution of responses over the question items.
2. To test the reliability of the data using by item-to-total correlation and Cronbach alpha statistical measures

The coming section discusses the data obtained in terms of their value and contribution to the aims of the questionnaire. In addition, it focuses on the purification and computation processes of the measuring instruments.

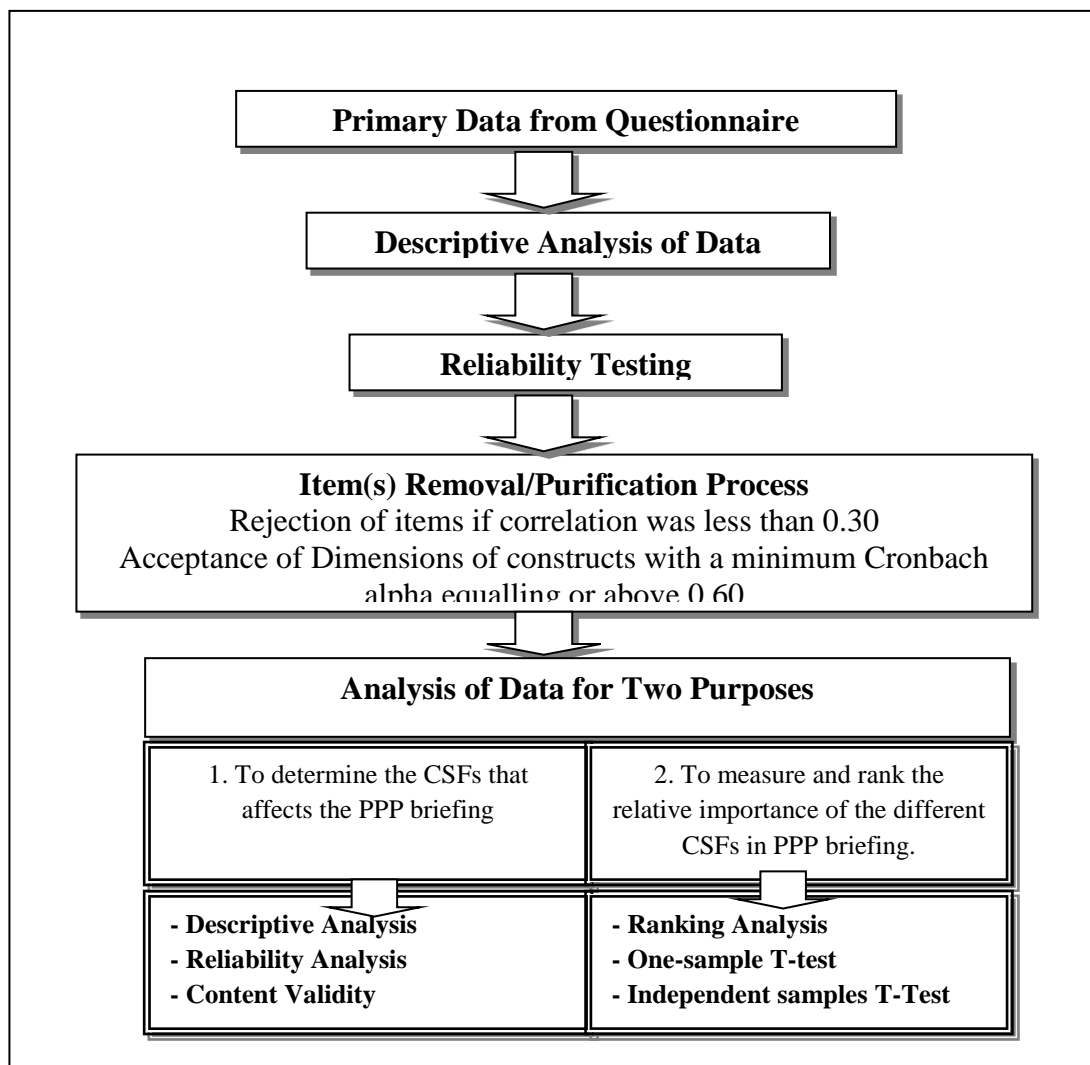


Figure 7-1: Data analysis process

#### 7.4 Respondents and Their Categories: Descriptive Analysis

This section focuses on general information about the respondents and their categories. The aim is to provide a brief account of the profile of the sample in the study. Frequency analysis was used to distribute the participating respondents according to the following characteristics:

- Sector of PPP Projects
- Experience of respondents
- Overall experience in PPP Projects
- Market sector category

#### 7.4.1 Type of PPP construction projects

As mentioned earlier, this study planned to obtain sample with experience in different types of PPP projects from UAE construction industry so the generalisation of the findings can be established for UAE construction industry in general. Consequently, the sample is comprised of 104 responses with experiences in eight different types of PPP construction projects. Table 7-1 illustrates that 13.5% of the respondents have experience in the educational projects. Only 6 respondents have experience in the health care construction (5.8%). Nearly on quarter (23.1%) of the respondents are with experience in the social housing sector. While (19.2 %) of the sample are with experience in the transport projects and (9.6%) are classified with experience in environmental construction projects.

Table 7-1: Distribution of respondents' experience by type of PPP construction project in the UAE

Type of PPP Construction Project	Frequency	Percent
Educational construction	14	13.5
Health- care construction	6	5.8
Social Housing	24	23.1
Transport project	20	19.2
Environmental construction,	10	9.6
Institutional project	8	7.7
Infrastructure construction	14	13.5
Industrial construction	8	7.7
Total	104	100.0

Eight respondents are experienced in both institutional projects and industrial construction projects (7.1%). Finally, 14 respondents have experience in the infrastructure construction (13.5%). Figure 7-2 illustrates the distribution of respondents' experience by sector of PPP projects in the UAE construction industry.

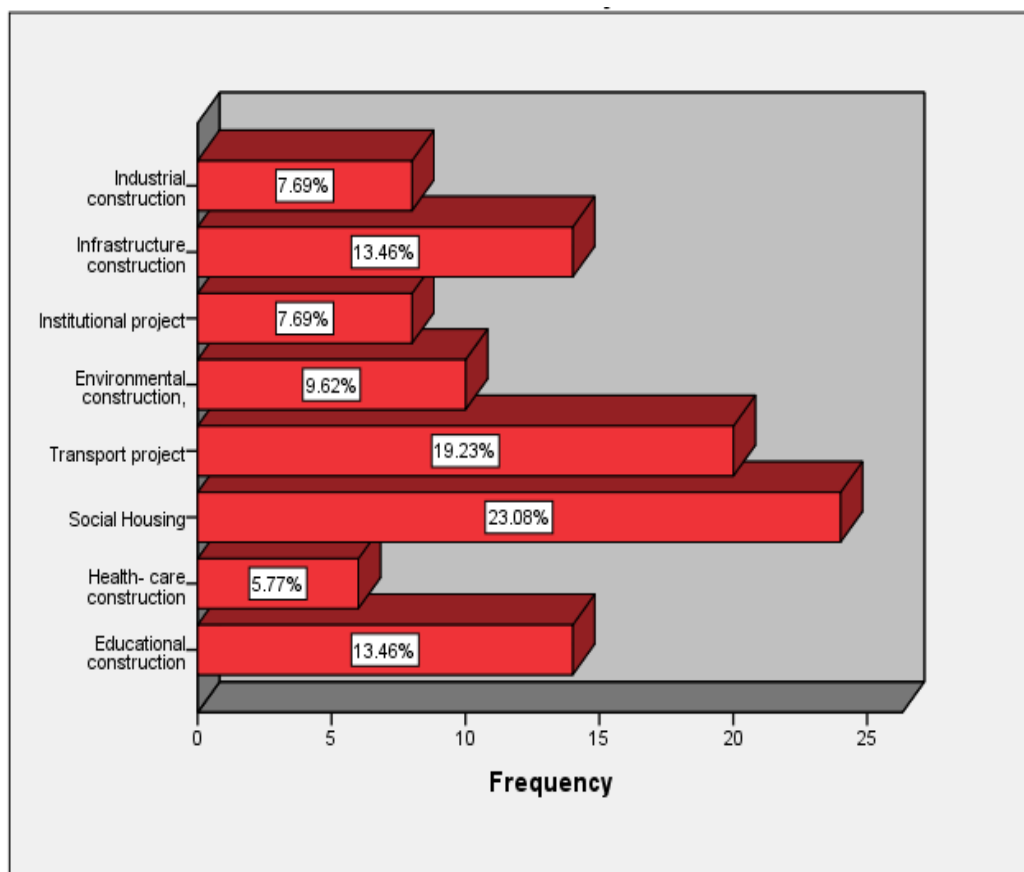


Figure 7-2: The distribution of respondents' experience by sector of PPP projects in the UAE construction industry

#### 7.4.2 Experience of respondents

Table 7-2 reveals that more than half of the respondents in this survey had experience at work of more than 20 years (53.8%). 21.2% had between 11-15 years of experience, 13.5% had between 15 and 20 years of experience and 9.6% had only between 6 and 10 years of experience.

Table 7-2: Overall professional experience

	Frequency	Percent	Valid Percent	Cumulative Percent
0-5 Years	2	1.9	1.9	1.9
6-10 Years	10	9.6	9.6	11.5
11-15 Years	22	21.2	21.2	32.7
16-20 Years	14	13.5	13.5	46.2
More Than 20 Years	56	53.8	53.8	100.0
Total	104	100.0	100.0	

Finally only very few respondents (1.9 %) had a limited work experience (of 0-5 years). Figure 7-3 summarises the distribution of these different years of experience among the respondents.

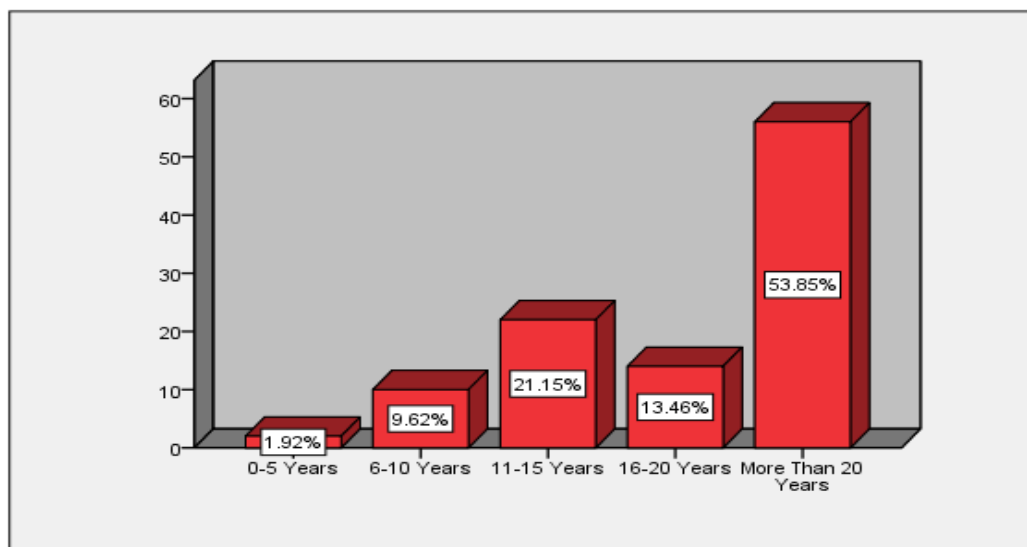


Figure 7-3: Distribution of the respondents by years of professional experience

### 7.4.3 Overall experience in PPP projects

Table 7-3 reveals that more than half of the respondents in this survey had had experience of PPP of more than 6 years (45.8%), whilst 44.2 % had between 0 and 5 years of experience in PPP projects.

Table 7-3: Overall experience in PPP projects

	Frequency	Percent	Valid Percent	Cumulative Percent
0-5 Years	46	44.2	44.2	44.2
6-10 Years	32	30.8	30.8	75.0
11-15 Years	16	15.4	15.4	90.4
16-20 Years	4	3.8	3.8	94.2
More Than 20 Years	6	5.8	5.8	100.0
Total	104	100.0	100.0	

Finally only very few respondents (9.6 %) had had extended work experience (16 years and above). Figure 7-4 summarises the distribution of these years of PPP experience among the survey respondents.

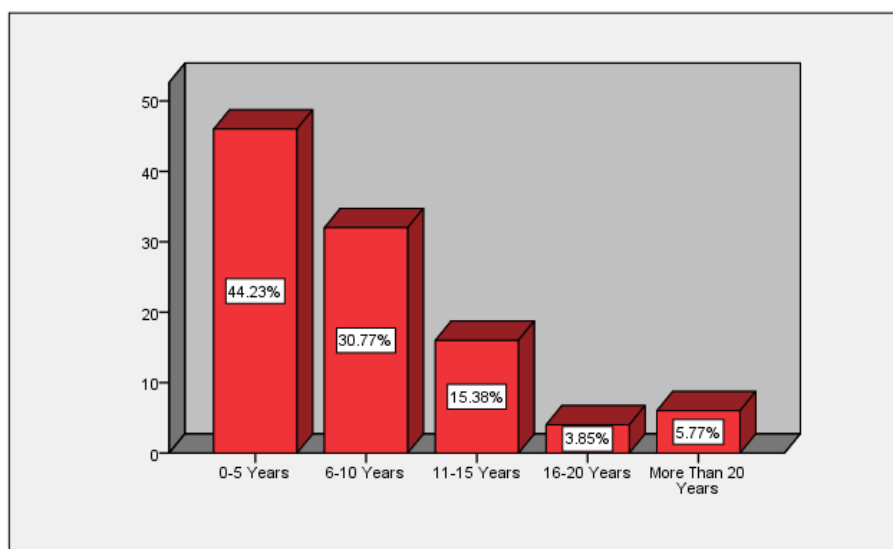


Figure 7-4: Distribution of the respondents by overall experience in PPP projects

#### 7.4.4 Market sector category

Table 7-4 reveals that most of the respondents (63.5) in this survey came from private sector companies. However, 36 respondents (34.6%) among them were working in public sector companies; this proportion was in fact due to the restrictions that were felt to be enforced on sharing information in the public sector.

Table 7-4: Market sector category

	Frequency	Percent	Valid Percent	Cumulative Percent
Public	36	34.6	34.6	34.6
Private	66	63.5	63.5	98.1
Other	2	1.9	1.9	100.0
Total	104	100.0	100.0	

It was very challenging to get such responses from the public sector.

Figure 7-5 shows the distribution of the sample by ownership.



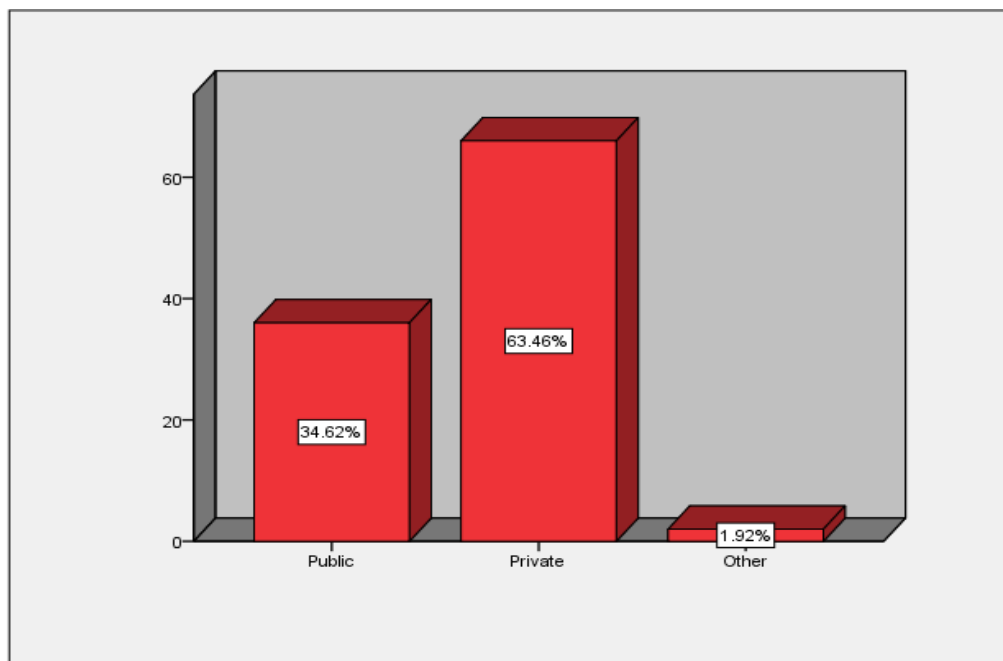


Figure 7-5: Distribution of the respondents by market sector category

#### 7.4.5 Participating in the PPP briefing process

One of the objectives of this questionnaire was to gauge the critical success factors for the PPP briefing process. Hence, it was important for the respondent to have been involved in implementing a PPP briefing process.

Table 7-5: Participating in PPP briefing

	Frequency	Percent	Valid Percent	Cumulative Percent
No	35	33.7	33.7	33.7
Yes	69	66.3	66.3	100.0
Total	104	100.0	100.0	

In this case Table 7-5 shows that a majority (66.3%) of the respondents had participated in a PPP briefing process. Consequently, it can be concluded that the respondents could be used to validate the findings and provide valuable information about the CSFs of such a process. Figure 7-6 shows the distribution of the sample by participation.

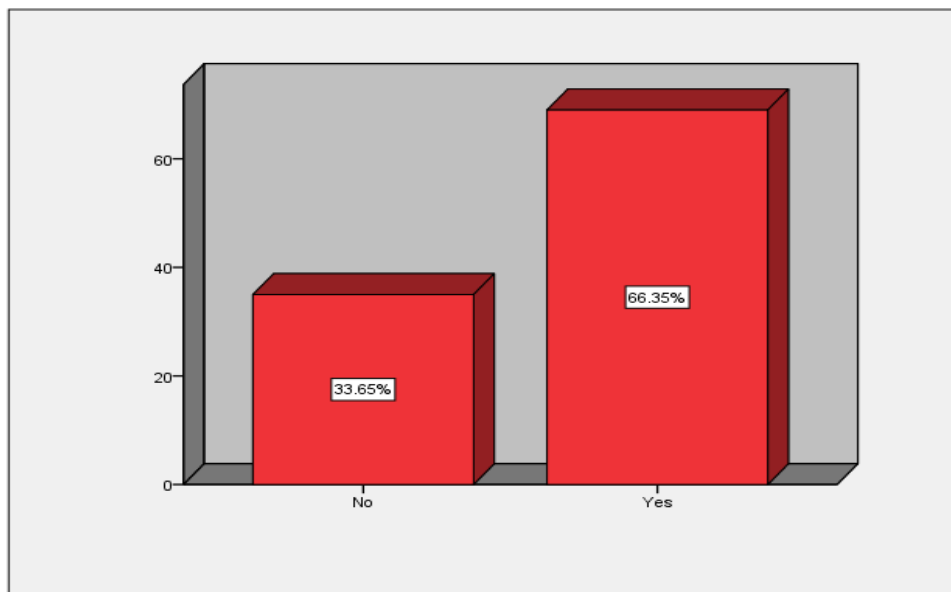


Figure 7-6: Participating in a PPP briefing process

## 7.5 Data Preparation and Purification of Measures

According to Frankfort-Nachmias and Nachmias (1996), researchers, after collecting the data, must follow several steps in order to obtain meaningful results from the analysis stage. The following sections discuss these steps in detail.

### 7.5.1 Data preparation

The first step in preparing the data for analysis was the process of data editing, coding and data entry to SPSS. First, raw data was edited for the purpose of detecting any errors and omissions, correcting them where possible, and certifying that the minimum data quality standards had been met

Second, the study variables were coded into formats for the statistical Package for the Social Sciences (SPSS) version 22 that was used in the data analysis. The variables were given unique labels. This step helped in setting up the computer software to analyse the data. Finally, SPSS was used to enter the data. Each returned

questionnaire was first checked for errors and omissions, and then the answers were entered manually in the computer to prepare the data for analysis.

### 7.5.2 Purification of measures

After the entry and recording processes had been completed, all the measures were purified by assessing their reliability and validity. There are a number of reasons for emphasizing the validity and reliability of the measurements. One is that a reliable and valid measuring instrument enhances the methodological rigour of the research. Another is that it permits a co-operative research effort and provides support for the triangulation of results and, finally, it provides a more meaningful explanation of the phenomena being investigated.

In this study the validity and reliability measurements used item-to-total correlation. The aim was to remove items if they had a low correlation unless they represented an additional domain of interest. This method is considered the most common procedure among researchers for guaranteeing the reliability of a multi-item scale (May, 1997). The purpose of the item-to-total correlation measure is to determine the relationship of a particular item to the rest of the items in the same dimension. The process helps to ensure that the items making up the dimension share a common core (Tiong, 1990). In this purification process, the items should have an item-to-total correlation score of 0.30 and above to be retained for further analysis; only these are considered highly reliable (Cooper & Emory, 1995).

Additionally, the estimation of reliability is also based on the average correlation between items within a dimension, which is concerned with “internal consistency” (Nunnally, 1978). The basic formula for determining reliability based on this internal consistency is called the coefficient alpha (Cronbach alpha). This

technique has proved to be a good way of estimating reliability in most research situations. Nunnally (1978) suggests that a reliability of 0.5 to 0.6 is sufficient.

The following section precedes a discussion on the process of computing reliability. A reliability analysis was conducted for all the measuring instruments in the questionnaire, namely, procurement related factors, stakeholders related factors, risk-related factors, finance and economy related factors, public sector capacity related factors, regulatory and legal related factors and social, cultural and ethical factors.

### **7.5.3 Reliability analysis results**

Computing the item-to-total correlation and also a coefficient alpha constitutes the process reliability analysis. As mentioned earlier, item-to-total correlation and the Cronbach Alpha coefficient are considered to be more popular than a cross-item reliability index in the field of social science research. This is done using an SPSS package.

All items in the present results were found to have a high item-to-total correlation, above the acceptable level of 0.30. As shown in the last column of Appendix E, the reliability coefficient ranged from 0.756 to 0.956, both significantly higher than the acceptable level of 0.60 (Nunnally, 1978). These results confirm that the scales used were reliable.

## **7.6 Content validity**

Content validity is the degree to which the domain of properties or characteristics of the construct that one wishes to measure are in fact captured by the measures one uses (Ahire, Golhar, & Waller, 1996; Das, Paul, & Swierczek, 2008).

A measure has content validity if there is general agreement among the subjects and researchers that the instruments has measurement items covering all the content domain of the variables being measured (Nunnally & Bernstein, 1994). The researcher can satisfy content validity through a careful definition of the research problem, the items to be scaled, and the scale to be used. This logical process is somewhat intuitive and is unique to each researcher (Emory & Cooper, 1991). However, the measurement scale must satisfy certain criteria before it can be applied in empirical work. These criteria include (McDaniel & Gates, 1996):

- Carefully defining what is to be measured
- Conducting a careful literature review and interviews with the target population
- Letting the scale be checked by experts
- Making sure that the scales can be pre-tested and also that open-ended questions are asked that may identify other items to be included.

As discussed above, the CSFs listed in the final draft of the survey were identified by a comprehensive review of the suitable literature, as discussed in Chapter5. The CSFs and their contents list were also validated by several interviews with PPP experts and a pilot study. This guaranteed that the content validity of the survey had been achieved.

### **7.7 Importance and Ranking of all CSFs**

This part describes the second phase of the data analysis. The previous part showed how the data obtained from the fieldwork were validated and purified. SPSS version 22 was used to analyse the data.

The CSFs and their SSFs were measured in terms of a Likert-type scale ranging from 1 to 5 with the following equivalents: 1: “not important” or “Not at

all”; 2: “Slightly important” 3: “Neutral” or “Moderately important”; 4: “very important”; and 5: “Extremely important”.

To calculate the means of different CSFs, if a factor has SSFs, then its mean is calculated on the basis of the average of its calculated SSFs means measured from the respondents’ rates. Otherwise, if the CSF has no SSFs, then its mean is calculated directly from its respondents’ rates.

### **7.7.1 Overall critical success factors assessment**

With respect to the overall assessment of these factors, Table 7-6 shows that the top 21 CSFs were ranked in a range above 4, representing their considerable importance. They include Procurement-related factors (Clear project goal, objectives, and deliverables in the brief – Appropriateness of the selected PPP model), Stakeholder-related factors (Identification of the influential stakeholders – Identification of the stakeholders’ needs, requirements, and interests, Risk-related Factors (Proper identification of the anticipated risks/threats to the PPP project – Proper mitigation/reduction strategy for the anticipated risks/threats to the PPP project – Proper analysis and assessment of the anticipated risks/threats to the PPP project – Government guarantees for political/legal/regulatory risks beyond the control of private investors – Flexibility of the project design solution to meet possible future changes in market demand), Finance and Economy-related Factors (Business and economic viability of the feasibility study – Financial capacity and reliability of the private sector – Sound commercial and financial package/arrangements), Public Sector Capacity-related Factors (Political support – Governmental assistance for the duration of the PPP project – Government financial capacity to support PPP financial requirements) and Regulatory and Legal-related

Factors (Clear authority and responsibility between public and private sector – Approved governance model by relevant authorities for the PPP venture – Availability of effective regulatory and legal frameworks for PPP - Adherence to applicable and up- to-date legal and regulatory frameworks – Proper dispute resolution mechanism – Project scope to match the authorized mandate of the public agency).

Similarly, the next 16 factors, ranked between 3.5 and 4, include Procurement-related factors (Clear and precise process for formulation and control of the brief – Adequate resources allocated to the briefing process – Flexibility of the brief and the management of change), Stakeholder-related factors (Team selection and empowerment – Stakeholder management strategies – Adequate engagement of user-groups throughout the briefing process – Proper communication and coordination between stakeholders during the brief development –Addressing stakeholders' possible power and influence), Risk-related Factors (Proper risk allocation and sharing among project stakeholders), Finance and Economic factors (Favourable financial and economic climate), Public Sector Capacity-related factors (Qualified and experienced public staff to manage the PPP briefing process – Effective government mechanisms for documentation and lessons learned) and Social, Cultural, and Ethical Factors (Acceptable tariff level – Consideration of socioeconomic aspects – Consideration of cultural and ethical values of the end users/user-group during the brief's development – Work environment during the brief development). Only one factor from the Social, Cultural, and Ethical Factors was ranked between 3.5 and 3 (Community participation, acceptance, and support). See Appendix F for the ranking of the factors at the level of the seven categories and their CSFs and sub-factors.

Table 7-6: Ranking of PPP critical success factors

ID	CSF	Group	Mean	Rank
F5	Clear authority and responsibility between public and private sector	Regulatory and legal	4.4231	1
C1	Proper identification of anticipated risks/threats to the PPP project	Risk	4.2821	2
F2	Approved governance model by relevant authorities for the PPP venture	Regulatory and legal	4.2692	3
E1	Political support: Sufficient political support, as a result of encouraging record or a political “champion”	Public sector capacity	4.2500	4
A1	Clear project’s goal, objectives, and deliverables in the brief	Procurement	4.2423	5
C4	Proper mitigation/reduction strategy for anticipated risks/threats to the PPP project	Risk	4.2404	6
F1	Availability of effective regulatory and legal frameworks for PPP	Regulatory and legal	4.2154	7
B1	Identification of the influential stakeholders	Stakeholder	4.1731	8
C2	Proper analysis and assessment of anticipated risks/threats to the PPP project	Risk	4.1563	9
E3	Governmental assistance during PPP project undertaking	Public sector capacity	4.1538	10
F4	Adherence to applicable and up- to-date legal and regulatory frameworks	Regulatory and legal	4.1538	10
F6	Proper dispute resolution mechanism	Regulatory and legal	4.1538	10
A3	Appropriateness of the selected PPP model	Procurement related	4.1346	13
F3	Project scope to match authorized mandate of the public agency	Regulatory and legal	4.1154	14
C5	Government guarantees for political/legal/regulatory risks beyond the control of private investors	Risk	4.0962	15
D2	Business and economic viability of the feasibility study	Finance and economy	4.0865	16
D4	Financial capacity and reliability of private sector	Finance and economy	4.0833	17
D3	Sound commercial and financial package/arrangements	Finance and economy	4.0692	18
C6	Flexibility of the project design solution to meet possible future changes in market demand	Risk	4.0192	19
E4	Government financial capacity to support PPP financial requirements	Public sector capacity	4.0192	19
B3	Identification of the stakeholders’ needs, requirements, and interests	Stakeholder	4.0096	21
C3	Proper risk allocation and sharing among project stakeholders	Risk	3.9904	22
B7	Team selection and empowerment	Stakeholder	3.9615	23
D1	Favourable financial and economic climate	Finance and economic	3.9375	24
E2	Qualified and experienced public staff to manage the PPP briefing process	Public sector capacity	3.9359	25
B5	Stakeholder management strategies	Stakeholder	3.8846	26
B4	Adequate engagement of user-groups throughout the briefing process	Stakeholder	3.8526	27



ID	CSF	Group	Mean	Rank
A2	Clear and precise process for formulation and control of the brief	Procurement	3.8341	28
G4	Acceptable tariff level	Social, cultural, and ethical	3.7692	29
A4	Adequate resources allocated to the briefing process	Procurement	3.7548	30
B6	Proper communication and coordination between stakeholders during the brief development	Stakeholder	3.7418	31
G5	Consideration of socioeconomic aspects	Social, cultural, and ethical	3.7308	32
B2	Addressing stakeholders' possible power and influence	Stakeholder	3.7115	33
A5	Flexibility of the brief and the management of change	Procurement	3.6538	34
G3	Consideration of cultural and ethical values of the end users/user-group during the brief's development	Social, cultural, and ethical	3.6538	35
E5	Effective government mechanisms for documentation and lessons learned	Public sector capacity	3.5705	36
G2	Work environment during the brief development	Social, cultural, and ethical factors	3.5423	37
G1	Community participation, acceptance, and support	Social, cultural, and ethical	3.3558	38

\* Mean is based on a five point Likert scale

### 7.7.2 One-sample test of statistical significance of the CSFs

A one-sample test was conducted to determine whether these observed means of the critical success factors (see Table 7-6 above) were significantly different from the mid-point 3.0. The results are given in Table 7-7 below.

Table 7-7: One sample test of statistical significance of the PPP briefing's CSFs

Test Value = 3							
ID	CSF	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
A1	Clear project's goal, objectives, and deliverables in the brief	17.223	103	.000	1.24231	1.0993	1.3854
A2	Clear and precise process for formulation and control of the brief	10.825	103	.000	.83413	.6813	.9870
A3	Appropriateness of the selected PPP model	12.235	103	.000	1.13462	.9507	1.3185
A4	Adequate resources allocated to the briefing process	8.418	103	.000	.75481	.5770	.9326
A5	Flexibility of the brief and the management of change	7.112	103	.000	.65385	.4715	.8362
B1	Identification of the influential stakeholders	15.560	103	.000	1.17308	1.0236	1.3226
B2	Addressing stakeholders' possible power and influence	8.143	103	.000	.71154	.5382	.8848
B3	Identification of the stakeholders' needs, requirements, and interests	13.491	103	.000	1.00962	.8612	1.1580
B4	Adequate engagement of user-groups throughout the briefing process	11.250	103	.000	.85256	.7023	1.0029
B5	Stakeholder management strategies	10.312	103	.000	.88462	.7145	1.0548
B6	Proper communication and coordination between stakeholders during the brief development	10.808	103	.000	.74176	.6056	.8779
B7	Team selection and empowerment	12.864	103	.000	.96154	.8133	1.1098
C1	Proper identification of anticipated risks/threats to the PPP project	18.449	103	.000	1.28205	1.1442	1.4199
C2	Proper analysis and assessment of anticipated risks/threats to the PPP project	13.206	103	.000	1.15625	.9826	1.3299
C3	Proper risk allocation and sharing among project stakeholders	9.078	103	.000	.99038	.7740	1.2067
C4	Proper mitigation/reduction strategy for anticipated risks/threats to the PPP project	14.874	103	.000	1.24038	1.0750	1.4058
C5	Government guarantees for political/legal/regulatory risks beyond the control of private investors	9.293	103	.000	1.09615	.8622	1.3301
C6	Flexibility of the project design solution to meet possible future changes in market demand	9.114	103	.000	1.01923	.7974	1.2410
D1	Favourable financial and economic climate	11.443	103	.000	.93750	.7750	1.1000
D2	Business and economic viability of the feasibility study	13.207	103	.000	1.08654	.9234	1.2497
D3	Sound commercial and financial package/arrangements	15.923	103	.000	1.06923	.9361	1.2024
D4	Financial capacity and reliability of private sector	12.142	103	.000	1.08333	.9064	1.2603
E1	Political support	14.510	103	.000	1.25000	1.0791	1.4209
E2	Qualified and experienced public staff to manage the PPP briefing process	12.645	103	.000	.93590	.7891	1.0827
E3	Governmental assistance during PPP project undertaking	14.321	103	.000	1.15385	.9941	1.3136

Test Value = 3							
ID	CSF	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
E4	Government financial capacity to support PPP financial requirements	8.981	103	.000	1.01923	.7942	1.2443
E5	Effective government mechanisms for documentation and lessons learned	5.587	103	.000	.57051	.3680	.7730
F1	Availability of effective regulatory and legal frameworks for PPP	13.955	103	.000	1.21538	1.0427	1.3881
F2	Approved governance model by relevant authorities for the PPP venture	15.432	103	.000	1.26923	1.1061	1.4323
F3	Project scope to match authorized mandate of the public agency	11.625	103	.000	1.11538	.9251	1.3057
F4	Adherence to applicable and up-to-date legal and regulatory frameworks	14.022	103	.000	1.15385	.9906	1.3170
F5	Clear authority and responsibility between public and private sector	17.682	103	.000	1.42308	1.2635	1.5827
F6	Proper dispute resolution mechanism	10.493	103	.000	1.15385	.9358	1.3719
G1	Community participation, acceptance, and support	3.076	103	.003	.35577	.1264	.5852
G2	Work environment during the brief development	4.979	103	.000	.54231	.3263	.7583
G3	Consideration of cultural and ethical values of the end users/user-group during the brief's development	6.651	103	.000	.65385	.4589	.8488
G4	Acceptable tariff level	7.080	103	.000	.76923	.5537	.9847
G5	Consideration of socioeconomic aspects	7.262	103	.000	.73077	.5312	.9303

In Table 7-7 above, the results were found to be very significantly different from the mid-point 3.0 ( $p < 0.01$ ). This confirms that all the critical factors for PPP briefing process were on the positive side. The following sections provide an analysis for each of the seven categories of the developed CSFs framework.

## 7.8 Procurement-related Factors

Table 7-8 illustrates the ranking order of CSFs under the Procurement-related category. As shown in this table “Clear project goal, objectives, and deliverables in the brief” ranked first (= 4.2423), This supports the view of Abdul-Aziz (2001) that in order to get the full benefits from a project, a clear goal, objectives, and deliverables should be presented in the project's brief. It also supports Akintoye and Donnelly

(2003) in stating that the client group must specify in unambiguous terms the output specifications that the facilities must achieve in a manner that can be interpreted by a separate commercial venture called a “special purpose vehicle” (SPV). Similarly, Yu et al. (2007) agree that a successful briefing depends on understanding the client’s strategic goals. This means that the following items should be given attention: clarity of the project goal and objectives as set by the client/owner, Proper project output – specifications developed to meet the client’s/owner’s service needs and standards; demonstration of the project’s alignment to the client’s/owner’s strategic objectives; integration of the PPP project with the national and local planning processes; and adequate preparation and management of the Expression of Interest (EOI) stage of the PPP project in the brief’s development.

