PRINCIPAL FACTORS FOR PUBLIC-PRIVATE PARTNERSHIP (PPP) IMPLEMENTATION IN VIETNAM: A MIXED METHODS STUDY

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ABSTRACT

Public-Private Partnerships (PPPs) involve a combination of two motivators: (1) profit for the private sector; and, (2) efficiency and savings for the public sector. This approach, which has become increasingly popular as a way of procuring and maintaining public infrastructure, is being adopted by many governments around the world. However, employing the PPP approach is not always positive and depends on each country context. This study investigates the principal factors for PPP implementation in a developing country (Vietnam). It explores their criticality using a mixed quantitative and qualitative methods sequential explanatory strategy. The study also uses a confirmatory factor analysis technique to address the potential drawbacks of the conventional mean value analysis method, and adopts a two-dimensional importance analysis approach to illustrate the co-variances among factors. The differences between North and South Vietnam, and between the public and private sectors concerning the importance of these factors, are additionally investigated in this study.

The results of this study confirm 37 from a pool of 84 factors suitable for PPP implementation in Vietnam, of which 23 important factors are identified and explained. This study also indicates four additional success factors in the context of Vietnam, including **Stable government policies**, **Support from civilians**, **Attention and care of top leaders**, and **Coordination between relevant governmental departments and Ministries**. In addition, the study's findings prove the suitability of the adoption of the PPP approach in the Vietnamese context. Although no evidence was found for the significant differences between the public and private sectors on the importance of these factors, the results indicate a significant difference regarding the importance of the success factor **Stable macro-economic condition** between North and South Vietnam. Apart from the economic aspects, other elements were found to significantly contribute to the differences of PPP implementation between the two regions. These include: political aspects; infrastructure and weather conditions; and, cultural and human matters. Considering a combination of the most critical factors for PPP implementation in Vietnam obtained from the integration of the quantitative and qualitative findings, this

study proposes an ideal model of the principal factors contributing the success of PPP implementation in Vietnam at the early stages of the PPP process. Compared with the results obtained in other countries, this study further indicates 13 important factors, irrespective of different jurisdictions. The remaining 10 factors are considered differently among the countries, depending on each country context.

The findings of this study have theoretical, methodological and practical value. The theoretical contributions include: this study provides a comprehensive review of the field and specifically of the principal factors for PPP implementation by using a three-stage method of a combined quantitative systematic and content analysis approach; it puts Vietnam on the map of PPP research in specific terms, possibly for use in future comparative, replicative research by showing dysfunctional, haphazard or incomplete models of PPPs in action in Vietnam; and, it provides a comparison for perceiving the important principal factors between countries, sectors, and the two halves of Vietnam, finally shown on an ideal model of PPPs in the country. In addition, it contributes four new success factors of PPP projects that emerged in the context of Vietnam to the existing literature on PPPs. Regarding methodological contributions, this study employs a new methodology approach to allow for a better understanding of the research problem by using a mixed methods design, and the application of techniques to address and present the co-variances between factors. This study also has implications for practice in that it constitutes a basis analysis for the government and the private sector of: how to adopt and identify PPP projects; and, how to attract private sector participation in PPP projects. It is believed that this useful information will help to minimise the current issues of PPP implementation in Vietnam.

CERTIFICATE OF ORIGINAL AUTHORSHIP

I certify that the work in this thesis has not previously been submitted for a degree, nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Date: 18/10/2016

Signature of Student:

ANH TUAN LA

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LIST OF ACRONYMS

BLT Build-Lease-Transfer

BTL Build-Transfer-Lease

BOO Build-Own-Operate

BOOT Build-Own-Operate-Transfer

BOT Build-Operate-Transfer

BT Build-Transfer

BTO Build-Transfer-Operate

BVCF Best Value Contributing Factor

CFA Confirmatory Factor Analysis

CPI Corruption Perceptions Index

CPIA Country Policy and Institutional Assessment

CPV Communist Party of Vietnam

CSF Critical Success Factor

DB Design-Build

DBFO Design-Build-Finance-Operate

DBFOM Design-Build-Finance-Operate-Maintain

DBM Design-Build-Maintain

DBO Design-Build-Operate

DBOM Design-Build-Operate-Maintain

EFA Exploratory Factor Analysis

GDP Gross Domestic Product

ICOR Incremental Capital and Output Rate

MVA Mean Value Analysis

ODA Official Development Assistance

OM Operate-Maintain

P3 Public-Private Partnership

PFI Private Finance Initiative

PFP Privately Financed Projects

PMU Project Management Unit

PPI Private Participations in Infrastructure

PPP Public-Private Partnership

PSC Public Sector Comparator

PSP Private-Sector Participation

PSPP Public Socialisation Private Partnership

SME Small and Medium-sized Enterprise

SOE State-Owned Enterprise

SPV Special Purpose Vehicle

VFM Value for Money

VND Vietnam Dong

1 INTRODUCTION

1.1 RESEARCH BACKGROUND

Walsh (1995) concluded that many approaches could be used to deliver public infrastructure facilities and services. But, neither pure public nor private approaches can achieve long-term sustainability due, in the main, to government and market failures. Yehoue, Hammami and Ruhashyankiko's (2006) study, which examined a World Bank database of 85 countries during the period 1990 to 2003, stresses that not only in developing but also in developed economies, governments or private-sector partners rarely have the requisite resources to provide public infrastructure projects and endure all risks independently. As a result, a combination of both private and public sectors in a partnership that expects to achieve profit for the former and efficiency and savings for the latter is required. The aims of such combinations are to share risks and rewards and exploit the strengths of both sectors. The general term by which such partnerships is known as Public-Private Partnerships (PPPs).

PPPs are not new to public procurement. They appear to have originated in the United States for educational programmes, and then for utilities in the 1950s. The term 'PPPs' came into wider use in the 1960s to refer to public–private joint ventures for urban renewal. Its meaning expanded rapidly during subsequent decades to infrastructure facilities and services in many other industrialised, emerging and developing economies worldwide (Yescombe 2011). An impressive example of PPP implementation was the introduction of approximately 3000 projects worldwide, accounting for approximately US$900 billion during the 1985 - 2004 period (Kwak et al. 2009). More specific examples of countries around the world include: 1300 contracts representing a total of €250 billion signed between 1990 and 2009 in many countries in the European area; investment totalling in excess of AU$9 billion was budgeted for and signed in Australia by 2004; and, an equivalent of over AU$115 billion is planned over the decade up to 2018 (Raisbeck, Duffield and Xu 2010); 20 per cent of all new infrastructure in Canada has the involvement of the private sector, and no less than half of the states

in the United States are adopting PPPs (Deloitte 2013); and, as of 2011, 139 low, lower-middle and upper-middle income countries had adopted PPPs for approximately 5,900 infrastructure projects costing more than US$2 trillion. This world trend towards increased PPP activity continued and reached its peak during the period 2003 to 2007. It slowed down in the aftermath of the 2007 - 2008 global financial crisis and the recession that followed (Raisbeck 2009). However, in more recent years, PPP activity has started to increase again, confirming that the difficult PPP market conditions arising from the 2007 - 2008 crisis rather than excluding PPP projects have created opportunities for countries to develop more sophisticated PPPs.

Proponents of PPPs claim that if properly formulated and managed, PPPs enjoy a number of advantages over traditional procurement. In theory, some of their main advantages include an improved risk profile by equitable risk sharing, cost savings and VFM, enhanced project delivery, reduced public financing, and a catalyst for the economy (Chan, Lam, Chan, Cheung and Ke 2009*a*). In practice, many studies provide evidence to show that PPPs are superior to traditional procurement by comparing the two methods' performance in terms of time and cost. For example, 76 per cent on time and 78 per cent within budget of PPP projects compared to 30 and 27 per cent respectively for those using traditional procurement tabled in the United Kingdom National Audit Office report of 2003 (NAO 2003); in Australia (91 per cent on budget (Fitzgerald 2004), 7 to 23 per cent cost savings (NSW Treasury 2006) and a fixed 11 per cent cost savings) (Duffield and Raisbeck 2007); in the United States (30 to 40 per cent cost savinsg) recorded in 2002 (Haskins, Gale and Kelly 2002); in Finland (14 to 20 per cent cost savings) (Pakkala 2002); and, in Argentina (approximately 30 per cent cost savings) (Liautaud 2001).

However, PPP projects usually involve the participation of many stakeholders in long-term project contracts marked by numerous risks and uncertainties. The major problems experienced include: the public sector allocating maximum risk to the private sector instead of setting an equitable risk allocation between the two sectors (Li 2003, Chan, Chan and Lam 2006, Ng and Loosemore 2007); lengthy and complicated bidding processes (Owen and Merna 1997); high life-cycle costs by increasing the cost of finance, transaction costs as well as bidding costs (Li 2003, Li, Akintoye, Edwards and Hardcastle 2005*b*, Chan et al. 2006, Sadka 2007, Grimsey and Lewis 2007*a*, Morallos and Amekudzi 2008, Yescombe 2011); excessive returns for the private sector (Franks 2002, Grimsey and Lewis 2007*a*, Toms, Beck and Asenova 2011); and, public opposition due to political and social issues, for example, environment protection, high tariff charge to dir-

ect users and corruption (Li 2003, Zhang 2006, Otairu, A Umar, Zawawi, Amila, Pakir and Hamid 2013). As well, there are concerns that PPP projects may create a legal path to corruption. Government authorities can manipulate the Public Sector Comparator (PSC)[1] to approve a PPP project by underestimating its total cost (Turner 2002, Umar, Idrus and Khamidi 2011). As a result, the application of PPPs lends itself to being criticised as a legalised method of bringing benefit to self-interested groups, especially in developing countries with unstable political climates that generate lack of transparency and accountability.

Despite the above challenges, many countries continue to adopt PPPs for their public infrastructure development strategies, arguing that "the advantages and/or mutual benefits, when successful, by far outweigh the risks involved" (Jamali 2004, p. 109). Therefore, studying PPPs is significant and important for understanding and enhancing knowledge of their successful implementation.

While PPPs have become increasingly popular among countries worldwide, the levels of understanding and market maturity when applying PPPs vary markedly. In most countries, PPP development remains at the first stage during which a legislative and policy frameworks and their marketplace are initially established. Theoretically, late-comers to PPP development could benefit from the learning experiences and/or adopting working models of the trailblazers who have developed mature PPP markets, e.g., the United Kingdom and Australia. However, most PPP projects differ in nature: they depend greatly upon an individual country context (Abdullah and Manjur 2013). There are no standard or universal PPP models. Each country has its own strategy for developing PPPs depending upon the country context, institution, funding, and the particular characteristics of the project (Hardcastle, Edwards, Akintoye and Li 2005, Ward and Sussman 2005). Deloitte (2013) suggests that each country should develop its PPPs in its own way, tailored to the country's situation and characteristics in terms of local geography, political, social and cultural climate, and sophistication of the capital market. Ke et al. (2009) and Tang, Shen and Cheng (2010) also conclude that the experience of PPP implementation cannot be just simply copied from countries with high levels of PPP maturity by a particular country in the process of adopting PPPs. There is a need to study PPPs in the individual country context. To this end, this thesis will focus upon PPP implementation of infrastructure development in Vietnam.

1 Grimsey and Lewis (2005) define the PSC as a benchmark for quantitative analysis in VFM comparison between a PPP and traditional procurement.

1.2 STATEMENT OF PROBLEM

The fact that PPPs have been successfully adopted by many countries worldwide does not ensure their successful application in Vietnam. To some extent, the Vietnamese government has based its adoption of PPPs on western models. However, this was not fully justified in terms of suitability for procuring public infrastructure facilities and services peculiar to Vietnam. Due to this omission, the outcomes of PPP implementation in Vietnam are somewhat limited and inefficient. The problems that Vietnam has encountered when implementing PPP projects may be similar to those encountered by other developing countries. Some key problems include government budget shortages, lack of effectiveness of budget utilisation by the public sector, incomplete legal framework, difficulty in attracting private investors, an undeveloped financial market, and excessive returns for private investors. However, the most problematic underlying issues in Vietnam lay in the following three aspects: political climate; differences between the two halves of the country; and, an urgent demand for infrastructure development.

The first distinction in Vietnam is that during its long and chequered history, Vietnam has experienced many wars and many episodes of the splitting and reuniting of the two major northern and southern regions of the country (Truong, Phan and Nguyen 1997). Taken together, these episodes severely damaged the country's economy. After the last unification of the two regions from 1975 up to 1986, the country was governed by a single and unopposed Party, the Communist Party of Vietnam (CPV). Post this period, the CPV focused upon introducing a centrally planned economy of which the state sector was the sole driver. However, after recognising the low productivity and inefficiency of this policy, the government introduced a new economic policy in 1986, i.e., "Doi Moi" (Renovation). Doi Moi marked the beginning of a transition to a market economy with socialist orientation, of which private enterprise was initially recognised as a significant part (Beresford 2008). In the process, a legal framework for the establishment and development of a private economy sector has been gradually introduced. However, the country is still governed by a one Party government pursuing socialism, consistently confirming the leading role of the state-owned economic sector in the economy. The state sector retains its significant size despite many decades of transition away from a centrally planned economy.

The political climate in Vietnam developed under the governance of the CPV. With its monopoly control, the CPV exercises central power over all aspects of government at all levels. Because the government maintains a strong system of State-Owned Enterprises (SOEs), the business environment in general and the

investment environment in the PPP market in Vietnam in particular have been affected significantly. The dilemma confronting PPP implementation in Vietnam is that while many private investors express interest, few actually participate in PPP projects. Domestic private enterprises, mostly Small and Medium-sized Enterprises (SMEs), find it hard to participate in infrastructure projects due to insufficient investment capital raised upfront. The government's offers of special support for and biased policies regarding SOEs have resulted in disadvantage being experienced by the domestic private sector. Foreign investment enterprises, although interested in operating in the domestic market, fear the investment environment in Vietnam. SOEs participate in many PPP projects due to the favours they receive from the government. However, these projects lack efficiency because SOEs lack the capacity to facilitate implementation.

Additionally, the government acts as a guarantor for SOEs' borrowing of funds for PPP projects and supports these enterprises when they suffer losses. In terms of style, these projects are implemented based upon cooperation between the public and private sectors. In essence, they are still dependent on the state budget (Giang 2012). Furthermore, although Vietnam does not have the highest level of corruption in the world, under the monopoly control of the one-party government, the incidence and severity of corruption is likely to increase significantly, and it may prove difficult to detect (Nguyen 2006).