Table 7-8: Ranking of procurement-related factors

One-Sample Statistics					
CSFs	N	Mean	Rank	Std. Deviation	Std. Error Mean
A1	104	4.2423	1	.73560	.07213
A3	104	4.1346	2	.94569	.09273
A2	104	3.8341	3	.78584	.07706
A4	104	3.7548	4	.91441	.08967
A5	104	3.6538	5	.93756	.09194

The appropriateness of the selected PPP model ranked second (= 4.1346). It is known that there are different models for the PPP process; the appropriateness of the selected PPP model will maximise the results of the PPP process. This actually supports the results that were obtained from the interviews: that the PPP (DB, BOT, BOOT, DBOT, etc.) model should be endorsed by the relevant authorities and should be appropriate for the type and scope of the project.

In the third and fourth places were “clear and precise process for the formulation and control of the brief” (= 3.8341) and “adequate resources allocated to the briefing process” (= 3.7548). This supports the results of Tang et al. (2013), who

found that the experience of the brief writer, adequate time for briefing and control of the process were considered to be among the most important procurement-related factors in PPP briefing.

Finally, “flexibility of the brief and the management of change” occupy the last place in this category. It reflects the importance of having a framework for the brief’s formulation which is agreed by key partners, A briefing process with clear goals and objectives, a lead given by the public sector and its continuous control and monitoring of the briefing process,; clear and applicable criteria for the selection of options; the establishment of priority levels for decisions agreed on by the key parties during briefing; the use/application of the Value Management (VM) approach in the development of the brief; a realistic timetable set for the completion of the brief; and the availability of a clear and precise brief at the end of the briefing stage.

It means also that it is very important to have a separate service fee allocated for developing the brief; sufficient time allowed for the briefing; sufficient human resources to be devoted to the briefing; and the recruitment of an experienced writer of briefs. What was ranked last in this category was the flexibility of the brief and the management of change (= 3.6538). This means that PPP briefing process should be flexible in developing the brief to allow for possible changes and the brief should describe the possible changes to the client’s organization resulting from the PPP project. A one-sample test was conducted to determine whether these observed means of the critical success factors were significantly different from the mid-point of 3.0. The results are given in Table 7-9 below.

Table 7-9: One sample test of the statistical significance of procurement-related factors

One-Sample Test						
CSFs	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
A1	17.223	103	.000	1.24231	1.0993	1.3854
A3	12.235	103	.000	1.13462	.9507	1.3185
A2	10.825	103	.000	.83413	.6813	.9870
A4	8.418	103	.000	.75481	.5770	.9326
A5	7.112	103	.000	.65385	.4715	.8362

In Table 7-9 above, the results were found to be very significantly different from the mid-point 3.0 ( $p < 0.01$ ). This confirms that all the critical factors for the Procurement –related factors were on the positive side.

### 7.8.1 Comparison of the public and private sectors: procurement-related factors

For comparisons between two groups (Sectors), a two-sample t-test is used. For the purpose of this research, respondents were classified into either the public or the private sector. The results are shown in Table 7-10.

Table 7-10: Public and private sector – procurement-related factors

CSFs	SECTOR	N	Mean	Std. Deviation	Std. Error Mean
A1	Public	36	4.3667	.64587	.10764
	Private	66	4.1515	.77345	.09521
A2	Public	36	3.9097	.61500	.10250
	Private	66	3.7841	.87556	.10777
A3	Public	36	4.0556	.92410	.15402
	Private	66	4.1515	.96464	.11874
A4	Public	36	3.7639	.85135	.14189
	Private	66	3.7576	.96573	.11887
A5	Public	36	3.6944	.91244	.15207
	Private	66	3.6667	.95003	.11694

Table 7-11 shows that, apart from CSF (A2): “Clear and precise process for formulation and control of the brief” (P-Value was .045); there are no significant differences between the public and private sectors regarding the procurement-related factors.

Table 7-11: Independent samples test: differences between the procurement-related factors

CSFs	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
A1	.292	.590	1.420	100	.159	.21515	.15153
			1.497	83.621	.138	.21515	.14371
A2	4.117	.045	.764	100	.447	.12563	.16454
			.845	93.580	.400	.12563	.14873
A3	.099	.753	-.487	100	.627	-.09596	.19697
			-.493	74.751	.623	-.09596	.19447
A4	1.398	.240	.033	100	.974	.00631	.19213
			.034	80.120	.973	.00631	.18511
A5	.121	.729	.143	100	.887	.02778	.19415
			.145	74.588	.885	.02778	.19184

## 7.9 Stakeholder -related Factors

With respect to the Stakeholder-related Factors, Table 7-12 shows the ranking order of factors related to this category from the respondents' point of view.

Table 7-12: Ranking of stakeholder-related factors

One-Sample Statistics				
CSFs	N	Mean	Std. Deviation	Std. Error Mean
B1	104	4.1731	.76884	.07539
B3	104	4.0096	.76317	.07484
B7	104	3.9615	.76225	.07475
B5	104	3.8846	.87488	.08579
B4	104	3.8526	.77282	.07578
B6	104	3.7418	.69988	.06863
B2	104	3.7115	.89111	.08738

As shown in Table 7-12 “Identification of the influential stakeholders” ranked first (= 4.1731), followed by “Identification of the stakeholders’ needs, requirements, and interests” (= 4.0096). This is in line with Kelly, Male, and Graham (2004) who insist that the influential stakeholders should be identified and represented during the early stage of a project. This supports results by Juaim and Hassanain (2011) and (Jing et al., 2009) that highlight the importance of including influential parties to the project who may enrich the briefing process and of identifying influential stakeholders properly. (Jing et al., 2009) also highlight the importance of understanding areas of stakeholders’ interests and their constraints.

Team selection and empowerment of the team ranked third (=3.9615). This reflects the importance of the selection process of the team members, since the quality of the outputs will depend to a great extent on the quality of the team; it also supports the results of Tang and Shen (2013), Yu et al. (2007) and Yu et al. (2006); who contend that it is very important for an effective brief to select team members with relevant experience. Yu et al. (2007) also mention that it is important to empower the stakeholder group as a team to make decisions in the briefing process. Stakeholder management strategies ranked fourth in this category (=3.8846). This reflects the importance of clarifying the roles and responsibilities of project stakeholders, managing stakeholders with corporate social responsibilities, publishing a proper consultation plan for user-groups and stakeholders, controlling and managing the client/user-groups to avoid output specifications becoming a wish list and proper analysis and compromise in conflicts and coalitions between stakeholders.

In the fifth and sixth places was “adequate engagement of user-groups throughout the briefing process” (= 3.8526) and “proper communication and



coordination between stakeholders during the brief development” (= 3.7418). Effective project managers with skilful guidance and advice will lead to smooth briefing. Finally, “addressing stakeholders’ possible power and influence” holds the last place in this category (=3.7115). This is in line with the view of Tang et al. (2013) that achieving efficient and effective relationships between stakeholders during the briefing process is considered especially important in PPPs. Transparency and trust are also vital issues for PPP success. Walker and Smith (1995) argue that stakeholders tend to be sceptical about becoming involved in a project if they believe that decisions have already been made.

A one-sample test was conducted to determine whether these observed means of the critical success factors are significantly different from the mid-point 3.0. The results are given in Table 7-13 below.

Table 7-13: One sample test of statistical significance of stakeholder -related factors

One-Sample Test						
CSF	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
B1	15.560	103	.000	1.17308	1.0236	1.3226
B3	13.491	103	.000	1.00962	.8612	1.1580
B7	12.864	103	.000	.96154	.8133	1.1098
B5	10.312	103	.000	.88462	.7145	1.0548
B4	11.250	103	.000	.85256	.7023	1.0029
B6	10.808	103	.000	.74176	.6056	.8779
B2	8.143	103	.000	.71154	.5382	.8848

In Table 7-13 above, the results are found to be very significantly different from the mid-point 3.0 ( $p < 0.01$ ). This confirms that all the critical factors for the stakeholder –related factors were on the positive side.

### Comparison of public and private sectors: stakeholder-related factors

Table 7-14 shows the results of the comparison between public and private sectors regarding stakeholder-related factors.

Table 7-14: Public and private sector – stakeholder-related factors

	SECTOR	N	Mean	Std. Deviation	Std. Error Mean
B1	Public	36	4.0000	.77460	.12910
	Private	66	4.2424	.75571	.09302
B2	Public	36	3.7963	1.06987	.17831
	Private	66	3.6465	.78855	.09706
B3	Public	36	4.1389	.67730	.11288
	Private	66	3.9167	.80064	.09855
B4	Public	36	4.0185	.80846	.13474
	Private	66	3.7576	.75458	.09288
B5	Public	36	3.9722	.80327	.13388
	Private	66	3.8333	.92635	.11403
B6	Public	36	3.8333	.77309	.12885
	Private	66	3.6883	.66814	.08224
B7	Public	36	4.1667	.71714	.11952
	Private	66	3.8485	.77940	.09594

Table 7-15 shows that, apart from “Addressing stakeholders’ possible power and influence” (P-Values was .011) there were no significant differences between the public and private sectors regarding the stakeholder-related factors.

Table 7-15: Independent samples test: differences between stakeholder-related factors

CSF	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
B1	.009	.923	-1.535	100	.128	-.24242	.15796
			-1.524	70.539	.132	-.24242	.15912
B2	6.704	.011	.806	100	.422	.14983	.18587
			.738	56.160	.464	.14983	.20302
B3	.562	.455	1.412	100	.161	.22222	.15742
			1.483	82.790	.142	.22222	.14985
B4	.346	.558	1.627	100	.107	.26094	.16034
			1.594	67.908	.115	.26094	.16366

CSF	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
B5	.836	.363	.757	100	.451	.13889	.18341
			.790	81.191	.432	.13889	.17586
B6	1.469	.228	.990	100	.324	.14502	.14641
			.949	63.640	.346	.14502	.15286
B7	.707	.403	2.025	100	.045	.31818	.15709
			2.076	77.341	.041	.31818	.15326

## 7.10 Risk-related Factors

With respect to the Risk-related Factors, Table 7-16 shows the ranking order of the factors related to this category from the respondents' point of view

Table 7-16: Ranking of risk -related factors

One-Sample Statistics				
CSF	N	Mean	Std. Deviation	Std. Error Mean
C1	104	4.2821	.70866	.06949
C4	104	4.2404	.85042	.08339
C2	104	4.1563	.89289	.08756
C5	104	4.0962	1.20290	.11795
C6	104	4.0192	1.14044	.11183
C3	104	3.9904	1.11255	.10909

As shown in Table 7-16, “Proper identification of anticipated risks/threats to the PPP project” ranked first (= 4.2821), followed by “Proper mitigation/reduction strategy for anticipated risks/threats to the PPP project” (= 4.2404). This supports (Allan, 1999) in judging that a proper risk identification and assessment process should be implemented from the outset. It also supports the claim that as part of the planning process of a PPP project, a proper risk transfer strategy should be developed, wherein the risks best managed by the private sector are transferred to it, and those best managed by the public sector are retained by it (Li & Akintoye, 2003).

This means that the commencement of a risk register/log early in the briefing stage; identifying the partner-related risks in the PPP projects; and identifying supply chain risks in PPP projects should be looked after for the PPP briefing process to be successful. Similarly, setting an effective management plan for risk mitigation/reduction and recruiting expert staff to assess the risk mitigation strategy are very critical for such success.

Proper analysis and assessment of anticipated risks/threats to the PPP project ranked third (=4.1563). This is in line with Ozdoganm and Birgonul (2000) in positing that a comprehensive special risk assessment should be set for briefing. This reflects the importance of the proper estimation of anticipated risk probabilities; proper quantification of the consequences of risks; proper calculation of risk value; thorough analysis of cash flows and financial risks; proper calculation of transferable and retained risks; and realistic long-term risk assessment. Government guarantees for political/legal/regulatory risks beyond the control of private investors ranked fourth in this category (=4.0962). Ozdoganm and Birgonul (2000) highlight the importance of the government's guarantee against political/legal/regulatory risks beyond the control of private investors. This reflects the importance of the role that is played by the government in the success of the PPP briefing process.

In the fifth and sixth places were "flexibility of the project design solution to meet possible future changes in market demand" (= 4.0192) and "proper risk allocation and sharing among project stakeholders" (= 3.9904). These are important because responsibilities are regarded as among the most important issues in PPP projects which include different stakeholders. The results of the interviews highlighted the fact that there should be flexible design solutions to meet possible market demand changes considered in the brief's requirements.

A one-sample test was conducted to determine whether these observed means of the critical success factors are significantly different from the mid-point 3.0. The results are given in Table 7-17 below.

Table 7-17: One sample test of the statistical significance of risk-related factors

One-Sample Test						
Test Value = 3						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
C1	18.449	103	.000	1.28205	1.1442	1.4199
C4	14.874	103	.000	1.24038	1.0750	1.4058
C2	13.206	103	.000	1.15625	.9826	1.3299
C5	9.293	103	.000	1.09615	.8622	1.3301
C6	9.114	103	.000	1.01923	.7974	1.2410
C3	9.078	103	.000	.99038	.7740	1.2067

In Table 7-17 above, the results were found to be very significantly different from the mid-point 3.0 ( $p < 0.01$ ). This confirms that all the critical factors for the Risk-related Factors were on the positive side.

### Comparison of public and private sectors: risk factors

Table 7-18 shows the results of the comparison between the public and private sectors regarding the Risk-related factors.

Table 7-18: Public and private sector – risk-related factors

CSF	SECTOR	N	Mean	Std. Deviation	Std. Error Mean
C1	Public	36	3.9259	.82466	.13744
	Private	66	4.4545	.55972	.06890
C2	Public	36	4.0278	.81235	.13539
	Private	66	4.2008	.93538	.11514
C3	Public	36	3.7222	.95950	.15992
	Private	66	4.1061	1.17511	.14465

CSF	SECTOR	N	Mean	Std. Deviation	Std. Error Mean
C4	Public	36	3.9722	.91764	.15294
	Private	66	4.3636	.78713	.09689
C5	Public	36	3.8333	.97101	.16183
	Private	66	4.2121	1.30697	.16088
C6	Public	36	3.9444	.92410	.15402
	Private	66	4.0303	1.25232	.15415

Table 7-19 show that apart from “Proper identification of anticipated risks/threats to the PPP project” (P-Values were .025) there were no significant differences between the public and private sectors regarding the Risk-related factors.

Table 7-19: Independent samples test: differences between the stakeholder-related factors

CSF	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
C1	5.184	.025	-3.839	100	.000	-.52862	.13770
			-3.438	52.997	.001	-.52862	.15375
C2	.008	.930	-9.34	100	.353	-.17298	.18528
			-.973	81.091	.333	-.17298	.17773
C3	.035	.853	-1.677	100	.097	-.38384	.22883
			-1.780	85.045	.079	-.38384	.21563
C4	3.197	.077	-2.262	100	.026	-.39141	.17303
			-2.162	63.246	.034	-.39141	.18105
C5	.429	.514	-1.523	100	.131	-.37879	.24866
			-1.660	90.674	.100	-.37879	.22819
C6	1.727	.192	-.361	100	.719	-.08586	.23789
			-.394	91.047	.694	-.08586	.21791

## 7.11 Finance and Economic Factors

With respect to the finance and economic factors, Table 7-20 shows the ranking order of factors related to this category from the respondents' point of view

Table 7-20: Ranking of finance and economic factors

One-Sample Statistics				
CSF	N	Mean	Std. Deviation	Std. Error Mean
D2	104	4.0865	.83897	.08227
D4	104	4.0833	.90991	.08922
D3	104	4.0692	.68480	.06715
D1	104	3.9375	.83554	.08193

As shown in Table 7-20, “Business and economic viability of the feasibility study” ranked first (= 4.0856), followed by “Sound commercial and financial package/arrangements” (= 4.0833). Amponsah (2010) highlights the fact that problems and delays during negotiation and procurement can be obviated by carrying out comprehensive feasibility studies with strong financial and economic analyses.

Several researchers (Abdou & Al Zarooni, 2011; Amponsah, 2010; Cheung, Chan, & Kajewski, 2012; Cheung, Chan, Lam, et al., 2012; Hardcastle et al., 2005; Ismail, 2013; Li et al., 2005b; Qiao et al., 2001; Tiong, 1990; Zhang, 2005a) agree about the importance of the comprehensive and business viability of a project feasibility study. Similarly, the results of Tang et al. (2013) support the view that proposed commercial arrangements, including contract duration, payment mechanism, and other partnership/financial arrangements, should be formulated in the brief.

This means that constructing a robust PPP reference model, a reliable Public Sector Comparator (PSC), a value-for-money (VfM) analysis, proper assessment of bankability, market intelligence study and practical budget and procurement programme of the project are very important elements of a feasibility study. Similarly, good private sector financial standing, a financial sector experienced in

assessing long-term lending decisions and a cost-effective technical solution are critical for such success.

Sound commercial and financial package/arrangements ranked third (=4.1563). This is in line with results from the Asian Development Bank (2008) that considered project financing a critical factor for the private sector in PPP infrastructure schemes, emphasizing that an accessible financial market is an incentive for the private sector to take up PPP projects, in efficient and mature markets most of all. Tang et al. (2013) also highlighted the advice that commercial arrangements, including contract duration, payment mechanism, and other partnership/financial arrangements, should be formulated in the brief. This reflects the importance of making sure that the following elements are met: flexible price regulations sufficient to adjust to major cost changes, the setting up of a feasible payment structure and mechanism, the ability to transfer profits out of the country, appropriate tariff level(s) and a suitable adjustment formula for investors.

Financial and economic climate ranked last in this category (=3.9375). This supports the inference of Harrington (2012) and UNESCAP (2005) that a strong and stable economic environment encourages foreign firms to invest in PPP projects and protects the government from the possibility of project failure due to larger macroeconomic shocks. A stable economic climate, effective financial regulatory regime, proper financial systems for PPP arrangements, a financial market, long-term finance, limited competition from other projects, stable currencies of securitization (debts and equity finance) and financing with fixed low interest rates are thus all seen as vital to success.



A one-sample test was conducted to determine whether these observed means of the critical success factors are significantly different from the mid-point 3.0. The results are given in Table 7-21 below.

Table 7-21: One sample test of the statistical significance of finance & economic factors

One-Sample Test						
CSF	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
D2	13.207	103	.000	1.08654	.9234	1.2497
D4	12.142	103	.000	1.08333	.9064	1.2603
D3	15.923	103	.000	1.06923	.9361	1.2024
D1	11.443	103	.000	.93750	.7750	1.1000

In Table 7-21 above, the results were found to be very significantly different from the mid-point 3.0 ( $p < 0.01$ ). This confirms that all the critical factors for the Finance and Economic Factors were on the positive side.

### Comparison of public and private sectors: finance & economic factors

Table 7-22 shows the results of the comparison between public and private sectors regarding the Finance and Economic Factors.

Table 7-22: Public and Private Sector – Finance and Economic Factors

CSF	SECTOR	N	Mean	Std. Deviation	Std. Error Mean
D1	Public	36	4.0486	.55604	.09267
	Private	66	3.8712	.96301	.11854
D2	Public	36	4.0648	.66700	.11117
	Private	66	4.1061	.93445	.11502
D3	Public	36	3.9778	.66895	.11149
	Private	66	4.1455	.68437	.08424
D4	Public	36	4.1111	.65707	.10951
	Private	66	4.0404	1.02535	.12621

Table 7-23 shows that apart from “Sound commercial and financial package/arrangements” (P-Values was .176), there are a significant differences

between the public and private sectors regarding Finance and Economic Factors. The public sector places more importance on a favourable financial and economic climate and the financial capacity and reliability of private sector factors than the private sector does. However, the private sector places more importance on the business and economic viability of the feasibility study factor.

Table 7-23: Independent samples test: finance and economic factor differences

CSF	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference
D1	11.029	.001	1.015	100	.312	.17740	.17471
			1.179	99.623	.241	.17740	.15046
D2	6.820	.010	-0.234	100	.815	-.04125	.17621
			-.258	92.790	.797	-.04125	.15996
D3	1.937	.167	-1.192	100	.236	-.16768	.14069
			-1.200	73.475	.234	-.16768	.13974
D4	5.153	.025	.374	100	.710	.07071	.18927
			.423	97.296	.673	.07071	.16710

## 7.12 Public sector capacity-related factors

With respect to the public sector capacity-related factors, Table 7-24 shows the ranking order of factors related to this category from the respondents' point of view.

Table 7-24: Public sector capacity-related factors

One-Sample Statistics				
CSF	N	Mean	Std. Deviation	Std. Error Mean
E1	104	4.2500	.87855	.08615
E3	104	4.1538	.82166	.08057
E4	104	4.0192	1.15734	.11349
E2	104	3.9359	.75481	.07402
E5	104	3.5705	1.04140	.10212

As shown in Table 7-24, “Political support” ranked first (= 4.2500), followed by “Governmental assistance during PPP project undertaking” (= 4.1538). This means that PPP projects should be given sufficient political support, as a result of encouragement or a political “champion”. This supports Dulaimi et al. (2010), who studied PPP critical success and failure factors using three different case studies. They find that political support is the most important success factor for PPPs.

However, governmental assistance during a PPP project undertaking was placed second which means that adequate assistance from line agencies and local government in undertaking PPP should be shown in the PPP briefing process. This supports Harrington (2012) who claims that adequate assistance from line agencies and local government is needed in undertaking a PPP.

Government financial capacity to support PPP financial requirements ranked third (=4.0192). Harrington (2012) also highlights that the integration of the PPP’s financial support requirements in the government’s budget process is very important for PPP success. This reflects the importance of the integration of PPP finance support requirements with government budget processes.

Qualified and experienced public staff to manage the PPP briefing process ranked fourth in this category (=3.9359). The studies of Martin (2010), Yu et al. (2006), Juaim and Hassanain (2011), Harrington (2012) and UNESCAP (2005) support this result and give great weight to the value of public staff having qualifications in and experience of managing PPP briefing processes and development. This underlines the importance of having adequately qualified and experienced public staff in the briefing process, adequate technical capacity in

relevant government agencies for tackling/undertaking similar PPP projects, adequate PPP resources/facilities and expert training.

Finally, effective government mechanisms for documentation and lessons learned ranked last in this category (=3.5705). This reflects the importance of the availability of PPP documentation and best practices in the public domain, a proper e-documentation system shared by all stakeholders for the brief's development and all the decisions made and feedback and lessons learned from PPP completed projects available as a data-base in the public domain for the success of PPP briefing process.

A one-sample test was conducted to determine whether these observed means of the critical success factors were significantly different from the mid-point 3.0. The results are given in Table 7-25 below. In same table above, the results were found to be very significantly different from the mid-point 3.0 ( $p < 0.01$ ). This confirms that all the critical factors for the public sector capacity-related factors were on the positive side.

Table 7-25: One sample test of the statistical significance of public sector factors

One-Sample Test						
Test Value = 3						
CSF	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
E1	14.510	103	.000	1.25000	1.0791	1.4209
E3	14.321	103	.000	1.15385	.9941	1.3136
E4	8.981	103	.000	1.01923	.7942	1.2443
E2	12.645	103	.000	.93590	.7891	1.0827
E5	5.587	103	.000	.57051	.3680	.7730

### Comparison of public and private sectors: public sector capacity factors

Table 7-26 shows the results of the comparison between the public and private sectors regarding the Public Sector Capacity-related factors.

Table 7-26: Public and private sector - public sector capacity-related factors

CSF	SECTOR	N	Mean	Std. Deviation	Std. Error Mean
E1	Public	36	4.2778	.88192	.14699
	Private	66	4.2121	.88605	.10907
E2	Public	36	4.1111	.82038	.13673
	Private	66	3.8081	.68702	.08457
E3	Public	36	4.3333	.67612	.11269
	Private	66	4.0303	.87653	.10789
E4	Public	36	4.3889	.68776	.11463
	Private	66	3.7879	1.30697	.16088
F5	Public	36	3.7593	.90715	.15119
	Private	66	3.4545	1.11192	.13687

Table 7-27 shows that apart from “Governmental assistance during PPP project undertaking” and “Government financial capacity to support PPP financial requirements” (P-Values were 0.034 and 0.001) there are no significant differences between the public and private sectors regarding the Public Sector Capacity-related factors. The public sector places more importance on the previously mentioned factors than the private sector does.

Table 7-27: Independent samples test: differences between the public sector capacity-related factors

CSF	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
E1	.017	.895	.358	100	.721	.06566	.18328
			.359	72.342	.721	.06566	.18303
E2	3.131	.080	1.986	100	.050	.30303	.15259
			1.885	62.013	.064	.30303	.16077
E3	4.633	.034	1.801	100	.075	.30303	.16825
			1.942	88.525	.055	.30303	.15601

CSF	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
E4	11.540	.001	2.568	100	.012	.60101	.23403
			3.043	99.923	.003	.60101	.19754
F5	1.017	.316	1.408	100	.162	.30471	.21648
			1.494	85.097	.139	.30471	.20394

### 7.13 Regulatory and Legal Factors

With respect to the regulatory and legal Factors, Table 7-28 shows the ranking order of factors related to this category from the respondents' point of view.

Table 7-28: Ranking of regulatory and legal factors

One-Sample Statistics				
CSF	N	Mean	Std. Deviation	Std. Error Mean
F5	104	4.4231	.82075	.08048
F2	104	4.2692	.83876	.08225
F1	104	4.2154	.88819	.08709
F4	104	4.1538	.83920	.08229
F6	104	4.1538	1.12145	.10997
F3	104	4.1154	.97848	.09595

As shown in Table 7-28, “Clear authority and responsibility between public and private sector” ranked first (= 4.4231), followed by “Approved governance model by relevant authorities for the PPP venture” (= 4.2692). UNESCAP (2005) and Chan et al. (2004) highlight the importance of having clearly allocated authority, rights, and responsibilities for each partner. This means that the distribution of authority and responsibility between public and private sector should be very clear. For the PPP briefing process to be successful, the right approval should also be obtained from the proper authorities. Many authors, such as Tiong (1996), Pongsiri (2002), Zhang (2005a), Li et al. (2005b), Hardcastle et al. (2005), Dulaimi et al. (2010), Cheung, Chan, and Kajewski (2012) and Ismail (2013) also highlight the

need to have the required laws for a PPP process and to prepare the necessary legal structures to deal with the legal issues arising in the process.

The availability of effective regulatory and legal frameworks for PPP ranked third (=4.2154). This supports Othman (2010) and Yu et al. (2007) in recommending consistency in any analysis with the updated policies and guidelines applying at the time. This reflects the importance of having a robust; transparent; and stable regulatory framework for PPP procurement; clear land planning laws and regulations; fairness and transparency in the government's procurement system; clear ownership issues and clear statutory control measures. Adherence to applicable and up-to-date legal and regulatory frameworks ranked fourth in this category (=4.1538). Tang et al. (2013) and Yu et al. (2006) assert that clear knowledge of the statutory and lease control measures during the PPP project period are needed if a briefing is to be successful. This reflects the importance of adhering to applicable design and operation codes and standards for the type of project and updated regulatory framework in view. Proper dispute resolution mechanisms ranked fourth (= 4.1538). Chan et al. (2004) draw attention to the importance of having productive conflict and dispute resolution mechanisms available. Finally that the project scope should match the authorized mandate of the public agency ranked last in this category.

A one-sample test was conducted to determine whether these observed means of the critical success factors were significantly different from the mid-point 3.0. The results are given in Table 7-29 below. The results were found to be very significantly different from the mid-point 3.0 ( $p < 0.01$ ). This confirms that all the critical factors for the regulatory and legal Factors were on the positive side.

Table 7-29: One sample test of the statistical significance of regulatory and legal factors

One-Sample Test						
CSF	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
F5	17.682	103	.000	1.42308	1.2635	1.5827
F2	15.432	103	.000	1.26923	1.1061	1.4323
F1	13.955	103	.000	1.21538	1.0427	1.3881
F4	14.022	103	.000	1.15385	.9906	1.3170
F6	10.493	103	.000	1.15385	.9358	1.3719
F3	11.625	103	.000	1.11538	.9251	1.3057

### Comparison of public and private sectors: regulatory and legal factors

Table 7-30 shows the results of a comparison between public and private sectors regarding the regulatory and legal factors.

Table 7-30: Public and Private Sector - Regulatory and legal Factors

CSF	SECTOR	N	Mean	Std. Deviation	Std. Error Mean
F1	Public	36	4.2556	.72760	.12127
	Private	66	4.1939	.98166	.12083
F2	Public	36	4.3333	.75593	.12599
	Private	66	4.2424	.89547	.11022
F3	Public	36	4.0000	1.01419	.16903
	Private	66	4.1515	.96464	.11874
F4	Public	36	4.1111	.85449	.14242
	Private	66	4.1515	.83652	.10297
F5	Public	36	4.2778	.94449	.15742
	Private	66	4.4848	.74920	.09222
F6	Public	36	4.1667	.77460	.12910
	Private	66	4.1212	1.28321	.15795

Table 7-31 shows that apart from “Approved governance model by relevant authorities for the PPP venture” and “Proper dispute resolution mechanism” (P-Values were 0.022 and 0.002) there were no significant differences between the public and private sectors regarding the regulatory and legal factors. The public



sector places more importance on the previous mentioned factors than the private sector does.

Table 7-31: Independent samples test: differences between the regulatory and legal factors

CSF	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
F1	3.841	.053	.330	100	.742	.06162	.18667
			.360	90.804	.720	.06162	.17119
F2	5.386	.022	.517	100	.607	.09091	.17596
			.543	82.925	.589	.09091	.16740
F3	.892	.347	-.744	100	.458	-.15152	.20352
			-.733	69.016	.466	-.15152	.20657
F4	.006	.937	-.231	100	.818	-.04040	.17463
			-.230	70.747	.819	-.04040	.17574
F5	3.109	.081	-1.215	100	.227	-.20707	.17049
			-1.135	59.381	.261	-.20707	.18244
F6	10.656	.002	.194	100	.847	.04545	.23444
			.223	98.892	.824	.04545	.20400

#### 7.14 Social, Cultural and Ethical Factors

With respect to the social, cultural and ethical factors, Table 7-32 shows the ranking order of factors related to this category from the respondents' point of view.

Table 7-32: Ranking of social, cultural and ethical factors

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
G4	104	3.7692	1.10805	.10865
G5	104	3.7308	1.02617	.10062
G3	104	3.6538	1.00261	.09831
G2	104	3.5423	1.11082	.10892
G1	104	3.3558	1.17967	.11568

As shown in Table 7-32 "Acceptable tariff level" ranked first (= 3.7692), followed by "Consideration of socioeconomic aspects" (= 3.7308). This means that the level of tariff should be socially and culturally acceptable to the community. This

supports Harrington's similar claim (2012) Kanakoudis et al., 2007 also acknowledge the social characteristics and economic impact of a PPP. It means also that all the parties involved should acknowledge the social characteristics and economic impact of the PPP projects.

Consideration of the cultural and ethical values of the end users/user-group during the brief's development ranked third (=3.6538). Othman, 2010, and Yu et al., 2007 support the idea that different end-users/user groups which affect decision-making in the briefing process should be given proper consideration and management of the cultural and ethical values involved. The work environment during the brief development ranked fourth (= 3.5423). This refers to the importance of having rewards and incentives to encourage the PPP staff, a long-term job commitment to increase the productivity of the project staff, openness and trust between stakeholders, the commitment of all participants in the briefing process and honesty among the stakeholders.

Finally, community participation, acceptance, and support ranked last in this category (= 3.3558). Previous studies such as Foster Infrastructure Pty Ltd, 2012 and UNESCAP, 2005 value the ability of the community to participate in or initiate PPP projects and coordinate with the government during the project's development according to the brief. This also reflects the value of a community which can suggest PPP projects and coordinate and participate with the government during the development of the project brief, together with the community's acceptance, supportiveness, and understanding during the developments of the project's brief.

Table 7-33: One sample test of the statistical significance of social, cultural and ethical factors

One-Sample Test						
Test Value = 3						
CSF	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
G1	3.076	103	.003	.35577	.1264	.5852
G4	7.080	103	.000	.76923	.5537	.9847
G5	7.262	103	.000	.73077	.5312	.9303
G3	6.651	103	.000	.65385	.4589	.8488
G2	4.979	103	.000	.54231	.3263	.7583

A one-sample test was conducted to determine whether these observed means of the critical success factors are significantly different from the mid-point 3.0. The results are given in Table 7-33 above. The results were found to be very significantly different from the mid-point 3.0 ( $p < 0.01$ ). This confirms that all the critical factors for the social, cultural and ethical Factors were on the positive side.

#### Comparison of public and private sectors: social, cultural and ethical

Table 7-34 shows the results of the comparison between public and private sectors regarding social, cultural and ethical Factors.

Table 7-34: Public and private sector - social, cultural and ethical factors

CSF	SECTOR	N	Mean	Std. Deviation	Std. Error Mean
G1	Public	36	3.5833	1.12440	.18740
	Private	66	3.2424	1.21605	.14969
G2	Public	36	3.6333	.98271	.16378
	Private	66	3.4848	1.19386	.14695
G3	Public	36	3.7778	.86557	.14426
	Private	66	3.5455	1.05512	.12988
G4	Public	36	3.6111	1.17784	.19631
	Private	66	3.8485	1.08475	.13352
G5	Public	36	3.6667	1.01419	.16903
	Private	66	3.7273	1.03099	.12691

Table 7-35 shows that there are no significant differences between the public and private sectors regarding the social, cultural and ethical Factors.

Table 7-35: Independent samples test: differences in the social, cultural and ethical factors differences

CSF	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
G1	.181	.672	1.389	100	.168	.34091	.24548
			1.421	77.024	.159	.34091	.23984
G2	1.731	.191	.637	100	.525	.14848	.23298
			.675	84.536	.502	.14848	.22005
G3	2.869	.093	1.129	100	.261	.23232	.20572
			1.197	84.750	.235	.23232	.19411
G4	1.615	.207	-1.025	100	.308	-.23737	.23169
			-1.000	67.139	.321	-.23737	.23741
G5	.244	.623	-.285	100	.776	-.06061	.21240
			-.287	73.076	.775	-.06061	.21137

### 7.15 Overall Analysis of the Seven CSFs Categories

The survey results indicated that all of the seven categories with their 38 CSFs and 103 SSFs were important/significant to the success of the briefing process of PPP projects in the UAE construction industry, because the results of the one-Sample Test of Statistical Significance, shown above in several tables, are found to be very significantly different from the mid-point 3.0 ( $p < 0.01$ ), which confirms that all the examined critical factors were on the positive side.

In general, the means averages of the main seven categories are ranked and shown in Table 7-36 and Figure 7-7 with a ranking of overall categories. Based on the overall results, the levels of importance of the main categories; in descending order; are as follows: 1) Regulatory and Legal Factors (Category F); 2) Finance and Economic Factors (Category D); 3) Risk-related Factors (Category C); 4) Public Sector Capacity-related Factors (Category E); 5) Procurement-related Factors

(Category A); 6) Stakeholder Factors (Category B); and 7) Social; Cultural; and Ethical Factors (Category G).

Table 7-36: Ranking of categories overall

ID	Category	Mean	Rank
F	Regulatory and Legal Factors	4.2147	1
D	Finance and Economic Factors	4.1587	2
C	Risk-related Factors	4.1571	3
E	Public Sector Capacity-related Factors	4.0423	4
A	Procurement-related Factors	4.0115	5
B	Stakeholder Related Factors	3.9835	6
G	Social, Cultural, and Ethical Factors	3.6038	7

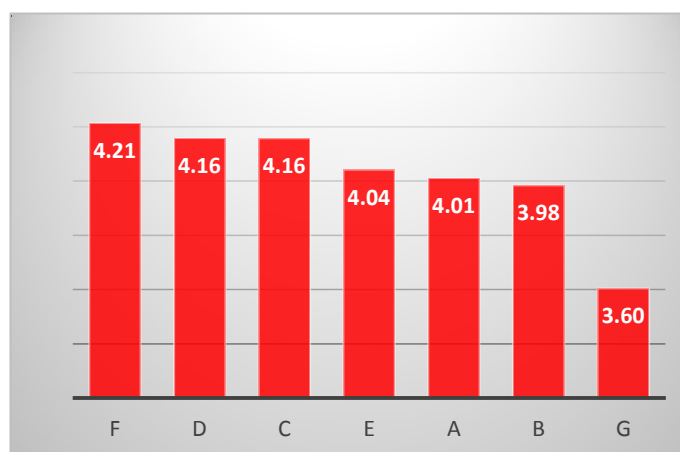


Figure 7-7: Overall means averages of all categories and their ranking

## 7.16 Summary and Conclusion

This chapter presents the analysis of the questionnaire surveys implemented, with the main aim of evaluating the relative importance of the identified Success Factors in PPP brief development, discussed in the previous chapter, and of ranking them, with a view to developing a comprehensive list of CSFs.