Another distinction in the context of Vietnam lies in the differences between the two regions of the country. As the history of Vietnam has resulted in its two major northern and southern regions being divided and reunited many times (Truong et al. 1997), concern has been raised about the differences between the two; for example, linguistic, cultural, and business environment differences (Engholm 1995, Quinlan 1995) and the managerial work value of managers (Ralston, Van Thang and Napier 1999). These differences are also indicated in terms of trade unions (Edwards and Phan 2008), ideology and institutions (Kim 2008), doing private business (Dapice and Bui 2004), and social perception (Kim 2007). More importantly, recently, the practical results of PPP implementation in Vietnam have shown differences between the two areas of the country, both in their own figures and according to the researcher's observation.

The last distinction is due to the history of the country. The existing infrastructure system in Vietnam is not only backward, it has been damaged by successive wars. The country's inferior infrastructure shows signs of long term weakness, and its low quality. During the period 1990 to 2010, Vietnam's economy grew 7.3 per cent annually (World Bank 2011). Due to attempting to maintain this

high rate, and to meet associated social demands, the pressure on infrastructure development is currently enormous. This huge demand for infrastructure development exceeds the capacity of the combined three financing resources (state budget, Official Development Assistance (ODA)[2] loans, and government bonds). This is due to the continued increase in the budget deficit, high public debt pressure, low effectiveness of budget utilisation, a decrease in the numbers of ODA loans, and failure to mobilise government bonds. As a result, these financing resources meet only 50 to 60 per cent of the demand to reach US$300 billion by 2020 (Warlters 2006). Therefore, funding for infrastructure projects is a huge challenge for Vietnam's government; and, tapping into private financing for public infrastructure projects is urgently needed to tackle the problem of investment shortage.

In order to solve the problem of infrastructure development, PPPs were introduced into Vietnam in 1993 in the form of one model, i.e., Build-Operate-Transfer (BOT). Between 1993 and 2009, the government issued laws, decrees, and other legislation documents regulating the usage of three forms of PPPs including BOT and another two schemes, Build-Transfer-Operate (BTO) and Build-Transfer (BT). This aimed to attract private financing of public facilities and services. During this period, Vietnam witnessed a total of 384 infrastructure projects proposed under the above three schemes, costing approximately US$55 billion. Of these, only 108 had selected investors with a total capital value of approximately US$18 billion (ECC 2013). However, most of these projects either failed or were not effective or efficient as proposed by initial objectives (Quoc Cuong 2010). While continuing to invest in these three forms could produce some growth, infrastructure development demanded by the approved plans could not be guaranteed. Therefore, in 2010, the government issued Decision number 71 promulgating the regulation of pilot investment in PPP projects which extended to other PPP schemes.

The government also enacted Circular number 03 in 2011 to regulate more details of investment in BOT, BTO and BT. Recently, a further regulation, Decree number 15 was issued in 2015 (Decree on PPP investment form). However, detailed guidelines for implementing this Decree has yet to be published. Therefore, the legal framework for PPP implementation is still evaluated as limited and incomplete (ECC 2013, Giang 2012). In particular, it still lacks mechanisms to ensure the transparency and accountability of public officials' activities, and lacks tools for the evaluation and appraisal of decision making in the very early

2 Information about the ODA, for example, what it is and how many types there are of ODA may be found at the website http://www.id.emb-japan.go.jp/oda/en/whatisoda_01.htm.

stages of a PPP process. Clearly, the comprehensive study of principal factors for PPP implementation in the context of Vietnam is an essential prerequisite for further research. This will allow the development of comprehensive models that will support project teams, enable them to transparently select a PPP instead of traditional procurement, and to prepare PPP projects efficiently in the early stages.

Taken together, the above special characteristics of Vietnam may give rise to differences in studying the principal factors for PPP implementation in this country context. Of particular concern will be specific factors and their criticality, the suitability of adopting PPPs, and differences in perception between the public and private sectors, between the two halves of the country concerning the importance of the principal factors in this country context.

1.3 PREVIOUS STUDIES

PPPs have been applied in many countries around the world. Academics and practitioners have developed particular aspects of the models or critical factors relating to said models. Principal factors for PPP implementation are first investigated in Li's (2003) research wherein he examines important issues in the first stages of business case establishment and development. These factors include driving forces (reasons) leading to the adoption of PPPs, attractive and negative factors for adopting PPPs, measures to enhance the VFM in PPP projects, success factors of PPP projects, and factors attracting private sector involvement in PPP projects. Subsequent to Li's (2003) research, many other researchers have studied these factors in different country contexts. For example, Cheung, Chan and Kajewski (2009*a*,*b*), Cheung (2009), and Cheung, Chan, Lam, Chan and Ke (2012) compare Hong Kong with Australia and the United Kingdom; Chan et al. (2009*a*), Chan, Lam, Chan, Cheung and Ke (2009*b*, 2010*b*) explore the Chinese context; Hwang, Zhao and Gay (2013) look at Singapore; Ismail (2013*a*,*b*,*c*) studies the Malaysian context; and Olusola Babatunde, Opawole and Emmanuel Akinsiku (2012) report on PPP projects in Nigeria. These studies show that the sets of factors found were almost the same with minor modifications among the countries. Their criticality as perceived in different countries differed significantly.

Previous studies reveal that while some factors were perceived as critical in all contexts, many other factors were regarded as critical only in particular contexts. The differences in the perceptions of the public and private sectors were also

considered significant in some countries, and insignificant in others. Additionally, it is important to note that although several researchers have explored this topic in developed countries including Hong Kong, Singapore, Australia and the United Kingdom, considerably fewer specific studies have been conducted in developing countries. These do not include Vietnam. Therefore, studying principal factors for PPP implementation in Vietnam is essential to understand PPPs in this specific context, which has distinctions in comparison with other country contexts.

1.4 RATIONALE FOR EMPLOYING A MIXED METHOD APPROACH

A mixed quantitative and qualitative research methods approach was adopted in this study for three reasons. The first was due to the nature of the research problem, which is to develop a set of principal factors for PPP implementation in Vietnam. It could be resolved by employing either a quantitative or qualitative approach. However, earlier studies, for example those of Li (2003), Cheung (2009), and Ismail (2013*b*,*c*, 2014) all adopted quantitative designs and called for using qualitative methods to obtain a deeper understanding of the principal factors. Therefore, there is a need to combine both approaches in order to enable the best possible outcome.

The second reason for the choice was attributable to the researcher's own personal experience of PPP projects and interest in the topic, which attempts to examine the principal factors in both broad and reasonable depth to ensure that the participants' responses are valid and focused. This is because PPPs are new to Vietnam and the majority of study respondents may not have sufficient in-depth knowledge of the topic.

The third reason was due to the researcher's desire to ensure the study's reliability and validity, which is also considered an academic requirement of any research study (Thanasegaran 2009).

This study has adopted an explanatory sequential mixed methods design. A quantitative phase was conducted first, followed by a qualitative phase to explain the quantitative results. This was due to two reasons. First, it was considered suited the purpose of using qualitative data to explain significant or surprising quantitative findings in this study. Second, this design fitted the purpose of identifying groups of respondents (the public and private sectors or North and South Vietnam) based on quantitative results, and for subsequent qualitative research to study the groups in depth.

1.5 PURPOSE OF THE STUDY AND RESEARCH QUESTIONS

This theoretical and empirical research continues the significant and important trend of studying and enhancing knowledge of PPPs. Its aim is to address a set of factors appertaining to PPP projects in Vietnam, one of the world's developing countries. To achieve this aim, a series of four objectives have been determined:

1. To identify principal factors for PPP implementation in Vietnam
2. To identify the criticality of these factors in Vietnam
3. To examine the suitability of adopting PPPs in Vietnam
4. To examine the differences in perceptions of criticality of these factors between the public and private sectors and between North and South Vietnam

As suggested above, an explanatory mixed methods design was used in this study. This involved collecting in-depth qualitative data after a quantitative phase. In the quantitative phase of the study, a questionnaire survey (numerical) was conducted with participants from both the public and private sectors in the two regions in Vietnam (the Northern and Southern regions) via on-line and/or on-site surveys at national seminars or workshops addressing PPP implementation in Vietnam. The participants included experts equipped with adequate knowledge of the field of PPPs, having practical experience of participating in PPP projects, or at least having closely followed the development of PPPs in Vietnam. The numerical data was then analysed to address the above four objectives. In the qualitative phase, semi-structured interviews were conducted as part of a multiple case study to explain the critical factors for PPP projects and particular factors with different criticality among different groups of respondents in the context of Vietnam. The qualitative follow-up data facilitated a deeper understanding of the quantitative results of the study.

According to Cooper, Schindler and Sun (2003), research questions are the choices that best state the purpose of the research study. Therefore, the research questions for Phase 1, the quantitative phase of this study, consistent with the above-stated objectives were as follows:

1. What are the principal factors for PPP implementation in Vietnam?
2. How is the criticality of these factors regarded in Vietnam?
3. Is the adoption of PPP projects in Vietnam suitable?

4. In what ways do the perceptions of respondents between the public and private sectors and between North and South Vietnam differ vis-à-vis the importance of these factors?

Apropos of the qualitative aspect of the study in Phase 2, the overarching core research question is:

5. How can the important results obtained in the quantitative phase be explained?

The integration of these two phases compared the findings obtained in Vietnam with those found in other countries.

1.6 OUTLINE OF THE STUDY

The structure of this thesis is as follows:

Chapter 1 the introductory chapter, includes the research background, and statement of problem. In addition, it provides details of previous studies on this topic, the rationale for adopting a mixed method approach to this study, and the purpose of the study and research questions. The structure of the research study is also outlined at the end of the Chapter.

A review of PPPs in general, and the principal factors for PPP implementation in particular, is the focus of Chapter 2. First, it provides a review of research studies conducted on PPP topics and reviews the principal factors for PPP implementation in different countries. This Chapter then reviews the background of PPPs, including details of the emergence of PPPs, definitions of a PPP, types of PPPs, a comparison of a PPP and traditional procurement, the parties involved in a PPP project, and a typical PPP process. This is followed by a review of the global practice of PPPs. The Chapter ends with a summary together with an indication of a theoretical framework for PPP implementation. Research gaps found in the literature survey are also outlined at the end of this Chapter.

In Chapter 3, focus centres on the characteristics of PPP implementation in Vietnam. Three distinctions of the country are discussed including the current status of the country's public infrastructure system, political climate, and differences between the North and the South of the country. The Chapter then reviews the status and related issues of PPP implementation in Vietnam. Another research gap for this study is then provided. The Chapter ends with a theoretical foundation for this study built on the literature review and research gaps that the study aims to solve.

The methodologies employed for this study are discussed in Chapter 4. It first provides an overview of the academic research design, then explains the reasons for selecting a mixed methods approach to the study. This is followed by details of the design procedures and of the applied analysis methods used for the quantitative and qualitative phases of the study. The Chapter ends with a discussion of issues relating to research ethics.

Chapter 5 details the results of the quantitative phase. These were reached following analysis of the data collected from a questionnaire survey and analysed using quantitative tools.

Chapter 6 presents the results obtained from the qualitative phase which were reached through text data collected from semi-structured interviews and analysed using qualitative tools; in effect, by adoption of a multiple case studies approach.

In Chapter 7, discussion centres on the major findings obtained from the interpretation and explanation of the quantitative and qualitative results. This is followed by the development of an ideal PPP model for Vietnam. A comparison with findings reached in other countries is also provided, followed by a discussion of the study's limitations. Finally, potential future research topics are suggested.

Chapter 8 summarises the research study and highlights the study's design and findings. The study implications and recommendations are also presented in this Chapter. Finally, the thesis ends with a concluding summary.

2 GENERAL REVIEW OF PUBLIC-PRIVATE PARTNERSHIPS

2.1 INTRODUCTION

Theory is rooted in practice, refined by research, and should be reapplied in practice. Figure 1 illustrates the relationships between theory, practice and research. While theory guides research and practice, research is an important factor in building theory and establishing guidelines for practising. Practice, which plays a role of theory tester, generates research questions. A literature review should look at works on theory, research and practice, and narrow exploration down to research issues with which a given study is concerned. The aim of this chapter is to review the extant literature on the PPP approach by looking at theory, global practice, and conducted research studies. The chapter then focuses on a literature survey of what Li (2003) alludes to as principal factors for PPP implementation, and finally discusses research gaps regarding this topic.

The content of the chapter is structured as follows: Section 2.2 first focuses on research studies addressing PPPs, then reviews the principal factors for PPP implementation in different countries. Section 2.3, which provides a review of the background of PPPs, examines theories pertinent to the emergence of PPPs, definitions of PPPs, and the types of PPP models. In addition, a comparison of a PPP and traditional procurement is drawn, and a review undertaken of (a) the parties involved in a PPP project; and, (b) of the PPP process in general. In Section 2.4, in which the global practice of PPPs is reviewed, focus is upon current trends, the global market, and on the positive and negative experiences of PPPs reported globally. The chapter concludes with a summary (Section 2.5) of the gaps evident in the extant literature.

2.2 RESEARCH STUDIES CONDUCTED ON PPP TOPICS

Researchers have focused their attention on PPP projects since they were initiated. Many have focused on identifying key aspects of PPP projects, their aim

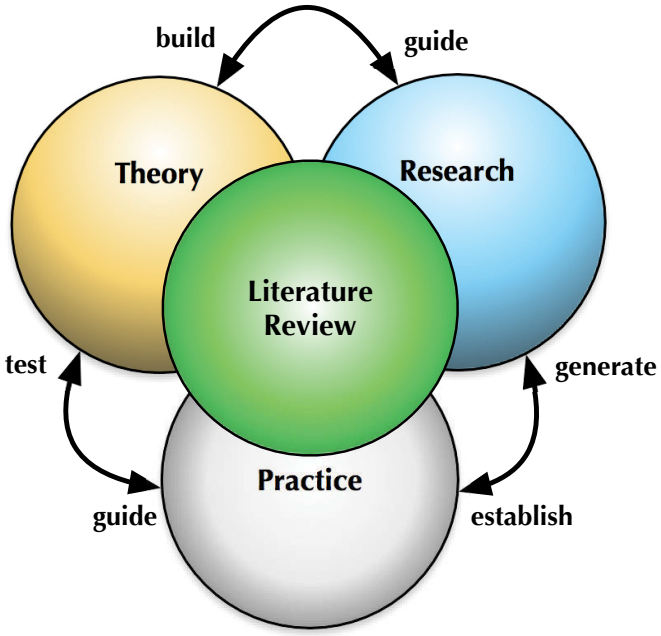


Figure 1: The relationship between theory, research, and practice (Darlington and Scott 2002).

being to improve the operation of said projects (Tiong, Yeo and McCarthy 1992, Grimsey and Lewis 2004, Li et al. 2005*b*, Zhang 2005, Jefferies 2006, Kwak et al. 2009). The publication process enables knowledge to be shared, by extension allowing for further advancement in this particular subject area. It also saves researchers from reinventing the wheel as it were. It enables them to use research works of other authors to reify their own research. Academic journals are not only generally beneficial to the community of researchers, but are also particularly significant to newcomers doing research in the field, a quick and simple medium for gaining a broader outlook. Further to this, Tsai and Lydia Wen (2005) assert that: "a systematic analysis of articles published in academic journals would assist researchers to explore the current status and future trends of literature in the chosen topic" (Tsai and Lydia Wen 2005, p. 3).

All publications on the topic of PPPs published in four construction journals during 1998 and 2003 were first reviewed competently by Al-Sharif and Kaka (2004). These four journals, including the *Journal of Construction Engineering and Management* (JCEM), *Construction Management and Economics* (CME), *International Journal of Project Management* (IJPM), and *Engineering Construction and Architectural Management* (ECAM) were selected from a list of the top-ten construction journals proposed by Chau (1997) as highly recognised by their frequent access. This study provided insights into how the coverage of PPP publications presented during this period shed light on the gaps that the academic community still need to address. They also evaluated the impact of the research on the con-

struction industry. Al-Sharif and Kaka finally summarised then categorised the PPP papers into three groups (**Risk**, **Procurement**, and **Financial**). This further showed that in terms of volume, papers published during the period 1998 to 2003 did not keep pace with the rate of activities.

Drawing upon a two-stage comprehensive literature review built upon Al-Sharif and Kaka's (2004) study, Ke et al. (2009) analysed published works on PPPs over a ten year period from 1998, focusing on the volume publications each year, the authors' contributions, and their research focus. In addition to the four construction journals that Al-Sharif and Kaka (2004) selected, Ke et al. (2009) extended their attention to three more journals, e.g., *Public Money and Management* (PMM), *Journal of Management in Engineering* (JME), and *Proceedings of Institution of Civil Engineers-Civil Engineering* (PICE-CE). Chau (1997) identifies these three as among the top-six construction journals. According to their review, the number of publications on PPPs grew over time: a total of 170 articles were published between 1998 and 2008. British researchers were recognised as publishing the majority of PPP articles, followed by American, Singaporean, Hong Kong, Chinese, Australian, and German researchers. Ke et al. (2009) also found a variation in how different models of PPPs were applied in different regions, as well as a general acceptance of using various PPP models rather than the BOT scheme. PPP topics continue to attract numbers of researchers. The three groups of topics identified by Al-Sharif and Kaka (2004) were developed into a range of seven categories: **Investment environment**; **Procurement**; **Economics viability**; **Financial package**; **Risk management**; **Governance issue**; and, **Integration research**. The field of study has also begun to rely on sophisticated analysis techniques, such as game theory and fuzzy set theory, for example.

A similar study conducted by Tang et al. (2010) reviewed research topics in the field of PPP study from 1998 to 2007. The six construction management journals selected for the study included CME, JCEM, ECAM, JME, IJPM and *Building research and information* (BRI). Different from previous peer research studies, Tang et al. (2010) looked deeply into the findings of the articles, drawing comparisons with the aim of improving the extant practices, and providing insights for directing research in the future. They first categorised the relevant literature into two groups (empirical and non-empirical studies); then, they further classified their findings under the headings of **Risks**, **Relationships**, and **Financing** (empirical), and **Financing**, **Project success factors**, **Risks**, and **Concession periods** (non-empirical).

PPP projects have been increasingly adopted by governments around the world. Adoption peaked during the period 2003 to 2007, then slowed during the global financial crisis period (2007 - 2008) subsequently recovering afterwards. In order to identify the trend of PPP research, it is strongly believed that a study of academic publications from 1998 to 2013 (years inclusive) is of great importance, especially for its comparison of two stages: before and after the international financial crisis. For the purposes of this study, the researcher adopted the review methods used by previous studies (Al-Sharif and Kaka 2004, Ke et al. 2009, Tang et al. 2010) to provide a continuous review of the research's direction in PPP topics during the period. The aims of this literature review are:

1. To review PPP papers published during the period 1998-2013. The authors' origins and contributions, as well as the countries with the highest number of published papers on PPP topics and their respective impacts on practices are also identified;

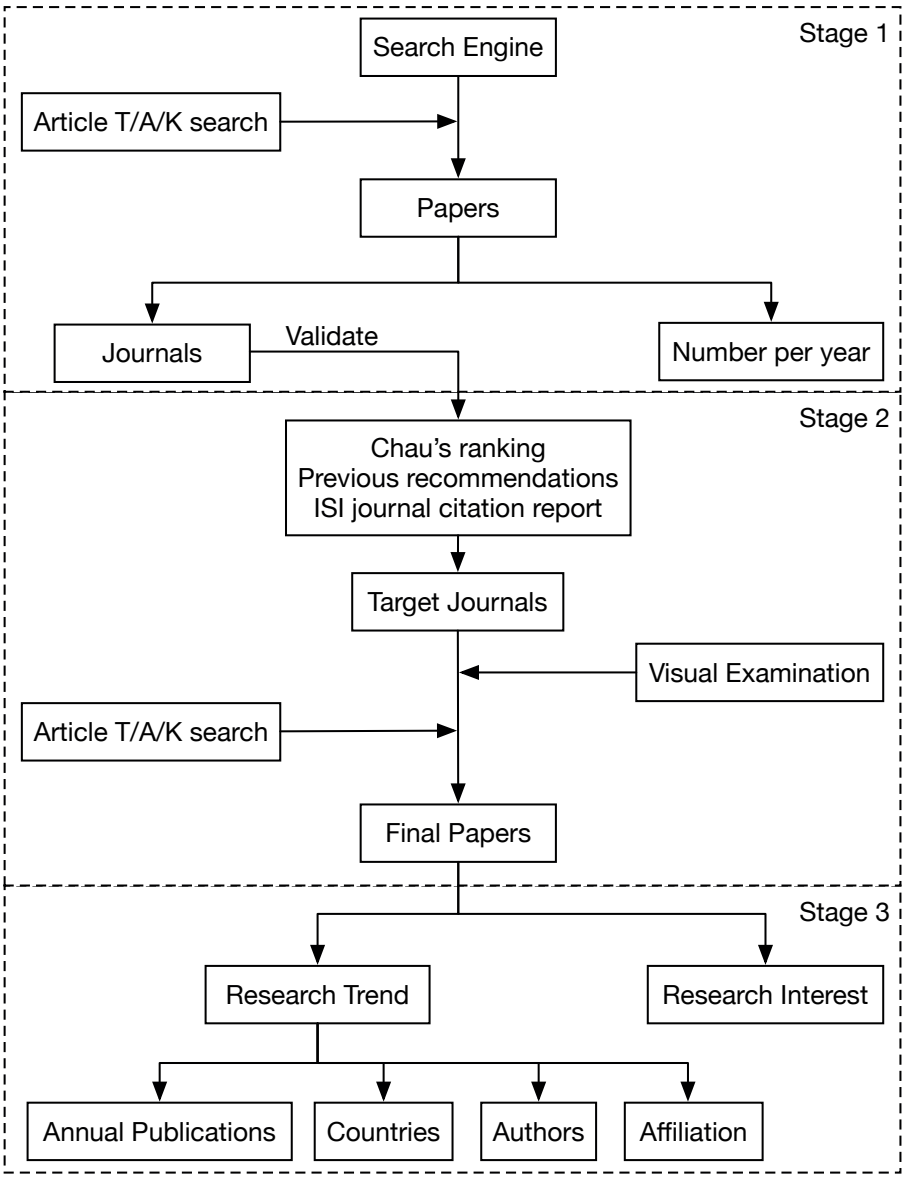
2. To summarise and categorise published papers' content into topics delineating the phases of the PPP process as discussed in Section 2.3.6;

3. To conduct an in-depth review of principal factors for PPP implementation alluded to in Li's research study conducted in 2003 in order to establish a theoretical foundation for this doctoral study. These factors include:

    - The rationales for adopting PPPs;
    - Factors attracting and hindering the adoption of PPPs;
    - Factors attracting private sector involvement in PPP projects;
    - Measures enhancing Value for Money (VFM) in PPP projects;
    - Success factors of PPP projects.

A three-stage literature review was adopted to conduct content analysis of PPP-related papers published during 1998 to 2013 (inclusive) as shown in Figure 2. The reason for selecting 1998 as the year of commencement was due to an underlying rationale that in the main, the emergence of PPP studies started in 1998 (Tang et al. 2010).

Apropos of research into PPPs, the number of PPP publications in the selected 10 journals significantly increased during the period 1998 to 2013 (years inclusive). A stable increase occurred from 1998 to 2005, followed by considerable fluctuations but still an overall increase during 2006 to 2009. Publications soared



Note: ISI acronym for the Institute for Scientific Information
T/A/K means Title, Abstract, Keywords

Figure 2: Literature survey for PPP publications, adapted from Ke et al. (2009).

in 2010 with almost double the volume of those recorded before the global financial crisis of 2007 and 2008. They reached a peak in 2013. It comes as no surprise that the United Kingdom accounted for the majority of PPP publications, followed by Hong Kong, the United States, Australia, China, and Singapore, which together formed a top-six group, accounting for more than 83 per cent of total publications during the period. The papers tended to focus more on issues pertaining to the first stage, in which principal factors for PPP implementation were identified as the main topic. Detailed content of the three-stage methodology literature survey in PPP topics as well as findings pertinent to research trends and interest in PPP publications during the investigated period are presented in

Appendix 8.4. The following section focuses the principal factors for PPP implementation.

In the PPP process (see Section 2.3.6), in the first stage, a reference project is normally used by the project team to compare and determine if a new project is affordable and achievable. According to Li (2003), the reference project is established by studying historical project data to identify a similar or comparable project. The reference project to some extent can confirm that an affordable investment plan for a similar project exists.

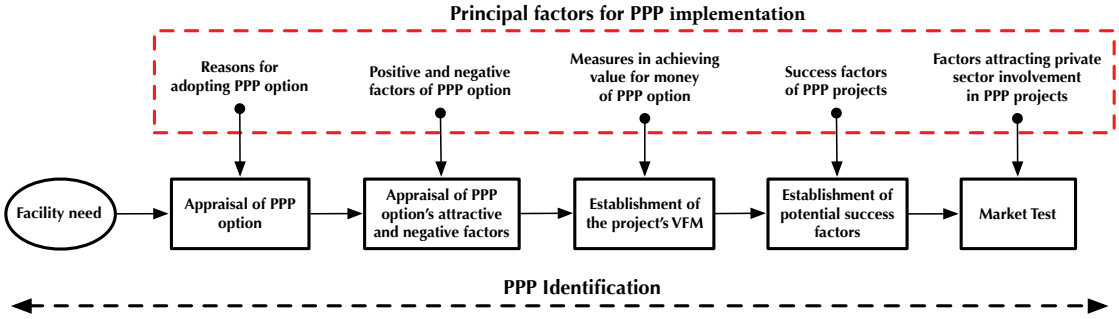


Figure 3: Principal factors for PPP implementation Li (2003).

Li (2003) alludes to principal factors for PPP implementation when examining important issues in the first stage of the PPP process. Principal factors, along with related important issues, are presented in Figure 3, in which principal factors are illustrated inside the rectangle with dashes. Identifying these factors is essential for building evaluation and appraisal models that will help the project team or decision-makers to comprehensively evaluate, appraise and/or justify their decisions in a transparent way. This is extremely important in the context of developing countries like Vietnam, with its high levels of corruption as well as lack of transparency and accountability.

According to Li (2003), the important issues in the first stage of the PPP process are as follows:

- The first issue is identification of the PPP approach. When there is a facility need, the public client or the private sector can be project proposers. They need to convince appraisers by answering the question of why the PPP approach should be adopted to deliver the project. Appraisers in this case need to be able to discern the critical reasons for adopting PPPs.
- The second issue is determination of the PPP approach's suitability by evaluating the attractive and negative factors for adopting this approach in the considered project. Appraisers also need to consider which are the most

attractive and negative factors associated with PPPs, when aiming to answer the question of why this approach is more suitable than traditional procurement.

- The third issue is measurement of the project's VFM to assess the question of whether or not the project will deliver VFM using the PPP approach. The option appraisal should look at the establishment of the measures for achieving VFM in PPP projects.
- If the PPP option is then shown to be appropriate, the next evaluation should be followed by a value management exercise to establish Critical Success Factors (CSFs) for the project. Accordingly, the project team or decision-makers should establish what the potential success factors of PPP projects require.
- The forgoing evaluation is a market check undertaken to ensure that the project can attract the private market. It is essential to determine which attractions will ensure private sector involvement in PPP projects.

The following section contains detailed reviews of principal factors for PPP implementation. It is important to note here that the literature search in this section was extended beyond the selected ten journals, as indicated above; and, the time period was extended from 1998 to 2015 (year inclusive) to widen the obtained results. This is because papers studying these topics in developing countries were rarely found in top international journals. This information was collected and summarised to provide secondary data for this study. It will be used for a comparison of principal factors for PPP implementation among countries (see Chapter 7).