The first part of this chapter emphasises the preliminary analysis of the collected data from the questionnaire survey. This includes, first, examining the general descriptive analysis of the respondents' profiles and their response

distribution. In addition, some initial interpretations are also put forward to start the data analysis process. This is followed by the reliability test, which covers all the research constructs to find the extent to which the measurements are reliable and valid. Item-to-total correlation was calculated for each category. All the variables/factors are found to have acceptable correlation values. Cronbach's alphas were used to assess the reliability of the internal consistency. The reliability coefficient ranged from 0.756 to 0.956, which was significantly higher than the acceptable level of 0.60 Nunnally (1978) and therefore, the data were acceptable for further analysis.

The second part of this chapter presents a comprehensive analysis of the importance and ranking of the identified success factors. Different statistical tests were used to analyse the thirty eight (38) CSFs and their Sub-Success Factors (SSFs), grouped into seven main categories. Their levels of importance, in descending order, are as follows: 1) Regulatory and Legal Factors (Category F), 2) Finance and Economic Factors (Category D), 3) Risk-related Factors (Category C), 4) Public Sector Capacity-related Factors (Category E), 5) Procurement-related Factors (Category A), 6) Stakeholder-related Factors (Category B) and, 7) Social, Cultural, and Ethical Factors (Category G). Overall analysis illustrates that all of the seven categories with their CSFs and SSFs were important/significant to the success of the briefing process of PPP projects in the UAE construction industry.

The next chapter discusses the modelling of the identified CSFs and the development of a Decision Support System prototype with the main objectives of guiding the development of PPP project briefing in the UAE and assessing the readiness of public and private organizations for this development.

## **Chapter 8: Modelling Critical Success Factors for Guiding the PPP Briefing Process: A Decision Support System**

### **8.1 Introduction**

The main aim of the present research is to develop a systematic framework for developing briefs in PPP projects with special reference to construction projects in the UAE. This framework could enable both the public and private sector to implement the briefing process systematically and ensure that important procedures and issues were not overlooked.

To this end, a process framework for PPP briefing, with special reference to UAE construction projects, was first developed on the basis of a wide-ranging literature review, case studies, documentary analysis and cross case study analysis and was validated through interviews with PPP experts in the UAE. Next, the critical success factors (CSFs) in PPP briefing, with special reference to UAE construction projects, were investigated and identified through a literature review and interviews with experts. A questionnaire survey to 104 experts from the PPP Market in the UAE was then used to identify and rank the identified CSFs in order of importance.

From this point, CSFs were modelled to develop a Decision Support System prototype with the main objectives of guiding the development of PPP project briefing in the UAE and assessing the readiness of public and private organizations for such development, highlighting areas for improvements and helping to develop action plan to improve them even further.

This chapter describes the process of developing the above decision Support System Prototype. It starts by describing the implementation of a model through the

Analytic Hierarchy Process (AHP), analysing and developing its hierarchical structure. Following this, a Decision Support System prototype for Guiding PPP briefing is presented. Figure 8-1 illustrates the research methodology discussed in this chapter.

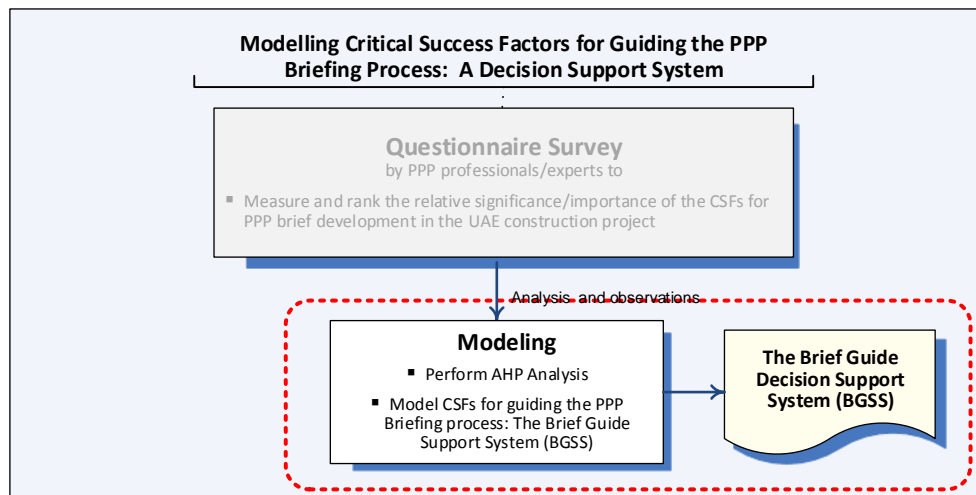


Figure 8-1: The research methodology discussed in this chapter.

## 8.2 Modelling Critical Success Factors for Guiding the PPP Briefing Process

### 8.2.1 AHP method and its use in decision modelling in the construction industry

The Analytic Hierarchy Process (AHP) belongs to the Multiple Attribute Decision Making (MADM) family of methods, which is concerned with making recurring decisions such as evaluation, prioritisation, and selection from a number of alternatives that are characterised by multiple or conflicting, attributes (Hwang & Yoon, 1981).

Thomas Saaty developed the AHP approach in the mid-1970s (Saaty, 1980).

It is based on mathematics and psychology, where it structures a decision problem in



a comprehensive and rational framework in order to illustrate and quantify its elements for use in overall goals and for the evaluation of alternative solutions. According to Rogers (2001), AHP breaks down an overall problem into single elements (criteria) in order to analyse the relationships between them all. Then it uses pairwise comparisons between different types of criteria to assess the relative importance of each criterion. AHP is thus a model that can rank qualitative data in quantitative terms (Saaty, 1980). Because of flexibility of AHP in a wide range of decision making scenarios, its ease of use, and its simplicity, the AHP method has been studied comprehensively and used in many applications over the last 20 years (Cheong, Jie, Meng, & Lan, 2008; Ho, 2008)

In the context of the construction industry and project management, AHP was extended and adapted by several research studies. For example, Gudienė, Banaitis, Podvezko, and Banaitienė (2014) proposed AHP as a tool to rank critical success factors (CSFs) for construction projects in Lithuania, using 71 project success factors classified into seven groups. In another research work, using 36 design development sub-criteria under four design development functional distinctions, Donnellan-Fernandez, Newman, Reiger, and Tracy (2013) used the AHP method to identify design development factors in Australian PPP projects. Moreover, Jaskowski, Biruk, and Bucon (2010) extended the AHP method by creating a fuzzy version in a study of contractor selection. Furthermore, an automatic mechanism for improving the consistency of AHP has been developed by (Lin, Wang, & Yu, 2008; Wang, Luo, & Hua, 2008).

In the area of evaluation, Budawara (2009) proposed a framework for measuring the design performance of the design process in the Canadian Construction Industry, by applying Key Performance Indicators (KPIs) to monitor

and to measure the performance of the design activities. The developed framework was intended to enable design and construction companies to benchmark their performances at both the project level and the company level. The AHP method was used to calculate the weights of the selected design performance indicators.

Moreover, in Hong Kong, Fong and Choi (2000) used 68 criteria to demonstrate how AHP can be used for contractor selection modelling. In addition, by surveying 26 developers and project managers in Hong Kong, Leung, Lam, Cheung, and Wan (2001) assessed key factors in procurement selection. In order to explore factors in architect selection, Kuen, Cheung, and Skitmore (2002) applied the AHP method to 53 survey results.

### **8.2.2 Modelling CSFs for briefing process using the AHP method**

A framework for CSFs in PPP Briefing, with special reference to UAE construction projects, was developed and described in Chapter 6, above. Seven factor categories were established, namely, procurement; stakeholder; risk; financial and economic issues; public sector capacity; regulatory and legal issues; and finally social, cultural and ethical. These categories contain 38 CSFs and their 103 sub-success factors (SSFs) (see Figure 8-2).

Generally, the AHP method involves five main steps, as follows: 1) break down the situation or problem into a hierarchy of connected decision elements (i.e. decision criteria and decision alternatives) ; 2) conduct pairwise comparisons between criteria using a 1-9 qualitative scale shown in Table 8-1; 3) calculate the relative priorities of the decision elements using the eigenvalue method; 4) aggregate the relative priorities of the decision elements to develop a set of ratings

for decision alternatives; and, finally, 5) define the consistency ratio for each of the above matrices (Bachkar, 2010).

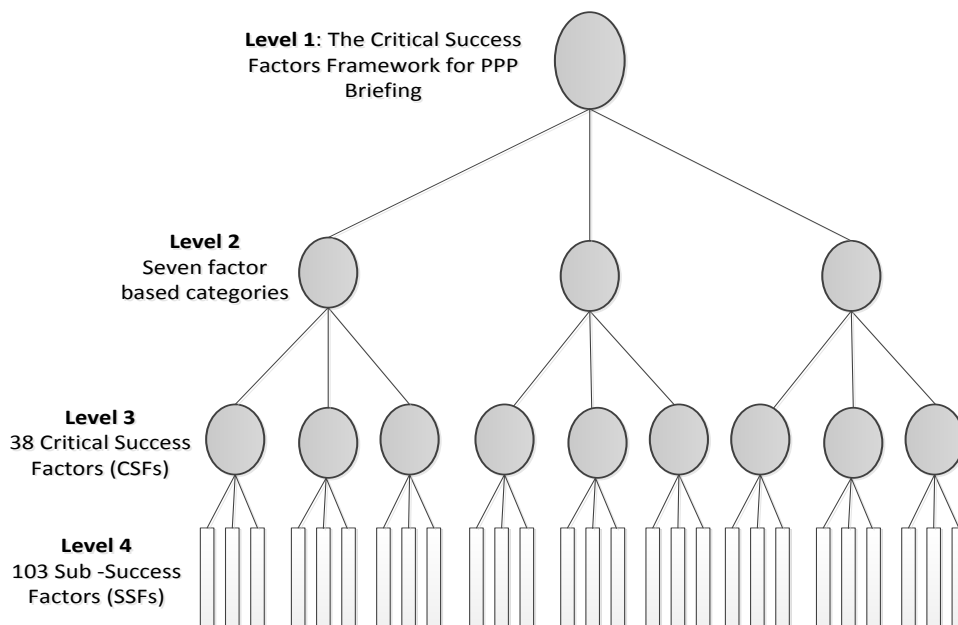


Figure 8-2: Structure of the developed framework for CSFs in PPP briefing

Table 8-1: Measurement scale of AHP – source: (Saaty, 1980)

Intensity of importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
3	Moderate importance	Experience and judgment slightly favour one activity over another
5	Strong importance	Experience and judgment strongly favour one activity over another
7	Very strong or demonstrated importance	An activity is favoured very strongly over another; its dominance demonstrated in practice
9	Extreme importance	The evidence favouring one activity over another is of the highest possible order of affirmation
2,4,6,8		Intermediate values

The data obtained from the analysis of a questionnaire survey, described in Chapter 6, answered by 104 PPP professional/experts is represented by a 5-point

Likert scale where 1 represents “not important” and 5 represents “extremely important”. Generally, the AHP method uses the ranking of importance between factors instead of a Likert scale. The ranking method uses a 9-point scale, as explained in Table 8-1, where 1 represents equally important, 3 represents slightly more important and 9 represents altogether more important.

To reformulate these ranks, we used the LSD Post-Hoc procedure in Analysis of Variance (ANOVA) method. The most significant means differences are given the highest rank and the least significant are given equally important rank. In this case, we consider the maximum means difference, denoted  $\max(d_i)$ , between 2 factors and construct an interval containing all the differences  $[0, \max(d_i)]$ . This interval is subdivided into 9 intervals.

The differences which fall into the first interval will take a rank value of 1 and those falling into the last one take a rank value of 9 (see the Tables AHP Matrix Ranking for CSFs and their Categories in Appendix G1). One can also consider a multi-criteria method in which each category has its own rank values according to the maximum difference between its factors. The next step is to create the pairwise comparison  $(p_{ij})_{m \times m}$  matrix which has the following format:

$$\begin{array}{ccc} 1 & r_{12} & r_{13} \\ 1/r_{12} & 1 & r_{23} \\ 1/r_{13} & 1/r_{23} & 1 \end{array}$$

$r_{ij}$  represents the rank of importance of factor  $i$  relative to factor  $j$ .

From the pairwise comparison matrix, we created the *standardized* matrix  $(s_{ij})_{m \times m}$  which is defined as:

$$s_{ij} = \frac{p_{ij}}{p_j}, \quad p_j = \sum_{i=1}^m p_{ij}.$$

The weights are defined as the average of each row of the standardized matrix  $s$ :

$$w_i = \frac{1}{m} \sum_{j=1}^m s_{ij}.$$

To study the concordance of these matrices, we used the consistency ratio ( $CR$ ) which is defined by the ratio between the consistency index ( $CI$ ) given by Equation (1) and the random index ( $RI$ ) developed by (Saaty, 1980). The values of  $RI$  depends of the number of the seven categories or their factors, denoted by  $m$ .

Table 8-2 contains the values of  $RI$  from  $m = 1, \dots, 10$ .

$$C.I = \frac{\lambda_{max} - m}{m - 1}, \quad (1)$$

$\lambda_{max}$  represents the largest eigenvalue of the pairwise comparison matrix. Following the criteria of (Saaty, 1980), the matrix is said to be consistent if  $CR$  is less than 0.1. Table 8.3 contains the weights in percentages for the overall seven categories and their factors. Details of Pairwise Comparison and Standardized Matrix for the seven categories and their factors are found in Appendices G2 and G3.

Table 8-3 and Figure 8-3, illustrate the comparison the calculated weight values for the seven categories in absolute scale. Result demonstrate that the categories weights in descending order are as follows: Regulatory and Legal Factors (Category F), Risk Related Factors (Category C), Procurement Related Factors (Category A), Capacity Related Factors (Category E), Finance and Economic Related Factors (Category D), Stakeholders Related Factors (Category B) and Cultural, and Ethical Related Factors (Category G).

Table 8-2: Random consistency index

<i>m</i>	1	2	3	4	5	6	7	8	9	10
<i>RI</i>	0	0	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49

Table 8-3: The calculated weights in percentages for all the seven categories and their factors – with  $\lambda_{max}$ , CI and CR

ALL	A		B		C		D		E		F		G		
	Procurement	Stakeholders	Risk	Finance and Economic	Public Sector Capacity	Regulatory and Legal	Social, Cultural, and Ethical	CSF	W	CSF	W	CSF	W	CSF	W
Category	W	CSF	W	CSF	W	CSF	W	CSF	W	CSF	W	CSF	W	CSF	W
A	11.27	A1	43.43	B1	37.74	C1	29.25	D1	17.56	E1	38.52	F1	12.06	G1	5.65
B	9.05	A2	8.18	B2	4.65	C2	16.67	D2	28.87	E2	12.52	F2	14.67	G2	14.20
C	23.20	A3	36.98	B3	19.47	C3	8.35	D3	28.87	E3	30.45	F3	9.90	G3	22.94
D	10.23	A4	6.33	B4	8.13	C4	25.08	D4	24.70	E4	15.31	F4	11.51	G4	30.49
E	10.95	A5	5.08	B5	10.04	C5	11.95			E5	3.19	F5	40.35	G5	26.71
F	33.08			B6	5.95	C6	8.69					F6	11.51		
G	2.22			B7	14.01										
$\lambda_{max}$	<b>7.11</b>	<b>5.045</b>	<b>7.257</b>	<b>6.12</b>	<b>4.061</b>	<b>5.182</b>	<b>6.088</b>	<b>5.107</b>							
CI	<b>0.018</b>	<b>0.011</b>	<b>0.043</b>	<b>0.0243</b>	<b>0.0202</b>	<b>0.055</b>	<b>0.0176</b>	<b>0.0268</b>							
CR	<b>0.014</b>	<b>0.0099</b>	<b>0.0324</b>	<b>0.0197</b>	<b>0.022</b>	<b>0.0406</b>	<b>0.0142</b>	<b>0.024</b>							

\*: All CR are less than 0.1.

CSF: Critical Success Factor (Level 3)

W: Weight

Figure 8-4 illustrates the cumulative weights. It can be observed from this figure that two categories (F & C) has around 57% of total weight, while four out of the seven categories (F, C A & E), compose almost 80% of the total value all categories.

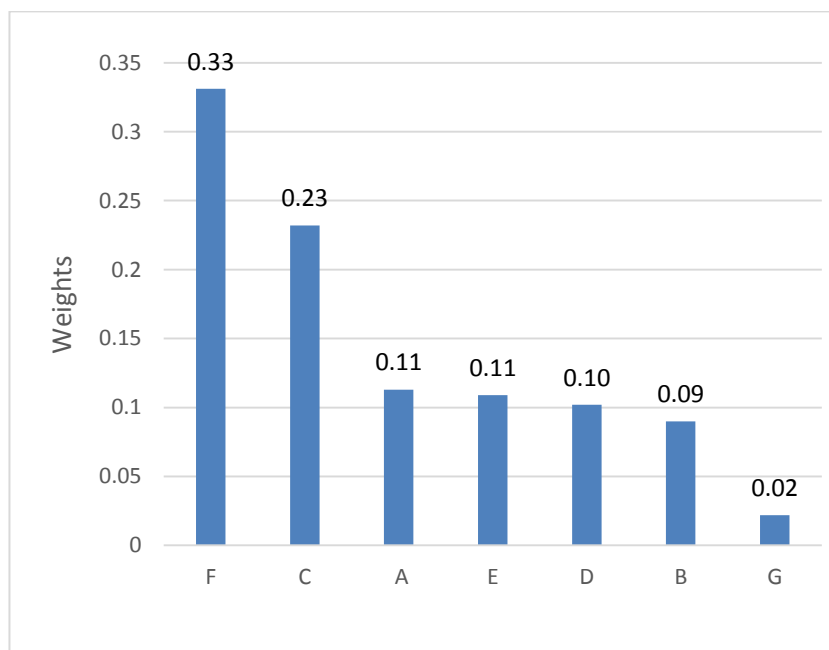


Figure 8-3: Direct weights comparison for the seven categories

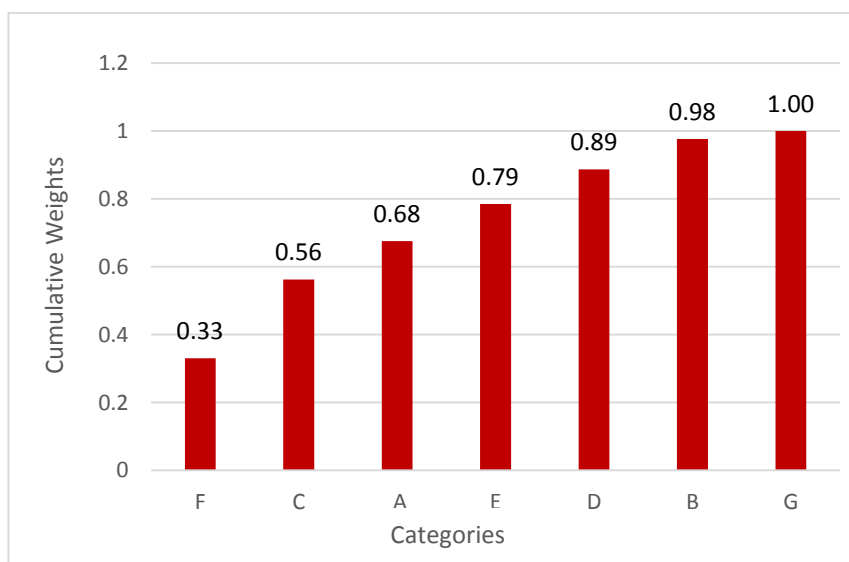
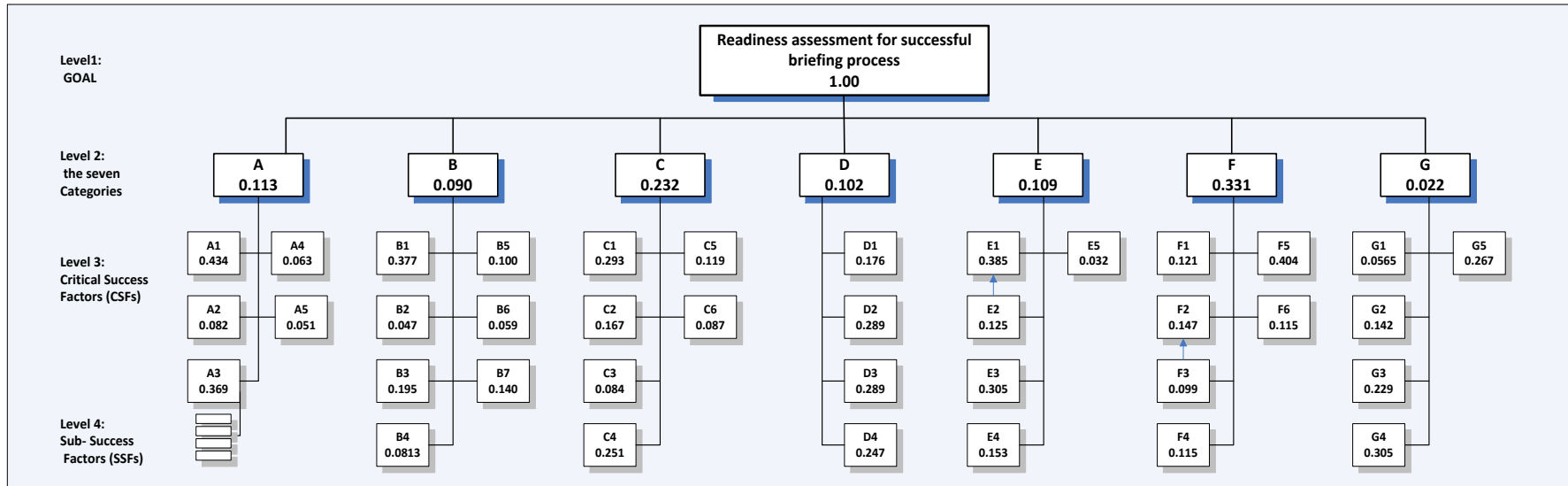


Figure 8-4: Cumulative weights

### 8.2.3 Hierarchical structure of the critical success factors

As discussed earlier in this chapter, the basis of the AHP method is the hierarchic presentation through which the complexity of the problem or situation can be resolved by successive simple processes. In this hierarchy, each element at a certain level is interrelated to at least one element of the next level up, which is considered a criterion. Graphically it can be presented as a hierarchic tree where the top (first level) is the goal, then consecutively from top to bottom, levels of factors (points of view, criteria, sub criteria), and sub-factors (if any) and finally the alternatives (Hongre, 2006). Figure 8-5 represents the hierarchy that was developed to model the CSFs in PPP. The hierarchy consists of four levels. Level 1 is the goal: the overall goal is to assess the readiness for a successful briefing process. In Level 2, the goal is divided into seven main factor categories, as described above. In Level 3 – Critical Success Factors (CSFs) – each of the seven factor categories is divided into CSFs, while in Level 4 – sub-factors – most of the CSFs are divided into sub-factors.





**Legend for the level 2 and 3 attributes:**

**A: Procurement Related Factors**

- A1: Clear project’s goal, objectives, and deliverables in the brief
- A2: Clear and precise process for formulation and control of the brief
- A3: Appropriateness of the selected PPP model
- A4: Adequate resources allocated to the briefing process
- A5: Flexibility of the brief and the management of change

**B: Stakeholders Related Factors**

- B1: Identification of the influential stakeholders
- B2: Addressing stakeholders’ possible power and influence
- B3: Identification of the stakeholders’ needs, requirements, and interests
- B4: Adequate engagement of user-groups throughout the briefing process
- B5: Stakeholder management strategies
- B6: Proper communication and coordination between stakeholders during the brief development
- B7: Team selection and empowerment

**C: Risk Related Factors**

- C1: Proper identification of anticipated risks/threats to the PPP project
- C2: Proper analysis and assessment of anticipated risks/threats to the PPP project
- C3: Proper risk allocation and sharing among project stakeholders
- C4: Proper mitigation/reduction strategy for anticipated risks/threats to the PPP project
- C5: Government guarantees for political/legal/regulatory risks beyond the control of private investors
- C6: Flexibility of the project design solution to meet possible future changes in market demand

**D: Finance and Economic Related Factors**

- D1: Favourable financial and economic climate
- D2: Business and economic viability of the feasibility study
- D3: Sound commercial and financial package/arrangements
- D4: Financial capacity and reliability of private sector

**G: Social, Cultural, and Ethical Related Factors**

- G1: Community participation, acceptance, and support
- G2: Work environment during the brief development
- G3: Consideration of cultural and ethical values of the end users/user-group during the brief’s development
- G4: Acceptable tariff level
- G5: Consideration of socioeconomic aspects

**E: Public Sector Capacity Related Factors**

- E1: Political support
- E2: Qualified and experienced public staff to manage the PPP briefing process
- E3: Governmental assistance during PPP project undertaking
- E4: Government financial capacity to support PPP financial requirements
- E5: Effective government mechanisms for documentation and lessons learned

**F: Regulatory and Legal Factors**

- F1: Availability of effective regulatory and legal frameworks for PPP
- F2: Approved governance model by relevant authorities for the PPP venture
- F3: Project scope to match authorized mandate of the public agency
- F4: Adherence to applicable and up-to-date legal and regulatory frameworks
- F5: Clear authority and responsibility between public and private sector
- F6: Proper dispute resolution mechanism

Figure 8-5: Hierarchical structure for the CSFS in PPP briefing with special reference to UAE construction projects.

### **8.3 The development of Decision Support System Prototype for Guiding the Briefing Process of PPP Construction Projects**

This section describes the development of the Decision Support System prototype for guiding the briefing process of PPP construction projects. To begin with, the system's main objectives are discussed. Following this, the proposed system architecture is presented. Then the implementation of the AHP method is detailed on the basis of the system architecture. Finally, the use of the proposed DSS in assessing the level of readiness for a successful briefing process is illustrated. The system is hereafter referred to as the "Briefing Guide Decision Support System" (BGDSS).

#### **8.3.1 Main objectives of the system**

The main objectives of the proposed BGDSS are to:

- Assist and guide decision-makers and professionals in the UAE in developing the PPP briefing process of construction projects.
- Contribute to the readiness of public and private organizations for the development of their briefing process.
- Contribute to the highlighting of different areas for improvement and help in developing an action plan to improve brief development.
- Let organizations use this model to predict, assess, track, and/or improve the briefing process of PPP in construction projects.

The aim of this PPP briefing readiness assessment is to provide a diagnostic tool for identifying the key areas that organisation/professionals need to address in order to carry out a briefing process more successfully. It can be used as follows:

- Before starting the project: to assess the readiness of an organization for successful briefing development, allowing action plans to be developed for improvement on the basis of this evaluation
- During and after the completion of the briefing stage or project: for evaluating the extent of practice for each factor and its categories and to generate lessons to learn as well as action items for the future development of the CSF framework

### 8.3.2 The model's structure and information flow

Figure 8-6 shows the modelling process for the BGDSS prototype. Overall, the modelling process went through three main stages. The first stage is the development of the critical success factors (CSFs) framework, as discussed above (Chapter 6). The second stage is using the Analytical Hierarchy Process (AHP) in the modelling. This stage contains two main components, a questionnaire survey outcome, in the form of the relative significance of the CSFs for PPP brief development in the UAE construction project. The second component is the AHP analysis, in which the scores derived from the survey results, were exported from the SPSS statistical package to Microsoft Excel in order to run the Analytical Hierarchy Process (AHP) analysis of the factors. The final outputs of the AHP analysis are weight tables for the briefing factors.

The third stage included the development of a BGDSS prototype. This stage started by developing the system architecture, which has two components. First, it had a user interface for the scoring, in which the availability/extent of practise of each Success Factors is evaluated through scores from 1-5 for the project under assessment, 1 representing “not at all” and 5 representing “All the time” . The second

component involved the system model base for the readiness assessment calculation, using an Excel environment. With this component, in order to assess the readiness, the objective matrix technique is used. Figure 8-7 shows the main parts of the objective matrix. The index is the product of the factor score multiplied by the weight. The sum of the factor's index is the overall readiness. The best score, which is attained when all factors for a project are ranked 5, would result in an index of 500 representing "very high" level of readiness. At the other extreme, an index of 100 would be the result if all the factors were ranked as 1 representing "very low" level of readiness.

Two options are proposed for the prototype. The first option uses level 3 CSFs to start the scoring process, while the second option uses level 4 (the SSF) for the same purpose. Option one can be used by executive users. It takes less time than the second option, which starts at the SSFs level. However, both options assess the readiness for each of the seven main categories and calculate the overall readiness. They generate tables and radar charts, the system Dash Board, which is described in more detail in the following sections.

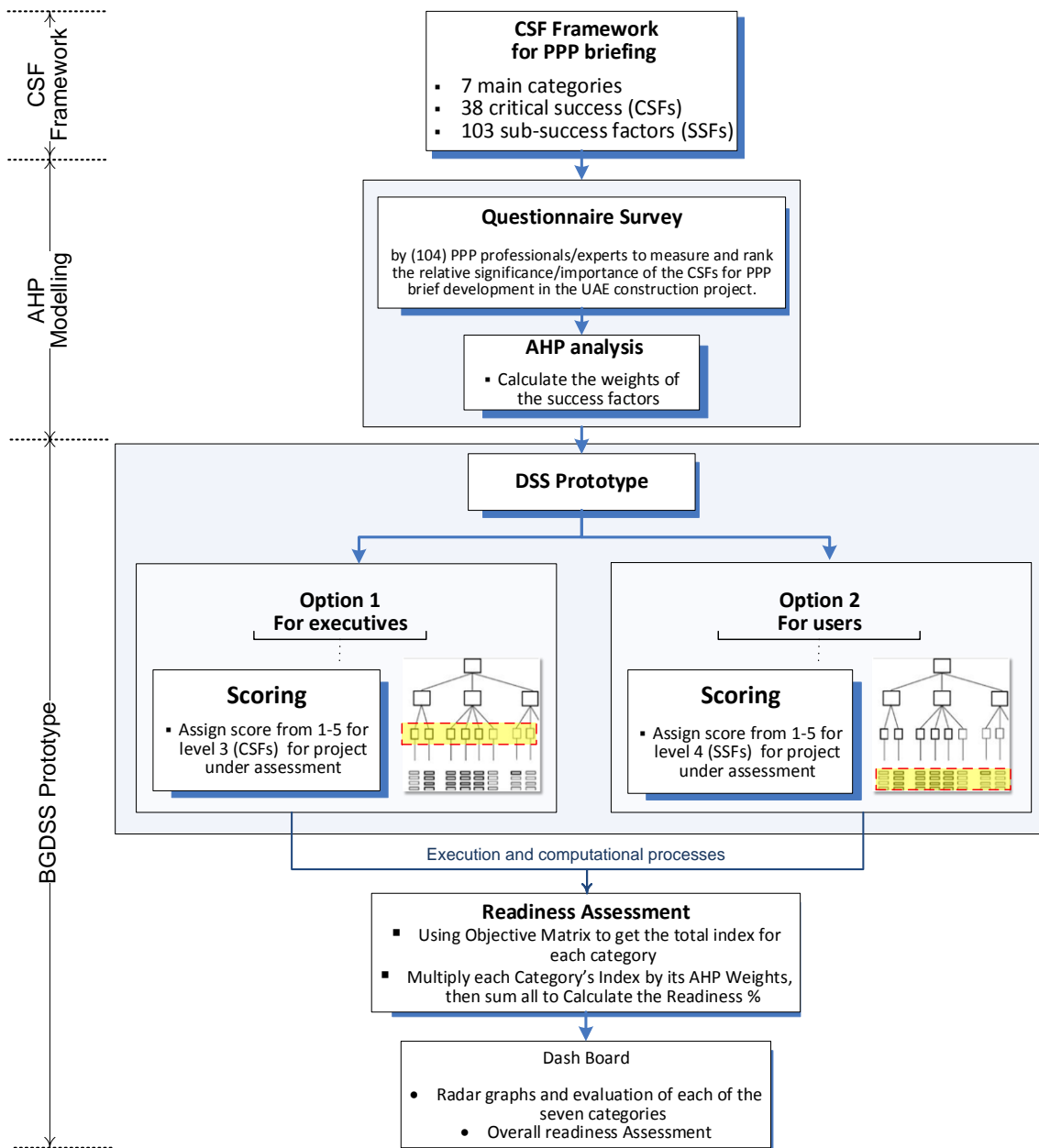


Figure 8-6: Modelling process for BGDSS prototype

Critical Success Factors in PPP Briefing								
	A	B	C	D	E	F	G	
	READINESS							
	X	X	X	X	X	X	X	5
								4
								3
								2
								1
Total	5	5	5	5	5	5	5	Score
100	11.27	9.05	23.20	10.23	10.95	33.08	2.22	Weight
500	56.36	45.25	116.01	51.13	54.77	165.4	11.08	Index

Figure 8-7: Objective matrix – developed on the basis of (Budawara, 2009)

### 8.3.3 Basic system architecture

The system architecture for the developed BCDSS prototype is shown in Figure 8-8. It consists of two main components: 1) the user interface; and 2) a model base system. The user interface consists of seven modules for main factor categories discussed above, through which the user can assess each module and examine the overall assessment of the readiness of the project under scrutiny, while all the execution and computational processes including the AHP method occur in the model base system. The user interface interacts with the interconnected system components through a set of users' screens, where users can view and edit related information at any stage of the brief development process of the project under evaluation.

The BGDSS prototype was constructed by an iterative process. First, when its objectives were defined, the outlines of different module screen interfaces, data entry and interactive graphs were designed. Then, after consultation with a software programmer, the Microsoft Excel was chosen as the package to be used in

developing the prototype. The development of an Excel application was based on the following procedures, which formed the basis for developing the proposed BGDSS prototype:

- Entering of the assessment information needs, with particular reference to the flow of data and information
- Running the AHP analysis
- Generating the tables and charts as required

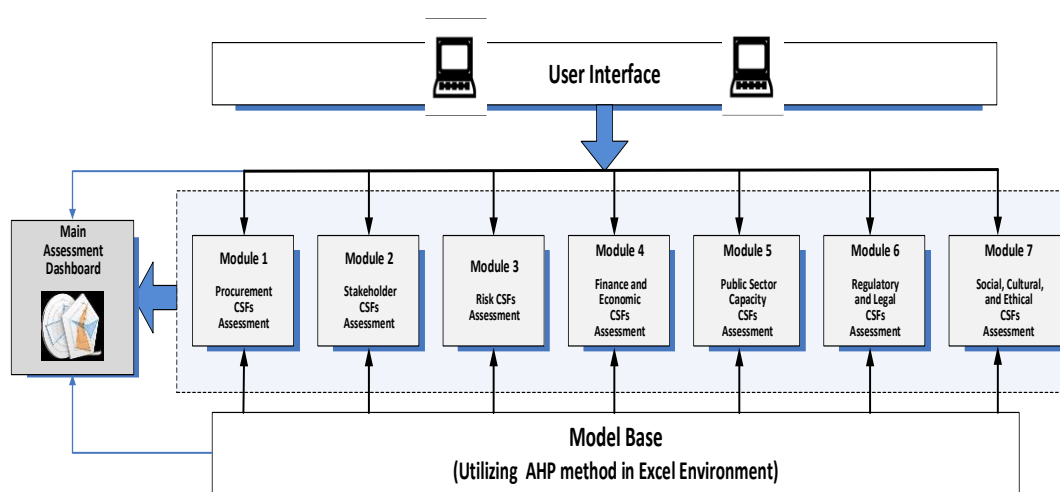


Figure 8-8: Basic architecture of the system

### 8.3.4 User interface: the Excel environment

The design of the prototype interface needs to be as user friendly as any other computer-based system. The user interface development includes interaction development and interface software development. Interaction development is concerned with the functioning of the user interface, its 'look and feel' and behaviour in response to what a user sees, hears, and does while interacting with the system. The interface software development is the means of implementing the code that instantiates the interaction components (Hix & Hartson, 1993). For the proposed

system, the user interaction and data input is via tables and macros in the environment of Microsoft Excel.

The first step in using the BGDSS is to enter the project details. Next, the user is required to enter the factor scores. This task can be performed before, during or after the completion of the briefing stage or project. The following section illustrates in detail the different elements of the prototype user interface.

#### 8.3.4.1 Project details table

The project details table enables the user to specify basic project information, as shown in Figure 8-9. In this table in the main screen, the user can fill in the necessary basic information about each project, including: the project title, location, PPP sector, and industry type. Once the user fills in the project details, he/she can press the ‘Start assessment’ button, which will clear all previous assessment data and transfer the user to the first module for starting the assessment.

Project Details	
Project Title:	TAWAM HOSPITAL
Location:	Al-Ain, Abu Dhabi
Sector:	Health Service
Industry:	Public
Breifing Phase:	Strategic Phase

Figure 8-9: The project basic information entry screen



### 8.3.4.2 Data entry for typical module score screens

After providing the basic information about the project, the user is required to enter the scores of all the factors. This process can be performed before, during or after the completion of the briefing stage or PPP project under evaluation.

The user starts the assessment by entering the availability/extent of practice of the different success factors as scores (on a scale from 1-5) for the seven factor category models. As discussed above, the user can select one of two prototype options. Option one, for executives, scores by the 38 CSFs of Level 3 in the hierarchical structure of the factors. With this option, the system provides access to detailed descriptions of the sub-factors of each CSF in the model if the user needs to view it, by clicking on the “sub-success factors” button (see Figure 8-10).

		Availability / Extend of practice				
		Not at all	Limited	Regularly	Extensivley	All the time
<b>2) Stakeholder Related Factors</b>						
Critical Success Factors (CSFs)		1	2	3	4	5
B1.	Identification of the influential stakeholders <a href="#">Sub-Success Factors</a>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
B2.	Addressing stakeholders' possible power and influence <a href="#">Sub-Success Factors</a>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
B3.	Identification of the stakeholders' needs, requirements, and interests <a href="#">Sub-Success Factors</a>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
B4.	Adequate engagement of user-groups throughout the briefing process <a href="#">Sub-Success Factors</a>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B5.	Stakeholder management strategies <a href="#">Sub-Success Factors</a>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
B6.	Proper communication and coordination between stakeholders during the brief development <a href="#">Sub-Success Factors</a>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B7.	Team selection and empowerment <a href="#">Sub-Success Factors</a>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 8-10: Typical module score screens – option 1

If the user takes option 2, he/she will start scoring the 103 sub- Factors (SSFs) level 4 as described above or score CSFs on level 3, which does not contain sub-factors. Option two is shown in Figure 8-11. The main screen of both options is divided into two parts: the left-hand part representing detail information on the factors.

The right-hand part is the measuring sheet, where the availability/extent of the practice for the project under assessment of each Success Factor is evaluated through scores from 1-5. 1 represents “not at all”, and 5 represents “All the time” .Seven screens with the same design were constructed for the seven modules (A to G), giving the users the choice to move from module to module or jump to see interactive generated graphs in the main dashboard.


		Availability / Extend of practice				
		Not at all	Limited	Regularly	Extensively	All the time
						
<b>2) Stakeholder Related Factors</b>						
Critical Success Factors (CSFs)		Sub- Success Factors (SSFs)				
		1	2	3	4	5
<b>B1. Identification of the influential stakeholders</b>						
	1. Identifying influential stakeholders properly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	2. Identifying key user- groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<b>B2. Addressing stakeholders' possible power and influence</b>						
	1. Assessing stakeholders' behaviour	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	2. Predicting the influence of stakeholders accurately	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	3. Assessing the attributes (power, urgency, and proximity) of stakeholders	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>B3. Identification of the stakeholders' needs, requirements, and interests</b>						
	1. Identifying end-user/user-groups requirements in the project brief	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	2. Identifying the client/owner's requirements in the project brief	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	3. Understanding the areas of stakeholders' interests and their constraints	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	4. Balancing the needs/requirements of different stakeholders	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>B4. Adequate engagement of user-groups throughout the briefing process</b>						
	1. Representation of both the user-groups and client groups in the development of the brief	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	2. Adequately engaging the user-groups throughout the briefing and design stages	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	3. Proper use of the user-groups values and knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<b>B5. Stakeholder management strategies</b>						
	1. Identifying appropriate decision-making strategies	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	2. Clarifying the roles and responsibilities of project stakeholders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	3. Managing stakeholders with corporate social responsibilities (economic, legal, environmental, and ethical)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	4. Publishing a proper consultation plan for user-groups and stakeholders	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	5. Strictly controlling and managing the client/user-groups to avoid output specifications becoming a wish list (wish-list syndrome)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	6. Proper analysis and compromise in conflicts and coalitions between stakeholders	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>B6. Proper communication and coordination between stakeholders during the brief development</b>						
	1. Good facilitation of briefing should be given to stakeholders	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	2. Good facilitation in the briefing for stakeholders	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	3. Communication with and engaging stakeholders properly and frequently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	4. Using different methods to document and effectively communicate the brief	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	5. Proper methods of e-based communications among stakeholders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	6. Facilitating the sharing of knowledge among the stakeholders	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	7. Using face-to-face contact as a communication method in critical decision stages of the brief	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>B7. Team selection and empowerment</b>						
	1. Empowering the stakeholder group as a team to make decisions in the briefing process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	2. Select team members with relevant experience to develop an effective brief	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 8-11: Typical module score screens – option 2

### 8.3.4.3 Data evaluation and outputs: the main dashboard

As discussed earlier, project details and success factor evaluation scores are the main entries in the different modules in the developed prototype. Figure 8-12 represents a snapshot of the main dashboard, which summaries the evaluation results and presents interactive graphs for the data entered in each of the seven modules. Through the dashboard interface, users can measure the readiness of one project/organisation at a time. Once scores are assigned in the seven modules, and the icon "SHOW CHART" is pressed, the system automatically draws different radars as well as generating an assessment index and percentages.

The main output evaluation dashboard shows several items, as follows:

- 1) Overall readiness assessment percentage for the project/organization under evaluation, along with the main index readiness scores (out of 500) for each of the seven categories and their percentages, where in this 'Readiness Scale' the 500 (100%) represents "very high" level of readiness, 400 (80%) represents "high" level of readiness, 300 (60%) represents "moderate" level of readiness, 200 (40%) represents "low" level of readiness and 100 (20%) represents "very low" level of readiness. A radar graph is generated illustrating the calculated indices for different categories, "INDEX" (100 to 500), with comparisons to the midpoint critical index with value 250. Figure 8-12 illustrates this part of the main Dashboard.

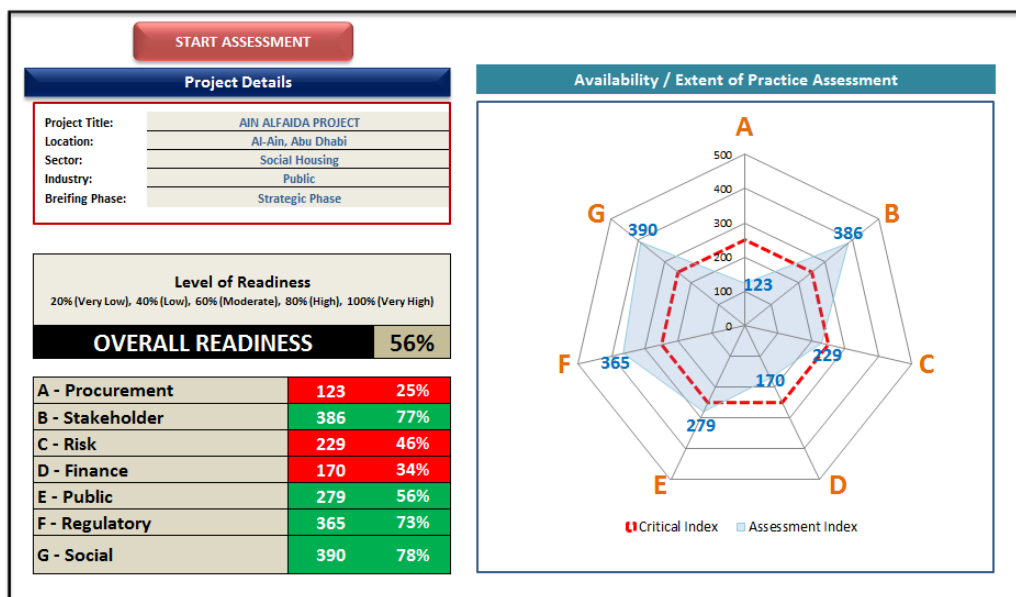


Figure 8-12: The main project assessment and radar graph for a hypothetical project.

- 2) Detailed index scores of each of the categories of the seven factors along with a readiness evaluation radar "SCORES" (1 to 5) comparison to the midpoint critical index with value 2.5. The calculated index values represent the subjective matrix method, discussed above. In order to measure the overall readiness, each factor's categories are compared to the total index value of 500. The closer to 500, the better the readiness (see Figure 8-13).

The produced scores, percentages and graphs shown on the main dashboard highlight different areas for improvement and assist decision makers during the evaluation of the project in developing an action plan to improve briefing development. Organizations can use this model to predict, assess, track and/or improve their briefing process as regards PPP construction projects.



Figure 8-13: Data evaluation and outputs of the seven modules for a hypothetical project.

### 8.3.5 Technical verifications of the developed BGDSS

System evaluation is an essential part of the prototype development. Evaluation is used to assess the overall value of the prototype. The evaluation strategy for the BGDSS is implemented on two assessment levels, as follows: Technical verification and Performance validation. Generally, verification is the process of confirming that the prototype has been formulated correctly and has no technical errors., while validation is the process that checks whether or not the developed model prototype meets the required specification and is appropriate for its intended use (Kotb, Miles, Moore, & Jaberian-Hamedani, 2000).

The following section discusses the process of technical verification of the developed prototype while the developed model validation is performed using two authentic case studies, which are detailed in the next chapter.

#### 8.3.5.1 Technical verification

In order to eliminate coding errors and check how well the system has been built and how accurately its output, static and dynamic testing methods have been used, several checking and testing activities were carried out during the development of the BGDSS prototype in order to ensure that the system was internally complete and correctly developed. At the beginning and during the system analysis stage, several activities were carried out including the development of preliminary study diagrams, charts for preliminary system architecture and diagrams for different intended processes and the model base. Next, similar activities were carried out during the system design stage to determine and examine the correctness and consistency of the design approach for each component of the system. During the system construction/coding stage, several testing activities were implemented to

determine the correctness and consistency of each system's modules and components. Errors were then corrected and debugged; the prototype was also inspected by some programming experts to check and feedback on its code accuracy. Simultaneously, several dynamic tests were also implemented for each module and its parts of the developed prototype. Several ad-hoc Excel models were developed and used to statistically test the black and white boxes of each module and their different components. Calculators were also used to check the mathematical methods integrated in several system components. Some modifications were considered.

#### **8.4 Summary and Conclusions**

This chapter presented the process of modelling the critical success factors (CSFs) for guiding the PPP briefing process and discussing the development of the Decision Support System (BGDSS). The first part of this chapter presented the basic components of the developed model. The standard AHP procedures were performed in order to obtain different weights of each success factor and its categories.

A decision support system was then implemented using macros and tables in Excel. It employed Excel to run the different parts of its model base. Excel is flexible and easy to use software program. The functionality of the BGDSS was described. User data entry, data evaluation and outputs in Excel were given special attention. They yield a user friendly tool to assess the readiness of public and private organizations for the briefing process in PPP construction projects. The aim of this PPP briefing readiness assessment was to provide a diagnostic tool for identifying the key areas that organisation/ professionals need to address before they can develop the briefing process more successfully.



The next chapter discusses in detail the evaluation process of developed models by means of two authentic PPP projects in the UAE.

## Chapter 9: Case Studies and Model Validation

### 9.1 Introduction

As outlined in the previous chapter, the Critical Success Factors in PPP briefing were modelled to develop a Decision Support System prototype whose main objective was to guide the development of briefing in PPP projects in the UAE and assess the readiness of public and private organizations to go on to the development of successful briefing, highlight areas for improvement and help to develop an action plan to improve briefing development.

In order to validate the developed model and assess its performance as a decision-making tool, two mega projects (real case studies) were assessed using the developed model. The first case is a USD \$410 million, build-own-operate-transfer (BOOT) project: the New Campus of the United Arab Emirates University (UAEU) while the second case is a 327-km regional highway, costing around USD \$3bn, with a 25-year concession regional highway. Structured interview sessions were organized with senior members of the briefing teams from these two projects. A questionnaire survey was used to extract their assessment of the availability/extent of the practice of identifying CSFs during the briefing stages of both projects and each respondent discussed the possible reasons behind his/her assessment. Following this, the developed BGDSS prototype (option one) was used to analyse the assessment results. This chapter describes and discusses the process of validating the developed model.

## 9.2 The Evaluation Process

The methodology of evaluation process used case studies of two mega PPP projects in the UAE. The researcher conducted two sessions of face-to-face structured interviews with senior members from the teams involved directly in the briefing process of the project to verify the practicality and usefulness of the developed model.

The respondents in both cases were senior project managers. The researcher introduced the developed model and its objectives and asked them to take the first measuring step in the developed model: to assess the CSFs using a questionnaire survey to rate the availability/extent of practice of each of the 38 CSFs in the brief development of their project. The interviewees were asked to select their response from a Likert scale calibrated as follows: 1: “Not at all”; 2: “Limited”; 3: “Regularly”; 4: “Extensively”; and 5: “All the time”) (please see Appendix D for the questionnaire that was used. Each interview lasted between 60 and 90 minutes. During the assessment of each CSF in its own category, the researcher discussed with each respondent the possible reasons behind his/her assessment, whether low or high, and the possible effects this might have on the brief development process and its success. The main points discussed and the issues raised were recorded and are elaborated in the discussion below.

Following this, prototype of the developed Brief Guide Decision Support System (BGDSS) (option one) was used to analyse the assessment results. The reason behind the selection of this option for use by the executives is that it takes less time (only 38 CSFs to rate, on level 3 in the hierarchical structure of the factors - see the previous chapter for more details), while the second option, (which starts with the

SSFs, on level 4 in the hierarchical structure of the factors) targets more detailed assessments and targets team members, not executives. Another advantage of this option was that it was better suited to the short time that was authorized for these interviews, given the seniority and busy schedules of the interviewees.

### **9.3 Case Study 1: The New Campus of the United Arab Emirates University (UAEU)**

This study concerns an actual case from the PPP construction industry in the UAE, which was analysed in the development of the Preliminary Process Framework for PPP briefing with special reference to the UAE construction projects discussed in Chapter 5. As discussed earlier, this project is a build-own-operate-transfer (BOOT) with a 28-year concession agreement, at a cost of USD \$410 million. The project involved constructing a 360,000 m<sup>2</sup> gross area of a fully gender-segregated campus holding 17,000 students at full capacity. The actual briefing process for this project started in 2004, and negotiations between the public and private parties lasted three years. The campus opened at its full capacity in September 2012. The successful case of the new UAEU campus was considered a reference project in social infrastructure in general and the educational sector in particular, the UAEU-PPP model being set as a benchmark for future experiences. The private partner (MDC) controlled the financing, management, design, construction, and operation as well as the briefing process. A senior project manager was interviewed and participated in filling the scores for the assessed CSFs. These data were entered into the developed model (option one).

### **9.3.1 Assessment of the critical success factors: the seven categories and their readiness indices**

The mathematical model, embedded in the prototype option one and described in Chapter 8, is used to calculate the index values for each of the seven categories and the overall readiness assessment in this case study. A high overall readiness assessment of 85% was calculated. The detailed assessment of each of the seven categories is illustrated in Figure 9-1. Analysis shows that 81.6% of the assessed CSFs scored between 3 and 5 higher than the critical midpoint of 2.5. The following section provides more analysis and discussion of each category of factors.

#### **9.3.1.1 Procurement-related factors (Category A)**

Procurement-Related Factors are considered the third most important category as it constitutes a weight of 0.113 in the hierarchy that was developed to model the CSFs in the PPP briefing (see Figure 8-3 and Figure 8-4 , in Chapter 8). The readiness index of this category is 458 out of 500 (92 %), which is a high score. The reasons behind such a high level of readiness in the Procurement-Related Factors are related to the high scores and indices of several CSFs in this category. For example, ‘Clear project goal, objectives, and deliverables in the brief’ (CSF A1) is weighted at 0.434 in the hierarchy of category A and given a score of 5 by the interviewee. Indeed, clarity in the goal and objectives of this project, as well as the great concern to develop clear output specifications was achieved in this project, along with the project’s alignment to the strategic objectives of the client organization, where the project achieved the desired growth and ambitions of the institution.

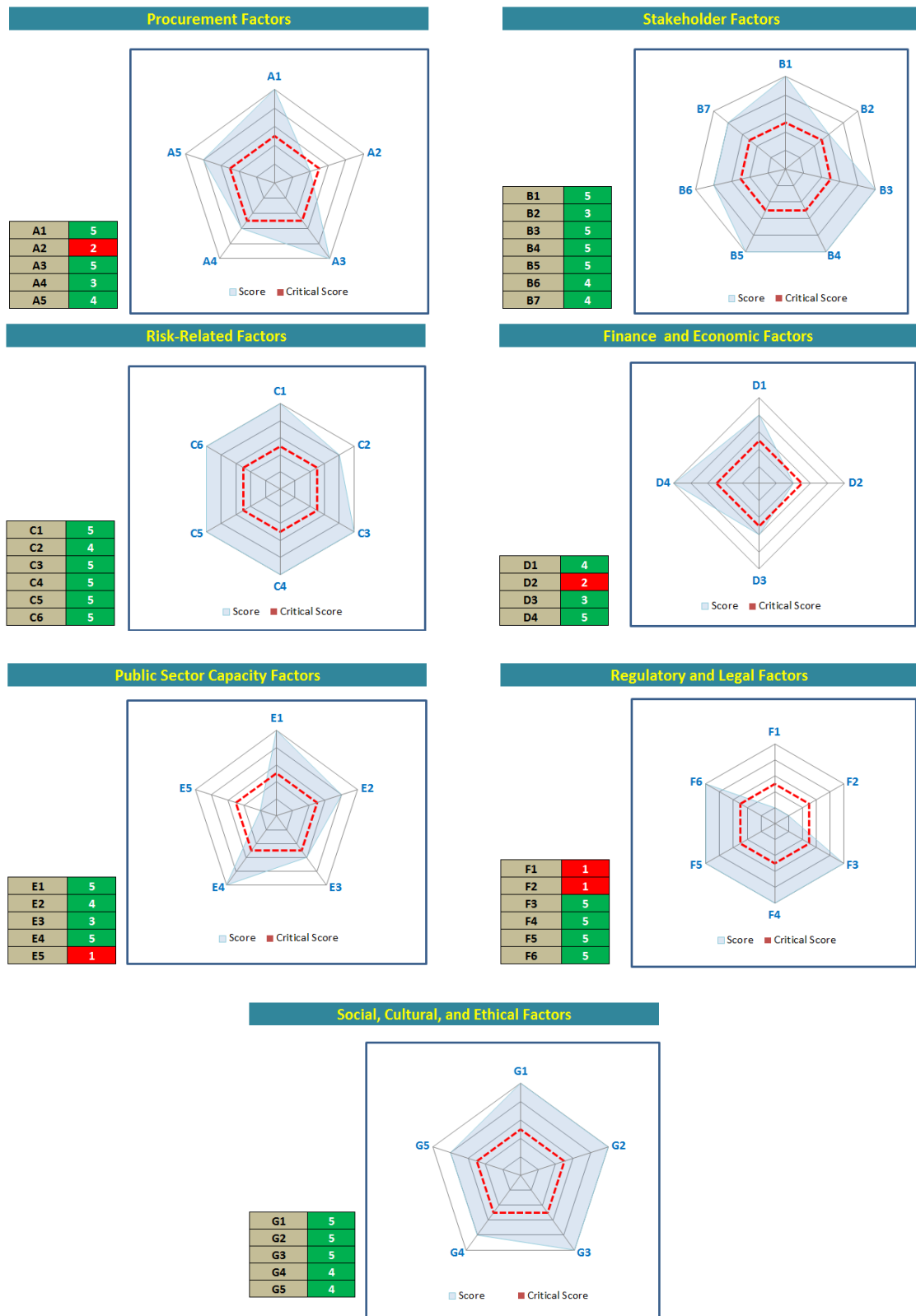


Figure 9-1: The assessment of the seven categories of CSFs for case study 1, the new campus of the United Arab Emirates University (UAEU)

The second highest weight CSF was 0.37; it is ‘appropriateness of the selected PPP model’ (CSF A3) which scored 5 as well. In fact, the selection of the BOOT model to deliver this project was a valid decision, because the UAEU as a government institution is not allowed to borrow from a bank. Thus, this model helped to provide new capital sources and avoid public borrowing, and the involvement of the private-sector experience increased operational efficiency, financial feasibility, and transfer of technological expertise to the UAEU staff. Furthermore, better integration of the design, construction, operational requirements and facility management for the entire campus enabled the UAEU faculty and staff to focus on academic issues and not the management of a range of buildings and campus facilities. The interviewee gave a score for the ‘Flexibility of the brief and the management of change’ (CSF A5) of 4 and for the ‘adequate resources allocated to the briefing process’ (CSF A4) of (3).

Nevertheless, ‘Clear and precise process for formulation and control of the brief’ (CSF A2) shows a limited availability and scored 2, as a result of the absence of clear methodology or formal procedures for the briefing process in PPP projects in the UAE.

### **9.3.1.2 Stakeholder-related factors (Category B)**

Stakeholder-Related Factors (Category B) constitute a weight of 0.09 in the hierarchy that was developed to model the CSFs in PPP briefing in the UAE.

A high level of readiness of Stakeholder-Related Factors (Category B) with a calculated index of 471 out of 500 (94 %). Figure 9-1 shows that 6 CSFs out of 7 scored between 4 and 5. In this project there was an agreed stakeholder management strategy, whereby the briefing team tried hard to properly identify the influential

stakeholders at the local and federal level and to set proper standards of communication and coordination between the different stakeholders. Much concern was also given to identifying these stakeholders' needs, requirements, and interests. The obvious involvement of the client and end-users at the briefing stage for the New Campus of the United Arab Emirates University (UAEU) project was one of the success factors of this project.

### 9.3.1.3 Risk-related factors (Category C)

Risk Related Factors (Category C) are considered the second most important category, since it constitutes a weight of 0.232 in the hierarchy that was developed to model the CSFs in PPP briefing in UAE. Additionally, its calculated index is 483 out of 500 (97%), which is the highest among the seven categories, because 5 out of the 6 assessed CSFs scored 5 (= "available all the time"). This was due to the appointment of an external insurance company for the purposes of insurance and risk assessment at the briefing stage. Therefore, from the outset proper risk identification and assessment processes were implemented, and the risks in the project were allocated to the party which was best able to manage them. All the risks related to project delivery were transferred to the private sector partner, while the UAEU retained the site acquisition, legal and policy risks. Furthermore, the flexibility of a design solution to meet possible changes in market demand were considered in the briefing requirements, where the master plan was flexible enough to allow for a non-segregated campus in future if it proves appropriate, though it is fully gender-segregated at present.



#### 9.3.1.4 Finance- and economic-related factors (Category D)

Finance and Economic Factors (Category D) constitute a weight of 0.102 in the hierarchy that was developed to model the CSFs in PPP briefing in UAE.

During the briefing process, the MDC was mainly concerned about the related financial issues. The engagement of an internal financial controller and an external financial advisor was a sign of this concern. The financial advisor was involved at the briefing stage to ensure that established financial aspects met the acceptable standards of the lending agencies, whereas the internal controller was assigned to follow up the internal financial issues of the project. Hence, the results showed a moderate level of readiness in the Finance and Economic factors (Category D), which has a calculated index of 338 out of 500 (68 %).

The financial capacity and reliability of the private sector (CSF D4) scored 5, as MDC had a good financial standing. It was obvious during the discussion of this case with the interviewees that, although the project was the first PPP social infrastructure in the country, a favourable financial and economic climate (CSF D1) existed because of the high level political support and approval of the grantees, the high stability of the economic climate, more so before the financial crisis influenced the level of readiness (in the briefing process 2004- 2007), and the stable currencies of securitization, which resulted in a favourable financial market (around 13 banks were involved in financing the project) and the availability of long-term finance.

The interviewees also scored 3 for sound commercial and financial package/arrangements (CSF D3). This is due to a group of propitious factors such as: flexible price regulations sufficient to adjust to major cost changes during the design and construction of the project and a feasible payment mechanism. Nonetheless, the

results showed the “Limited” availability of the business and economic viability of the feasibility study; CSF D2 scored (2). This was the consequence of the unclear requirements of the value-for-money analysis when the briefing of this project took place. The interviewees confirmed the finding in Chapter 4, that the public-sector comparator (PSC) process was not performed during the briefing development, as required in many PPP international guidelines and practices, because value for money (VfM) was claimed to be theoretically based on benchmarking with international experiences and comparison with other traditional procurement models.

#### **9.3.1.5 Public sector capacity-related factors (Category E)**

This category constitutes a weight of 0.109. In spite of the UAE’s having limited market exposure to and experience with the PPP procurement method, the results indicated that the Public Sector Capacity Related Factors (Category E) showed a high index of 414 out of 500 (83 %). Looking back at the scores and indexes of this category’s CSFs may explain the reason for such a level of readiness in this category. The interviewees remarked that before and during the briefing stage there was remarkable political support (CSF E1) from the Abu Dhabi government, as discussed in Chapter 5. Hence, this factor scored 5. The briefing teams were properly selected from both parties: the teams contained internal and external experts in various areas, including technical, procurement, financial, insurance, and legal practices. Hence, the presence of qualified and experienced public staff to manage the PPP briefing process (CSF E2) scored 4. Furthermore the interviewees pointed out that governmental assistance during the PPP project undertaking (CSF E3) and government financial capacity to support the PPP financial requirements (CSF E4) were high in this project, leading to scores for these factors of 3 and 5 respectively.

The CSF with the poorest score in this category was effective government mechanisms for documentation and lessons learned (CSF E5), due to the absence of PPP documentation and examples of best practices from the public domain, a proper e-documentation system among all the stakeholders and feedback and lessons learned from the completed PPP projects.

### **9.3.1.6 Regulatory and legal -related factors (Category F)**

As discussed in the previous chapter, the Regulatory and Legal Factors (Category F) are considered the first and most important category; it constitutes a weight of (0.33). The calculated index for this category is 393 out of 500 (79%). In spite of its moderate to high level of readiness (according to the index scale discussed in Chapter 8) it was found to be the second lowest readiness index in this project, after the category of Finance (G). This is due to the indefiniteness of some of the factors that are related to the general environment of PPPs in the UAE, such as the ‘Availability of effective regulatory and legal frameworks for PPP’ (CSF F1) and ‘The approved governance model by relevant authorities for the PPP venture’ (CSF F2). Both were awarded the lowest and poorest score of 1. This raises the question of the availability, enforcement, and effectiveness of the PPP legal system and a PPP governance model, as approved by the Department of Finance and other relevant authorities.

In contrast, other regulatory and legal factors which on the project/organization level were scored the highest (5), were ‘the project scope to match the authorized mandate of the public agency’ (CSF F3), ‘the adherence to applicable and up-to-date legal and regulatory frameworks’ (CSF F4), ‘Clear authority and responsibility between the public and private sectors’ (CSF F5) and ‘A

proper dispute resolution mechanism' (CSF F6). Considerable attention was given by both parties (UAEU and MDC) to such factors: two different External Legal Consultant companies were appointed, one for each party. The one recruited by UAEU was a client legal consultant responsible for ensuring the legal compliance of the model with the UAEU's existing legal structure. The MDC's Legal Consultant was appointed to develop the contract details after negotiation with the other party's legal advisor.

### **9.3.1.7 Social, culture & ethical -related factors (Category G)**

The Social, Culture & Ethical Factors (Category G) are considered the least important category, which constitutes a weight of (0.022). Its calculated index is 443 out of 500 (89%) which shows a high level of readiness.

Considerable attention was given to the UAE's community participation, acceptance, and support and work environment during the development of briefing for this project, due to the close coordination between the two teams from the UAEU and MDC. Furthermore, understanding the background and cultural and ethical values of the end users (UAEU community) was easy for MDC, because the impact of the cultural issues such as language, time orientation, use of space, and religion must was minimal/insignificant. Since the parties had a common environment.

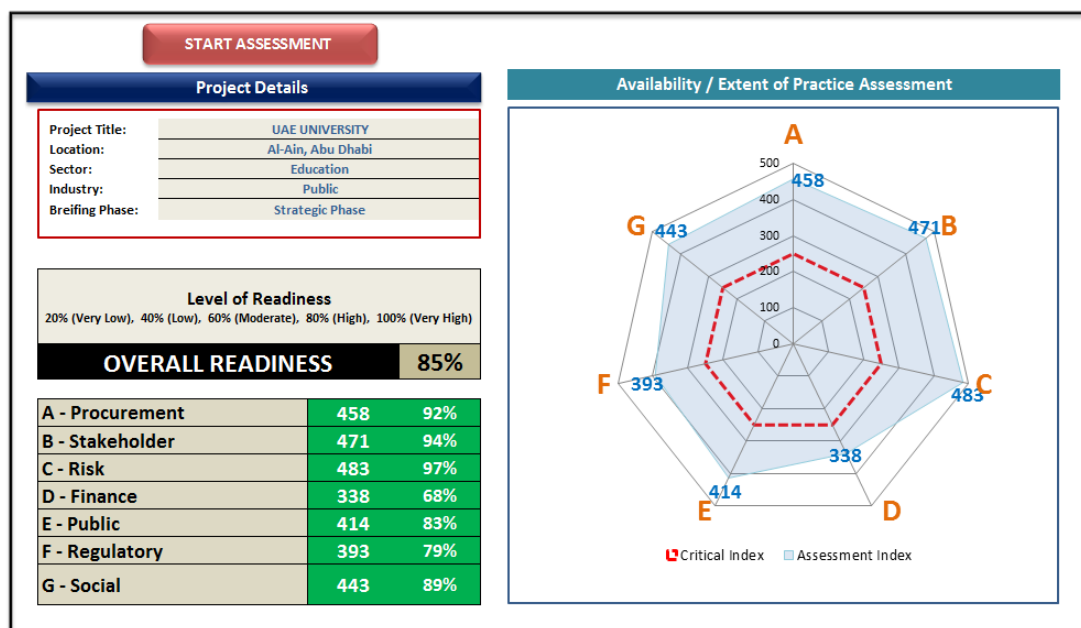


Figure 9-2: Overall briefing readiness assessment of case study 1

### 9.3.1.8 Overall readiness assessment of case study 1.

As noted above, a high level of overall readiness assessment of 85% was calculated. The Radar charts, illustrated in

Figure 9-2, indicate that the project has a high level of readiness shown by its percentages in four categories out of the seven. The index Radar chart indicates that all of the seven categories received indices that are higher than the critical line (250). To tell the truth, this was expected for this project, which demonstrates a successful case study of briefing development.

The top categories were as follows, in descending order: “Risk-related Factors” (Category C), ‘Stakeholder-related Factors’ (Category B), ‘Procurement-related Factors’ (Category A), ‘Social, Cultural, and Ethical-related Factors’ (Category G), and ‘Public Capacity-related Factors’ (Category E), with calculated indices of 483 (97%), 471 (94%), 458 (92%) and 443 (89%) respectively. The charts

also show a good level of readiness in the remaining factor categories, which are as follows, in descending order: Regulatory and Legal Factors (Category F) and Finance and Economic Factors (Category D), with scores ranging from 338 to 393.

With reference to the weight of each of seven categories from the overall readiness assessment, it can be observed that the second to lowest calculated index score of 373 (68%) , which was given to the ‘Regulatory and legal category’, constitutes a weight of 0.331 (almost a third of the overall readiness assessment criteria). However, the overall calculated readiness score for the project shows a high level of readiness (85%), due to the high rating of other categories with considerable weight in the criteria, such as categories C, A, and E with calculated assessment scores of (97%), (92%), and (83 %), respectively.

#### **9.4 Case Study 2: A Regional Highway**

This is an actual case from the PPP construction industry in the UAE, which has been analysed in the development of the Preliminary Process Framework for PPP briefing with special reference to the UAE Construction Projects in Chapter 6. As discussed above, the main aim of this project was to upgrade, finance, operate and maintain a 327-km highway regional highway, for around \$3bn, with a 25-year concession. The name of the project and that of the public sector client organization were not mentioned for reasons of confidentiality, as requested by the interviewee. There were several limitations and challenges facing the briefing process in this project. The absence of a methodology or formal procedures for the briefing in this project was due to the absence of a unified tender law and PPP procurement process in the UAE. The project brief was also developed by the public client organization without the involvement of the other key stakeholder. This resulted in very little

support for the project outside the client organization. The limited experience of the briefing staff in the public sector client organization and the absence of PPP documentation and best practice were marked at the briefing stage. Due to the lack of experts and the absence of formal procedures, it was a challenge to perform comprehensive feasibility studies for this project with robust technical, financial and economic analyses. Moreover, there was an unrealistic risk transfer to the private sector. More details are discussed in Chapter 5.

After tendering, this project suffered a series of delays and scope changes, so as to cost less. Then, after three years of appraisal and negotiations with potential private partners, with several million dollars spent on preparing the bid, the project collapsed as a PPP.

#### **9.4.1 Assessment of critical success factors: the seven categories and their readiness indices**

The senior project managers from the public sector client were interviewed and asked to allocate scores for all the factors. Project briefing data were extracted after the briefing stage was completed. The scores were entered and the resulting low scores of the seven categories' of factors are presented in Figure 9-3.

The mathematical model, embedded in the prototype's option one and described in Chapter 8, is used to calculate the index values for each of the seven categories and the overall readiness assessment of case study 2. An overall readiness of 45% was calculated using the BGDSS (option one). The detailed assessment of each of the seven categories is illustrated in same figure.