The search code was refined in accordance with changes in the search terms and the period of publication. Together with terms appertaining to PPPs, terms relating to principal factors for PPP implementation were also included in the search field. They are fully presented below:

> TITLE-ABS-KEY("reasons" OR "driving forces" OR "driving factors" OR "drivers" OR "motivations" OR "attractive factors" OR "negative factors" OR "barriers" OR "obstacles" OR "constraints" OR "critical factors" OR "impeding factors" OR "enablers" OR "impedance" OR " privileges" OR "attractions" OR "value for money" OR "vfm" OR "critical success factors" OR "csf") AND TITLE-ABS-KEY("public private partnership" OR "build-operate-transfer" OR "bot" OR "build operate transfer" OR "build/operate/transfer" OR "private finance initiative" OR "public-private" OR "privately financed" OR "private finance" OR "public/private" OR "private infrastructure" OR "privatised infrastructure" OR "pfi" OR "ppp/pfi" OR "pfi/ppp")

AND DOCTYPE(ar OR re) AND SUBJAREA(ener OR engi OR envi OR busi OR deci OR manag OR econ OR soci) AND (PUBYEAR > 1997) AND (PUBYEAR < 2015) AND (LIMIT-TO(LANGUAGE,"English")) AND (LIMIT-TO(SRCTYPE,"j"))
Result: 812 (Searched 31 August 2015)

While the search returned 812 results, many of them were irrelevant to principal factors for PPP implementation. Studies concerning the principal factors for PPP implementation can be categorised into two groups. The first group conducts a literature survey that discusses one of those factors, but does not carry out specific analysis of them, for example, see Startin, Baxter and Harding (2009). The second group studies the factors for PPP projects through empirical examination, for example, see Li (2003), Li, Akintoye, Edwards and Hardcastle (2005*a*), Cheung et al. (2009*a*,*b*), Cheung, Chan and Kajewski (2010, 2012), Cheung, Chan, Lam, Chan and Ke (2012), Ismail (2013*a*,*b*,*c*, 2014), Ismail and Azzahra Haris (2014). This study aims to investigate the principal factors for PPP implementation in a country context (Vietnam), and compare them with those found in other countries. Although many more papers relating to principal factors for PPP implementation were found, focus was on the second group. After careful assessment of titles, abstracts, keywords, and the content of each paper, the final list of 24 papers was retained for further analysis. The detailed information relating to the 24 papers selected for this study is presented in Appendix 8.4. Their content was further analysed, summarised and presented in: Table 1, driving forces for adopting PPPs; Table 2, attractive factors for adopting PPPs; Table 3, negative factors of adopting PPPs; Table 4, VFM drivers in PPP projects; Table 5, success factors of PPP projects; and, Table 6, privileges or attractions for private sector involvement in PPP projects.

Apropos of the research studies examining principal factors for PPP implementation, in addition to Li's (2003) research conducted in the United Kingdom, many other researchers have studied these factors in different country contexts; for example: Cheung (2009) in the context of Hong Kong and compared with the contexts of Australia and the United Kingdom; Ismail (2013*a*,*b*,*c*), Ismail and Azzahra Haris (2014), Ismail (2014) in the Malaysian context; Chan et al. (2009*a*,*b*, 2010*b*), Chan, Lam, Chan, Cheung and Ke (2010*a*) in the Chinese context; Hwang et al. (2013) in the Singaporean context; Chou et al. (2012) in the Taiwanese context; and, Chou and Pramudawardhani (2015) in the Indonesian context.

2.2.1 *Reasons for adopting PPPs*

PPPs are popular in the development of public infrastructure in many countries across the world. Why do countries around the world favour PPPs for the

provision of their public facilities and services? Regarding the first adoption of this method cited by Hood, Fraser and McGarvey (2006), the reasons converged in an attempt to tap into private financing for public projects. Public infrastructure projects usually involve large investment capital, and the demand for their development has been high. If they are all fully funded by governments, the cost would create a heavy burden for government budgets. PPPs can help governments to relieve the financial burden incurred when developing infrastructure. In addition, they can create business opportunities for the private sector. Many countries first initiated adoption of PPPs to solve their budget shortage problems. Beyond this reason, other perceived benefits of adopting PPPs could also be reasons for government involvement. Table 1 summarises nine different driving forces for adopting PPPs found in the four country contexts of the United Kingdom, Australia, Hong Kong, and Malaysia.

Table 1: Driving forces for adopting PPPs from published literature.

Driving forces for adopting PPPs	UK[1,2,3]	Australia[2]	Hong Kong[2]	Malaysia[3]
Economic development pressure of demanding more facilities	x	x	x	x
Political pressure	•	•	•	•
Social pressure of poor public facilities	•	•	•	•
Private incentive	•	•	x	x
Shortage of government funding	x	•	•	x
Inefficiency because of public monopoly and lack of competition	•	x	•	•
High quality of service required	•	x	x	•
Avoid public investment restriction	x	•	•	•
Lack of business and profit generating skill in the public sector	•	•	•	•

1. Li (2003); **2**. Cheung et al. (2009*b*); **3**. Ismail (2014)
x indicates top three reasons for each country

Li (2003) consolidated the driving forces (reasons) leading to the adoption of PPPs into nine major reasons including: **Economic development pressure demanding more facilities**; **Political pressure**; **Social pressure of poor public facilities**; **Private incentive**; **Shortage of government funding**; **Inefficiency because of public monopoly and lack of competition**; **High quality of service required**; **Avoiding public investment**; **Lack of business and profit-generating skill in the public sector**. He then grouped these reasons into three categories: **Nature of the public project**; **Public finance**; and, **Political and civilian pressure**.

Cheung et al. (2009*b*) adopted the above nine reasons from Li's (2003) research to form a comparative study examining the importance of these reasons for adopting PPPs among the different country contexts of Hong Kong, Australia and the United Kingdom. Similarly, adopting Li's (2003) nine reasons, Ismail (2014) investigates factors forcing the adoption of PPPs in Malaysia. He also

conducted a comparison of driving forces for PPP adoption between the United Kingdom and Malaysia.

The findings indicate to some extent that countries considered all the reasons or driving forces as important although each country attributed different priority to each of the factors depending on the unique nature of the PPPs in the specific country. For example, whereas Hong Kong and Australia placed emphasis on factors designed to improve the performance of facilities and services, the United Kingdom focused on solving the problem of financial restriction and investment shortage (Cheung et al. 2009*b*).

It is important to note that the role of politics as ideological reasons to adopt PPPs, a concept that is frequently overlooked. For example, the United Kingdom PPP was known as 'the only game in town'. According to Lonsdale is:

> No direct government funding is available should a satisfactory PFI solution not be found. To make such an announcement does not, of course, make rational economic sense as it puts the public body in a weaker than necessary negotiating position vis-à-vis suppliers, especially after the preferred bidder has been selected" (Lonsdale 2005, p. 242).

In the United Kingdom, where political imperatives often dominate economic rationality, PFIs appear to be related to the idea of political - as opposed to rational - decision making. Another example is Ireland, wherein potential issues arising from the contradiction of government ministries acting as advocates of PPP policy and guardians of the public purse have given rise to concern (Greve and Hodge 2010). As Reeves suggests, dissension surrounding proposed projects can exacerbate the premise that PPPs are 'the only game in town', fuelling bias in favour of PPPs over alternative governance arrangements (Reeves 2013).

2.2.2 *Attractive and negative factors*

Regarding the attractive factors for adopting PPPs (see Table 2), Li et al. (2005*a*), who investigate 15 attractive factors of the use of PPPs in the context of the United Kingdom, grouped them into the following five categories: **Project economy and technology improvement**; **Benefits to the public sector and end-users**; **Governmental avoidance in regulation constraints**; **Government saving in transaction costs**; and, **Others**. Many other researchers adopted the attractive factors found in Li et al.'s (2005*a*) study and explored them in different country contexts, e.g., Chan et al. (2009*a*) in Hong Kong compared to China, Cheung et al. (2010) in Hong Kong compared to Australia and the United Kingdom, Chou et al.

(2012) in Taiwan, and Chou and Pramudawardhani (2015) in Indonesia. Ismail (2013*c*) extracted two attractive factors from the list because they appeared not to fit the context of Malaysia: **Cap the final service costs**; and, **Technology transfer to local enterprise**.

Other researchers, e.g., Tookey, Liu and Wilkinson (2011) in New Zealand, Hwang et al. (2013) in Singapore, and Robert, Dansoh and Ofori-Kuragu (2014) in Ghana conducted literature surveys of attractive factors for adopting PPPs, and selected factors in accordance with the context of each country. Tookey et al. (2011) considered seven factors in New Zealand, three of which were different from the list of 15 attractive factors explored by Li et al. (2005*a*). They included: **Likely to access additional revenue sources**; **Improved quality of service**; and, **Improved project scrutiny**.

Similarly, Hwang et al. (2013) selected the following four different factors attracting the adoption of PPPs in the context of Singapore: **Private sector has ability to raise funds for projects**; **Better value for money**; **Improved quality and services**; and, **Tap's on private expertise**. These two researchers selected different factors for their country contexts without providing any explanation for the reasons why they were chosen. It may be that they referred, to some extent, to one or more than one factor sought by Li et al. (2005*a*). For example, **Improved quality and services** could refer to both **Improve buildability** and **Improve maintainability**. More recently, Robert et al. (2014), who conducted a more complete literature survey of attractive factors for adopting PPPs, selected 17 factors from the literature in the context of Ghana. Although six of the 17 factors were different from those found by Li et al. (2005*a*), they included attractions for private sector involvement in PPP projects in the list of attractive factors for adopting PPPs, which were considered separately by Li et al. (2005*a*).

The findings of attractive factors indicate that there were significant differences in the ratings of attractive factors for adopting PPPs among countries. Some countries, China, Ghana, the United Kingdom, for example, rated economic-related factors higher, while others, e.g., Hong Kong, tended to rate efficiency-related factors higher. New Zealand placed higher emphasis on efficient use of resources. Also, there were significant differences between the public and private sectors in some countries, i.e., Malaysia, the United Kingdom, rating the importance of several attractive factors for adopting PPPs, e.g., **Improve buildability** and **Save time in delivering the project**.

Although there have been a large number of successful PPP projects, there have also been numerous "divorces" involving public-private "marriges" (Estache

2005). Numerous reasons have been offered for the failures. Some of them refer back to the negative factors of adopting PPPs, which are summarised in Table 3.

Li et al. (2005*a*), who consolidated 13 negative factors of adopting PPPs from the literature survey, examined them in the context of the United Kingdom. They then grouped them into three categories: **Public and private sector inexperience**; **Excessive commercialisation**; and, **High participation cost and time**. These 13 negative factors were subsequently adopted by many other researchers to investigate their importance in other country contexts. For example, Cheung et al. (2010) examined these 13 attractive factors in Hong Kong and compared them with other country contexts (the United Kingdom and Australia); Chan et al. (2009*b*) investigated these negative factors in the contexts of Hong Kong and China; Ismail and Azzahra Haris (2014) considered the factor **Lack of government guidelines and procedures on PPPs** together with the 13 factors alluded to above to provide a list of the 14 negative factors of adopting PPPs in the Malaysian context; Hwang et al. (2013) declared only seven of the 13 factors as negative for Singapore; and, Tookey et al. (2011) added some additional factors to the list, some of which indicated similar meanings to those identified by Li et al. (2005*a*). For example, the negative factor **Problems with the private sector** should include the factor **High risk relying on the private sector**, or **Higher charge to direct users** should belong to **Problems with the public sector**.

As regards the negative factors, the findings also showed that the number of negative factors vis-à-vis the adoption of PPPs were almost similar among countries. Each study considered the more or less factors on the list based on the suitability of said factors to the unique country context. The importance of negative factors as rated among countries showed significant differences. In addition, the perceptions of the public and private sectors ratings of the importance of some negative factors of adopting PPPs (for example, **High participation costs** and **High project costs**), in some countries, e.g., Malaysia and the United Kingdom, showed significant differences.

Table 2: Attractive factors of adopting PPPs from published literature.

Attractive factors of adopting PPPs	UK[4,5,6]	Australia[6]	Hong Kong[5,6]	New Zealand[7]	Singapore[8]	China[5]	Taiwan[9]	Ghana[10]	Malaysia[11]	Indonesia[12]
Solve the problem of public sector budget restraint	x	•	x			x	x	x	x	•
Provide an integrated solution	•	x	x			x	•	•	x	x
Reduce public money tied up in capital investment	•	•	•			x	x	•	•	•
Cap the final service costs	•	•	•			•	•			•
Facilitate creative and innovative approaches	•	x	x		x	•	•	•	x	x
Reduce the total project cost	•	•	•	•	•	•	•	•	•	•
Save time in delivering the project	•	x	•	•		•	x	•	•	•
Transfer risk to the private partner	x	•	•	•	x	•	•	x	•	•
Reduce public sector administration costs	•	•	•			•	•	x	•	•
Benefit to local economic development	•	•	•	•		•	•	•	•	•
Improve buildability	•	•	•			•	•		•	x
Improve maintainability	•	•	•			•	•		•	x
Technology transfer to local enterprise	•	•	•			•	•	•		•
Non-recourse or limited recourse to public funding	x	•	•			•	•		•	•
Accelerate project development	•	•	•			•	•		•	x
Private sector possess better resource mobility					•			•		
Private sector has ability to raise funds for projects								•		
Increase access to the public sector market								•		
Provides tax exemptions and reduction								•		
Provides incentive to new market penetration								•		
Provides government assistance in financing								•		
Better value for money					x					
Improved quality of service				•	•			•		
Likely to access additional revenue sources				•						
Improved project scrutiny				•						
Tap's on private expertise					•					

4. Li et al. (2005*a*); **5**. Chan et al. (2009*a*); **6**. Cheung et al. (2010); **7**. Tookey et al. (2011); **8**. Hwang et al. (2013); **9**. Chou et al. (2012); **10**. Robert et al. (2014); **11**. Ismail (2013*c*)
12. Chou and Pramudawardhani (2015)
x indicates top three reasons for each country

Table 3: Negative factors of adopting PPP arrangements from published literature.

Negative factors of adopting PPP arrangements	UK[4,6]	Australia[6]	Hong Kong[6,13]	New Zealand[7]	Singapore[8]	China[13]	Malaysia[14]
Reduce the project accountability	•	•	•			•	•
High risk relying on the private sector	•	•	•	•	•	•	•
Few schemes have actually reached the contract stage	•	•	x			•	•
Lengthy delays because of political debate	•	•	x	•		x	•
Higher charge to direct users	•	•	•			•	x
Less employment positions	•	•	•			•	•
High participation costs	x	x	•		x	•	•
High project costs	•	•	•	•	•	•	•
A great deal of management time spent in contract transaction	x	•	•			•	•
Lack of experience and appropriate skills	•	x	•		x	x	•
Confusion over government objectives and evaluation criteria	•	x	•		x	•	•
Excessive restrictions on participation	•	•	•		•	•	•
Lengthy delays in negotiation	x	•	x	•	x	x	x
Lack of government guidelines and procedures on PPP				•			x
Unfavourable economic and commercial conditions				•			
Problems with the public sector				•			
Problems with the private sector				•			

4. Li et al. (2005*a*); **6**. Cheung et al. (2010); **7**. Tookey et al. (2011); **8**. Hwang et al. (2013); **13**. Chan et al. (2009*b*); **14**. Ismail and Azzahra Haris (2014)

x indicates top three reasons for each country

2.2.3 *Measures enhancing VFM in PPP projects*

Grimsey and Lewis (2007*b*) define VFM as the optimum combination among four elements: whole life cycle costs; risks; completion time; and, quality in order to meet the public requirement. For governments, one of the crucial requirements is to consider a PPP superior to traditional procurement. For example, the British government stated that "the government only uses a PPP where it can be shown to deliver VFM and does not come at the expense of employees' terms and conditions" (HM Treasury 2006, p. 4). Public Sector Comparator (PSC) is one of the popular methods employed to evaluate VFM in which VFM is achieved only if the present value cost of a PPP project is lower than that of a PSC (Ismail and Pendlebury 2006). In order to build a comprehensive and reliable tool for assessing VFM, it is essential to first identify the factors that contribute to the enhancement of VFM in PPP projects.