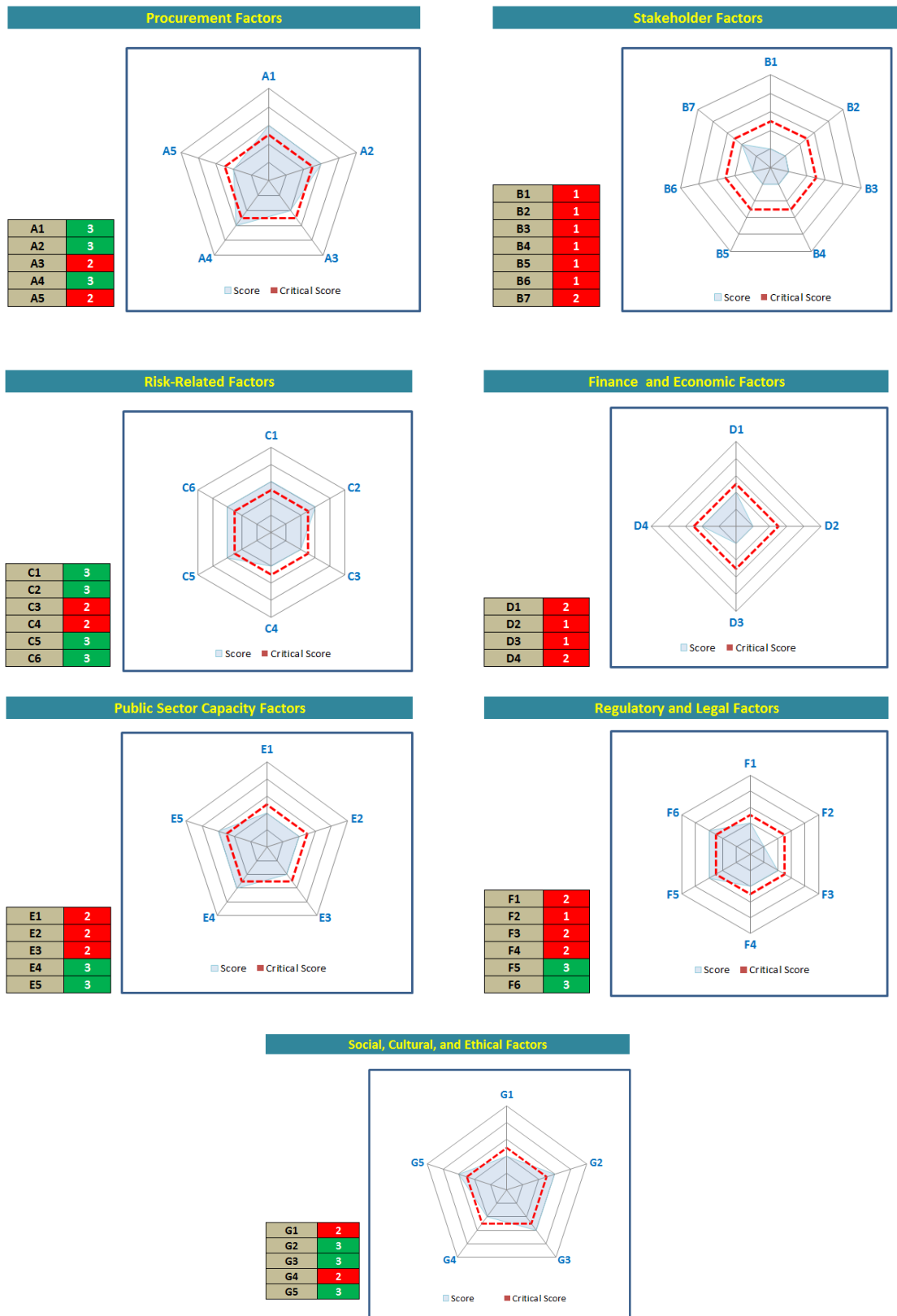


Figure 9-3: The assessment of the seven categories of CSFs for case study 2, Regional Highway



The results show that most of the factors (71% from the 38 CSFs) scored less than the critical figure of 2.5. The following section provides more analysis and discussion of each category of factors.

#### **9.4.1.1 Procurement-related factors (Category A)**

The calculated readiness index of this category is 258 out of 500 (52 %). In this category, the ‘Appropriateness of the selected PPP model’ (CSF A3) received a score of (2) (showing the limited extent of its practice). When this issue was discussed with the respondents, they highlighted that the project was based on a unitary charge payment model, but there was only one available working model of it (in Australia). A similar score (2) was received for the ‘Flexibility of the brief and the management of change’ (CSF A5). The interviewees judged that during briefing stage the project team did not consider flexibility in the development of the brief to allow for possible changes nor the ability of the brief to describe the possible changes to the client organization that might result from the PPP project. This omission became clear when the project suffered a series of delays after the client organization asked for a scope change as a result of tendering at a lower cost. The scope was not clear enough to incorporate change. At the same time, CSF s A1, A2 and A4 were deemed to have been practiced to a satisfactory extent, scoring 3.00.

#### **9.4.1.2 Stakeholder-related factors (Category B)**

The interview and the case analysis provided a number of noteworthy results, some of which are the Stakeholder-related Factors (Category B). These had the poorest calculated readiness index of 114 out of 500 (23 %), as shown in

Six factors (B1-B6) out of seven were recorded with the lowest and poorest scores (1). The discussion during the interviews revealed that the most influential stakeholders were not formally identified, their potential influence was not understood and there was no strategy in place to manage it. These stakeholders included the key government agency, the Department of Finance, the Executive Council and also the influence of some of the major construction companies in the region who were not involved in the project.

#### **9.4.1.3 Risk-related factors (Category C)**

Risk-related Factors (Category C) are considered the second most important category as it constitutes a weight of 0.232. This category received 267 out of 500 (53%), which can justify its level of readiness as calculated for this project.

Figure 9-3 shows that proper risk allocation and sharing among project stakeholders (CSF C3) and proper mitigation/reduction strategy for anticipated risks/threats to the PPP project (CSF C4) were awarded the lowest scores in this category (2). This was expected, because risk allocation and mitigation in this project were poorly understood and thus key risks were allocated to the private sector. Generally, the interview results showed that a lack of formal, comprehensive risk assessment contributed to this oversight. A formal risk assessment as is standard practice for all other projects would have helped to remedy the oversight and some of the other issues which ultimately led to the failure of the project.

#### **9.4.1.4 Finance and economic- related factors (Category D)**

The Finance and Economic Factors (Category D) had the second lowest index among the seven categories, 142 out of 500 (28%). Both factors 'Business and

economic viability of the feasibility study' (CSF D2) and 'Sound commercial and financial package/arrangements' (CSF D3) were awarded the lowest scores in this category (1). It was obvious during the discussion of this case that with regard to CSF D2, the feasibility study did not look at the wider economic benefits that would accrue from the project and could have offset the higher costs. In regard to CSF D3, it was poorly understood and the packaging reflected this, resulting in commercial bids with very costly financial packages.

#### **9.4.1.5 Public sector capacity- related factors (Category E)**

Public Sector Capacity-related Factors (Category E) with an index of 218 out of 500 (44%) is the second lowest calculated index after the Stakeholder-related Factors (Category B) in this project. A limited extent of practice was allocated, scoring (2.00) for three out of five main factors in this category. One interviewee remarked that during the development of the brief, it was not clear from the very beginning whether 'political support' (CSF E1) had actually been sought, let alone obtained. Regarding the 'Qualified and experienced public staff to manage the PPP briefing process' (CSF E2), although consultants were engaged, public sector counterparts could have played a bigger role. Moreover, governmental assistance in undertaking the PPP project (CSF E3) had not been available because the project had been the first of its kind for the client organization.

#### **9.4.1.6 Regulatory and legal - related factors (Category F)**

The calculated index of this category (F) was 237 out of 500 (47%). This category is considered the most important category, constituting a weight of 0.331 (33%) of the criteria for readiness. In this project, this category was one of the four categories with the lowest readiness index. The 'approved governance model by

relevant authorities for the PPP venture' (CSF F2) was awarded the lowest and poorest score of (1). Because there was no governance model for PPP in place which had been approved by the Department of Finance. The following factors were also awarded the second lowest scores: the 'availability of effective regulatory and legal frameworks for PPP' (CSF F1), 'the project scope to match the authorized mandate of the public agency' (CSF F3) and 'the adherence to applicable and up-to-date legal and regulatory frameworks' (CSF F4), with a rating of 2 out of 5. This resulted from there being no PPP laws in place to govern contractual relationships, uncertainty whether the public sector client organization had this mandate and an absence of regulatory frameworks in place to govern the proposed PPP contractual relationships.

Generally speaking, this is with line with the discussion in several previous chapters of the present thesis. Because there was a lack of any kind of legal or regulatory framework to facilitate the funding and procurement arrangements for the project, it was very difficult to conduct a PPP process within the procurement rules of the client organization and government procurement laws. A formal regulatory framework would also have made the value-for-money proposition and the required criteria of the Department of Finance clearer from the start and avoided the problems that were later encountered with respect to the Department of Finance's buying in to the project.

#### **9.4.1.7 Social, cultural and ethical - related factors (Category G)**

The calculated index of this category (G) was 264 out of 500 (53%). As discussed above, Category G is considered the least important category, since it constitutes a weight of (0.022) in the hierarchy of CSFs. Results show that the index for this category is located at only 9 degrees higher than the critical line (250). Two

factors from this category scored 2.00 (indicating the ‘Limited extent of practice’). These factors are ‘Community participation, acceptance, and support’ (CSF G1) and ‘Acceptable tariff level’ (CSF G4), since no community consultation was undertaken for this project and there were no preliminary studies to determine the acceptable levels of the tariffs. The final proposed tariff was deemed to be too high for the project to start. The other factors, G2, G3 and G5, scored 3 for their regular practice.

#### **9.4.1.8 Overall readiness assessment of case study 2.**

The Radar charts, illustrated in Figure 9-4, indicate that the project has an overall low level of readiness of (45%). Looking back to the indices of the seven categories may determine the cause of such a level. The results show that most of the factors (71% of the 38 CSFs) were awarded less than the critical score of 2.5. Consequently, four factor categories out of seven received score indices below the critical line (250). Those categories in ascending order are: Stakeholder-related Factors (Category B), Public Sector Capacity-related Factors (Category E), Finance and Economic Factors (Category D) and Regulatory and Legal Factors (Category F). Interestingly, these four categories constitute a weight of 0.632 (63.2%) from the overall hierarchy that was developed to model the CSFs in PPP briefing. This may justify such a low level of overall readiness in this project. Moreover, the remaining categories scored with indices only slightly above the critical line (250). In descending order these categories are: Risk-related Factors (Category C), Procurement-related Factors (Category A) and Social, Cultural, and Ethical Factors (Category G). Unfortunately, this was expected owing to the delays and scope changes in the project (see Figure 9-4 below).

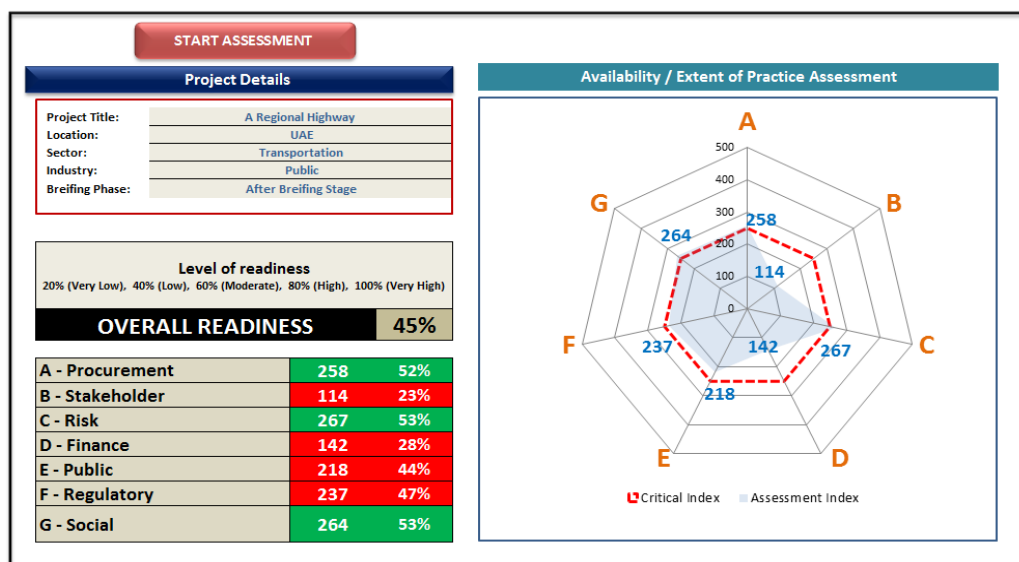


Figure 9-4: Overall briefing readiness assessment of the case study two.

## 9.5 Summary and Conclusion

The aim of this chapter was to validate a model that was developed for assessing the readiness of public and private organizations for successful brief development and assess the performance of the model as a decision-making tool. Two mega projects – case studies – were assessed by means of this model. The first case was the New Campus of the United Arab Emirates University (UAEU) and the second was a regional highway project. Structured interview sessions were conducted with senior members of the briefing team from these projects. A questionnaire survey was used when they assessed the availability/extent of practice of the identified CSFs and when each respondent discuss the possible reasons behind his/her assessments.

The result of the first case illustrates a very good level of overall readiness for briefing development, due to the availability/extent of practice of, most of the factors critical to the success of PPP briefing in UAE construction projects. Generally, there was a very high level of readiness in four categories, namely, Risk-related Factors

(Category C), Social Cultural, and Ethical Factors (Category G), Stakeholder-related Factors (Category B) and Procurement-related Factors (Category A), and a high level of readiness in the other three categories. This was expected for this project, which demonstrates a successful case study of briefing development.

Alternately, the second case study, which collapsed as a PPP project, after a long period of appraisal and negotiations with potential private partners, demonstrates an unsuccessful case study of briefing development. The result using the developed model validates this issue, and underlines areas of low overall readiness for briefing development. Most of the assessed CSFs categories were deemed to have low levels of readiness. Indeed, the reason for the low readiness of the project overall was related to a lack of several legal or regulatory success factors in the briefing stage of this project. Poor stakeholder management and to escalating costs resulting from bad risk management. This led to very little support for the project outside the public client organization, and the failure of downfall of the project as a PPP, in which the government had decided to use the traditional procurement method instead of a more costly PPP model. The outputs of these two cases validate the developed model and its performance of its stated purpose.

## Chapter 10: Summary and Conclusion

### 10.1 Introduction

The main aim of this research has been to develop a framework for guiding the brief development of PPP projects in the UAE construction industry. In order to fulfil this aim, detailed objectives were identified and a suitable methodology was implemented.

The focus of this chapter, organized in four sections, is to present the conclusions of the study. The first section presents a summary of findings of the main themes/and areas that have been investigated. The second section reports on the main contributions of the study. The limitations and difficulties of the study are discussed in the third section, and future research directions are suggested in the last section.

### 10.2 Summary of Findings

The main findings of this research are summarised below.

#### **The use of PPP in the UAE**

The specific findings in the following five paragraphs fulfil the first objective and validate the first hypothesis of this research; for more details, see Chapter 3.

Although the UAE has been the biggest market for Public Private Partnerships (PPPs) in the countries of the Gulf Cooperation Council (GCC) and despite the present increase in the use of PPPs in the rapid development of UAE infrastructure projects, little is known about the importance, future demand and the success factors of adopting such an approach there. Both public and private sectors



share the opinion that beyond a five-year window, there is a demand for a PPP approach everywhere in the country's infrastructure development. Several factors are driving the demand for these sectors. This demand is expected, due to the current and future prospects of economic and demographic growth in the UAE, and to the expected high rate of growth of its population.

The UAE's adoption of the PPP approach brings a high potential for efficiency gains in the development and implementation of projects. In fact, the UAE does not face financial problems at present; but the most important post-crisis message is still the most efficient use of fiscal resources. Thus, the current focus across the region on the PPP approach is a result of using the scheme as a tool for adding efficiency, used to attract the technical knowledge, skills, and the expertise of the private sector that the public sector lacks. Usually the involvement of the private sector increases the likelihood of finishing infrastructure projects on time and within budget; moreover, it introduces efficiencies and innovations.

Experts from both sectors in the UAE believe that the PPP method is a much more effective way to secure infrastructure in UAE than traditional ones have been. The discussion in this research reveals that several factors have served to increase the interest in the PPP approach there. These factors include general benefits such as access to private finance in order to expand services, clearer objectives, new ideas, flexibility, better planning, improved incentives for competitive tendering, better management and allocation of risks and greater value for money in public projects.

Thirteen general factors critical for the success of PPP projects in the UAE are discussed in Chapter 3. According to the overall results, the top five CSFs, in descending order of importance, are: 1) the availability and effectiveness of a proper

regulatory and legal framework for PPP; 2) proper risk allocation and sharing among project stakeholders; 3) a clear project brief and client outcomes; 4) the comprehensive and business viability of the project feasibility study; and 5) proper project value management systems throughout all the project phases. The analysis of public and private sector opinions demonstrates that there is almost a consensus between the two sectors in the importance of these factors. Analysis has also revealed that those factors are considered either important or very important to the success of PPP implementation in this country. There is almost a consensus also between the two sectors in the perceived importance of the top four ranked factors, namely, the availability and effectiveness of a proper regulatory and legal framework; proper risk allocation and sharing among project stakeholders; a clear project brief and client outcomes; and the comprehensive and business viability of the project feasibility study. Despite the significant importance of proper regulatory and legal framework for PPP implementation, however, there is at present no specific PPP legal or regulatory framework in the UAE to support the use of such an approach.

Many other challenges currently face the briefing process of PPP projects in the UAE. There is no clear methodological/procedure for PPP brief development, due to the in the UAE's lack of a unified tender law and PPP procurement process. In addition, the government has no specific authority allocated to this type of procurement, such as a PPP unit. Moreover, the lack of previous experience in PPP procurement has led to a shortage of experienced staff for managing PPPs and the absence of PPP documentation or records of best practices in the governmental agencies. As a result, some government-related organizations have taken over some of the tasks that would have been allocated to dedicated authorities/units in countries

mature in the implementation of PPPs. It is urgently recommended that a PPP unit be created to establish and unify a proper regulatory and legal framework for PPP projects.

### **PPP briefing practice in the mature PPP markets**

The specific findings in the following two paragraphs fulfil the first part of the second objective of this research; for more details see Chapters 4 and 5.

Comparative analysis of the briefing processes in the three most mature PPP markets (the UK, Australia and Canada) demonstrate the generality of the PPP main briefing processes in these three countries, revealing several main characteristics of their briefing frameworks. These main characteristics are the management and control of PPP briefing, solely in the charge of the public sector client/the public sector client body. Regarding the process itself, in spite of differences in the titles of the main phases in the three countries, the phases have almost the same functions in their processes and also share the same decision gates. Furthermore, the contents of activities in the reviewed processes are almost identical, the main difference being the time sequence of some of the activities involved. In the briefing processes of the three countries there are three recognizable decision gates, which are vital. These are: i) the decision on the need of physical assets/infrastructure to meet the identified business and organizational needs; ii) the decision on the PPP's suitability; and finally iii) the decision whether to issue the final project brief. The UK, Canada and Australia share the same multi-stage procurement process, consisting of an Expression of Interest (EoI) stage, an RFP stage involving interaction with bidders, the selection of a preferred bidder and pre-award contract negotiations.

In this research a generic conceptual process framework for the development of Briefing in PPP Projects was developed, based on the findings from the comparative analysis of PPP briefing practice in the three most mature PPP markets. The developed framework consists of three main phases, in which the PPP is iteratively developed and appraised throughout the briefing stage. The three phases are as follows: i) the Strategic phase, ii) the Feasibility phase, and, iii) the Procurement phase. At each main phase, a key decision is required in the PPP briefing process. The proposed main phases, as well as the key decision gates, are suggested due the considerable cost of developing PPP projects; thus a well-defined PPP briefing process can ensure that development budgets are well spent. Moreover, such a framework enables oversight agencies to be involved in good time in approving projects. It can also provide a clear mechanism for identifying and precisely representing all the stakeholders' requirements in the briefing stage of a PPP project.

### **The briefing practices of PPP projects in the UAE construction industry**

The specific findings in the following four paragraphs fulfil the second part of the second objective and validate the second hypothesis of this research; for more details see Chapter 5.

Several issues were identified when reviewing the existing PPP briefing practices in two case studies and a document analysis in the UAE construction industry. One of the main problems identified was that this industry has no clear methodology/procedure for the briefing process in PPP projects. This is due to the absence of a national unified tender law and PPP procurement process. In addition, a lack of understanding of certain necessary procurement-related elements in the

briefing of PPP projects was observed, such as a public sector comparator (PSC), a feasibility study with robust technical, financial and economic analyses and a risk analysis and allocation, with limited leadership and control from the public sector in several briefing processes.

There were no clear process steps for the involvement of the main stakeholders in the briefing process. Nor were there any process steps for the involvement by the user groups and those responsible for project requirements, because there are no clear process of consultation with users of the project, in particular those who will use the new facility once it is built. A close relationship with the user groups would normally have engendered a better understanding of the end-users' requirements, thereby promoting innovation and enhancing the quality of services and facilities. It was recommended that the capacity of the public sector in terms of skills and the availability of PPP documentation and best practice in the public domain should be increased for the sake of successful PPP briefing.

Analysis of the two case studies revealed that there are no clear or distinct briefing decision gates in the briefing process of PPP projects in the UAE construction industry. Furthermore, the decision on PPP as the preferred procurement option was taken early; hence, the briefing process did not go through a strategic phase where a decision whether to build or not results from a feasibility study that checks whether a traditional contract, as opposed to a PPP, should be awarded,

Current regulations in the UAE do not call for the documentation of lessons to learn for projects in general; thus the investigation of all cases showed that at present no clear documentation of lessons to learn has a place in PPPs in general and in the briefing process in particular. Documenting the lessons to learn is very

important in the case of the UAE, for the sake of improvement and to create and share databases. These would help to increase transparency and in turn would help both public and private agencies to run better and succeed with PPP projects. As a result of the above noted challenges, most of the experts and professionals pointed out that clear project briefs and client outcomes are not available for bidders as outcomes of the briefing process.

### **The process framework for PPP brief with special reference to UAE construction industry**

The specific findings in the following three paragraphs fulfil the third objective and validate the third hypothesis of this research; for more details, see Chapter 5.

On the basis of knowledge from the international literature, international and local professional practice and case studies and documentary analysis and interviews with professionals, a process framework for PPP briefing with special reference to UAE construction projects was developed. The proposed framework evolved in three main stages: conceptual, preliminary and final. In the first stage, the development process of briefs for PPP projects was investigated to define its main, stages, generic processes, and key decision gates, as recommended in the literature and through a comparative analysis of the different briefing process frameworks of the three most mature countries in the PPP Market Maturity chart. Through this stage a generic conceptual process framework was built up for the development of briefs in PPP projects in general. In the second stage, a preliminary process framework for PPP briefing with special reference to UAE construction projects was developed from an analysis of two case studies for its mega PPP projects and compared with the existing governmental procedures for developing PPP briefs. In the last stage, the

above framework was further developed and was validated through structured interview sessions with professionals and experts from the PPP market in the UAE. The interviews revealed that the developed process framework useful and significant for developing PPP project briefing in general and in the UAE in particular, as well as for overcoming the problems and challenges associated with PPP briefing in UAE.

The process framework for PPP project briefing, as noted above, consists of three main phases, strategic, feasibility and procurement) separated by clear decision gates. In this framework the PPP is iteratively developed and appraised through the briefing stage. At each gate, the continuation of the process is decided on the basis of an analysis of the information available at the time in the documentary form of a defined briefing deliverable. The framework has five main components: 'briefing phases', briefing activities', 'key briefing tasks'; 'briefing decision gates' and finally 'briefing deliverables', presented in columns, as well as some documentation of the lessons to learn throughout the briefing process. It can provide guidance on each of the three proposed stages for developing a PPP project briefing, from needs analysis to issuing a request for proposals at any point in the lifetime of a project briefing.

The proposed framework provides a clear systematic procedure for the briefing process with special reference to UAE construction projects, containing all the main required activities and their key tasks, as in the PPP briefing process in mature PPP markets, after adaptation to the local UAE conditions. It enables oversight agencies to control and manage the briefing process and to be involved in good time in approving projects. It can also provide a clear mechanism for identifying and precisely representing all the stakeholders' requirements in the briefing stage of PPP projects. The distinct briefing decision gates in the developed framework help to make sure that the project will continue to meet the criteria

required for a successful PPP project. Furthermore, unlike traditional practice, this process enables the lessons to learn to be identified and documented as a main deliverable at the end of each of three phases in the project's briefing process. This advantage allows room for the huge amount of special information and experience that might be generated during each briefing phase. It encourages the ability to draw key lessons from experience throughout the life cycle of the brief development, as well as from its conclusion and provides a cumulative database built of valuable lessons to learn which could be used in the UAE to continually improve the briefing process and its components. The validation of the process framework for PPP project briefing revealed that the framework took all the briefing considerations for PPP projects (discussed in Chapter 4) into account, and furthermore, that it rectified the issues that affect the briefing process in the UAE, which had earlier been identified and discussed in Chapter 5.

### **CSFs framework for PPP briefing with special reference to the UAE construction industry**

The specific findings in the following two paragraphs fulfil the fourth objective of this research; for more details; see Chapters 6 and 7).

Based on the above process framework for PPP briefing, a CSFs framework for this purpose with special reference to UAE construction projects was then developed through three main stages. First, an initial list with 218 process-based factors was developed through a comprehensive review of the available literature on the success factors of construction project briefing in general, and PPP projects in particular, emphasising the briefing stage. These factors were reviewed, refined to discard the repeated factors and merge similar ones, and grouped into seven main categories. In order to complete the picture of these factors, and to confirm the ones



identified in terms of their categorization, sufficiency and appropriateness within the UAE's PPP environment, interviews with PPP experts and professionals in the country were held and a preliminary CSFs framework was developed. Factors in seven categories were found, namely, procurement; stakeholder; risk; financial and economic issues; public sector capacity; regulatory and legal issues; and social, cultural and ethical. These categories contain 38 CSFs, together with their 103 sub-success factors (SSFs). Next, after further coding, re-grouping and refining, a final CSFs framework for PPP briefing with special reference to UAE construction projects was developed. The soundness of this CSFs framework was confirmed in interviews with PPP professionals.

The findings from a questionnaire survey with 104 respondents illustrates that all of the seven categories with their CSFs and SSFs were important/significant to the success of the briefing process of PPP projects in the UAE construction industry. Their relative importance, in descending order, is as follows: 1) Regulatory and Legal Factors, 2) Finance and Economic Factors, 3) Risk-related Factors, 4) Public Sector Capacity-related Factors, 5) Procurement-related Factors, 6) Stakeholder-related Factors, and 7) Social, Cultural, and Ethical Factors. In addition, the perceptions of the public and private sectors concerning the importance of CSFs was analysed; the results disclose that there are no significant differences between the public and private sectors – indeed, a general consensus – regarding all the CSFs and the overall rankings within each category.

#### **The readiness assessment model for the successful development of PPP briefing**

The specific findings in the following two paragraphs fulfil the fifth objective and validate the fourth hypothesis of this research; for more details see Chapter 8.

Based on the above findings, CSFs were modelled to develop a CSFs model for guiding the assessment of the readiness of organizations to undertake the briefing process of PPP projects in the UAE's PPP construction industry. This model is a decision making tool to assist and guide decision-makers and professionals in this area and to provide a diagnostic tool for identifying the key areas that organisations/professionals need to address in order to carry out the briefing process successfully. It was built on the systematic steps of assessing in order to allow rational decisions to be adopted. The Analytic Hierarchy Process (AHP) was used in the modelling of CSFs; it conducted pairwise comparisons and calculated the weights for all the seven categories and their factors. This resulted in a hierarchical structure for the CSFs in PPP briefing.

The assessment of readiness resulted from an evaluation of the users which is multiplied by the various weights from the AHP of the CSFs and the category; these resulted in an index for each CSF as well as for each category. As a result, the overall readiness of the organization for a project can be evaluated and so enable the key areas that organisations/professionals need to address in a successful briefing process to be diagnostic.

### **The Briefing Guide Decision Support System (BGDSS)**

The specific findings in the following two paragraphs fulfil the aim of the second part of the fifth objective of this study; for more details see Chapters 8 and 9.

The aim of the proposed system was to provide a diagnostic tool for identifying the key areas that organisation/professionals need to address in order to carry out a briefing process more successfully. The Briefing Guide Decision Support

System (BGDSS) is the transformation of the readiness assessment model into an easy and user-friendly tool. It can:

- Assist and guide decision-makers and professionals in the UAE in developing the PPP briefing process of construction projects.
- Contribute to the readiness of public and private organizations for the development of their briefing process.
- Contribute to the highlighting of different areas for improvement and help in developing an action plan to improve brief development.
- Let organizations use this model to predict, assess, track, and/or improve the briefing process of PPP in construction projects.

This system can be used before starting a project to assess the readiness of an organisation for successful brief development, allowing action plans to be developed for improvement on the basis of this evaluation. In addition, it can be used also during and after the completion of the briefing stage or project for evaluating the extent of practice of each factor and its categories and to generate lessons to learn as well as action items for the future development of the CSF framework. The validation of the developed model and assessment of its performance as a decision-making tool was conducted with reference to two mega projects (real case studies). The output of these two cases was found to validate the developed model and its fulfilment of its stated purpose.

### **10.3 Contributions**

The aim of this research has been to develop a framework as a guide for the brief development of PPP Projects in the UAE construction industry; to assist both the public and private sectors in implementing the briefing process systematically

and more successfully; and to ensure that important procedures and issues will not be overlooked.

### **Main contributions**

The three main contributions of this research are as follows:

- 1) The development of a ‘Process Framework for PPP brief development’, which is, to the author’s knowledge, the first attempt to develop one with special reference to UAE construction projects. The framework has five main components: ‘briefing phases’, ‘briefing activities’, ‘key briefing tasks’, ‘briefing decision gates’ and ‘briefing deliverables’. The framework developed above can be used by clients’ organizations in the UAE, as well as firms in its private sector, at the PPP briefing stage to create a platform for a clear understanding of all stakeholders’ needs and to ensure that the final product meets their wishes, while taking into consideration all the required studies and analysis.
- 2) The development of a ‘CSFs Framework for PPP Briefing’, which is, to the author’s knowledge, the first attempt to develop one with special reference to UAE construction projects. It has seven categories, containing 38 CSFs and their 103 sub-success factors (SSFs). This framework provides a list of key factors that must be present if a brief development is to succeed, and the objectives of its different stakeholders are to be achieved.
- 3) The development of a method for assessing the readiness for successful brief development that employs a CSFs framework as a weighted set of criteria for such assessment, using decision support technology. The method used the AHP technique to calculate the CSFs and the weights of their categories. This method

is the first attempt, to the author's knowledge, to develop such a method in the context of PPP briefing of construction projects in general, and also the first with special reference to UAE construction industry. This model was developed and presented in a user friendly decision support system.

### **Other contributions**

Beside the development of this framework containing these three main contributions, this research makes some other original contributions, summarized below:

- 1) The development of a generic conceptual process framework for developing briefs in PPP projects, based on a comparative analysis of the briefing practices in the three most mature PPP markets. It has a strategic phase, a feasibility phase and a procurement phase, with 12 main processes in which the PPP is iteratively developed and appraised during the briefing stage. At each main phase, a key decision is required in the PPP brief development process,; in this way an early and well-defined PPP briefing process can be set up to ensure that development budgets are well spent. Moreover, such a framework enables oversight agencies to be involved in good time in approving projects. It can also provide a clear mechanism for identifying and precisely representing all the stakeholders' requirements in the briefing stage of PPP projects.
- 2) A review of current practices in PPP briefing, from both the global and local points of view. Globally, PPP briefing is investigated and its considerations are identified. The various briefing frameworks in the most mature PPP Markets were investigated and the main characteristics of their briefing frameworks were identified.

- 3) A review of the current briefing practices in PPP construction projects in the UAE, identifying its main associated problems and challenges. These findings filled up a gap in the literature with regard to PPP briefing in general and PPP briefing in the UAE in particular.
- 4) The identification and ranking of the relative importance of the CSFs in PPP brief development, with their SSFs, taking special note of the UAE construction industry.
- 5) Raising the awareness of several members among staff and decision makers in the UAE who work in Public Private Partnerships of the challenges currently facing the briefing process of PPP projects in their country, achieved by interviews and questionnaires. The major challenge is the absence of a unified tender law and PPP procurement process in the UAE, which precludes a clear methodology/procedure for PPP brief development.
- 6) Using interviews as well as questionnaires to raise the awareness and interest among several members of staff and decision makers in the same area as 5) above of the importance of putting in place a framework to guide the brief development of PPP Projects in the country's construction industry. This would assist both the public and private sectors to implement the briefing process systematically and more successfully.

#### **10.4 Limitations and Difficulties**

This research addressed the benefits and advantages that the proposed framework for guiding the brief development of PPP Projects in the UAE construction industry and the proposed readiness assessment model. However, no

model can claim to be perfect; this research and the proposed model have, among other things, the following limitations:

- Due to the limited time and resources of the researcher, the validation of the readiness assessment model, based on two real PPP case studies, has the limitations of the case study approach. More case studies could be used to test and validate the present model. The researcher appreciates the difficulty of finding suitable projects
- Another limitation is that the choice of selected case studies was made on the basis of the willingness of different parties in the two sectors to cooperate and make data available to this research; the data were also constrained by confidentiality.

## 10.5 Recommendations and Future Research

The outcome and findings of this research have generated several recommendations and a number of areas have been identified that would benefit from further research. The first type of recommendation could apply to the industry for application and improvement, while the second type is recommended for further research.

### Recommendations for the industry

- Adopting the Process Framework for PPP briefing stage: Adopting the developed Process Framework for the PPP briefing stage in PPP projects in the UAE would alleviate the problems that affect its present briefing process in the UAE, as identified and discussed earlier. The process framework provides a clear systematic procedure for the briefing process, containing all the main required activities and their key tasks in the process

after consideration of the local conditions. Because of its obvious benefits, the process framework should be the choice of the public client organizations working in PPP construction which want to compete in the future. In addition, this process framework should be built into the organisation's culture and management procedures, and should undergo evaluation and revision in response to experience for the purpose of continuous improvement.

- Using the Brief Guide Decision Support System (BGDSS): The briefing readiness model and its DSS, developed in this research, is recommended for use by the PPP construction industry in order to assist and guide decision-makers and professionals in the UAE in developing the PPP briefing process for construction projects. It also forms a diagnostic tool for identifying the key areas that organisation/professionals need to address in pursuing a briefing process more successfully. It was built in systematic steps to allow rational decisions to be taken. It is assumed that the briefing CSFs readiness model will change the way in which PPP brief development is managed. It is advised that this model be used in all the stages of the PPP briefing process.
- Focusing on CSFs for PPP briefing in the UAE: It is recommended that the government agency and firms working on UAE PPP projects or on overseas ones that want to compete or embark on work in the UAE should consider the identified CSFs in PPP briefing that reflect the culture and values of the society from both the public and private sector perspectives where the work is to be done



- PPP implementation in the UAE Construction Industry: with the increased demand for PPP projects in UAE, efforts should be made by related government agencies to:
  - Develop an effective regulatory and legal framework for PPP. This would be significant for encouraging the application of the PPP procurement approach in the UAE. Such a framework should be compatible with the country's legal systems and updated regularly as experience is gained and lessons are learned. In addition, the government should avoid complicated systems and over-regulation, which can burden and frustrate PPP transactions.
  - Improve PPP capacity in the current government mechanisms in place so as to coordinate PPP needs. This could be done by a PPP Unit, with experienced staff to manage the PPP process in relevant government agencies, adequate technical capacity in the government agencies to ensure the proper construction and service standards, and the presence in the public domain of suitable documentation and records of best PPP practices.

### **Recommendations for Future Research**

During the course of this research, some areas were found which may be recommended for further research.

- Identifying New PPP briefing CSFs: The research identified the CSFs that affect the PPP project briefing stage in general, with particular focus on the UAE construction industry. Further research is recommended to be carried out in other regions to identify new CSFs, reflecting their context, in order to give the best advices and prepare the most suitable model. In addition, the

critical success factors for briefing in specific types of PPP projects such as educational or healthcare facilities should be investigated.

- Using Management Disciplines to Enhance the PPP Project briefing: The role of some management disciplines such as value and risk management and the possibility of combining them in the PPP briefing process as a management tool for enhancing project performance should be investigated.
- Using Group Decision Support technology may be recommended, to develop a group decision support system (GDSS) and provide a computer-supported collaborative environment that enables project stakeholders to reflect their requirements at the strategic briefing stage.

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### List of Publications

- 1) Al Saadi, R. and Abdou, A. (2015) Factors Critical for the Success of Public Private Partnership in UAE Infrastructure Projects: Experts' Perception. International Journal of Construction Management, 1-19 (Accepted and under final editing).
- 2) Al Saadi, R. and Abdou, A. (2015) A conceptual process framework for the development of briefs in public private partnership projects. Proc. of Eighth International Conference on Construction in the 21st Century (CITC-VIII), "Changing the Field: Recent Developments for Future Engineering and Construction", May 27-30, Thessaloniki, Greece, 1-13.
- 3) Al Saadi, R. and Abdou, A. (2014) Factors critical for the success of PPP brief development, with special interest to Abu-Dhabi Emirate. Proc. of smart, sustainable and healthy Cities, first International conference of the CIB Middle East and North Africa Research Network (CIB-MENA), 14-16 December, Abu Dhabi, UAE, A1-24
- 4) Al Saadi, R. and Abdou, A. (2013) The use of public-private partnership in infrastructure development in gulf cooperation council countries. Proc. of International Conference on PPP Body of Knowledge (P3Book) 18-20 March, Westleigh Conference Centre, Preston, UK, A1-14



## Appendix A

### Semi-Structured Interview Questionnaire: Investigating the Use of Public-Private Partnership in the UAE



#### Investigating the Use of Public-Private Partnership in the UAE

**Dear Respondent,**

This semi-structured interview questionnaire is part of an ongoing research work for a PhD degree aiming at investigating the proper implementation of the Public-Private Partnership (PPP) approach in the United Arab Emirates (UAE). The main aim of this questionnaire is to collect experts' opinions and their perceptions of the importance, demand, and factors critical for the success of PPP in the UAE infrastructure projects.

The questionnaire is divided into two parts. Part I includes the respondent's general information and his/her background, while Part II assesses the importance, demands, and the possible critical success factors of PPP in UAE infrastructure projects.

The survey is targeting PPP experts and key personnel at companies and organizations (Public & Private) within the UAE. All data will be kept confidential and used anonymously for academic purposes only.

Researcher/PhD Candidate

Rauda Al Saadi

Email: [rauda.alsaadi@uaeu.ac.ae](mailto:rauda.alsaadi@uaeu.ac.ae)

Faculty of Engineering

UAE University

**Part I****Respondent General Information and Background**

Please respond to the following:

1. Personal contact information:

Your name (optional): .....

The name of your organization (optional): .....

Your title in your organization: .....

Your location (Emirate/Country): .....

2. Which sector do you have experience in?

 Public Sector       Private Sector       Other

3. Please indicate your personal experience in the following:

	<i>Years of experience</i>				
	0	5-10	10-15	15-20	≥20
Overall industry experience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Please indicate your personal experience in PPP projects:

	<i>Years of experience</i>				
	0	5-10	10-15	15-20	≥20
Overall experience in P-PP projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Part II: Importance, Demands, and Critical Success Factors of PPP Projects in the UAE.**

5. In your opinion, is PPP a better and much more effective method for project procurement in UAE?

 Yes       No

Why?

.....

.....

.....

6. Please rate the potential future demand for PPP in each of the following sectors for the coming five-year:

Low				High
1	2	3	4	5

	<i>Sectors</i>	<i>Rate</i>
a)	Transport (please specify)	<input type="checkbox"/>
b)	Energy	<input type="checkbox"/>
c)	Water	<input type="checkbox"/>
d)	Waste	<input type="checkbox"/>
e)	Telecommunication	<input type="checkbox"/>
f)	Health	<input type="checkbox"/>
g)	Educational	<input type="checkbox"/>
h)	Social Housing	<input type="checkbox"/>
i)	Other projects (please specify)	<input type="checkbox"/>

7. Please rate the importance/significance of the following Critical Success Factors in PPP projects in the UAE:

<b>Low</b>		<b>High</b>
	1                      2                      3                      4                      5	

	<i>Critical Success Factors</i>	<i>Rate</i>
1)	Strong and stable economy	<input type="checkbox"/>
2)	Available financial markets (local and international)	<input type="checkbox"/>
3)	Availability and effectiveness of proper and regulatory framework for PPP	<input type="checkbox"/>
4)	Political support and stability	<input type="checkbox"/>
5)	Savings and need for finance	<input type="checkbox"/>
6)	Readiness of the public sector (availability of experienced staff for managing PPP process in relevant government agencies)	<input type="checkbox"/>
7)	Strong private consortium (Technically and financially)	<input type="checkbox"/>
8)	Effective technology transfer mechanism	<input type="checkbox"/>
9)	Opportunities for innovation	<input type="checkbox"/>
10)	Comprehensive and business viability of project feasibility study	<input type="checkbox"/>
11)	Clear project brief and client outcomes	<input type="checkbox"/>
12)	Proper project value management systems during different project phases	<input type="checkbox"/>
13)	Proper risk allocation and sharing among project stakeholders	<input type="checkbox"/>

**Please indicate any other possible Critical Success Factors of PPP projects in the UAE:**

.....  
Thank you very much for your co-operation. Your contribution will add significantly to this research project.

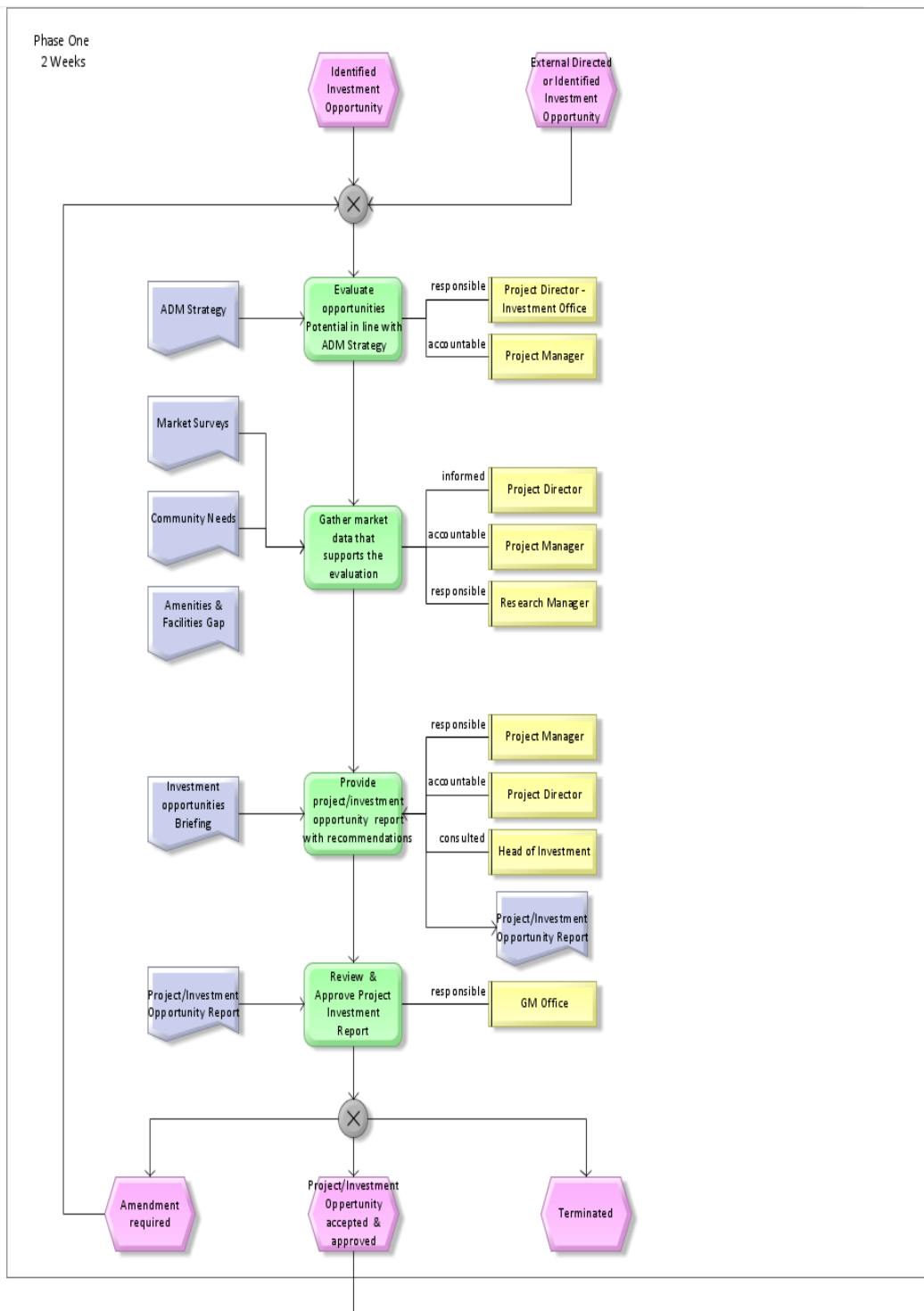
If you have further questions related to this survey, please contact me at  
[rauda.alsaadi@uaeu.ac.ae](mailto:rauda.alsaadi@uaeu.ac.ae)

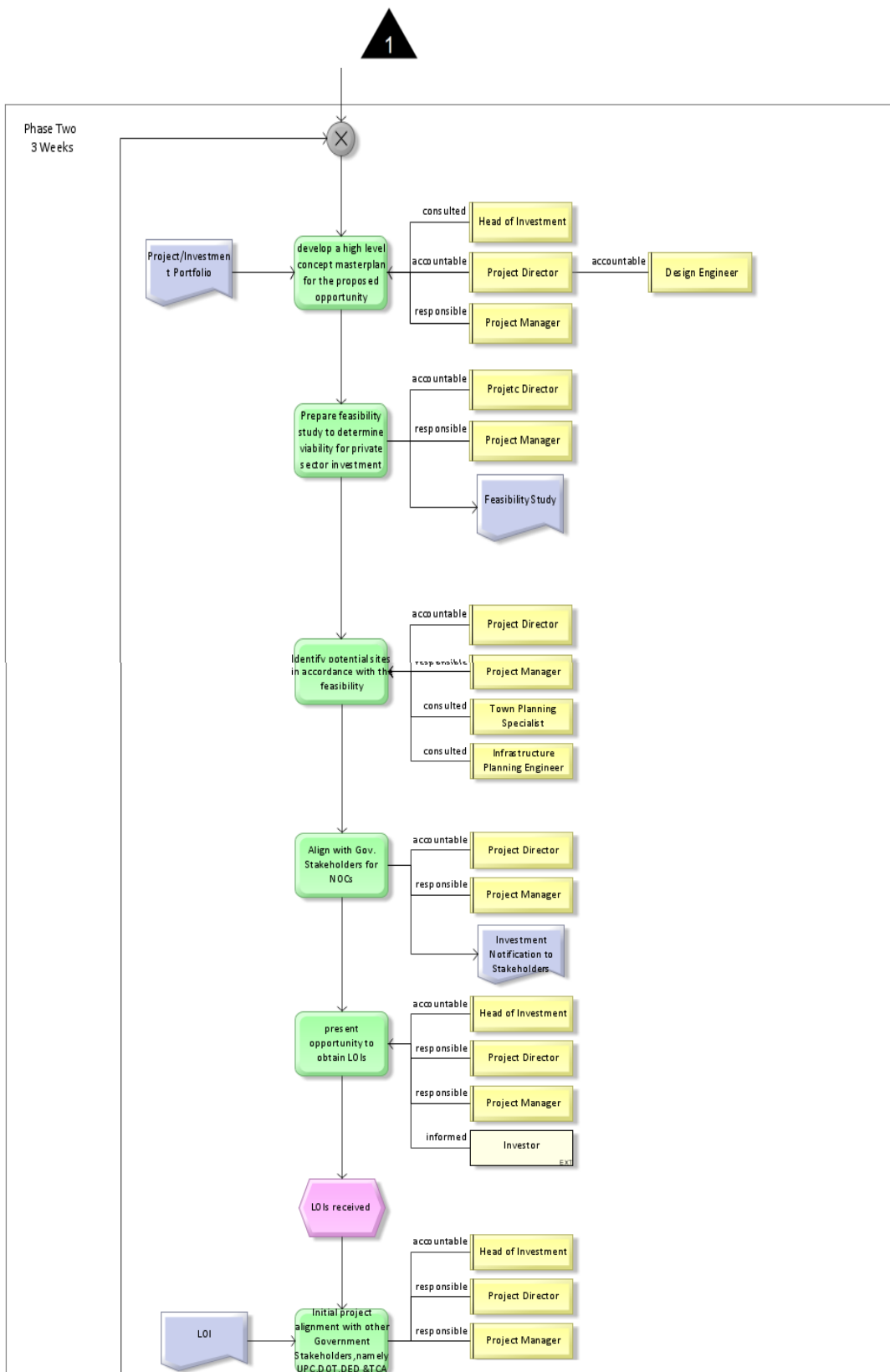
Would you like to receive a copy of the summary results of this questionnaire survey?

- Yes, my email address is  
 No, thank you.

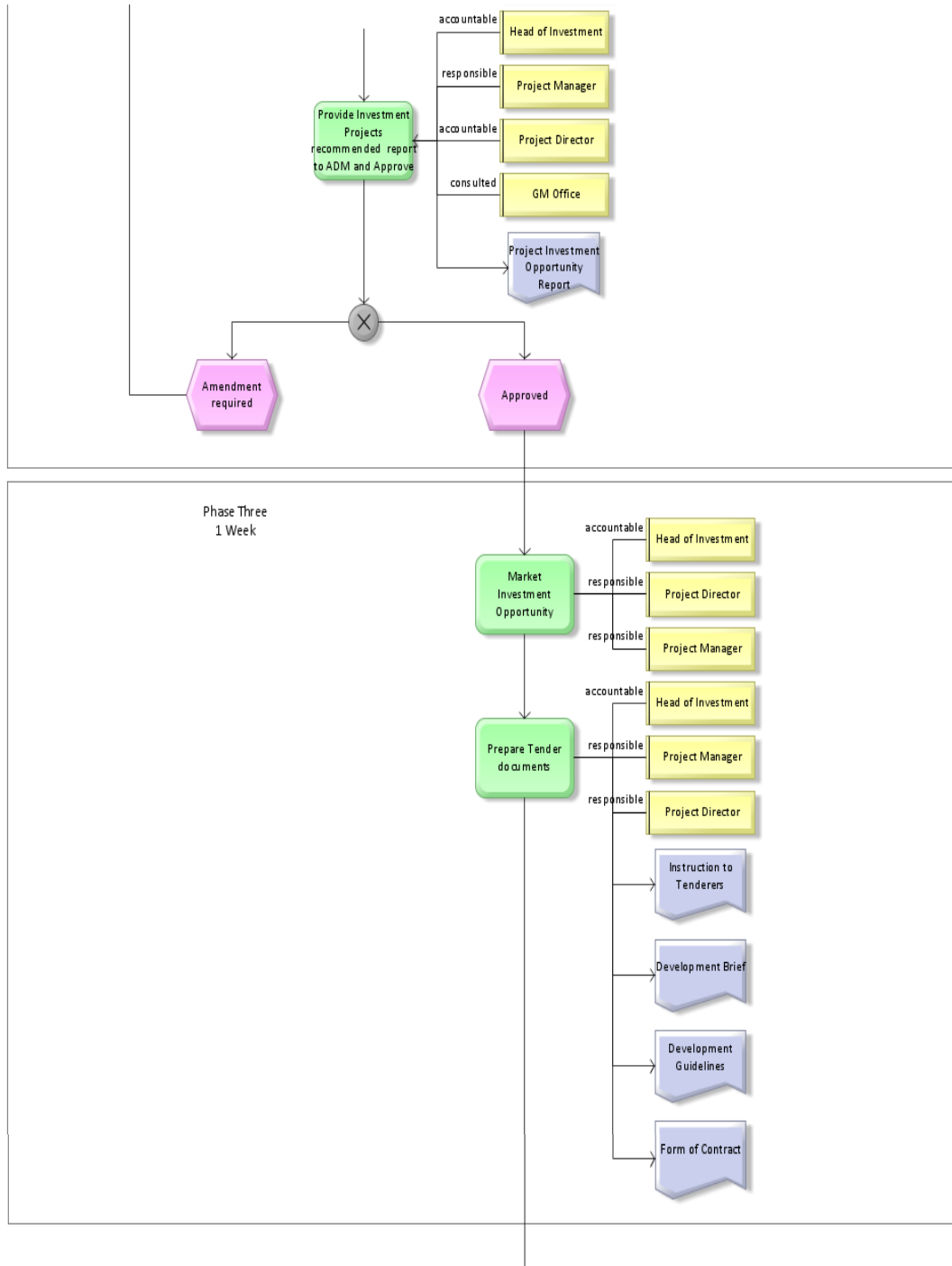
Rauda Al Saadi

## Appendix B Briefing Procedure for PPP Projects in Public Investment Office





2



## Appendix C

### Initial Success Factors List for PPP Briefing

Briefing Phases	Briefing Activity	Briefing Tasks	Factors Affecting the Briefing
Strategic Briefing	1. The Needs Analysis	1.1 Identify long term business/service needs.	<ul style="list-style-type: none"> <li>An accepted need for the service/ product (Ozdoganm &amp; Birgonul, 2000)</li> <li>A near-monopoly condition for the service/product (Ozdoganm &amp; Birgonul, 2000)</li> <li>Clear long-term demand for the products/service in the market (Ng, Wong, &amp; Wong, 2012)</li> <li>Comprehension of the functions that the institution performs in the public interest or on behalf of the public service (South Africa National Treasury, 2004b)</li> </ul>
		1.2 Demonstrate that the project is aligned with the institution's strategic objectives	<ul style="list-style-type: none"> <li>Understanding of the client's strategic goals (Yu et al., 2007)</li> <li>Alignment with the latest version of government policies and strategies (Ng et al., 2012; Victorian Government, 2001)</li> <li>Integration of the projects with the national and local planning process (UNESCAP, 2005)</li> </ul>
		1.3 Identify and analyse the available budget(s)	<ul style="list-style-type: none"> <li>Integration of the project's financial/financing support requirements with government's budget process (UNESCAP, 2005)</li> <li>Identification of government's future budgetary commitments (South Africa National Treasury, 2004b)</li> <li>Identification of the line items currently in the institution's budget which may no longer be incurred as a result of the proposed project (South Africa National Treasury, 2004b)</li> </ul>
		1.4 Ensure the institution's commitment and capacity	<ul style="list-style-type: none"> <li>PPP process has sufficient political support, due to positive record or political "champion"</li> <li>Defined government mechanisms in place to coordinate PPP needs</li> <li>Staff of relevant government agencies with resources/qualifications/information for managing PPP process</li> <li>Staff awareness of legal, financial and basic technical issues in PPP projects</li> <li>Staff competence in routine operations of PPP project development</li> <li>Technical capacity sufficient to ensure construction and service standards</li> <li>Staff capacity to access outside work, including feasibility studies and risk mitigation strategies</li> <li>PPP documentation/best practices available in public domain</li> <li>Adequate resources/facilities and expertise to train in PPP</li> <li>Provision for assisting line agencies and local government in undertaking PPP (UNESCAP, 2005)</li> </ul>
	2. Project Parameters and Scoping	2.1 Perform user groups analysis	<ul style="list-style-type: none"> <li>Identification of key user groups and nature of relationships and the project's impact on them (South Africa National Treasury, 2004b)</li> <li>Development of a user groups consultation plan (South Africa National Treasury, 2004b)</li> </ul>
		2.2 Get User Group Input	<ul style="list-style-type: none"> <li>Adequate representation of user groups and client groups (Yu, 2007; Yu et al., 2007)</li> <li>Clear end-user requirements (Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)</li> <li>Understanding of different end-users'/user groups' culture and traditions (Othman, 2010)</li> <li>Proper use made of users' values and knowledge(Kelly &amp; Duerk,</li> </ul>

Briefing Phases	Briefing Activity	Briefing Tasks	Factors Affecting the Briefing	
			<p>2002; Zwemmer &amp; Otter, 2008)</p> <ul style="list-style-type: none"> <li>• Strict control and management of the client/user groups by the brief/ output specification, to avoid the brief's becoming a 'wish list' (Foster Infrastructure Pty Ltd, 2012; Yu, 2007; Yu et al., 2007)</li> </ul>	
		2.3	Develop project parameters and output specifications	<ul style="list-style-type: none"> <li>• Commitment of all participants in the briefing process (Juaim &amp; Hassanain, 2011)</li> <li>• Open and effective communication (Chan et al., 2004; Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)</li> <li>• Involvement of the owner in the briefing process (Juaim &amp; Hassanain, 2011)</li> <li>• Consultation with facility managers (Yu et al., 2007)</li> <li>• Clear goals and objectives (Tang et al., 2013) [1-4, 8]</li> <li>• Clarity of project requirements (functional, technical and behavioural) (Juaim &amp; Hassanain, 2011)</li> <li>• Facilitation of active communication through workshops for stakeholders (Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)</li> <li>• Formal procedures in gathering requirements (Ann et al., 2010)</li> <li>• Assessment that the output specifications can meet the institution's ongoing service needs</li> <li>• Identification of service interface expectations</li> <li>• Setting of a defined and measured service quality (Ng et al., 2012)</li> <li>• Adequate level of experience with the building process on the part of the owner (Juaim &amp; Hassanain, 2011)</li> <li>• Productive conflict resolution (Chan et al., 2004)</li> <li>• Establishing priority levels for the various requirements of the project (Juaim &amp; Hassanain, 2011)</li> <li>• Revision of the findings of a Post-occupancy evaluation and post-project evaluation of the clients last project of a similar type (Yu et al., 2007)</li> </ul>
		2.4	Define the scope of the project (project definition)	<ul style="list-style-type: none"> <li>• Clear outcomes from previous activities/steps (institution's needs and strategic objectives, and the output specifications)</li> <li>• Identification of the significant government assets that will be used for the project (such as land and equipment) (South Africa National Treasury, 2004b)</li> </ul>
		2.5	Draft statement of requirements.	<ul style="list-style-type: none"> <li>• Thorough record of findings, conclusions and decisions made (Tang et al., 2013; Yu et al., 2006)</li> </ul>
	3. Option Appraisal	3.1	Identify possible solution options to meet the need	<ul style="list-style-type: none"> <li>• Early considerations of suitability for a PPP</li> <li>• Early indication of market interest</li> </ul>
		3.2	Evaluate each solution option	<ul style="list-style-type: none"> <li>• Objective criteria for option evaluation being known and applied (clear evaluation criteria)</li> <li>• Excellent technical capability (plus relevant previous experience) (Yu et al., 2006)</li> <li>• Knowing the advantages and disadvantages of each solution option (South Africa National Treasury, 2004b)</li> <li>• Examination of the risks and benefits for, and potential impacts on government of each option (South Africa National Treasury, 2004b)</li> </ul>
		3.3	Early considerations of suitability for a PPP	<ul style="list-style-type: none"> <li>• Clarity of output specification</li> <li>• Adequate probable cash flows (inflows and out flows) and financing costs</li> <li>• Thorough examination of opportunities for risk transfer (risks sharing)</li> <li>• Early indication of market interest</li> </ul>



Briefing Phases	Briefing Activity	Briefing Tasks	Factors Affecting the Briefing
		3.4 Choose the preferred solution option.	<ul style="list-style-type: none"> <li>Objective criteria for options selection being known and applied (clear selection criteria)</li> <li>Determining the appropriate decision-making method (Yu, 2007; Yu et al., 2007)</li> <li>Consistency of the analysis and selection with any infrastructure investment policy and guidelines applying at the time (Victorian Government, 2001)</li> </ul>
Feasibility Briefing	4. Project due diligence	4.1 Legal issues	<ul style="list-style-type: none"> <li>Compatibility of the preferred option(s) with current statutory and institutional arrangements (Ng et al., 2012)</li> <li>A favourable legal framework (mature, reasonable and predictable) (Ng et al., 2012)</li> <li>A mature legal framework for the realization of possible PPP projects (Ozdoganm &amp; Birgonul, 2000)</li> <li>Knowledge of statutory and lease control of the project (Tang et al., 2013)</li> <li>Use of up-dated regulations (Othman, 2010)</li> <li>Investigation of any regulatory matters that might impact on the private party's ability to deliver as expected for greenfield projects (South Africa National Treasury, 2004b)</li> <li>Clearly defined legal basis for private sector participation in PPP</li> <li>Clear authority and procedures for acquiring land and rights of way</li> <li>Clear regulatory authority for all PPP types</li> <li>Regulated price and quality of PPP monopolies to protect consumers and others</li> <li>sufficiently flexible price regulation to adjust to major cost changes</li> <li>Adequate powers and resources to regulate PPP (UNESCAP, 2005)</li> <li>Adherence to the applicable codes and municipal standards for the project type (Juaim &amp; Hassanain, 2011)</li> <li>Adequate, transparent and clearly defined procurement system by the government (Ozdoganm &amp; Birgonul, 2000)</li> <li>Adequate regulatory framework of the public institution (Ozdoganm &amp; Birgonul, 2000)</li> </ul>
		4.2 Site ownership and availability	<ul style="list-style-type: none"> <li>Establishment of the following: <ul style="list-style-type: none"> <li>land ownership</li> <li>land availability and any title deed endorsements</li> <li>any land claims, if any</li> <li>lease interests in the land, if any</li> </ul> </li> <li>Experts appointed to undertake surveys of: <ul style="list-style-type: none"> <li>environmental matters</li> <li>geo-technical matters</li> <li>heritage matters</li> <li>zoning rights and town planning requirements</li> <li>Municipal Integrated Development Plans. (South Africa National Treasury, Module 4: PPP Feasibility Study.)</li> </ul> </li> <li>All related NOCs and approvals being identified, compiled and verified if the institution nominates a particular site.</li> </ul>
		4.3 Environmental assessment	<ul style="list-style-type: none"> <li>Environmental laws which are clear and transparent and are all available from a single source (UNESCAP, 2005)</li> <li>Project's consistency with environmental decisions (Ozdoganm &amp; Birgonul, 2000)</li> <li>Environmental sustainability of the project is (Ng et al., 2012)</li> <li>Sufficient public acceptance of the project (Ozdoganm &amp; Birgonul, 2000)</li> </ul>
		4.4 socio-economic assessment	<ul style="list-style-type: none"> <li>Setting of the socio-economic targets that the institution wishes to achieve in the project</li> <li>Impact assessments follow well-defined guidelines which take into account key variables such as population density, type of terrain and type of project (UNESCAP, 2005)</li> </ul>

Briefing Phases	Briefing Activity	Briefing Tasks	Factors Affecting the Briefing
			<ul style="list-style-type: none"> <li>• Prices of the services consistent with compatible services (Ozdoganm &amp; Birgonul, 2000)</li> <li>• A possibility that government might subsidize the prices (Ozdoganm &amp; Birgonul, 2000)</li> <li>• An understanding and supportive community (Ng et al., 2012)</li> <li>• Full understanding/acknowledgement of the social character of PPP (Kanakoudis et al., 2007)</li> <li>• An acceptable level of toll/tariff (Ng et al., 2012)</li> <li>• Possibility of creating more job opportunities (Ng et al., 2012)</li> <li>• Establishing community advisory groups by the government as a means of two-way communication between the project team and the community, particularly in relation to urban design and master planning issues (Foster Infrastructure Pty Ltd, 2012)</li> <li>• Appropriate and efficient management of the community expectations (Foster Infrastructure Pty Ltd, 2012)</li> </ul>
	<b>5. Assess Risk</b>	5.1 Identify project risks 5.2 Assesses the impact of risks 5.3 Estimate the likelihood of the risks occurring 5.4 Calculate the cost of the risks and ranges of possible outcomes 5.5 Allocate risks to party or parties best able to manage them 5.6 Identify strategies for mitigating risks	<ul style="list-style-type: none"> <li>• Commencement of risk register (Tang et al., 2013)</li> <li>• Special risk assessment (Tang et al., 2013)</li> <li>• Quantification of consequences of risks (Tang et al., 2013)</li> <li>• Estimation of risk probabilities (Tang et al., 2013)</li> <li>• Calculation of risk values (Tang et al., 2013)</li> <li>• Identification of desired risk allocation (Tang et al., 2013)</li> <li>• Possible allocation of responsibilities and risks between the government and the private sector (Tang et al., 2013)</li> <li>• Accurate measurement of risk management/mitigation (Tang et al., 2013)</li> <li>• Calculation of transferable and retained risks (Tang et al., 2013)</li> <li>• Realistic assessment of demand projections               <ul style="list-style-type: none"> <li>○ to quantify long-term risks and revenues (Ozdoganm &amp; Birgonul, 2000)</li> </ul> </li> <li>• Minimizing of cash-flow risk by government through possible property development rights (Ozdoganm &amp; Birgonul, 2000)</li> <li>• Guarantees provided by government against political/legal/regulatory risks beyond the out of control of private investors (Ozdoganm &amp; Birgonul, 2000)</li> <li>• Flexibility to decide appropriate risk allocation (Ng et al., 2012)</li> <li>• Risk mitigation strategies proposed by staff (UNESCAP, 2005)</li> <li>• Sensible and manageable arrangements for risk sharing (UNESCAP, 2005)</li> </ul>
	<b>6. Financial Assessment</b>	6.1 Construct the Public Sector Comparator (PSC) 6.2 Construct the PPP reference model and setting out the payment mechanism 6.3 Demonstrate affordability	<ul style="list-style-type: none"> <li>• Costing of a project on PSC lines based on recent, actual costs of a similar project, or best estimates (South Africa National Treasury, 2004b)</li> <li>• Allocation of sufficient resources to project development to ensure the high-quality analysis of cash flows and risks (Victorian Government, 2001)</li> <li>• Feedback from completed (local or regional) projects (Juaim &amp; Hassanain, 2011; Tang et al., 2013; Yu et al., 2006)</li> <li>• Skilful guidance and advice from Ministry/Department of Finance and/or a financial adviser to develop project risks and ascribe the PSC (Victorian Government, 2001)</li> </ul> <ul style="list-style-type: none"> <li>• Use of the identical output specifications as those used in the PSC model (South Africa National Treasury, 2004b)</li> <li>• Experience of the transaction advisor</li> <li>• Market knowledge and experience to construct a market-related PPP reference model.</li> </ul> <ul style="list-style-type: none"> <li>• Careful analysis of the expected costs of the project over the whole project term, including costs of managing a PPP agreement, as well as operating and maintenance costs (South Africa National Treasury, 2004b)</li> <li>• Clear existing budgetary commitments the institution (South</li> </ul>

Briefing Phases	Briefing Activity	Briefing Tasks	Factors Affecting the Briefing	
			Africa National Treasury, 2004b)	
		6.4	Test value-for-money (VfM)	<ul style="list-style-type: none"> <li>Robust outcome from the PSC, reference model and risk assessment based on the requirements of the output specifications (South Africa National Treasury, 2004b)</li> <li>Reasonable and appropriate assumptions (South Africa National Treasury, 2004b)</li> </ul>
		6.5	Assess bankability	<ul style="list-style-type: none"> <li>Estimation of revenue based on realistic assumptions and on most appropriate baseline case (European Investment Bank, 2012)</li> <li>Consistent attention in the project feasibility study to financing needs (European Investment Bank, 2012)</li> <li>Suitable type of debt to finance long-term PPP projects (European Investment Bank, 2012)</li> </ul>
		6.6	Conduct market testing	<ul style="list-style-type: none"> <li>Adequate market capability and appetite</li> <li>Identification of the capacity of the public and private sector to provide the assets/ services (South Africa National Treasury, 2004b)</li> <li>Awareness of project size and complexity (South Africa National Treasury, 2004b)</li> <li>Comparison to similar cases</li> </ul>
Project Briefing	7. Consultations with relevant Stakeholders	7.1	Perform a detailed Stakeholders analysis	<ul style="list-style-type: none"> <li>Identification of key stakeholders and nature of their relationships and the project's impact on stakeholders (South Africa National Treasury, 2004b)</li> <li>Knowledge of client's responsibility (Tang et al., 2013)</li> <li>Assessing the commitment, interest and power of the individual stakeholders (Yu, 2007; Yu et al., 2007)</li> <li>The client should define the composition of the stakeholder group (Yu et al., 2007)</li> <li>Understanding different cultural and ethical characteristics of the individual stakeholders (Yu, 2007; Yu et al., 2007)</li> <li>Identifying influential stakeholders properly (Jing et al., 2009)</li> <li>Assessing the attributes (power, urgency, and proximity) of stakeholders (Jing et al., 2009; Yang et al., 2014)</li> <li>Understanding areas of stakeholders' interests and their constraints (Jing et al., 2009)</li> </ul>
		7.2	Develop consultation plan	<ul style="list-style-type: none"> <li>A proper consultation plan for user groups and stakeholders is needed throughout the brief development process (South Africa National Treasury, 2004b; Yu et al., 2007)</li> <li>Clarity of roles of stakeholders (Tang et al., 2013; Yu et al., 2006)</li> <li>Sufficient consultation with stakeholders (Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)</li> <li>Experience of stakeholder groups (Tang et al., 2013; Yu et al., 2006)</li> <li>Productive Conflict Resolution (Chan et al., 2004)</li> <li>Adequate representation of both the user-groups and client groups in the development of the brief (Tang et al., 2013; Yu et al., 2006, 2007)</li> <li>Identifying the strategies used to deal with the issues raised by stakeholders (Yang et al., 2014)</li> <li>The stakeholders' roles and responsibilities needing to be clarified (Tang et al., 2013)</li> </ul>

Briefing Phases	Briefing Activity	Briefing Tasks	Factors Affecting the Briefing	
Project Briefing		7.3 Conduct discussions and record correspondence	<ul style="list-style-type: none"> <li>Initial consultation with the relevant treasury department about budgetary and affordability issues (South Africa National Treasury, 2004b)</li> <li>Balance of the needs/requirements of different stakeholders (Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)</li> <li>The stakeholder group should be empowered by the client within precisely defined limits (Yu et al., 2007)</li> <li>The stakeholder group must be empowered to make decisions as a team in the briefing process (Yu et al., 2007)</li> <li>Commitment of all participants in the briefing process (Juaim &amp; Hassanain, 2011)</li> <li>Empowerment of stakeholders to make decisions (Yu, 2007; Yu et al., 2007)</li> <li>Efficient Coordination (Chan et al., 2004)</li> <li>A structured or facilitated workshop will improve communication amongst stakeholders (Yu et al., 2007)</li> <li>Communication among stakeholders is crucial to the success of the briefing process (Yu et al., 2007)</li> <li>Manage stakeholders with corporate social responsibilities (economic, legal, environmental, and ethical) (Jing et al., 2009)</li> <li>Proper use made of users' values and knowledge (Kelly &amp; Duerk, 2002; Zwemmer &amp; Otter, 2008)</li> <li>Proper analysis and compromise in conflicts and coalitions among stakeholders (Jing et al., 2009)</li> <li>Utilization of different methods to document and effectively communicate the brief (Juaim &amp; Hassanain, 2011)</li> <li>Open and effective communication with stakeholders, the team, and project representatives (Chan et al., 2004; Juaim &amp; Hassanain, 2011; Tang et al., 2013; Yu et al., 2006, 2007)</li> <li>Good facilitation of the briefing passed on to the stakeholders (Tang et al., 2013; Yu et al., 2006, 2007)</li> <li>Communicate with and engage stakeholders properly and frequently (Jing et al., 2009)</li> <li>Facilitating knowledge sharing among the stakeholders (Yu et al., 2007)</li> <li>Build openness and trust among stakeholders and end-user groups (Chan et al., 2004; Tang et al., 2013; Yu et al., 2006)</li> <li>Require all parties to be involved and committed (Juaim &amp; Hassanain, 2011; Yu et al., 2007)</li> </ul>	
	8. Project development	8.1 Assemble resources – steering committee, project director, procurement team		
		8.2 Develop a project plan		<ul style="list-style-type: none"> <li>Practical/realistic budget and program (Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)</li> <li>Skilful guidance and advice from project manager (Tang et al., 2013)</li> </ul>
		8.3		<ul style="list-style-type: none"> <li>Excellent technical capability (Yu et al., 2006)</li> </ul>
	8.4 Appoint a Transaction Advisor		<ul style="list-style-type: none"> <li>Precise terms of reference for the transaction advisor, focused on clear deliverables (South Africa National Treasury, 2004a).</li> <li>Fair, equitable, transparent, competitive and cost-effective. procurement of the transaction advisor in line with government's constitutional mandate for the hiring of services</li> <li>No separate retention or subsequent hiring of additional consultants for the project outside of the transaction advisor</li> <li>Enhancement of investor confidence.</li> <li>A contract between the institution and the transaction advisor that incentivizes the quality completion of milestones according</li> </ul>	