Table 4 summarises VFM drivers for PPP projects in four different country contexts drawn from the literature survey. Li (2003) first examined 18 measures that contribute to VFM in PPP projects in the context of the United Kingdom. Ch-

Table 4: Measures enhancing VFM in PPP projects from published literature.

Measures enhancing VFM in PPP projects	UK[1,15]	Australia[15]	Hong Kong[15]	Malaysia[16]
Competitive tender	•	•	x	x
Efficient risk allocation	x	x	x	x
Risk transfer	•	•	•	•
Output based specification	x	•	x	•
Long-term nature of contracts	x	•	•	•
Improved and additional facilities to the public sector	•	•	•	•
Private management skill	•	•	•	•
Private sector technical innovation	•	x	•	x
Optimal use of asset/facility and project efficiency	•	x	•	•
Early project service delivery	•	•	•	•
Low project life cycle cost	•	•	•	•
Low shadow tariffs/tolls	•	•	•	
Level of tangible and intangible benefits to the users	•	•	•	
Environmental consideration	•	•	•	•
Profitability to the private sector	•	•	•	•
"Off the public sector balance sheet" treatment	•	•	•	•
Reduction in disputes, claims and litigation	•	•	•	•
Nature of financial innovation	•	•	•	•
Government support				•
Performance-based payment mechanism				•
Bidding cost				•
Commissioning programme				•

1. Li (2003); **15**. Cheung et al. (2009*a*); **16**. Ismail (2013*b*)
x indicates top three reasons for each country

eung et al. (2009*a*) adopted all of the measures sought by Li (2003). Then, they in investigated them in the contexts of Hong Kong and Australia, comparing them with the British context. Ismail (2013*b*), who also used these measures for VFM, considered their suitability in the Malaysian context. Ismail finally excluded two VFM drivers from the list and included four new drivers in the country context. The two excluded VFM drivers were **Low shadow tariff/tolls** and **Level of tangible and intangible benefits to the users**; and, the four additional drivers were **Government support**, **Performance-based payment mechanism**, **Bidding cost**, and **Commissioning programme**.

The results showed that the additional measures for VFM in PPP projects found in the Malaysian context ranked low, with the exception of **Performance-based payment mechanism**, which ranked fifth. There were also significant differences in the perceptions of the public and private sector ratings of the importance of several VFM drivers in PPP projects, found in the Malaysian context.

2.2.4 *Success factors for PPP projects*

Many researchers, e.g., Akintoye, Hardcastle, Beck, Chinyio and Asenova (2003) and Bing, Akintoye, Edwards and Hardcastle (2005), stress that identification and analyses of success factors of PPP projects are extremely important. They provide a foundation to ensure that governments encourage and support the operation and growth of PPP markets. However, it is difficult to provide a comprehensive definition of CSFs because the terms "success" or "project effectiveness" are not easy to classify. It depends significantly on the specific contexts wherein the terms are defined. However, Morledge and Owen's (1998) definition of CSFs seems the most suitable as it was defined in the PPP context. For this reason, it was adopted for the purpose of this research study. Accordingly, CSFs are defined as: "those few factors which, when judiciously applied to a PFI scenario, have led to, and/or will actively contribute to, a profitable conclusion for one or more of the parties involved" (Morledge and Owen 1998, p. 567).

Li et al. (2005*b*) studied 18 CSFs for PPP projects in the United Kingdom and grouped them into the following five categories: **Effective procurement**; **Project implement ability**; **Government guarantee**; **Favourable economic conditions**; and, **Available financial market**. Following Li et al.'s (2005*b*) methodology, many other researchers adopted all of the 18 CSFs sought by Li et al. (2005*b*) and investigated them in different country contexts. For example: Cheung, Chan and Kajewski (2012) examined these factors in the contexts of Hong Kong and Australia and compared them to the British context; Cheung, Chan, Lam, Chan and

Ke (2012) in Hong Kong and China; Chou et al. (2012) in Taiwan; Olusola Babatunde et al. (2012) in Nigeria; Ismail (2013*a*) in Malaysia and Indonesia.

Basing their investigation on Li et al.'s (2005*b*) findings, Kahwajian, Baba, Amudi and Wanos (2014), Alinaitwe and Ayesiga (2013) and Hwang et al. (2013) developed their own list of CSFs with changes in accordance with their unique country contexts, i.e., Syria, Uganda, and Singapore respectively. While one new success factor was found in the context of Syria (**Technology transfer**), this factor was also the attractive factor used in Li's (2003) study. Hwang et al. (2013) only considered eight CSFs in the Singaporean context, among which two new factors were found, **Clear defined responsibility and roles** and **Clarification of contract documents**. These two factors were also considered in the Indonesia context (Chou and Pramudawardhani 2015). Interestingly, Alinaitwe and Ayesiga (2013) considered many more detailed factors contributing to the success of PPP projects in Uganda, probably because the term "success factors" can be defined and applied in both narrow or broad contexts, depending upon the purpose of the researchers. In this case, Alinaitwe and Ayesiga (2013) aimed to focus on a broad area of developing countries rather than on Uganda itself. Among these factors, apart from **Technology transfer** which was also recognised in Kahwajian et al.'s (2014) study in the Syrian context, factors relating to business climates in developing countries were especially emphasised by Alinaitwe and Ayesiga (2013) (see Table 5).

The results show that while the new CSFs (**Technology transfer**, **Clear defined responsibility and roles**, and **Clarification of contract documents**) found in the contexts of Syria and Singapore as well as Indonesia respectively were all rated rather low. It is additionally worth noting that the business climate-related success factor was ranked differently by groups of respondents (the public, private, and financial sectors) in Uganda. The financial sector rated it in the top three most important factors.

Table 5: Factors contributing to the success of PPP projects from published literature.

Success factors of PPP projects	UK[17,18]	Australia[18]	Hong Kong[18,19]	Singapore[8]	China[19]	Taiwan[9]	Malaysia[20]	Nigeria[21]	Uganda[22]	Syria[23]	Indonesia[12]
Stable macro-economic condition	•	•	•		•	•	•	•	•	•	•
Sound economic policy	•	•	•		•	•	•	x	•	•	•
Available financial market	x	•	•		•	•	x	•		•	•
Favourable legal framework	•	•	x	•	x	•	x	•	•	x	•
Commitment and responsibility of public and private sectors	•	x	x		x	x	x	•		•	•
Strong and good private consortium	x	x	x	x	•	x	•	•	•	•	•
Good governance	•	•	•		•	•	x	x	x	x	x
Shared authority between public and private sectors	•	•	•	•	•	•	•	•	•	•	•
Well organised and committed public agency	•	•	•	x	•	•	•	•	x	•	•
Multi-benefit objectives	•	•	•		•	•	•	•		•	•
Appropriate risk allocation and risk sharing	x	x	•	x	x	x	•	•	•	•	•
Project technical feasibility	•	•	•		•	•	•	x	•	•	•
Political support	•	•	•		•	•	•	•		x	•
Social support	•	•	•		•	•	•	•		•	•
Competitive procurement process	•	•	•		•	•	•	•	•	•	•
Transparent procurement process	•	•	•	•	•	•	•	•	•	•	x
Government involvement by providing guarantee	•	•	•		•	•	•	•	•	•	•
Thorough and realistic assessment of the cost and benefits	•	•	•		•	•	•	•	•	•	•
Technology transfer									•	•	
Clear defined responsibility and roles				•							x
Clarification of contract documents				•							•
Sound business environment									•		
Available of competent personnel to									•		

(The Table continues on the following page...)

Table 5: Factors contributing to the success of PPP projects from published literature.

Success factors of PPP projects	UK[17,18]	Australia[18]	Hong Kong[18,19]	Singapore[8]	China[19]	Taiwan[9]	Malaysia[20]	Nigeria[21]	Uganda[22]	Syria[23]	Indonesia[12]
participate in PPP project implementation											
Positive attitude towards PPP projects									•		
Willingness to support and freely participate in PPP project implementation									•		
Involvement of all of the key parties during project planning									•		
A streamlined transparent and clear project appraisal policy									•		
A strong monitoring and evaluation system for the projects implemented									•		
Strong monitoring and evaluation teams for the projects implemented									•		
Proper recording, archiving and referencing									•		
General knowledge about existence and working of PPPs									•		
Presence of a pro-investment culture among the population in the country									•		
Financial capacity/ability of the parties									•		
Well organised private sector									•		
Presence of an enabling PPP policy									•		
Favourable policies in respect to lending for PPP construction projects									•		

8. Hwang et al. (2013); **9**. Chou et al. (2012); **12**. Chou and Pramudawardhani (2015); **16**. Li et al. (2005*b*); **17**. Li et al. (2005*b*); **18**. Cheung, Chan and Kajewski (2012)
19. Cheung, Chan, Lam, Chan and Ke (2012); **20**. Ismail (2013*a*); **21**. Olusola Babatunde et al. (2012); **22**. Alinaitwe and Ayesiga (2013); **23**. Kahwajian et al. (2014)
x indicates top three reasons for each country

2.2.5 *Attractions for private sector involvement*

PPP projects are high risk because they tend to be implemented over a long-term period, resulting in many uncertainties. The private sector participation in these projects needs to mobilise huge investment capital upfront as it cannot expect revenue in the short term. Without support from the public sector in any form, it is not easy to attract private sector participation in PPP projects. Table 6 lists the main privileges or attractions found in the literature review that invite the private involvement in PPP projects.

Few studies have explored these privileges or attractions. Li (2003) examined five privileges associated with participation of the private sector in PPP projects in the context of the United Kingdom. Chan et al. (2010*a*) subsequently adopted the attractions included in Li's (2003) questionnaire survey to investigate these privileges in other countries; Hong Kong and China, for example. Their results show that these attractions were rated differently among countries.

Table 6: Privileges or attractions for private sector involvement in PPP projects from published literature.

Attractions for private sector involvement in PPP projects	UK[1]	Hong Kong[24]	China[24]
Government sponsorship	•	x	•
Government assistance in financing	•	•	x
Government guarantee	•	x	x
Tax exemption or reduction	•	•	x
Incentive of new market penetration	•	x	•

1. Li (2003); **24**. Chan et al. (2010*a*)
x indicates top three reasons for each country

In this section, research studies conducted into PPPs and principal factors for PPP implementation have been reviewed. The next section will examine a review of the background of PPPs.

2.3 BACKGROUND OF PUBLIC-PRIVATE PARTNERSHIPS

2.3.1 *Emergence of PPPs*

This section reviews public policy and economic theories in an attempt to ascertain the reasons for the surge in the adoption of PPPs.

Multiple approaches to public goods[1] delivery exist. Yet, as Miller (1999) concludes, neither solely private nor solely public approaches can achieve long-term sustainability. Walsh (1995) states that the former approach suffers from what is known as market failure. This explicates some of the main reasons why the provision of public goods by the private market fails and government intervention is needed. These reasons include inadequate provision of public goods, welfare loss due to increasing returns, externalities being not fully considered, and unequal access to merit goods. Walsh (1995) also shows that the latter can induce some key problems, e.g., the domination of self-interest, inefficient allocation of resources, and low efficiency due to the spread of investment, all of which may be exemplified by the concept of government failure.

In an attempt to explain reasons for market failure, Ramanadham (1988) observes that the commercial profits of public goods are generally low. The private sector invariably finds it difficult to generate revenue to offset costs. Therefore, it is not likely to provide sufficient public goods to meet market demand. If private investors set prices higher than cost, they will increase their profits but reduce total public welfare. In addition, Stiglitz and Brown (2000) allude to the problem of free riders, claiming that if goods cannot be provided by the market, but only by private provision, they will be under-produced.

Market failure also occurs when externalities are not fully taken into account by producers or consumers (Walsh 1995). These externalities can be negative or positive. When negative, externalities such as pollution are not fully considered. Producers will provide more than society desires, and consumers will use more products with scant concern for the long-term consequences. This will inevitably lead to "over-production and over-consumption", for while both producers and consumers will reap the benefits, the whole of society will suffer undesirable pollution over time. Similarly, when positive externalities such as the benefits of reduced congestion are not fully considered, the possibility of "under-production and under-consumption" will be high.

The final argument for market failure made by Walsh (1995) is that there are some special goods called "merit goods", e.g., education and health, which government can produce and to which it can provide appropriate access. When these goods are provided privately, private investors are more likely to be concerned with their own interests rather than with public interest. As a result,

1 A public good can be defined based on two characteristics (Holcombe 1997): first, according to economic theory, it is a good that, once produced, can be used by an additional consumer without adding any additional cost; and second, it can be sometimes specified that consumers cannot be excluded from consuming the public good once it is produced.

private markets may restrict access. For example, education is still not accessible by all social classes. Where the wealthy can afford to pay for their children to attend private schools, it is impossible for the poor to pay. Therefore, indispensable goods should be supplied by the public sector.

Yescombe (2011) lists the following reasons why the public sector is suited to providing public goods and services: first, it is not easy for private partners to estimate and calculate all macro benefits such as benefits for the whole economy and social welfare; second, substantial numbers of goods and services need to be accessed freely, for example, national roads, street lighting, or public toilets; and, finally, in the case of public infrastructure projects, the private sector is expected to invest high capital upfront irrespective of the unlikely prospect of gaining return in the short term. Thus, without the support of the public sector, these projects seem to have little appeal for the private sector. Intervention by the public sector is necessary here.

The above studies have shown some problems surrounding private sector's single-handed provision of public goods, indicating market failure. However, the following questions must be asked: will public-sector intervention fix market failure, and is the public sector capable of independently providing public goods efficiently without exacerbating the problems of welfare loss and uneven distribution? The evidence suggests that government intervention leads only to further failure, that is, government failure.

Duncan Black coined the term "Public choice theory" in 1948 to explain the causes of government failure. According to this theory, government policies are planned and built by self-interested individuals (Rowley 1993). According to Ducan Black, public spending depends heavily on institutional conditions, especially the budget allocation process, hierarchical levels, and the proportion of public goods in the basket of goods provided by the government. These factors may encourage collusion between a number of individuals and groups with some political officials making biased decisions that allow these people to profiteer, often illegally. He also argues that in order to be successful when reforming the public sector, a change in approach needs to be implemented in which the first action is the elimination of forces and conditions fostering privileges and special advantages. Although this theory has emphasised some causes, they have not been enough to explain government failure (Rowley 1993).