Briefing Phases	Briefing Activity	Briefing Tasks	Factors Affecting the Briefing		
			<p>to the PPP project cycle, on time and within budget.</p> <ul style="list-style-type: none"> <li>• Experience in similar transactions</li> <li>• Protection against very costly, avoidable mistakes</li> <li>• Access to national and international best practice</li> <li>• Technical strength in the institution's team</li> <li>• (South Africa National Treasury, 2004a)</li> </ul>		
		8.5	Conduct further development for the PSC	<ul style="list-style-type: none"> <li>• Development of a framework agreed by the key parties (Tang et al., 2013)</li> <li>• The brief should act as a reference document which should be available to all project parties (Yu et al., 2007)</li> <li>• The brief should contain details of the procedures necessary to facilitate the absorption of the project into the clients' core business following completion (Yu et al., 2007)</li> <li>• The brief should describe the potential changes to the client organisation resulting from the construction project (Yu et al., 2007)</li> </ul>	
		8.6	Conduct further development for the project brief	<ul style="list-style-type: none"> <li>• The brief should describe the contribution of the project to the client's core business (Yu et al., 2007)</li> <li>• Setting up a deadline to freeze the development of the brief (Juaim &amp; Hassanain, 2011)</li> <li>• Flexibility of briefs to cater for changes (Tang et al., 2013; Yu et al., 2006, 2007)</li> </ul>	
			8.7	Develop EOI evaluation criteria	<ul style="list-style-type: none"> <li>• Clear evaluation criteria</li> </ul>
	<b>9. Confirming Market Interest &amp; Capacity</b>		9.1	Develop & issue Expression of Interest (EoI) invitations	<ul style="list-style-type: none"> <li>• An EoI document with sufficient information (Victorian Government, 2001)</li> <li>• An EoI stating the results to be delivered before government will proceed with private investment (Victorian Government, 2001)</li> <li>• An EoI which does not require potential bidders to expend significant resources on preparing a response (Victorian Government, 2001)</li> </ul>
			9.2	Evaluate responses and develop a shortlist	<ul style="list-style-type: none"> <li>• A briefing session for the parties contemplating a response to the EoI (Victorian Government, 2001)</li> </ul>
			9.3	Finalize the project brief, RFP with draft PPP agreement	<ul style="list-style-type: none"> <li>• Consensus building (Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)</li> <li>• Proper priority setting (Tang et al., 2013; Yu et al., 2006)</li> <li>• Utilization of different methods to document and effectively communicate the brief (Juaim &amp; Hassanain, 2011)</li> </ul>
		9.4	Marketing PPP project	<ul style="list-style-type: none"> <li>• Clear and precise briefing documents (Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)</li> <li>• Agreement on brief by all relevant parties (Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)</li> </ul>	
<b>10. Request for Proposals and Briefing sessions</b>		10.1	Publish notices to invite companies/consortia previously pre-qualified or shortlisted in the EoI exercise to submit proposals.		
		10.2	Conduct briefing work shop with the bidders.	<ul style="list-style-type: none"> <li>• Use of face-to-face contact as a communication method (Juaim &amp; Hassanain, 2011)</li> <li>• Experience of the client (Juaim &amp; Hassanain, 2011; Tang et al., 2013; Yu et al., 2006)</li> <li>• Good facilitation (Tang et al., 2013; Yu et al., 2006)</li> </ul>	

### Other CSFs Related to the Whole Briefing Process in PPP Projects:

1. Adequate time for briefing (Juaim & Hassanain, 2011; Tang et al., 2013; Yu et al., 2006)
2. Feedback from completed projects (Juaim & Hassanain, 2011; Tang et al., 2013; Yu et al., 2006)
3. Experience of the client (Juaim & Hassanain, 2011; Tang et al., 2013; Yu et al., 2006)
4. Selection of briefing team (Tang et al., 2013; Yu et al., 2006)
5. Knowledge of client's business (Yu et al., 2006)
6. Experience of the brief writer (Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)
7. Control of the process (Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)
8. Commitment of all participants in the briefing process (Juaim & Hassanain, 2011)
9. Timely and proper decision-making at the various stages of the development and implementation of the brief (Juaim & Hassanain, 2011)
10. Allocation of a separate service fee for developing the brief (Juaim & Hassanain, 2011)
11. Involvement of the project manager in the briefing process (Juaim & Hassanain, 2011)
12. Support from Top Management (Chan et al., 2004)
13. Mutual trust (Chan et al., 2004)
14. Long-Term Commitment (Chan et al., 2004)
15. Productive Conflict Resolution (Chan et al., 2004)
16. Understanding of team dynamics (Yu, 2007; Yu et al., 2007)
17. Development of a framework agreed by the key parties (Tang et al., 2013)
18. Issues were resolved in a timely and responsive manner (Chan et al., 2004)
19. The brief writer's determining the appropriate decision making method in the briefing process (Yu, 2007; Yu et al., 2007)
20. The brief writer's making decisions based on information received from the stakeholders (Yu et al., 2007)
21. Effective decision making by client representative (Yu, 2007; Yu et al., 2007)
22. Control of the briefing process (Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)
23. Clear management structure (Tang et al., 2013; Yu et al., 2006)
24. Honesty (Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)
25. Openness and trust (Tang et al., 2013; Yu et al., 2006)
26. Open and effective communication (Chan et al., 2004; Tang et al., 2013; Yu, 2007; Yu et al., 2006, 2007)
27. The brief being the primary vehicle for knowledge sharing amongst the project team (Yu et al., 2007)
28. Culture and ethics affect decision making in the briefing process (Yu et al., 2007)

## Appendix D

### Questionnaire Survey on Critical Success Factors Affecting the Development of PPP Project Brief in the UAE construction industry



### Questionnaire Survey on Critical Success Factors Affecting the Development of PPP Project Brief in the UAE construction industry

Dear Respondent,

Briefing is considered one of the important stages in any Public-Private Partnership (PPP) project, where client needs are defined and the major commitments of resources are made. Moreover, most of the significant decisions made during this early stage will have a far-reaching impact throughout a project's life cycle. This Questionnaire survey is part of an ongoing research work for a PhD degree at UAEU aiming at developing a systematic framework for guiding the briefing process of PPP projects in the UAE.

The Critical Success Factors (CSFs) are those factors that must be maintained in order to increase the project success rate and manage it in an efficient and effective way. Various success factors that can affect the process of developing the brief of PPP projects in the UAE were identified through literature review and interviews with PPP experts and practitioners in the UAE. Thirty eight (38) CSFs and their Sub-Success Factors (SSFs) were finalized and grouped into seven main categories: (1) procurement, (2) stakeholder, (3) risk, (4) finance and economic, (5) public sector capacity, (6) regulatory and legal, and (7) social, cultural, and ethical.

This questionnaire consolidates available knowledge from PPP professionals from public and private sectors who have experience in PPP projects in the UAE. It measures the relative importance/significance of these CSFs and their SSFs within UAE PPP environment. The questionnaire is divided into two parts: Part I includes the respondent's general information and background, while Part II is dedicated to rating the success factors. The questionnaire will take approximately 20-25 minutes to be completed. Please answer all questions if possible. You may also let me know if you wish to receive a summary of the final results of this survey. Individual responses will be kept confidential and used exclusively and anonymously for academic purposes only.

Your input and feedback is highly appreciated. Should you have any queries, please feel free to contact me.

Thank you in advance for your contribution to this study.

Researcher

Rauda Al Saadi

Email: [rauda.alsaadi@uaeu.ac.ae](mailto:rauda.alsaadi@uaeu.ac.ae)

Faculty of Engineering

UAE University

## Part I - BACKGROUND INFORMATION

### Please tick in the appropriate box

1. Your name (optional): .....
2. The name of your company/organization (optional): .....
3. What is your role in your organization? .....
4. In which labour market sector you are currently employed in?

<input type="checkbox"/> Public Sector	<input type="checkbox"/> Private Sector	Other: .....
--	---	--------------

5. Please indicate your overall professional experience:

Years of Experience				
0-5 yrs	6-10 yrs	11- 15 yrs	16-20 yrs.	≥20 yrs.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Overall experience in PPP projects :

Years of Experience in PPP Projects				
0-5 yrs.	6-10 yrs.	11- 15 yrs.	16-20 yrs.	≥20 yrs.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. What industry sector(s) of PPP projects you have experience in ?

<input type="checkbox"/> Educational construction	<input type="checkbox"/> Health- care construction	<input type="checkbox"/> Social Housing	<input type="checkbox"/> Transport project, please specify:
<input type="checkbox"/> Environmental construction, please specify:	Institutional project	<input type="checkbox"/> Infrastructure construction, please specify:	<input type="checkbox"/> Industrial construction, please specify:
please specify:			

8. Are/were you directly involved in briefing process of PPP project?

Yes       No

If yes, what is/was your role? .....



## Part II -CRITICAL SUCCESS FACTORS

The following factors are expected to be the key factors for successful briefing process in PPP construction Projects in the UAE. Please select a number between 1 and 5 to indicate the level of importance/Significance for all Sub-Success Factors (SSFs).

- *Degree of Significance/ importance:*

1	2	3	4	5
Not important	Somewhat important	Important	Very important	Extremely important

You are invited to add new factors (if any) at CSFs or SSFs levels.

A. Procurement Related Factors						
Critical Success Factors (CSFs)	Sub- Success Factors (SSFs)	1	2	3	4	5
<b>1. Clear project's goal, objectives, and deliverables in the brief</b>	1. Clarity of the project goal and objectives set by the client/owner					
	2. Proper project output- specifications developed to meet the client's/owner's service needs and standards					
	3. Demonstration of the project's alignment to the client's/owner's strategic objectives					
	4. Integration of the PPP project with the national and local planning processes					
	5. Adequate preparation and management of the Expression of Interest (EOI) stage of the PPP project in the brief's development					
	6. Other, please specify:					
	<b>2. Clear and precise process for formulation and control of the brief</b>	1. A framework for the brief's formulation to be agreed by key partners				
2. A briefing process with clear goals and objectives						
3. Lead given by the public sector and its continuous control and monitoring of the briefing process						
4. Clear and applicable criteria for the selection of options						
5. Establishment of priority levels for decisions agreed on by the key parties during briefing						
6. Use/application of the Value Management (VM) approach in the development of the brief						
7. A realistic timetable set for the completion of the brief						
8. Availability of a clear and precise brief at the end of the briefing stage						
9. Other, please specify:						
<b>3. Appropriateness of the selected PPP model</b>						
<b>4. Adequate resources allocated to the briefing process</b>						
	1. Allocation of a separate service fee for developing the brief					
	2. Sufficient time to be allowed for the briefing					
	3. Sufficient human resources to be allowed for the briefing					
	4. The recruitment of an experienced writer of briefs					

	5. Other, please specify:										
<b>5.</b>	<b>Flexibility of the brief and the management of change</b>										
	1. Flexibility in development of the brief to allow for possible changes										
	2. The brief should describe the possible changes to the client organization resulting from the PPP project										
	3. Other, please specify:										
<b>6.</b>	<b>Other, please specify:</b>										
<b>B. Stakeholder Related Factors</b>											
	<b>Critical Success Factors (CSFs)</b>	<b>Sub- Success Factors (SSFs)</b>					<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>1.</b>	<b>Identification of the influential stakeholders</b>										
	1. Identifying influential stakeholders properly										
	2. Identifying key user- groups										
	3. Other, please specify:										
<b>2.</b>	<b>Addressing stakeholders' possible power and influence</b>										
	4. Assessing stakeholders' behaviour										
	5. Predicting the influence of stakeholders accurately										
	6. Assessing the attributes (power, urgency, and proximity) of stakeholders										
	7. Other, please specify:										
<b>3.</b>	<b>Identification of the stakeholders' needs, requirements, and interests</b>										
	1. Identifying end-user'/user-groups' requirements in the project brief										
	2. Identifying the client/owner's requirements in the project brief										
	3. Understanding the areas of stakeholders' interests and their constraints										
	4. Balancing the needs/requirements of different stakeholders										
	5. Other, please specify:										
<b>4.</b>	<b>Adequate engagement of user-groups throughout the briefing process</b>										
	1. Representation of both the user-groups and client groups in the development of the brief										
	2. Adequately engaging the user-groups throughout the briefing and design stages										
	3. Proper use of the user-groups values and knowledge										
	4. Other, please specify:										
<b>5.</b>	<b>Stakeholder management strategies</b>										
	1. Identifying appropriate decision-making strategies										
	2. Clarifying the roles and responsibilities of project stakeholders										
	3. Managing stakeholders with corporate social responsibilities (economic, legal, environmental, and ethical)										
	4. Publishing a proper consultation plan for user-groups and stakeholders										
	5. Strictly controlling and managing the client/user-groups to avoid output specifications becoming a wish list (wish-list syndrome)										
	6. Proper analysis and compromise in conflicts and coalitions between stakeholders										
	7. Other, please specify:										

<b>6. Proper communication and coordination between stakeholders during the brief development</b>									
	1. Good facilitation of briefing should be given to stakeholders								
	2. Good facilitation in the briefing for stakeholders								
	3. Communication with and engaging stakeholders properly and frequently								
	4. Using different methods to document and effectively communicate the brief								
	5. Proper methods of e-based communications among stakeholders								
	6. Facilitating the sharing of knowledge among the stakeholders								
	7. Using face-to-face contact as a communication method in critical decision stages of the brief								
	8. Other, please specify:								
<b>7. Team selection and empowerment</b>									
	1. Empowering the stakeholder group as a team to make decisions in the briefing process								
	2. Selecting team members with relevant experience to develop an effective brief								
	3. Other, please specify:								
<b>8. Other, please specify:</b>									
<b>C. Risk-Related Factors</b>									
Critical Success Factors (CSFs)	Sub- Success Factors (SSFs)	1	2	3	4	5			
<b>1. Proper identification of anticipated risks/threats to the PPP project</b>									
	1. Commencement of a risk register/log early in the briefing stage								
	2. Identifying partner-related risks in the PPP projects								
	3. Identifying supply chain risks in the PPP projects								
	4. Other, please specify:								
<b>2. Proper analysis and assessment of anticipated risks/threats to the PPP project</b>									
	1. Proper estimation of anticipated risk probabilities								
	2. Proper quantification of the consequences of risks								
	3. Proper calculation of risk value								
	4. Thorough analysis of cash flows and financial risks								
	5. Proper calculation of transferable and retained risks								
	6. Examining the impact of risks/benefits on government options								
	7. Realistic long-term risk assessment								
	8. Special risk assessment								
	9. Other, please specify:								
<b>3. Proper risk allocation and sharing among project stakeholders</b>									
	1. Determining the desired risk allocation								
	2. Appropriate risk allocation in the following areas: concession agreement, guarantees/support/comfort letters loan agreements, operation agreements, insurance agreements, design and construct contracts								
	3. Other, please specify:								
<b>4. Proper mitigation/reduction strategy for anticipated risks/threats to the PPP project</b>									

	1. Setting an effective management plan for risk mitigation/reduction										
	2. Recruiting expert staff to assess the risk mitigation strategy										
	3. Other, please specify:										
5.	<b>Government guarantees for political/legal/regulatory risks beyond the control of private investors</b>										
6.	<b>Flexibility of the project design solution to meet possible future changes in market demand</b>										
7.	<b>Other, please specify:</b>										
<b>D. Finance and Economic Related Factors</b>											
	<b>Critical Success Factors (CSFs)</b>	<b>Sub- Success Factors (SSFs)</b>					<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1.	<b>Favourable financial and economic climate</b>										
	1. Stable economic climate										
	2. Effective financial regulatory regime in place										
	3. Availability of proper financial systems for PPP arrangements										
	4. Available financial market										
	5. Availability of long-term finance										
	6. Limited competition from other projects										
	7. Stable currencies of securitization (debts and equity finance)										
	8. Financing with fixed low interest rates										
	9. Other, please specify:										
A.	<b>Business and economic viability of the feasibility study</b>										
	1. Constructing a robust PPP reference model										
	2. A reliable Public Sector Comparator (PSC)										
	3. A value-for-money (VfM) analysis										
	4. Proper assessment of bankability										
	5. Market intelligence study: Investigation of private sector capability and capacity to deliver the required services										
	6. Practical budget and procurement programme of the project										
	7. Other, please specify:										
B.	<b>Sound commercial and financial package/arrangements</b>										
	1. Flexible price regulations sufficient to adjust to major cost changes										
	2. The setting up of a feasible payment structure and mechanism										
	3. The ability to transfer profits out of the country										
	4. Appropriate tariff level(s) and suitable adjustment formula for investors										
	5. The ability to deal with fluctuations in interest/exchange rates										
	6. Other, please specify:										
C.	<b>Financial capacity and reliability of private sector</b>										
	1. Good private sector financial standing										

	2. Financial sector experienced in assessing long-term lending decisions								
	3. Cost-effective technical solution								
	4. Other, please specify:								
<b>D. Other please specify:</b>									
<b>E. Public Sector Capacity Related Factors</b>									
Critical Success Factors (CSFs)	Sub- Success Factors (SSFs)	1	2	3	4	5			
1.	<b>Political support:</b> Political support: Sufficient political support, as a result of encouraging record or a political “champion”								
2.	<b>Qualified and experienced public staff to manage the PPP briefing process</b>								
	1. Adequate public staff qualifications and experience in the briefing process								
	2. Adequate technical capacity in relevant government agencies for tackling/undertaking similar PPP projects								
	3. Adequate PPP resources/facilities and expertise training								
	4. Other, please specify:								
3.	<b>Governmental assistance during PPP project undertaking:</b> Adequate assistance of line agencies and local government in undertaking PPP								
4.	<b>Government financial capacity to support PPP financial requirements:</b> Integration of PPP finance support requirements with government budget process								
5.	<b>Effective government mechanisms for documentation and lessons learned</b>								
	1. Availability of PPP documentation and best practices in the public domain								
	2. Proper e-documentation system among all stakeholders for the brief’s development and all the decisions made								
	3. Availability of feedback and lessons learned from PPP completed projects as a data-base in the public domain								
	4. Other, please specify:								
6.	<b>Other please specify:</b>								
<b>F. Regulatory and Legal Related Factors</b>									
Critical Success Factors (CSFs)	Sub- Success Factors (SSFs)	1	2	3	4	5			
1.	<b>Availability of effective regulatory and legal frameworks for PPP</b>								
	1. Robust, transparent, and stable regulatory framework for PPP procurement								
	2. Clear land planning laws and regulations								
	3. Fairness and transparency of the government’s procurement system								
	4. Clear ownership issues								
	5. Clear statutory control measures								
	6. Other please specify:								
2.	<b>Approved governance model by relevant authorities for the PPP venture</b>								
3.	<b>Project scope to match authorized mandate of the public agency</b>								
4.	<b>Adherence to applicable and up- to-date legal and regulatory frameworks</b>								
	1. Adherence to applicable design and operation codes and standards for the type of project								

	2. Updated regulatory framework in place								
	3. Other please specify:								
<b>5. Clear authority and responsibility between public and private sector</b>									
<b>6. Proper dispute resolution mechanism</b>									
<b>7. Other please specify:</b>									
<b>G. Social, Cultural, and Ethical Related Factors</b>									
Critical Success Factors (CSFs)	Sub- Success Factors (SSFs)	1	2	3	4	5			
<b>1. Community participation, acceptance, and support</b>									
	1. Ability of the community to suggest PPP projects, coordinate and participate with the government during the development of the project brief								
	2. Community acceptance, supportiveness, and understanding obtained during the developments of the project's brief								
	3. Other please specify: -----								
<b>2. Work environment during the brief development</b>									
	1. Rewards and incentives to encourage the PPP staff								
	2. Long-term job commitment to increase the productivity of project staff								
	3. Openness and trust between stakeholders								
	4. Commitment of all participants in the briefing process								
	5. Honesty among stakeholders								
	6. Other please specify:								
<b>3. Consideration of cultural and ethical values of the end users/user-group during the brief's development</b>									
<b>4. Acceptable tariff level:</b> Level of tariff socially and culturally acceptable by community									
<b>5. Consideration of socioeconomic aspects:</b> Acknowledgement of the social characteristics and economic impact of the PPP									
<b>6. Other please specify:</b>									

Any additional comments you wish to add:

Thank you very much for your co-operation.  
Your contribution will add significantly to this research project.  
If you have further questions related to this survey, please contact me at  
[rauda.alsaadi@uaeu.ac.ae](mailto:rauda.alsaadi@uaeu.ac.ae)  
Rauda Al Saadi

## Appendix E Reliability Analysis

### Reliability Analysis for the Research factors

Item Code	Item	SSFs Item-total correlation	CSFs Item-total correlation	Cronbach Alpha
<b>A. Procurement Related Factors</b>				<b>0.808</b>
<b>A1</b>	<b>Clear project's goal, objectives, and deliverables in the brief</b>		.583	<b>0.906</b>
A11	Clarity of the project goal and objectives set by the client/owner	.757		
A12	Proper project output- specifications developed to meet the client's/owner's service needs and standards	.716		
A13	Demonstration of the project's alignment to the client's/owner's strategic objectives	.845		
A14	Integration of the PPP project with the national and local planning processes	.721		
A15	Adequate preparation and management of the Expression of Interest (EOI) stage of the PPP project in the brief's development	.783		
<b>A2</b>	<b>Clear and precise process for formulation and control of the brief</b>		<b>0.668</b>	<b>0.936</b>
A21	A framework for the brief's formulation to be agreed by key partners	.829		
A22	A briefing process with clear goals and objectives	.858		
A23	Lead given by the public sector and its continuous control and monitoring of the briefing process	.731		
A24	Clear and applicable criteria for the selection of options	.780		
A25	Establishment of priority levels for decisions agreed on by the key parties during briefing	.766		
A26	Use/application of the Value Management (VM) approach in the development of the brief	.695		
A27	A realistic timetable set for the completion of the brief	.797		
A28	Availability of a clear and precise brief at the end of the briefing stage	.735		
<b>A3</b>	<b>Appropriateness of the selected PPP model</b>	--	.567	
<b>A4</b>	<b>Adequate resources allocated to the briefing process</b>		.499	<b>0.890</b>
A41	Allocation of a separate service fee for developing the brief	.554		
A42	Sufficient time to be allowed for the briefing	.859		
A43	Sufficient human resources to be allowed for the briefing	.822		
A44	The recruitment of an experienced writer of briefs	.837		
<b>A5</b>	<b>Flexibility of the brief and the management of change</b>		.655	<b>0.859</b>

Item Code	Item	SSFs Item-total correlation	CSFs Item-total correlation	Cronbach Alpha
A51	Flexibility in development of the brief to allow for possible changes	.752		
A52	he brief should describe the possible changes to the client organization resulting from the PPP project	.752		
<b>B.</b>	<b>Stakeholder Related Factors</b>			<b>0.841</b>
<b>B1</b>	<b>Identification of the influential stakeholders</b>		.644	<b>0.819</b>
B11	Identifying influential stakeholders properly	.694		
B12	Identifying key user- groups	.694		
<b>B2</b>	<b>Addressing stakeholders' possible power and influence</b>		<b>.536</b>	<b>0.916</b>
B21	Assessing stakeholders' behaviour	.783		
B22	Predicting the influence of stakeholders accurately	.890		
B23	Assessing the attributes (power, urgency, and proximity) of stakeholders	.824		
<b>B3</b>	<b>Identification of the stakeholders' needs, requirements, and interests</b>		<b>.696</b>	<b>0.931</b>
B31	Identifying end-user'/user-groups' requirements in the project brief	.805		
B32	Identifying the client/owner's requirements in the project brief	.878		
B33	Understanding the areas of stakeholders' interests and their constraints	.872		
B34	Balancing the needs/requirements of different stakeholders	.797		
<b>B4</b>	<b>Adequate engagement of user-groups throughout the briefing process</b>		<b>.463</b>	<b>0.914</b>
B41	Representation of both the user-groups and client groups in the development of the brief	.825		
B42	Adequately engaging the user-groups throughout the briefing and design stages	.848		
B43	Proper use of the user-groups values and knowledge	.807		
<b>B5</b>	<b>Stakeholder management strategies</b>		<b>.562</b>	<b>0.953</b>
B51	Identifying appropriate decision-making strategies	.856		
B52	Clarifying the roles and responsibilities of project stakeholders	.836		
B53	Managing stakeholders with corporate social responsibilities (economic, legal, environmental, and ethical)	.896		
B54	Publishing a proper consultation plan for user-groups and stakeholders	.840		
B55	Strictly controlling and managing the client/user-groups to avoid output specifications becoming a wish list (wish-list syndrome)	.825		
B56	Proper analysis and compromise in conflicts and coalitions between stakeholders	.877		
<b>B6</b>	<b>Proper communication and coordination between stakeholders during the brief development</b>		<b>.685</b>	<b>0.869</b>
B61	Good facilitation of briefing should be given to stakeholders	.714		



Item Code	Item	SSFs Item-total correlation	CSFs Item-total correlation	Cronbach Alpha
B62	Good facilitation in the briefing for stakeholders	.578		
B63	Communication with and engaging stakeholders properly and frequently	.618		
B64	Using different methods to document and effectively communicate the brief	.737		
B65	Proper methods of e-based communications among stakeholders	.615		
B66	Facilitating the sharing of knowledge among the stakeholders	.733		
B67	Using face-to-face contact as a communication method in critical decision stages of the brief	.521		
<b>B7</b>	<b>Team selection and empowerment</b>		.574	<b>0.850</b>
B71	Empowering the stakeholder group as a team to make decisions in the briefing process	.739		
B72	Selecting team members with relevant experience to develop an effective brief	.739		
<b>C.</b>	<b>Risk-Related Factors</b>			<b>0.934</b>
<b>C1</b>	<b>Proper identification of anticipated risks/threats to the PPP project</b>		.650	<b>0.828</b>
C11	Commencement of a risk register/log early in the briefing stage	.722		
C12	Identifying partner-related risks in the PPP projects	.622		
C13	Identifying supply chain risks in the PPP projects	.724		
<b>C2</b>	<b>Proper analysis and assessment of anticipated risks/threats to the PPP project</b>		.640	<b>0.975</b>
C21	Proper estimation of anticipated risk probabilities	.859		
C22	Proper quantification of the consequences of risks	.918		
C23	Proper calculation of risk value	.897		
C24	Thorough analysis of cash flows and financial risks	.884		
C25	Proper calculation of transferable and retained risks	.919		
C26	Examining the impact of risks/benefits on government options	.932		
C27	Realistic long-term risk assessment	.900		
C28	Special risk assessment	.867		
<b>C3</b>	<b>Proper risk allocation and sharing among project stakeholders</b>		.810	<b>0.973</b>
C31	Determining the desired risk allocation	.948		
C32	Appropriate risk allocation in the following areas: concession agreement, guarantees/support/comfort letters loan agreements, operation agreements, insurance agreements, design and construct contracts	.948		
<b>C4</b>	<b>Proper mitigation/reduction strategy for anticipated risks/threats to the PPP project</b>		.804	<b>0.756</b>
C41	Setting an effective management plan for risk mitigation/reduction	.607		

Item Code	Item	SSFs Item-total correlation	CSFs Item-total correlation	Cronbach Alpha
C42	Recruiting expert staff to assess the risk mitigation strategy	.607		
<b>C5</b>	<b>Government guarantees for political/legal/regulatory risks beyond the control of private investors</b>	--	<b>.741</b>	
<b>C6</b>	<b>Flexibility of the project design solution to meet possible future changes in market demand</b>	--	<b>.736</b>	
<b>D.</b>	<b>Finance and Economic Related Factors</b>			<b>0.879</b>
<b>D1</b>	<b>Favourable financial and economic climate</b>		<b>.803</b>	<b>0.907</b>
D11	Stable economic climate	.797		
D12	Effective financial regulatory regime in place	.848		
D13	Availability of proper financial systems for PPP arrangements	.231		
D14	Available financial market	.691		
D15	Availability of long-term finance	.752		
D16	Limited competition from other projects	.762		
D17	Stable currencies of securitization (debts and equity finance)	.830		
D18	Financing with fixed low interest rates	.782		
<b>D2</b>	<b>Business and economic viability of the feasibility study</b>		<b>.803</b>	<b>0.903</b>
D21	Constructing a robust PPP reference model	.820		
D22	A reliable Public Sector Comparator (PSC)	.829		
D23	A value-for-money (VfM) analysis	.419		
D24	Proper assessment of bankability	.801		
D25	Market intelligence study: Investigation of private sector capability and capacity to deliver the required services	.813		
D26	Practical budget and procurement programme of the project	.780		
<b>D3</b>	<b>Sound commercial and financial package/arrangements</b>		<b>.592</b>	<b>0.808</b>
D31	Flexible price regulations sufficient to adjust to major cost changes	.621		
D32	The setting up of a feasible payment structure and mechanism	.699		
D33	The ability to transfer profits out of the country	.444		
D34	Appropriate tariff level(s) and suitable adjustment formula for investors	.619		
D35	The ability to deal with fluctuations in interest/exchange rates	.569		
<b>D4</b>	<b>Financial capacity and reliability of private sector</b>		<b>.789</b>	<b>0.956</b>
D41	Good private sector financial standing	.892		
D42	Financial sector experienced in assessing long-term lending decisions	.913		

Item Code	Item	SSFs Item-total correlation	CSFs Item-total correlation	Cronbach Alpha
D43	Cost-effective technical solution	.915		
<b>E. Public Sector Capacity Related Factors</b>				<b>0.828</b>
<b>E1</b>	<b>Political support: Sufficient political support, as a result of encouraging record or a political “champion”</b>	--	<b>.689</b>	
<b>E2</b>	<b>Qualified and experienced public staff to manage the PPP briefing process</b>		.468	<b>0.871</b>
E21	Adequate public staff qualifications and experience in the briefing process	.723		
E22	Adequate technical capacity in relevant government agencies for tackling/undertaking similar PPP projects	.874		
E23	Adequate PPP resources/facilities and expertise training	.675		
<b>E3</b>	<b>Governmental assistance during PPP project undertaking</b>	--	<b>.714</b>	
<b>E4</b>	<b>Government financial capacity to support PPP financial requirements</b>	--	.550	
<b>E5</b>	<b>Effective government mechanisms for documentation and lessons learned</b>		.703	<b>0.935</b>
E51	Availability of PPP documentation and best practices in the public domain	.852		
E52	Proper e-documentation system among all stakeholders for the brief’s development and all the decisions made	.848		
E53	Availability of feedback and lessons learned from PPP completed projects as a data-base in the public domain	.900		
<b>F. Regulatory and Legal Related Factors</b>				<b>0.862</b>
<b>F1</b>	<b>Availability of effective regulatory and legal frameworks for PPP</b>		.575	<b>0.901</b>
F11	Robust, transparent, and stable regulatory framework for PPP procurement	.813		
F12	Clear land planning laws and regulations	.902		
F13	Fairness and transparency of the government’s procurement system	.894		
F14	Clear ownership issues	.403		
F15	Clear statutory control measures	.850		
<b>F2</b>	<b>Approved governance model by relevant authorities for the PPP venture</b>	--	<b>.527</b>	
<b>F3</b>	<b>Project scope to match authorized mandate of the public agency</b>	--	<b>.522</b>	
<b>F4</b>	<b>Adherence to applicable and up- to-date legal and regulatory frameworks</b>		.868	<b>0.934</b>
F41	Adherence to applicable design and operation codes and standards for the type of project	.875		
F42	Updated regulatory framework in place	.875		
<b>F5</b>	<b>Clear authority and responsibility between public and private sector</b>	--	<b>.776</b>	
<b>F6</b>	<b>Proper dispute resolution mechanism</b>	--	.650	
<b>G. Social, Cultural, and Ethical Related Factors</b>				<b>0.892</b>
<b>G1</b>	<b>Community participation, acceptance, and support</b>		.656	<b>0.944</b>
G11	Ability of the community to suggest PPP projects, coordinate and participate with the government during the development of the project brief	.894		

Item Code	Item	SSFs Item-total correlation	CSFs Item-total correlation	Cronbach Alpha
G12	Community acceptance, supportiveness, and understanding obtained during the developments of the project's brief	.894		
<b>G2</b>	<b>Work environment during the brief development</b>		.760	<b>0.952</b>
G21	Rewards and incentives to encourage the PPP staff	.834		
G22	Long-term job commitment to increase the productivity of project staff	.899		
G23	Openness and trust between stakeholders	.886		
G24	Commitment of all participants in the briefing process	.840		
G25	Honesty among stakeholders	.878		
<b>G3</b>	<b>Consideration of cultural and ethical values of the end users/user-group during the brief's development</b>	--	.837	
<b>G4</b>	<b>Acceptable tariff level</b>	--	.622	
<b>G5</b>	<b>Consideration of socioeconomic aspects</b>	--	.797	

## Appendix F Factors Ranking Analysis

### Mean and Level of Importance of the Factors

Item Code	Item	SSFs Mean	SSFs Rank	CSFs Mean	CSFs Rank	Categories Mean	Categories Rank
<b>A.</b>	<b>Procurement Related Factors</b>					<b>4.0115</b>	<b>5</b>
<b>A1</b>	<b>Clear project's goal, objectives, and deliverables in the brief</b>			4.2423	1		
A11	Clarity of the project goal and objectives set by the client/owner	4.4231	1				
A12	Proper project output- specifications developed to meet the client's/owner's service needs and standards	4.3077	2				
A13	Demonstration of the project's alignment to the client's/owner's strategic objectives	4.1731	4				
A14	Integration of the PPP project with the national and local planning processes	4.0962	5				
A15	Adequate preparation and management of the Expression of Interest (EOI) stage of the PPP project in the brief's development	4.2115	3				
<b>A2</b>	<b>Clear and precise process for formulation and control of the brief</b>			<b>3.8341</b>	<b>3</b>		
A21	A framework for the brief's formulation to be agreed by key partners	3.9038	3				
A22	A briefing process with clear goals and objectives	3.9038	3				
A23	Lead given by the public sector and its continuous control and monitoring of the briefing process	3.7885	6				
A24	Clear and applicable criteria for the selection of options	3.8462	5				
A25	Establishment of priority levels for decisions agreed on by the key parties during briefing	3.7885	6				
A26	Use/application of the Value Management (VM) approach in the development of the brief	3.5192	8				
A27	A realistic timetable set for the completion of the brief	3.9231	2				
A28	Availability of a clear and precise brief at the end of the briefing stage	4.0000	1				
<b>A3</b>	<b>Appropriateness of the selected PPP model</b>	--	--	<b>4.1346</b>	<b>2</b>		

Item Code	Item	SSFs Mean	SSFs Rank	CSFs Mean	CSFs Rank	Categories Mean	Categories Rank
<b>A4</b>	<b>Adequate resources allocated to the briefing process</b>			<b>3.7548</b>	<b>4</b>		
A41	Allocation of a separate service fee for developing the brief	3.7115	4				
A42	Sufficient time to be allowed for the briefing	3.8077	1				
A43	Sufficient human resources to be allowed for the briefing	3.7692	2				
A44	The recruitment of an experienced writer of briefs	3.7308	3				
<b>A5</b>	<b>Flexibility of the brief and the management of change</b>			<b>3.6538</b>	<b>5</b>		
A51	Flexibility in development of the brief to allow for possible changes	3.6346	2				
A52	The brief should describe the possible changes to the client organization resulting from the PPP project	3.6731	1				
<b>B.</b>	<b>Stakeholder Related Factors</b>					<b>3.9835</b>	<b>6</b>
<b>B1</b>	<b>Identification of the influential stakeholders</b>			4.1731	<b>1</b>		
B11	Identifying influential stakeholders properly	4.2692	1				
B12	Identifying key user- groups	4.0769	2				
<b>B2</b>	<b>Addressing stakeholders' possible power and influence</b>			<b>3.7115</b>	<b>7</b>		
B21	Assessing stakeholders' behaviour	3.7885	1				
B22	Predicting the influence of stakeholders accurately	3.6923	2				
B23	Assessing the attributes (power, urgency, and proximity) of stakeholders	3.6538	3				
<b>B3</b>	<b>Identification of the stakeholders' needs, requirements, and interests</b>			4.0096	<b>2</b>		
B31	Identifying end-user'/user-groups' requirements in the project brief	4.1538	1				
B32	Identifying the client/owner's requirements in the project brief	4.1346	2				
B33	Understanding the areas of stakeholders' interests and their constraints	3.9615	3				
B34	Balancing the needs/requirements of different stakeholders	3.7885	4				
<b>B4</b>	<b>Adequate engagement of user-groups throughout the briefing process</b>			3.8526	<b>5</b>		
B41	Representation of both the user-groups and client groups in the development of the brief	3.9423	1				
B42	Adequately engaging the user-groups throughout the briefing and design stages	3.9615	2				
B43	Proper use of the user-groups values and knowledge	3.6538	3				

Item Code	Item	SSFs Mean	SSFs Rank	CSFs Mean	CSFs Rank	Categories Mean	Categories Rank
<b>B5</b>	<b>Stakeholder management strategies</b>			3.8846	<b>4</b>		
B51	Identifying appropriate decision-making strategies	3.9038	3				
B52	Clarifying the roles and responsibilities of project stakeholders	4.0769	1				
B53	Managing stakeholders with corporate social responsibilities (economic, legal, environmental, and ethical)	3.7308	6				
B54	Publishing a proper consultation plan for user-groups and stakeholders	3.8077	5				
B55	Strictly controlling and managing the client/user-groups to avoid output specifications becoming a wish list (wish-list syndrome)	3.9615	2				
B56	Proper analysis and compromise in conflicts and coalitions between stakeholders	3.8269	4				
<b>B6</b>	<b>Proper communication and coordination between stakeholders during the brief development</b>			3.7418	<b>6</b>		
B61	Good facilitation of briefing should be given to stakeholders	3.7308	4				
B62	Good facilitation in the briefing for stakeholders	4.0385	1				
B63	Communication with and engaging stakeholders properly and frequently	3.9808	2				
B64	Using different methods to document and effectively communicate the brief	3.5962	6				
B65	Proper methods of e-based communications among stakeholders	3.4423	7				
B66	Facilitating the sharing of knowledge among the stakeholders	3.6346	5				
B67	Using face-to-face contact as a communication method in critical decision stages of the brief	3.7692	3				
<b>B7</b>	<b>Team selection and empowerment</b>			3.9615	<b>3</b>		
B71	Empowering the stakeholder group as a team to make decisions in the briefing process	3.8654	2				
B72	Selecting team members with relevant experience to develop an effective brief	4.0577	1				
<b>C.</b>	<b>Risk-Related Factors</b>					<b>4.1571</b>	<b>3</b>
<b>C1</b>	<b>Proper identification of anticipated risks/threats to the PPP project</b>			4.2821	<b>1</b>		
C11	Commencement of a risk register/log early in the briefing stage	4.3654	2				
C12	Identifying partner-related risks in the PPP projects	4.4038	1				
C13	Identifying supply chain risks in the PPP projects	4.0769	3				
<b>C2</b>	<b>Proper analysis and assessment of anticipated risks/threats to the PPP project</b>			4.1563	<b>3</b>		

Item Code	Item	SSFs Mean	SSFs Rank	CSFs Mean	CSFs Rank	Categories Mean	Categories Rank
C21	Proper estimation of anticipated risk probabilities	4.1154	6				
C22	Proper quantification of the consequences of risks	4.2115	2				
C23	Proper calculation of risk value	4.1923	3				
C24	Thorough analysis of cash flows and financial risks	4.3269	1				
C25	Proper calculation of transferable and retained risks	4.1538	5				
C26	Examining the impact of risks/benefits on government options	4.1731	4				
C27	Realistic long-term risk assessment	4.0962	7				
C28	Special risk assessment	3.9808	8				
<b>C3</b>	<b>Proper risk allocation and sharing among project stakeholders</b>			3.9904	<b>6</b>		
C31	Determining the desired risk allocation	3.9615	2				
C32	Appropriate risk allocation in the following areas: concession agreement, guarantees/support/comfort letters loan agreements, operation agreements, insurance agreements, design and construct contracts	4.0192	1				
<b>C4</b>	<b>Proper mitigation/reduction strategy for anticipated risks/threats to the PPP project</b>			4.2404	<b>2</b>		
C41	Setting an effective management plan for risk mitigation/reduction	4.1538	2				
C42	Recruiting expert staff to assess the risk mitigation strategy	4.3269	1				
<b>C5</b>	<b>Government guarantees for political/legal/regulatory risks beyond the control of private investors</b>	--	--	4.0962	<b>4</b>		
<b>C6</b>	<b>Flexibility of the project design solution to meet possible future changes in market demand</b>	--	--	4.0192	<b>5</b>		
<b>D</b>	<b>Finance and Economic Related Factors</b>					<b>4.1587</b>	<b>2</b>
<b>D1</b>	<b>Favourable financial and economic climate</b>			3.9375	<b>4</b>		
D11	Stable economic climate	4.0577	4				
D12	Effective financial regulatory regime in place	4.0769	3				
D13	Availability of proper financial systems for PPP arrangements	4.3077	1				
D14	Available financial market	4.0192	5				
D15	Availability of long-term finance	4.2308	2				
D16	Limited competition from other projects	3.2500	8				



Item Code	Item	SSFs Mean	SSFs Rank	CSFs Mean	CSFs Rank	Categories Mean	Categories Rank
D17	Stable currencies of securitization (debts and equity finance)	3.9231	6				
D18	Financing with fixed low interest rates	3.6346	7				
<b>D2</b>	<b>Business and economic viability of the feasibility study</b>			4.0865	<b>1</b>		
D21	Constructing a robust PPP reference model	4.0577	3				
D22	A reliable Public Sector Comparator (PSC)	3.8846	6				
D23	A value-for-money (VfM) analysis	4.3077	1				
D24	Proper assessment of bankability	4.0577	3				
D25	Market intelligence study: Investigation of private sector capability and capacity to deliver the required services	4.0577	3				
D26	Practical budget and procurement programme of the project	4.1538	2				
<b>D3</b>	<b>Sound commercial and financial package/arrangements</b>			4.0692	<b>3</b>		
D31	Flexible price regulations sufficient to adjust to major cost changes	4.0000	4				
D32	The setting up of a feasible payment structure and mechanism	4.0962	2				
D33	The ability to transfer profits out of the country	4.0577	3				
D34	Appropriate tariff level(s) and suitable adjustment formula for investors	4.1923	1				
D35	The ability to deal with fluctuations in interest/exchange rates	4.0000	4				
<b>D4</b>	<b>Financial capacity and reliability of private sector</b>			4.0833	<b>2</b>		
D41	Good private sector financial standing	4.2115	1				
D42	Financial sector experienced in assessing long-term lending decisions	4.1538	2				
D43	Cost-effective technical solution	3.8846	3				
<b>E</b>	<b>Public Sector Capacity Related Factors</b>					<b>4.0423</b>	<b>4</b>
<b>E1</b>	<b>Political support: Sufficient political support, as a result of encouraging record or a political “champion”</b>	--	--	4.2500	<b>1</b>		
<b>E2</b>	<b>Qualified and experienced public staff to manage the PPP briefing process</b>			3.9359	<b>4</b>		

Item Code	Item	SSFs Mean	SSFs Rank	CSFs Mean	CSFs Rank	Categories Mean	Categories Rank
E21	Adequate public staff qualifications and experience in the briefing process	4.0192	1				
E22	Adequate technical capacity in relevant government agencies for tackling/undertaking similar PPP projects	3.9231	2				
E23	Adequate PPP resources/facilities and expertise training	3.8654	3				
<b>E3</b>	<b>Governmental assistance during PPP project undertaking</b>	--	--	4.1538	2		
<b>E4</b>	<b>Government financial capacity to support PPP financial requirements</b>	--	--	4.0192	3		
<b>E5</b>	<b>Effective government mechanisms for documentation and lessons learned</b>			3.5705	5		
E51	Availability of PPP documentation and best practices in the public domain	3.5577	2				
E52	Proper e-documentation system among all stakeholders for the brief's development and all the decisions made	3.5000	3				
E53	Availability of feedback and lessons learned from PPP completed projects as a data-base in the public domain	3.6538	1				
<b>F.</b>	<b>Regulatory and Legal Related Factors</b>					<b>4.2147</b>	<b>1</b>
<b>F1</b>	<b>Availability of effective regulatory and legal frameworks for PPP</b>			4.2154	3		
F11	Robust, transparent, and stable regulatory framework for PPP procurement	4.2885	2				
F12	Clear land planning laws and regulations	4.0962	5				
F13	Fairness and transparency of the government's procurement system	4.1346	4				
F14	Clear ownership issues	4.3654	1				
F15	Clear statutory control measures	4.1923	3				
<b>F2</b>	<b>Approved governance model by relevant authorities for the PPP venture</b>	--	--	4.2692	2		
<b>F3</b>	<b>Project scope to match authorized mandate of the public agency</b>	--	--	4.1154	6		
<b>F4</b>	<b>Adherence to applicable and up-to-date legal and regulatory frameworks</b>			4.1538	4		
F41	Adherence to applicable design and operation codes and standards for the type of project	4.1154	2				

Item Code	Item	SSFs Mean	SSFs Rank	CSFs Mean	CSFs Rank	Categories Mean	Categories Rank
F42	Updated regulatory framework in place	4.1923	1				
F5	<b>Clear authority and responsibility between public and private sector</b>	--	--	4.4231	1		
F6	<b>Proper dispute resolution mechanism</b>	--	--	4.1538	5		
<b>G.</b>	<b>Social, Cultural, and Ethical Related Factors</b>					<b>3.6038</b>	<b>7</b>
<b>G1</b>	<b>Community participation, acceptance, and support</b>			3.3558	5		
G11	Ability of the community to suggest PPP projects, coordinate and participate with the government during the development of the project brief	3.2885	2				
G12	Community acceptance, supportiveness, and understanding obtained during the developments of the project's brief	3.4231	1				
<b>G2</b>	<b>Work environment during the brief development</b>			3.5423	4		
G21	Rewards and incentives to encourage the PPP staff	3.3462	5				
G22	Long-term job commitment to increase the productivity of project staff	3.3846	4				
G23	Openness and trust between stakeholders	3.5769	3				
G24	Commitment of all participants in the briefing process	3.6346	2				
G25	Honesty among stakeholders	3.7692	1				
<b>G3</b>	<b>Consideration of cultural and ethical values of the end users/user-group during the brief's development</b>	--	--	3.6538	3		
<b>G4</b>	<b>Acceptable tariff level</b>	--	--	3.7692	1		
<b>G5</b>	<b>Consideration of socioeconomic aspects</b>	--	--	3.7308	2		

## Appendix G

### Pairwise Comparison and Standardized Matrices

#### APPEDIX G-1: AHP Matrix Scale, Ranking Pairwise Comparison and Standardized Matrix of the Seven Categories

Matrix Ranks – Factors Main Categories									
Differences	AHP Scale	F	C	E	D	A	B		
0-0.122	1	C		A,B,D	A,B	B			
0.123-0.188	2		A,E,D						
0.189-0.244	3	E	B						
0.245-0.305	4	A,D							G
0.306-0.366	5	B				G	G		
0.367-0.427	6			G					
0.428-0.488	7								
0.489-0.549	8		G						
>0.550	9	G							

Pairwise Comparison - Factors Main Categories									
Factor	ID	A	B	C	D	E	F	G	
Procurement Related Factors	A	1	1	0.5	1	1	0.25	8	
Stakeholders Related Factors	B	1	1	0.333333	1	1	0.2	4	
Risk Related Factors	C	2	3	1	2	2	1	8	
Finance and Economic Related Factors	D	1	1	0.5	1	1	0.25	5	
Public Sector Capacity Related Factors	E	1	1	0.5	1	1	0.333333	6	
Regulatory and Legal Factors	F	4	5	1	4	3	1	9	
Social, Cultural, and Ethical Related Factors	G	0.125	0.166667	0.125	0.2	0.166667	0.111111	1	
Sum		10.125	12.16667	3.958333	10.2	9.166667	3.144444	41	

Standardized Matrix - Factors Main Categories									
Factor	ID	A	B	C	D	E	F	G	Weights
Procurement Related Factors	A	0.098765	0.082192	0.126316	0.098039	0.109091	0.079505	0.195122	11.27%
Stakeholders Related Factors	B	0.098765	0.082192	0.084211	0.098039	0.109091	0.063604	0.097561	9.05%
Risk Related Factors	C	0.197531	0.246575	0.252632	0.196078	0.218182	0.318021	0.195122	23.20%
Finance and Economic Related Factors	D	0.098765	0.082192	0.126316	0.098039	0.109091	0.079505	0.121951	10.23%
Public Sector Capacity Related Factors	E	0.098765	0.082192	0.126316	0.098039	0.109091	0.106007	0.146341	10.95%
Regulatory and Legal Factors	F	0.395062	0.410959	0.252632	0.392157	0.327273	0.318021	0.219512	33.08%
Social, Cultural, and Ethical Related Factors	G	0.012346	0.013699	0.031579	0.019608	0.018182	0.035336	0.02439	2.22%
Sum		1	1	1	1	1	1	1	1

## APPENDIX G-2: AHP Matrix Scale, Ranking Pairwise Comparison and Standardized Matrix of Category A- Procurement Related Factors

Matrix Ranks – Category A- Procurement Related Factors					
Differences	AHP Scale	A1	A2	A3	A4
0-0.122	1	A3	A4		A5
0.123-0.188	2		A5		
0.189-0.244	3				
0.245-0.305	4			A2	
0.306-0.366	5				
0.367-0.427	6	A2		A4	
0.428-0.488	7	A4		A5	
0.489-0.549	8				
>0.550	9	A5			

Pairwise Comparison - Category A- Procurement Related Factors							
CSF	ID	A1	A2	A3	A4	A5	
Clear project's goal, objectives, and deliverables in the brief	A1	1	6	1	7	9	
Clear and precise process for formulation and control of the brief	A2	0.166667	1	0.25	1	2	
Appropriateness of the selected PPP model	A3	1	4	1	6	7	
Adequate resources allocated to the briefing process	A4	0.142857	1	0.166667	1	1	
Flexibility of the brief and the management of change	A5	0.111111	0.5	0.142857	1	1	
	Sum	2.420635	12.5	2.559524	16	20	

Standardized Matrix - Category A-Procurement Related Factors							
CSF	ID	A1	A2	A3	A4	A5	Weights
Clear project's goal, objectives, and deliverables in the brief	A1	0.413115	0.48	0.390698	0.4375	0.45	43.43%
Clear and precise process for formulation and control of the brief	A2	0.068852	0.08	0.097674	0.0625	0.1	8.18%
Appropriateness of the selected PPP model	A3	0.413115	0.32	0.390698	0.375	0.35	36.98%
Adequate resources allocated to the briefing process	A4	0.059016	0.08	0.065116	0.0625	0.05	6.33%
Flexibility of the brief and the management of change	A5	0.045902	0.04	0.055814	0.0625	0.05	5.08%
	Sum	1	1	1	1	1	100.00%

### APPEDIX G-3: AHP Matrix Scale, Ranking Pairwise Comparison and Standardized Matrix of Category B: Stakeholders Related Factors

Matrix Ranks – Category B:Stakeholders Related Factors							
Differences	AHP Scale	B1	B3	B4	B5	B6	B7
0-0.122	1		B7	B6	B4	B2	B4,B5
0.123-0.188	2	B3	B5,B6,B4	B2	B2,B6		
0.189-0.244	3	B7					B6
0.245-0.305	4	B5	B2,B6				B2
0.306-0.366	5	B4					
0.367-0.427	6						
0.428-0.488	7	B2,B6					
0.489-0.549	8						
>0.550	9						

Pairwise Comparison - Category B:Stakeholders Related Factors									
CSF	ID	B1	B2	B3	B4	B5	B6	B7	
Identification of the influential stakeholders	B1	1	7	2	5	4	7	3	
Addressing stakeholders' possible power and influence	B2	0.142857	1	0.25	0.5	0.5	1	0.25	
Identification of the stakeholders' needs, requirements, and interests	B3	0.5	4	1	5	2	2	1	
Adequate engagement of user-groups throughout the briefing process	B4	0.2	2	0.2	1	1	1	1	
Stakeholder management strategies	B5	0.25	2	0.5	1	1	2	1	
Proper communication and coordination between stakeholders during the brief development	B6	0.142857	1	0.5	1	0.5	1	0.333333	
Team selection and empowerment	B7	0.333333	4	1	1	1	3	1	
	Sum	2.569048	21	5.45	14.5	10	17	7.583333	

Standardized Matrix - Category B:Stakeholders Related Factors									
CSF	ID	B1	B2	B3	B4	B5	B6	B7	Weights
Identification of the influential stakeholders	B1	0.389249	0.333333	0.366972	0.344828	0.4	0.411765	0.395604	37.74%
Addressing stakeholders' possible power and influence	B2	0.055607	0.047619	0.045872	0.034483	0.05	0.058824	0.032967	4.65%
Identification of the stakeholders' needs, requirements, and interests	B3	0.194625	0.190476	0.183486	0.344828	0.2	0.117647	0.131868	19.47%
Adequate engagement of user-groups throughout the briefing process	B4	0.07785	0.095238	0.036697	0.068966	0.1	0.058824	0.131868	8.13%
Stakeholder management strategies	B5	0.097312	0.095238	0.091743	0.068966	0.1	0.117647	0.131868	10.04%
Proper communication and coordination between stakeholders during the brief development	B6	0.055607	0.047619	0.091743	0.068966	0.05	0.058824	0.043956	5.95%
Team selection and empowerment	B7	0.12975	0.190476	0.183486	0.068966	0.1	0.176471	0.131868	14.01%
	Sum	1	1	1	1	1	1	1	100.00%

#### APPENDIX G-4: AHP Matrix Scale, Ranking Pairwise Comparison and Standardized Matrix of Category C: Risk Related Factors

Matrix Ranks – Category C: Risk Related Factors						
Differences	AHP Scale	C1	C2	C4	C5	C6
0-0.122	1	C4	C5	C2	C3,C6	C3
0.123-0.188	2	C2,C5	C3,C6	C5		
0.189-0.244	3			C6		
0.245-0.305	4	C3,C6		C3		
0.306-0.366	5					
0.367-0.427	6					
0.428-0.488	7					
0.489-0.549	8					
>0.550	9					

Pairwise Comparison - Category C: Risk Related Factors								
CSF	ID	C1	C2	C3	C4	C5	C6	
Proper identification of anticipated risks/threats to the PPP project	C1	1	2	4	1	2	4	
Proper analysis and assessment of anticipated risks/threats to the PPP project	C2	0.5	1	2	1	1	2	
Proper risk allocation and sharing among project stakeholders	C3	0.25	0.5	1	0.25	1	1	
Proper mitigation/reduction strategy for anticipated risks/threats to the PPP project	C4	1	1	4	1	2	3	
Government guarantees for political/legal/regulatory risks beyond the control of private investors	C5	0.5	1	1	0.5	1	1	
Flexibility of the project design solution to meet possible future changes in market demand	C6	0.25	0.5	1	0.333333	1	1	
	Sum	3.5	6	13	4.083333	8	12	

Standardized Matrix - Category C: Risk Related Factors									
CSF	ID	C1	C2	C3	C4	C5	C6	Weights	
Proper identification of anticipated risks/threats to the PPP project	C1	0.285714	0.333333	0.307692	0.244898	0.25	0.333333	29.25%	
Proper analysis and assessment of anticipated risks/threats to the PPP project	C2	0.142857	0.166667	0.153846	0.244898	0.125	0.166667	16.67%	
Proper risk allocation and sharing among project stakeholders	C3	0.071429	0.083333	0.076923	0.061224	0.125	0.083333	8.35%	
Proper mitigation/reduction strategy for anticipated risks/threats to the PPP project	C4	0.285714	0.166667	0.307692	0.244898	0.25	0.25	25.08%	
Government guarantees for political/legal/regulatory risks beyond the control of private investors	C5	0.142857	0.166667	0.076923	0.122449	0.125	0.083333	11.95%	
Flexibility of the project design solution to meet possible future changes in market demand	C6	0.071429	0.083333	0.076923	0.081633	0.125	0.083333	8.69%	
	Sum	1	1	1	1	1	1	100.00%	

**APPEDIX G-5: AHP Matrix Scale, Ranking Pairwise Comparison and Standardized Matrix of Category D: Finance and Economic Related Factors**

<b>Matrix Ranks – Category D: Finance and Economic Related Factors</b>				
<b>Differences</b>	<b>AHP Scale</b>	<b>D2</b>	<b>D3</b>	<b>D4</b>
0-0.122	1	D3,D4	D4	D1
0.123-0.188	2	D1	D1	
0.189-0.244	3			
0.245-0.305	4			
0.306-0.366	5			
0.367-0.427	6			
0.428-0.488	7			
0.489-0.549	8			
>0.550	9			

<b>Pairwise Comparison - Category D: Finance and Economic Related Factors</b>					
<b>CSF</b>	<b>ID</b>	<b>D1</b>	<b>D2</b>	<b>D3</b>	<b>D4</b>
<b>Favourable financial and economic climate</b>	<b>D1</b>	1	0.5	0.5	1
<b>Business and economic viability of the feasibility study</b>	<b>D2</b>	2	1	1	1
<b>Sound commercial and financial package/arrangements</b>	<b>D3</b>	2	1	1	1
<b>Financial capacity and reliability of private sector</b>	<b>D4</b>	1	1	1	1
	<b>Sum</b>	6	3.5	3.5	4

<b>Standardized Matrix - Category D: Finance and Economic Related Factors</b>						
<b>CSF</b>	<b>ID</b>	<b>D1</b>	<b>D2</b>	<b>D3</b>	<b>D4</b>	<b>Weights</b>
<b>Favourable financial and economic climate</b>	<b>D1</b>	0.166667	0.142857	0.142857	0.25	<b>17.56%</b>
<b>Business and economic viability of the feasibility study</b>	<b>D2</b>	0.333333	0.285714	0.285714	0.25	<b>28.87%</b>
<b>Sound commercial and financial package/arrangements</b>	<b>D3</b>	0.333333	0.285714	0.285714	0.25	<b>28.87%</b>
<b>Financial capacity and reliability of private sector</b>	<b>D4</b>	0.166667	0.285714	0.285714	0.25	<b>24.70%</b>
	<b>Sum</b>	1	1	1	1	<b>100.00%</b>



**APPEDIX G-6: AHP Matrix Scale, Ranking Pairwise Comparison and Standardized Matrix of Category E: Public Sector Capacity Related Factors**

<b>Matrix Ranks – Category E:Public Sector Capacity Related Factors</b>					
<b>Differences</b>	<b>AHP Scale</b>	<b>E1</b>	<b>E2</b>	<b>E3</b>	<b>E4</b>
0-0.122	1	E3			E2
0.123-0.188	2			E4	
0.189-0.244	3	E4		E2	
0.245-0.305	4				
0.306-0.366	5	E2			
0.367-0.427	6		E5		
0.428-0.488	7				
0.489-0.549	8				
>0.550	9	E5			

<b>Pairwise Comparison - Category E:Public Sector Capacity Related Factors</b>						
<b>CSF</b>	<b>ID</b>	<b>E1</b>	<b>E2</b>	<b>E3</b>	<b>E4</b>	<b>E5</b>
<b>Political support</b>	<b>E1</b>	1	5	1	3	9
<b>Qualified and experienced public staff to manage the PPP briefing process</b>	<b>E2</b>	0.2	1	0.333333	1	6
<b>Governmental assistance during PPP project undertaking</b>	<b>E3</b>	1	3	1	2	7
<b>Government financial capacity to support PPP financial requirements</b>	<b>E4</b>	0.333333	1	0.5	1	7
<b>Effective government mechanisms for documentation and lessons learned</b>	<b>E5</b>	0.111111	0.166667	0.142857	0.142857	1
	<b>Sum</b>	2.644444	10.16667	2.97619	7.142857	30

<b>Standardized Matrix – Category E:Public Sector Capacity Related Factors</b>							
<b>CSF</b>	<b>ID</b>	<b>E1</b>	<b>E2</b>	<b>E3</b>	<b>E4</b>	<b>E5</b>	<b>Weights</b>
<b>Political support</b>	<b>E1</b>	0.378151	0.491803	0.336	0.42	0.3	<b>38.52%</b>
<b>Qualified and experienced public staff to manage the PPP briefing process</b>	<b>E2</b>	0.07563	0.098361	0.112	0.14	0.2	<b>12.52%</b>
<b>Governmental assistance during PPP project undertaking</b>	<b>E3</b>	0.378151	0.295082	0.336	0.28	0.233333	<b>30.45%</b>
<b>Government financial capacity to support PPP financial requirements</b>	<b>E4</b>	0.12605	0.098361	0.168	0.14	0.233333	<b>15.31%</b>
<b>Effective government mechanisms for documentation and lessons learned</b>	<b>E5</b>	0.042017	0.016393	0.048	0.02	0.033333	<b>3.19%</b>
	<b>Sum</b>	1	1	1	1	1	<b>1</b>

### APPEDIX G-7: AHP Matrix Scale, Ranking Pairwise Comparison and Standardized Matrix of Category F: Regulatory and Legal Factors

Matrix Ranks – Category F: Regulatory and Legal Factors						
Differences	AHP Scale	F1	F2	F4	F5	F6
0-0.122	1	F3,F4,F6	F4,F6,F1	F3,F6		F3,F4
0.123-0.188	2		F3		F2	
0.189-0.244	3				F1	
0.245-0.305	4				F4,F6	
0.306-0.366	5				F3	
0.367-0.427	6					
0.428-0.488	7					
0.489-0.549	8					
>0.550	9					

Pairwise Comparison - Category F: Regulatory and Legal Factors								
CSF	ID	F1	F2	F3	F4	F5	F6	
Availability of effective regulatory and legal frameworks for PPP	F1	1	1	1	1	0.333333	1	
Approved governance model by relevant authorities for the PPP venture	F2	1	1	2	1	0.5	1	
Project scope to match authorized mandate of the public agency	F3	1	0.5	1	1	0.2	1	
Adherence to applicable and up- to-date legal and regulatory frameworks	F4	1	1	1	1	0.25	1	
Clear authority and responsibility between public and private sector	F5	3	2	5	4	1	4	
Proper dispute resolution mechanism	F6	1	1	1	1	0.25	1	
	Sum	8	6.5	11	9	2.533333	9	

Standardized Matrix – Category F: Regulatory and Legal Factors								
CSF	ID	F1	F2	F3	F4	F5	F6	Weights
Availability of effective regulatory and legal frameworks for PPP	F1	0.125	0.153846	0.090909	0.111111	0.131579	0.111111	12.06%
Approved governance model by relevant authorities for the PPP venture	F2	0.125	0.153846	0.181818	0.111111	0.197368	0.111111	14.67%
Project scope to match authorized mandate of the public agency	F3	0.125	0.076923	0.090909	0.111111	0.078947	0.111111	9.90%
Adherence to applicable and up- to-date legal and regulatory frameworks	F4	0.125	0.153846	0.090909	0.111111	0.098684	0.111111	11.51%
Clear authority and responsibility between public and private sector	F5	0.375	0.307692	0.454545	0.444444	0.394737	0.444444	40.35%
Proper dispute resolution mechanism	F6	0.125	0.153846	0.090909	0.111111	0.098684	0.111111	11.51%
	Sum	1	1	1	1	1	1	100.00%

### APPEDIX G-8: AHP Matrix Scale, Ranking Pairwise Comparison and Standardized Matrix of Category G: Social, Cultural, and Ethical Related Factors

Matrix Ranks – Category G: Social, Cultural, and Ethical Related Factors					
Differences	AHP Scale	G2	G3	G4	G5
0-0.122	1		G2	G3,G5	G3
0.123-0.188	2	G1			G2
0.189-0.244	3			G2	
0.245-0.305	4		G1		
0.306-0.366	5				G1
0.367-0.427	6			G1	
0.428-0.488	7				
0.489-0.549	8				
>0.550	9				

Pairwise Comparison - Category G: Social, Cultural, and Ethical Related Factors						
CSF	ID	G1	G2	G3	G4	G5
Community participation, acceptance, and support	G1	1	0.5	0.25	0.166667	0.2
Work environment during the brief development	G2	2	1	1	0.333333	0.5
Consideration of cultural and ethical values of the end users/user-group during the brief's development	G3	4	1	1	1	1
Acceptable tariff level	G4	6	3	1	1	1
Consideration of socioeconomic aspects	G5	5	2	1	1	1
	Sum	18	7.5	4.25	3.5	3.7

Standardized Matrix - Category G: Social, Cultural, and Ethical Related Factors							
CSF	ID	G1	G2	G3	G4	G5	Weights
Community participation, acceptance, and support	G1	0.055556	0.066667	0.058824	0.047619	0.054054	<b>0.056544</b>
Work environment during the brief development	G2	0.111111	0.133333	0.235294	0.095238	0.135135	<b>0.142022</b>
Consideration of cultural and ethical values of the end users/user-group during the brief's development	G3	0.222222	0.133333	0.235294	0.285714	0.27027	<b>0.229367</b>
Acceptable tariff level	G4	0.333333	0.4	0.235294	0.285714	0.27027	<b>0.304922</b>
Consideration of socioeconomic aspects	G5	0.277778	0.266667	0.235294	0.285714	0.27027	<b>0.267145</b>
	Sum	1	1	1	1	1	<b>1</b>

**Appendix H**  
**Structured Interview Questionnaire: The extent of practice/availability of CSFs  
 in PPP Brief in the UAE construction industry**

**Structured Interview Questionnaire: The extent of  
 practice/availability of CSFs in PPP Brief in the UAE  
 construction industry**

Dear respondent,

This Questionnaire survey is part of an ongoing research work for a PhD degree at UAEU aiming at developing a systematic framework for guiding the briefing process of PPP projects in the UAE.

This structured interview questionnaire aims at assessing the extent of practice/availability of the identified CSFs during briefing stage of your project, which is selected as a case study. The questionnaire is divided into two parts: Part I includes the respondent's general information and background and project details, while Part II is dedicated to rating the success factors. You may also let me know if you wish to receive a summary of the final results of this survey.

As I appreciate your busy time schedule, I dedicated my effort to make the questionnaire as simple as possible. Hoping that you wish to facilitate the successful completion of this academic research, I would like to ensure that your responses will be used purely and strictly in academic studies and not for any other purposes.

Your input and feedback is highly appreciated. Should you have any queries, please feel free to contact me.

Thank you in advance for your contribution to this study.

Researcher  
 Rauda Al Saadi  
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 Faculty of Engineering  
 UAE University

## Part I - BACKGROUND INFORMATION

### Respondent general information and background

1. Your name (optional): .....
2. The name of your company/organization (optional): .....
3. What is your role in your organization? .....
4. Contact Phone No. ....
5. Your Designation E-mail Address .....

### Project details

6. Project name (optional): .....
7. The type of PPP project: .....
8. The description of PPP project? .....
9. Contact Phone No. ....
10. The briefing phase at the time of filling this questionnaire .....

## Part II -CRITICAL SUCCESS FACTORS

11. The following CSFs are expected to be key factors for successful briefing process in PPP projects in UAE. Please rate the extent of practice/ availability for the following CSFs for the ..... project.

**Extent of practice:**

1	2	3	4	5
Not at all	Limited	Regularly	Extensively	All the time

### A. Procurement Related Factors

Critical Success Factors (CSFs)	1	2	3	4	5
A1. Clear project's goal, objectives, and deliverables in the brief					
A2. Clear and precise process for formulation and control of the brief					
A3. Appropriateness of the selected PPP model					
A4. Adequate resources allocated to the briefing process					
A5. Flexibility of the brief and the management of change					

### B. Stakeholder Related Factors

Critical Success Factors (CSFs)	1	2	3	4	5
B1. Identification of the influential stakeholders					
B2. Addressing stakeholders' possible power and influence					

B3. Identification of the stakeholders' needs, requirements, and interests					
B4. Adequate engagement of user-groups throughout the briefing process					
B5. Stakeholder management strategies					
B6. Proper communication and coordination between stakeholders during the brief development					
B7. Team selection and empowerment					
<b>C. Risk-Related Factors</b>					
Critical Success Factors (CSFs)	1	2	3	4	5
C1. Proper identification of anticipated risks/threats to the PPP project					
C2. Proper analysis and assessment of anticipated risks/threats to the PPP project					
C3. Proper risk allocation and sharing among project stakeholders					
C4. Proper mitigation/reduction strategy for anticipated risks/threats to the PPP project					
C5. Government guarantees for political/legal/regulatory risks beyond the control of private investors					
C6. Flexibility of the project design solution to meet possible future changes in market demand					
<b>D. Finance and Economic Related Factors</b>					
Critical Success Factors (CSFs)	1	2	3	4	5
D1. Favourable financial and economic climate					
D2. Business and economic viability of the feasibility study					
D3. Sound commercial and financial package/arrangements					
D4. Financial capacity and reliability of private sector					
<b>E. Public Sector Capacity Related Factors</b>					
Critical Success Factors (CSFs)	1	2	3	4	5
E1. Political support					
E2. Qualified and experienced public staff to manage the PPP briefing process					
E3. Governmental assistance during PPP project undertaking					
E4. Government financial capacity to support PPP financial requirements:					
E5. Effective government mechanisms for documentation and lessons learned					
<b>F. Regulatory and Legal Related Factors</b>					
Critical Success Factors (CSFs)	1	2	3	4	5
F1. Availability of effective regulatory and legal frameworks for PPP					

<b>F2. Approved governance model by relevant authorities for the PPP venture</b>					
<b>F3. Project scope to match authorized mandate of the public agency</b>					
<b>F4. Adherence to applicable and up- to-date legal and regulatory frameworks</b>					
<b>F5. Clear authority and responsibility between public and private sector</b>					
<b>F6. Proper dispute resolution mechanism</b>					
<b>G. Social, Cultural, and Ethical Related Factors</b>					
Critical Success Factors (CSFs)	1	2	3	4	5
<b>G1. Community participation, acceptance, and support</b>					
<b>G2. Work environment during the brief development</b>					
<b>G3. Consideration of cultural and ethical values of the end users/user-group during the brief's development</b>					
<b>G4. Acceptable tariff level</b>					
<b>G5. Consideration of socioeconomic aspects</b>					

Thank you very much for your co-operation. Your contribution will add significantly to this research project.

If you have further questions related to this survey, please contact me at

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