In 1966, Leibenstein proposed the "X-efficiency theory", which provided additional causes of government failure that stemmed from inefficient allocation of resources. These causes included the organisational structure of the government,

and that government intervention distorts the market, indicating the nature of bureaucracy. He emphasised that a government is not likely to fail if the expansionary monetary and fiscal policy is large enough to rescue it from failure. According to this theory, cooperation between the public and private sectors is necessary to improve the inefficiency of the public sector and take advantage of market resources to provide better services (Leibenstein 1966).

In more recent times, empirical evidence continues to confirm Leibenstein's theory. For example, Stacey (1997) suggests that the characteristics of traditional forms of investment (investments from either public or private funding) are low productivity, low profitability and lack of connection between demand and supply. His study argues that the main thrust of "X-efficiency theory" is to combine different resources of society (especially the resources of the private sector), harmoniously to ensure that people's needs are met. Birch and Haar (2000) conclude that government failure derives from the fact that the government has pursued too many goals at once, including creating jobs, providing non-trading profit goods, and a spread of investment leading to low efficiency. They propose that privatising the provision of public goods and separating government from the decision-making process would improve the quality of goods.

In an attempt to explain the causes of government failure in developing countries, Gunawan and Pesisir (2001) stress the following: the national budget deficit status and the rapid increase of public debt; the decline of Official Development Assistance (ODA); government restrictions vis-à-vis providing public goods in order to meet social requirements; and, a sharp increase in demand for transport services, creating motivation for providing better alternative supply channels.

However, the question is: do these failures happen only in developing countries due to limited resources? Drawing upon World Bank data, Yehoue et al. (2006) conducted a meticulous study of private investment in 85 countries during the period 1990 to 2003. Their study showed that governments or private-sector partners rarely have enough resources to single-handedly provide public infrastructure and at the same time endure all risks. Therefore, a combination of two motivators, profit (the private sector) and efficiency and savings (the public sector) is required. Collaboration between the public and private sectors aims to share benefits equally, obtain appropriate allocation of risks, improve quality of public goods, provide transparent accountability, and promote the advantages of both sectors.

Initially relating to combined public and private sector funding, the term 'Public-private partnership' appears to have originated in the United States for educa-

tional programmes, and then expanded in the 1950s for utilities, but been widely used in the 1960s with reference to public-private joint ventures for urban renewal (Yescombe 2011). During the 1970s and 1980s, the public sectors were subject to aggressive privatisation in various parts of the world, e.g. the United Kingdom, New Zealand and Australia for example (Broadbent and Laughlin 2003). Prior to the late 1980s, in many counties public projects were in the main delivered by the public sectors: there was no keen initiative to allow private sectors to invest in public projects (Allen 2003).

However, November 1992 saw the introduction of the Private Finance Initiative (PFI) by the Conservative government in the United Kingdom which supported the notion that the private sector would provide better public services (Broadbent and Laughlin 2003). Although PFI projects continue to predominate, in more recent times the generic term 'PPP' has been increasingly utilised in the United Kingdom (HM Treasury 2008). Over the last two decades, PPPs have been widely used in infrastructure procurement and public service delivery signalling a significant increase in the number of both developing and developed countries adopting PPPs (Yescombe 2011).

2.3.2 *Definitions of a PPP*

This section aims to delineate a definition of a PPP. As previously discussed, its ability to incorporate the strengths of both the public and private sectors to help overcome market failure and government failure makes the PPP approach an increasingly popular way of procuring and maintaining public goods and services.

Yet, even as it is widely adopted, a PPP has not been given a universal definition. Abadie and Howcroft (2004) state that a narrow definition can result in legislation being applied only to a narrow range of project types or structures, causing a limitation in practical value. Table 7 summarises several definitions of a PPP that different governments and international organisations have used. Although more exist, these definitions are sufficient to indicate the core characteristics of a PPP, which suggest that a PPP: (1) is a partnership between the public and private sectors; (2) involves both sectors working together towards joint objectives; and, (3) distributes risks and responsibilities between the two appropriately.

From this perspective, Kwak et al. (2009) define a PPP broadly with an aim to integrate ideas from literature covering different areas and nations as follows: "A PPP is defined broadly as a cooperative arrangement between the public and

private sectors that involves the sharing of resources, risks, responsibilities, and rewards with others for the achievement of joint objectives" (Kwak et al. 2009, p. 52).

In a 2009 report, the World Bank defined a PPP in Vietnam as "the transfer to the private sector of investment projects that have been traditionally executed or financed by the public sector" (World Bank 2009, p. 93). This report, that highlights the investment dimension of a PPP in Vietnam, additionally noted that "there are at least two other dimensions to consider. First, the private investor often gets the responsibility for the provision of a service through the project; and second, some of the risk associated with the project is transferred from the government to the private sector" (World Bank 2009, p. 93-94).

However, in Decision 71/QĐ-TTg issued in 2010 that promulgated the regulation of a pilot PPP approach, investment in the form of PPPs in Vietnam is defined only generally as an arrangement in which "the public and private sectors jointly implement projects on development of infrastructure or provision of public services on the basis of project contracts" (MPI 2010, p. 2). The definition of a PPP in Vietnam, as defined in this Decision, led to several interpretations and different concepts for this form of investment. For example, at one time, forms sometimes considered included "socialisation" or "state and citizen working together" projects. At other times, PPP projects were considered merely as profitable private sector investment projects.

It was not until early 2015 that the form was redefined in Article 3, Decree 15/2015/NĐ-CP on PPP investment as "an investment form to be implemented based on a contract between an authorized state agency and (an) investor(s) and the project enterprise to implement, manage, operate an infrastructure project and to provide public services" (VBPL 2015). While this definition seems to be close to those of other countries and organisations (see Table 7), it is still general and does not show the nature of risk and reward sharing in these kinds of projects.

Due to the vagueness and incompleteness of PPP definitions in Vietnam, this study has adopted the definition provided by Kwak et al. (2009) because it implies a broad meaning that is independent of the difference between regions and countries of the world. Also, it presents a clear and concise concept of a PPP, even though there are a variety of PPP models that will be discussed in detail in the next section.

Table 7: Definitions of a PPP provided by some governments and organisations.

Sources	Definition
HM Treasury[a]	"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".
European Commission[b]	"An arrangement between two or more parties who have agreed to work cooperatively towards shared and/or compatible objectives and in which there is shared authority and responsibility; joint investment of resources; shared liability or risk-taking; and ideally mutual benefits".
The World Bank[c]	"The term PPP has taken on a very broad meaning. The key elements, however, are the existence of a partnership style approach to the provision of infrastructure as opposed to an arm's-length supplier relationship... Either parties takes responsibilities for an element of the total enterprise and they work together, or both parties take joint responsibility for each element... A PPP involves a sharing of risk, responsibility, and reward, and it is undertaken in those circumstances when there is a value-for-money benefit to the taxpayers".
Canada Council for PPPs[d]	"A cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards".
The National Council for PPPs[e]	"A contractual agreement between a public agency (federal, state or local) and a private sector entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and/or facility".
Infrastructure Australia[f]	"A long-term contract between the public and private sectors where government pays the private sector to deliver infrastructure and related services on behalf, or in support, of government's broader service responsibilities. PPPs typically make the private sector parties who build infrastructure responsible for its condition and performance on a whole-of-life basic".
Department of Economic Affairs in India[g]	"An arrangement between a government or statutory entity or government-owned entity on one side and a private sector entity on the other, for the provision of public assets and/ or related services for public benefit, through investments being made by and/or management undertaken by private sector entity for a specified time period, where there is a substantial risk sharing with the private sector and the private sector receives performance linked payments that conform (or are benchmarked) to specified, pre-determined and measurable performance standards".

a. HM Treasury, "Partnerships for prosperity: The Private Finance Initiative (PFI)", 1998
b. European Commission, "Guidelines for successful PPPs", 2003
c. World Bank, "World Bank group private sector development strategy implementation progress report", 2003
d. Canada Council for PPPs, "About PPP", 2004
e. The National Council for PPPs (NCPPP), "Definitions of PPPs", 2006
f. Infrastructure Australia, "National PPP Guidelines", 2008
g. The Department of Economic Affairs in India, "PPP in India Toolkit", 2011

2.3.3 *Types of PPPs*

Because many definitions for a PPP exist, questions are raised over the number of types of PPPs, over their differences, and over ways to classify them. This section will address these questions in a structured way.

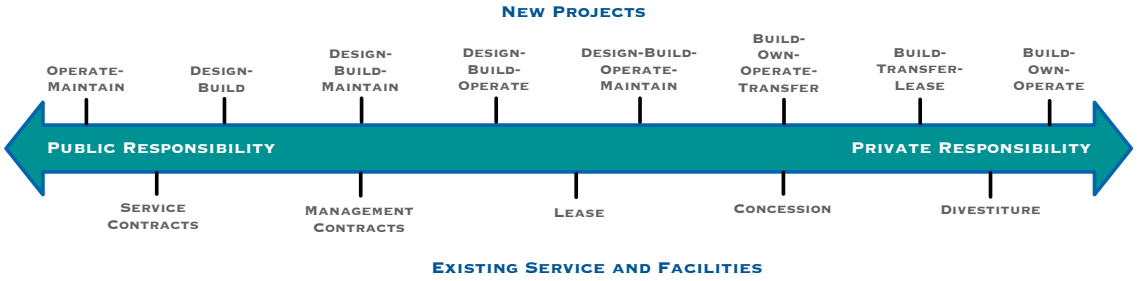


Figure 4: Continuum of types of PPPs, adapted from NCPPP (2011), Kwak et al. (2009) and Gil (2013).

A study conducted by Yescombe in 2011 reveals the diverse terms used in relation to PPPs: Private Participations in Infrastructure (PPI) originated by the World Bank and now used in South Korea; Private-Sector Participation (PSP) used in the development-banking sector; Public-Private Partnership (P3) used in North America; Privately Financed Projects (PFP) used in Australia; Private Finance Initiative (PFI) originated in Britain, and now also used in Japan and Malaysia. In Vietnam, before the term Public-Private Partnership (P3) was used widely from 2009, the government used the concept of Public Socialisation Private Partnership (PSPP) which first emerged in 2005 in government policy pertinent to socialisation in education, health, culture and sport activities (Government 2011).

Table 8: Descriptions of some of the most common PPPs for existing projects (Deloitte 2013).

Types of PPPs	Description
Service Contract	The public sector pays a fee to the private sector for providing specific services previously performed by the public sector.
Management Contract	The private sector is responsible for the operation and maintenance of a public sector's service and receives a fee paid directly by the public sector.
Lease	The private sector leases an asset from the public sector, then operates and maintains it in accordance with the terms and conditions in the lease set by the public sector.
Concession	The private sector is responsible for provision, operation and maintenance of an asset for a specific period according to performance pre-determined by the public sector. The ownership of the original asset belongs to the public sector while the private sector retains ownership over any improvement made during this period.
Divestiture	The public sector partly or fully transfers an asset to the private sector in accordance with some certain requirements and conditions in order to ensure that improvement of the facility is reached and its service continues to be provided to end-users.

Irrespective of the names used, underlying all such contractual agreements is the notion that they involve two agencies, one from the public sector and the

other from the private sector. They enable the private sector to participate more deeply in public infrastructure projects delivery. To understand different types of PPPs, it is necessary to look at the ways in which PPPs are classified. There are many approaches to categorising different types of PPPs based on different factors such as the way that costs are repaid, the nature of services and risks transferring, and the degree of private sector involvement.

According to Yescombe (2011), such partnerships often have structures that are categorised into two general types, i.e., Concessions and PFI contracts, which differ by the way costs are offset. In a Concession agreement, users are charged to finance these costs, while the PFI model relies on payments from the public authority. There could be a third category when costs spent by the private sector are recovered by the combination of users and government subsidy. For example, the cost of financing a recreational centre could be recouped from users' payments as a subsidised fee for the facility.

Also, PPPs can be classified based on the nature of services and risks transferred between the public sector and private partners. According to this classification, PPPs can be "Usage-based" or "Availability-based" (Yescombe 2011). "Usage-based" PPPs involve transferring the risk of using a facility to the private sector, whereas "Availability-based" PPPs do not require the private sector to take this risk but the risk of enabling the services ready for utilisation. In this sense, "Usage-based" PPPs usually fall into the Concession agreement category while "Availability-based" PPPs fall into the PFI model.

Furthermore, PPPs may be categorised according to the legal status of the private sector involved (Savas 2000, Kwak et al. 2009, Yescombe 2011). As suggested by Savas (2000), different types of PPP projects can be thought of as "falling on a spectrum of different combinations of the public and private arrangement, with varying degrees of private sector involvement" (Savas 2000, p. 241). Public provision lies at one end: this means that the public sector takes full responsibility for every aspect of public services delivery. At the opposite end lies private provision: all accountabilities are charged to the private sector. Between the two ends, the degree of the private involvement varies.

PPPs may be classified according to the way project proposals are made. They are solicited in cases when the public sector proposes the project; and, conversely, they are unsolicited when the private sector proposes the project. PPPs can also be sorted according to types of projects (new or existing projects) (Deloitte 2013). Although there are many ways of classifying PPPs, the most common PPP types usually undertake a partial or full combination of functions; for

Table 9: Descriptions of some of the most common PPPs for new projects (Deloitte 2013), (Kwak et al. 2009), and (Gil 2013).

Types of PPPs	Descriptions
Operate-Maintain (OM)	The private sector is responsible for all aspects of operation and maintenance. The private and public sectors both manage a capital investment fund and determine fund usage, even though responsibility for financing is not private sector's role.
Design-Build (DB)	The private sector is responsible for both design and construction according to the requirements set by the public sector. The public sector owns the assets and assumes responsibility for the operation and maintenance. This model is also referred to as Build-Transfer (BT).
Design-Build-Maintain (DBM)	Although this model is similar to DB, the maintenance of the assets becomes the responsibility of the private sector. The public sector still owns the assets and retains responsibility for operation.
Design-Build-Operate (DBO)	The private sector is responsible for design and construction. All assets are transferred back to the public sector once the construction is finished; but, the private sector assumes responsibility for the operation for a specified period. This model is also referred to as Build-Transfer-Operate (BTO).
Design-Build-Operate-Maintain (DBOM)	The private sector is responsible for all design, construction, operation and maintenance for a specified period. Transfer to the public owner happens at the end of the period, at the time when the construction is finished (as in DBO). This model is also referred to as Build-Operate-Transfer (BOT).
Build-Transfer-Lease (BTL) and Build-Lease-Transfer (BLT)	In Build-Transfer-Lease (BTL), the private sector is responsible for design, construction and operation, and leases it to the public sector. Build-Lease-Transfer (BLT) differs from Build-Transfer-Lease (BTL) just in terms of time of transferring. The private sector transfers ownership to the public sector immediately after the facility is built with private funds. The public sector, in turn, gives permission for the company to manage and operate the facility and pays money for the services rendered by the company. This enables the company. to recover its investment and operation costs.
Build-Own-Operate-Transfer (BOOT)	This model is similar to DBOM; but the private sector owns and operates the assets for a specific period and ownership is transferred back to the public sector at the end of said period.
Build-Own-Operate (BOO)	The private sector constructs, owns and operates the assets without transferring the ownership back to the public sector. The assets remain in the private sector.
Design-Build-Finance-Operate (DBFO) or Design-Build-Finance-Operate-Maintain (DBFOM)	The private sector is responsible for all design, construction, finance, operation and/or maintenance under a long-term contract. The public sector retains ownership, and the assets are transferred back to the public sector at the end of the contract term.

example: design, build, lease, maintain, operate, finance, and own. A continuum describing some of the most common PPPs for new projects as well as existing service and facilities appears in Figure 4. Their definitions in Figure 4 are fur-

ther discussed and summarised in Table 8 for existing service and facilities and in Table 9 for new projects.

Vietnam has applied some types of PPPs such as project investment in the forms of BOT, BTO, and BT outlined in Decree 108/2009/NĐ-CP dated November 2009 in which BOT emerges as the most popular scheme implemented in Vietnam. Recently, some new types of PPPs, e.g., BOO, BTL, BLT and OM have been introduced under new Decree 15/2015/NĐ-CP dated early 2015. Given the wide variation in types of PPPs and their respective names, for the sake of clarity this research will use the term "PPPs" to refer to all of these variations.

2.3.4 *A PPP and traditional procurement*

Having defined a PPP and classified PPP models, in this section the study identifies the differences between a PPP and traditional procurement. However, before establishing a contrast, it will first be helpful to define "traditional procurement".

Although there are many definitions of traditional procurement, HM Treasury (2003) concludes that it is normally characterised by the four following aspects: (1) the private sector provides only assets, not services; (2) the public sector predetermines input-based specifications, not output-based specifications; (3) the private sector is responsible for delivering assets in short-term contracts, not for long-term performance; and, (4) the public sector is responsible for management.

According to the above, fixed price and managing contracts exist as two main forms of traditional procurement (HM Treasury 2003). Under a fixed price contract, a group of designers is responsible for designing parts of the bidding documentation used to make a bid for the contract by the public sector. The contract involves a fixed tendered price. The contractor who succeeds in the procurement has to provide work as long as the design remains unchanged. In practice, contracts are rarely delivered at a fixed price. The design is often changed by the public sector as a result of changes in scope or risk, e.g., latent conditions and delays. These possibilities are often covered by the public sector via a fixed price contract (HM Treasury 2003).

Under a managing contract, the public sector calls in a private contractor to partially or entirely manage the design, procurement and construction phases for an agreed lump sum. The latter covers the management fee and the cost of any work completed under the component subcontracts. This type of contract not only offers flexibility, but also allows the public sector to make use of the managing contractor's skills when tendering for the projects, and the preparation of the document arrangement and commercial bundles (HM Treasury 2003).

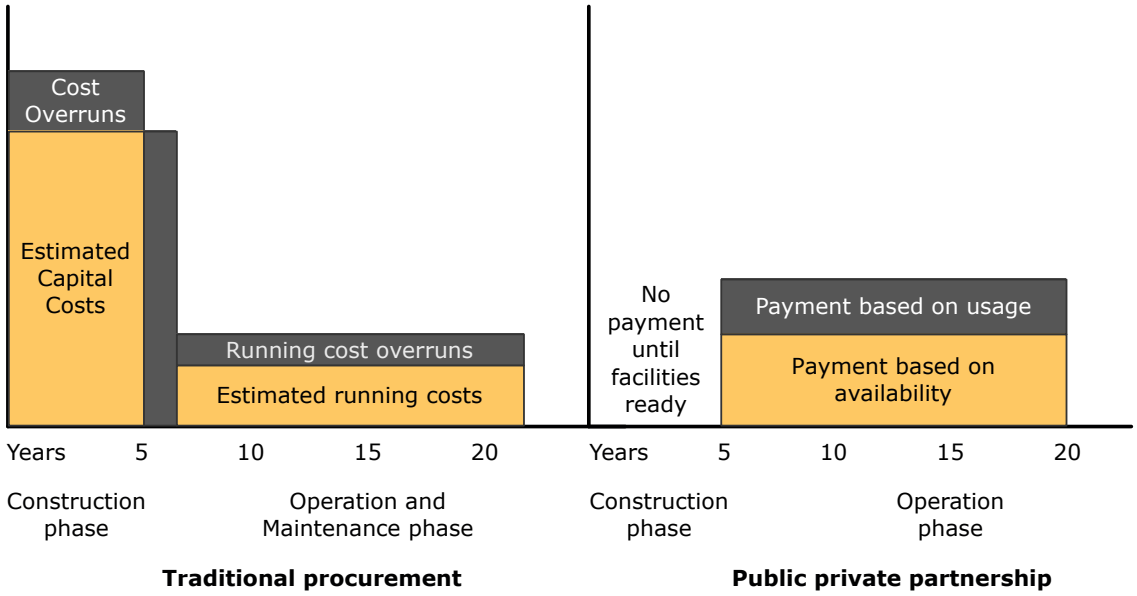


Figure 5: Traditional procurement and a PPP (Davies and Eustice 2005).

In contrast to traditional procurement, in a PPP there is a link between the private sector returns, the service results, and the quality of the facility over the duration of the contract. Asset delivery and the overall management and implementation of the project - as well as its continued operation for several years - thereafter becomes private sector provider's responsibility (Davies and Eustice 2005). This leads to dramatically different timing of payments for the assets and services delivered (see Figure 5).

As may be seen from Figure 5, in cases of traditional procurement, the public sector takes care of capital, operating and maintaining costs, and assumes the risk of cost overruns as well as late delivery. These costs derive from taxes and public debt. The private sector service provider is not responsible for any work after the end of the warranty period. Due to time overruns in the preparation and implementation stages, actual investment costs may exceed initial cost estimates. In addition, fluctuation in the costs of operation and maintenance periods can be difficult to determine, leading to low investment efficiency (Davies and Eustice 2005). In contrast, with a PPP, payment is made by the public sector after a long period of time according to the supplying process of services. The private sector, on the other hand, has to be financially self-prepared mostly by mobilising investment by other partners and its own shareholders. The quality of service determines returns on their equity (Davies and Eustice 2005). Because of these key differences, a PPP is expected to prove an efficient approach to solving the problem of governments' delivery of public projects.

2.3.5 *Participants in a PPP project*

The previous sections discussed the reasons underpinning the emergence of PPPs, definitions and classification of PPPs, as well as the differences between a PPP and traditional procurement. This section and the next seek to address the following two questions: who are the participants in PPP projects?; and, what is a typical PPP process?

Generally, as its name implies, a PPP project includes two key parties: the public sector and the private sector (Leiringer 2003). The public sector consists of two main participants: public sector clients and project users. Public sector clients may be governmental departments, governmental agencies or local authorities. Their key roles in PPPs are to ensure that the public interest will be served. Common tasks of the public sector clients include: identifying the project; deciding on the project and its scope; and, selecting private sponsors through an appropriate bidding and evaluation process in order to ensure that the designing, performing and maintenance stages of the project are delivered according to the country's objectives (Unido 1996). Project users may be defined as end-users or customers where distinction is made according to the source of service payment. If it is paid from taxes, the users are considered end-users. Otherwise, they are customers who pay directly for the service. The latter may be the public sector client or the general public.

The private sector is represented by a Project Company (may be referred to as a Concessionaire), a legal entity that tenders for, constructs and provides the required services. A Project Company can be an existing company or a subsidiary of a larger company. It tends to take the form of a Special Purpose Vehicle (SPV); that is, a consortium or a joint venture. In general, SPVs raise capital from two sources, i.e., debt from banks and equity of company members, accounting for 90 per cent and 10 per cent respectively (Spackman 2002). Moreover, because an SPV is usually established for one project only, its lifetime is limited by the duration of the particular PPP project (Bailey, Valkama and Anttiroiko 2012).

Leiringer (2003) notes three other active participants involved in PPP projects in which financial supporters and third parties are directly related to the Project Company. Advisers support both the public sector client and the Project Company. First, financial supporters who provide finance to the project normally include equity providers, debt financiers, and government aid. While equity providers hold equity interests in the Project Company, debt finance is provided by debt financiers. Government aid supported by host governments or international organisations such as the World Bank or the Asian Development Bank

(ADB) can be determined in the forms of equity or debt financing, subsidies or guarantees. Second, depending on the nature of the projects, third-party entities involved in PPP projects may be responsible for construction and/or operations. They can also be insurance providers or suppliers of raw materials, equipment or technology. As the third parties' contributions to the project are both large and important, they also have stakes in the Project Company. Third, because the public sector client and the Project Company may not have expertise in all facets of a PPP project, they may seek the expertise of advisers and other specialists regarding finance, legislation and technology.

2.3.6 *The PPP process*

Identification, development and implementation of a PPP project require a clear process of several steps. However, because countries have socially, economically and legally different contexts, each government regulates a particular procedure for its PPP process. For example, Victoria state in Australia regulates five phases of PPP delivery: (1) project development; (2) expressions of interest; (3) request for proposal; (4) negotiation and completion; and, (5) contract management (Victoria Partnerships 2008). India organises the typical PPP process into a flow of four stages: (1) project identification and needs analysis; (2) PPP decision, project appraisal and clearance; (3) final approval and procurement; and, (4) implementation and monitoring (DEA 2011). In Vietnam, the PPP regulation, specifically Decision 71/QD-TTg known as "promulgating the regulation on pilot investment in the PPP form" (MPI 2010), specifies a procurement process which appears to borrow heavily from established European models. This process consisted of five phases: (1) preparation of a project proposal; (2) submission of project proposal; (3) feasibility study; (4) bidding process and investment certificate; and, (5) implementation.

According to Giang (2012), the mobilisation of private investments in combination with state capital for economy development in general and infrastructure in particular is almost inevitable, especially in developing countries. This is because lack of funding poses a big problem for developing economies. If there is no funding to support development, these countries are likely to fall into a vicious circle from poverty to impossibility. Their attempts to develop the required infrastructure could lead to slippage and finally to poverty. Moreover, in the context of increasingly harsh international competition, lack of the funding required to build infrastructure will reduce a country's economic competitiveness. As a result, it could sink increasingly into slow development.

Mobilising private capital, including an important part of foreign capital for infrastructure development, is an urgent requirement for governments, especially those of developing countries. World Trade Organisation (WTO) membership requires countries in this organisation to deal equally with different members (Wade 2003). The construction of a PPP process that meets international standards is a mandatory requirement. That is, the PPP process construction should follow international standards, from procuring to assessing risks, benefits, and the costs of the project.

As suggested by the European PPP Expertise Centre (EPEC) (EIB 2012), the PPP project procurement procedure typically consists of the following four phases:

PPP identification. The first phase is to identify a PPP scheme. This phase has two ultimate tasks: first, the public sector identifies whether there is any need for the facility and/or services; second, it is important to determine whether the selected project is suited to using a PPP rather than traditional procurement in order to ensure that the project offers VFM. At this point, it is also necessary to perform a market sounding or market testing to determine the potential degree of interest of the market in participating in the project.

PPP preparation. The second phase involves preparation for PPP projects. In this phase, the project team, governance structure, and an engaged team of advisers are established before detailed development of the project plan and schedule is conducted. Then, the public sector further develops all aspects of the PPP design. The concluding phase requires a full draft of the PPP contract and a complete set of tendering documents.

PPP procurement. In the third phase, the PPP bidding process is conducted. This is followed by the finalising of the contract and the financial arrangements. Interested parties are invited to express interest. After evaluating the bidding proposals and negotiating with preferred bidders, the PPP contract is then awarded to the best bidder. Finalisation of the PPP arrangements, including the finance agreement, should be undertaken carefully using experienced advisers.

PPP implementation. The last phase is project execution. This includes construction, operation, monitoring of performance, contract management and evaluation of the conducted project.

2.4 GLOBAL PRACTICE OF PPPS

Section 2.3 has provided an overview of PPPs by introducing a definition of the concept, reviewing classifications of PPP models, comparing a PPP with traditional procurement, discussing the parties involved in a PPP project, as well as the PPP process. While PPPs have been promoted as an efficient scheme compared to traditional procurement, contestation has always surrounded this premise. Argument has suggested that there is no evidence to confirm that PPPs deliver greater efficiency than public procurement; for example, under United Kingdom conditions (Shaoul 2002), where PPPs are frequently used, and where traditional procurement in public projects still accounts for 85 per cent of public investment (HM Treasury 2003). Another example is Australia, the second leading PPP market in the world. There, PPP projects account for approximately 10 per cent of public sector investment (Grimsey and Lewis 2007*a*). In order to explicate current PPP trends and practice, as well as the global market of PPPs, the following part will provide an overview of PPPs globally.

For more than twenty years, PPPs have been an efficient way of delivering public goods and services at all levels of development. The years 1985 to 2004 saw the introduction of approximately 3000 PPP projects worldwide, amounting to a gross figure of approximately US$900 billion (Kwak et al. 2009). Ranging from economic infrastructure, e.g., roads, bridges, tunnels, railways, airports, and seaports to social infrastructure including hospitals, schools, prisons and social housing (Yescombe 2011), possible fields for the application of PPPs are marked by their diversity. Sketching a global view of PPP developments over the last two decades is problematic due, in the main, to differences in definition, the time of the project and sectors included. Notwithstanding, the following figures provide an illustrative and overall impression of PPPs in various parts of the world.

In many countries in the European area, the number of PPP deals double, triple, even quadruple every year, with 1300 contracts representing a total of €250 billion signed between 1990 and 2009. Approximately 350 new works, amounting to about €70 billion, were financed in early 2007 (Abdullah and Manjur 2013). The driving force propelling the use of PPPs is assumed to be a consequence of securing VFM (Burger and Hawkesworth 2011). The United Kingdom has led the movement using the PFI model in its developing and delivering of infrastructure of varying types ranging from schools to defence facilities (Allen 2003). Governments in the new Central European democracies see PPPs as a means of achieving project completion within time and budget constraints,

and of attracting foreign investment. For these reasons, they rely increasingly on PPPs for new infrastructure (Deloitte 2013).

In Australia, investment to the equivalent of over AU$350 billion in infrastructure is planned over the next decade. Approximately one third of this investment (AU$115 billion) is expected to be disbursed for PPP projects over the decade up to 2018 (Duffield and Raisbeck 2007). By 2004, PPP deals in excess of AU$9 billion were budgeted for and signed. This included AU$4 billion for PPP projects currently implemented, with the remainder being considered to be delivered by PPPs (Raisbeck et al. 2010). In Canada, the private sector is involved in the design, construction and operation of 20 per cent of all new infrastructure; and, in the United States, despite PPPs being adopted rapidly, recent years have seen no less than half of the states passing PPP-enabling bills. This has prompted some analysts to predict that the United States will likely become one of the leading markets supporting PPPs in the world in the near future (Deloitte 2013).

Table 10: Infrastructure projects and investment in different regions in the world by primary sector (World Bank 2013).

Featured Indicator (1985-2011)	**Region 1**	**Region 2**	**Region 3**	**Region 4**	**Region 5**	**Region 6**
Number of countries with the PPP approach	21	22	29	12	8	47
Total projects	1687	820	1745	148	976	492
Total investment commitments	$370,334	$313,889	$792,455	$93,101	$359,070	$134,119
Sector with largest projects	Energy (46%)	Energy (50%)	Energy (45%)	Telecom (32%)	Energy (50%)	Telecom (42%)
Sector with largest investments	Energy (39%)	Telecom (54%)	Telecom (43%)	Telecom (64%)	Energy (43%)	Telecom (77%)
Projects cancelled or in trouble	82 (10%)	34 (2%)	133 (8%)	6 (1%)	13 (1%)	48 (5%)

Region 1: East Asia and the Pacific.
Region 2: Europe and Central Asia.
Region 3: Latin America and the Caribbean.
Region 4: Middle East and North Africa.
Region 5: South Asia.
Region 6: Sub Saharan Africa.

Infrastructure sectors reported
Sector 1: Energy
Sector 2: Telecommunications
Sector 3: Transport
Sector 4: Water and sewage
Investment commitments (US$ million).
Projects cancelled or in trouble: the number of projects representing the percentage of total investment.

Apropos of low, lower-middle, and upper-middle income countries, Table 10 provides a picture of infrastructure projects in six regions showing the four primary sectors (Energy, Telecommunications, Transport, and Water and sewage) from 1985 to 2012. By 2011, this group of countries, which included 139 members, had adopted PPPs as a way of procuring and maintaining public infrastructure facilities and services, for a total of approximately 5,900 PPP projects costing

more than US$2 trillion. China, India, Brazil and the Russian Federation were ranked first, second, third, and fourth per number of PPP projects between 1984 and 2012. Similarly, the first, second, third and fourth positions, in terms of total funding calculated in US$ million for PPP projects, were held by Brazil, India, the Russian Federation and China respectively (World Bank 2013).

After reaching a peak of PPP activity during the period 2003 to 2007, the combined effects of the 2007 - 2008 global financial crisis and recession slowed down the world trend. The global PPP market experienced a post-crisis period that was marked by significant decline due to the collapse of several banks and insurance companies (Raisbeck 2009). The reduction of capital value spent on PPP deals, and the subsequent impact on PPP projects, was an obvious response to the consequences of the global financial crisis on PPP projects. In the developed economies, very few new PPP projects were signed at that time because the private sector was unable to borrow money to finance PPP projects (Hall 2009). Among the developing economies, the PPP markets attracted approximately US$161 billion for 318 projects in 2007. In 2008, this figure dropped to US$154 billion for 216 projects. In 2009, although the situation had improved, the capital value spending on PPP deals increased only in some countries, e.g., Brazil, China, India, and Turkey. In East Asia and the Pacific, PPP investment also sharply reduced from US$23.1 billion for 126 projects in 2007 to US$15.4 billion for 78 projects in 2008, signalling a decrease of 33 per cent (PPIAF 2009).

However, the recovery of the PPP markets, which have been accelerating in number in recent years, confirmed the fact that current PPP market conditions do not exclude PPP projects. Conversely, they created opportunities for countries to develop increasingly more sophisticated PPPs, to cope with the change of business environment that occurred post the 2007-2008 crisis.

Lloyd (2012) suggests that there were two major reasons behind the global trend of PPP growth. These were: pressure on infrastructure development to attain or maintain economic growth and sustain a country's competitiveness; and, the growing disparity between the financing required to promote growth and what governments can afford. This report also stated that the gap between the amount of investment needed to spur growth and the current levels is approximately US$2 trillion (Lloyd 2012). Despite the growth of a PPP market, PPPs are not used equally across all infrastructure sectors. Adetola, Goulding and Liyanage (2011) claim that in most countries, transportation projects such as roads, bridges, tunnels, railways, and airports often rely primarily on PPPs. This, however, is changing as PPP projects have gradually expanded to other sectors in recent

years. For example, Korea has employed PPPs in the development of schools, hospitals, and public housing (Park 2006), while the United States has adopted PPPs for prisons, water supply and waste water treatment (Vining, Boardman and Poschmann 2005). In the group of low, lower-middle, and upper-middle income countries, energy and telecommunications emerge as leading sectors vis-à-vis the largest number of projects and investment commitments (see Table 10).

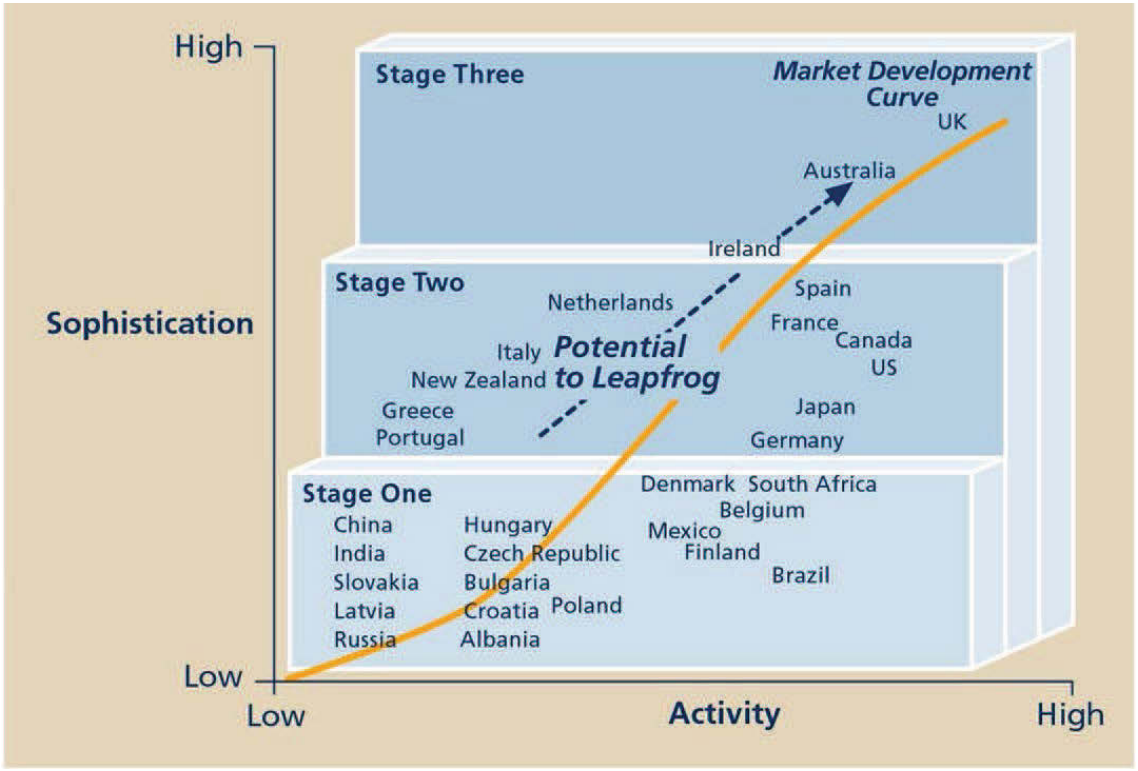


Figure 6: PPP Market Maturity Curve (Deloitte 2013).

When it comes to understanding innovative partnership models and using them sophisticatedly, countries vary widely. Each country develops PPPs on its own terms, which are determined by many specific factors (Eggers and Startup 2006), e.g., local geography, political climate, market sophistication, and the formation of partnerships. However, a general PPP development, with its three different stages (Deloitte 2013), may be achieved by observing PPP development in many countries of the world (see Figure 6).

- In Stage one, a legislative and policy framework is set up; and, a unit is tasked with overseeing PPP implementation. How deals are structured is developed, and the marketplace is being established. Also, at this level, a comparator model is developed for the public sector.
- In Stage two, government agencies set up their own dedicated units for PPP projects. Here, the marketplace is taking shape and primed for expansion.

In essence, PPP schemes increase in depth as they are applied in other sectors of the economy.

- Stage three signals the highest stage of PPP maturity. Here, application of PPPs increases in complexity. For example, there may be greater flexibility in terms of how the roles of both the private and public sectors are defined according to a certain project. Also, the risk models are more complex, with considerable attention centred on the life cycle of a PPP project. In a mature market, the government learns a great deal from its private sector partners through exposure to non-traditional ways of delivering projects and services.

In most countries, especially developing countries, PPP development remains at the first stage. It would be beneficial for latecomers to apply PPPs so that they can absorb previous experiences and/or adopt working models of the trailblazers who have developed mature PPP markets. For example, schools, hospitals and defence facilities in the United Kingdom, roads in Australia and Ireland, and social housing and urban regeneration in the Netherlands (Eggers and Startup 2006). The authors also stated that:

> Latecomers to the PPP party can also avoid mistakes these trailblazers had made while in earlier stages of maturity, such as the tendency to apply a one-size-fits-all model to all infrastructure projects. From the outset, they can also make use of the more flexible, creative and tailored PPPs currently practised by these trailblazers (Eggers and Startup 2006, p. 29).

Although adoption of PPPs for procuring public projects has become a common trend among countries around the world, the experience of PPP implementation shared by countries is not always positive. Thus, PPP performances continue to be subject to debate. On the one hand, PPPs are promoted worldwide to achieve time and cost savings as well as better VFM compared to traditional procurement. For example, in the United Kingdom, estimates of PPP associated efficiencies vary from 17 per cent (Andersen 2000) to 30 per cent (Shepherd 2000), even up to 50 per cent cost savings in some cases (MacDonald 2002). More specifically, a 2003 report issued by the National Audit Office examining construction performance gained in PPP projects found that between 76 and 78 per cent of PPP projects were completed on time and on budget, a vast improvement compared to the respective percentages of 30 and 27 in traditional procurement. In Australia, evidence demonstrating a PPP superior cost efficiency over traditional procurement showed 91 per cent on budget (Fitzgerald 2004), 7 to 23 per cent cost savings (NSW Treasury 2006), and a fixed 11 per cent cost savings recorded

by Duffield and Raisbeck (2007). In the United States, a detailed study conducted by Haskins et al. in 2002 revealed the efficient performance of 30 to 40 per cent cost savings on PPP projects. More positive evidence from other countries confirms the economic and financing benefits of PPPs, e.g., Pakkala (2002) in Finland (14 to 20 per cent cost savings), and Liautaud (2001) in Argentina (approximately 30 per cent cost savings). In general, these figures can provide "grounds for optimism" (Hall 1998).

Conversely, protesters provide arguments and evidence of questionable PPP issues. For example, in the United Kingdom, PPPs attract the nomenclature of "public fraud and false accounting...commissioned and directed by the Treasury", a description coined by Monbiot (2002), cited in O'Flynn and Wanna (2008, p. 97), to indicate the failure of the government to represent the public interest. More generally, in Europe, Greve (2003) cited the "Farum" PPP case as "the most spectacular scandal in the history of Danish Public Administration" (Greve 2003, p. 2). This was due to its consequences which saw higher taxes enforced on the public, and more debt incurred for the local state. In Australia, Walker and Walker (2000) raised the issue of PPP involvement in private sector's excessive profit-making, citing the Sydney Airlink BOOT case. The profit return from the proposed projects of railways connecting Sydney's central business district (CBD) and Mascot station was estimated at a rate of 21 to 25 per cent for the private sector, compared to 2 per cent for the public sector through traditional procurement. Another case cited by Walker and Walker (2000), based upon a report by the New South Wales Auditor General, exposed Sydney's M2 Motoway's excessive pre-tax return of more than 24 per cent to the private sector.

Fitzgerald (2004) reported the problem of discount rate selection when evaluating the superiority of a PPP over traditional procurement. An evaluation of eight case studies in Australia revealed that when the discount rate changed from 8.65 to 5.7 per cent, the cost efficiency of these projects varied from 9 per cent cheaper to 6 per cent more expensive than traditional procurement. English (2005) cites the failure of a 20-year BOO project after just 2 years of delivery as demonstrating the problem of VFM estimates. Critics claimed that the government accepted the tender, despite its unsustainable price, without carrying out a carefully comparative analysis of the case with traditional procurement. In the United States, Bloomfield, Westerling and Carey (1998) observed that PPP contracts were 7.4 per cent more expensive than traditional procurement, citing the case of repairing a Massachusetts facility. Another problem was recorded in Latin America and the Caribbean. It involved very high rates of renegotiation of PPP projects, citing 54.7 per cent in the transportation sector and 74.4 per

cent in the water and sanitation sector (Guasch, Laffont and Straub 2008). Critics claim that the governments accepted bidders offering much lower than sustainable prices. After declaring them winners, they allowed them to benefit from an opportunity to renegotiate with favourable conditions.

2.5 SUMMARY AND LITERATURE GAP

This chapter has provided the results of a comprehensive literature review of both the theoretical and practical aspects of PPPs, as well as of PPP-related research studies conducted to provide background knowledge relevant to the research study. In addition, a set of principal factors and their ratings in different country contexts and between the public and private sectors, which are reviewed at the end of this chapter, has formed a theoretical framework for this study. Based on the literature survey, the framework, which is presented in Figure 7, includes six following blocks: (1) Reasons for adopting PPPs; (2) Attractive factors of adopting PPPs; (3) Negative factors of adopting PPPs; (4) Drivers for VFM in PPP projects; (5) CSFs of PPP projects; and (6) Attractions for private sector involvement in PPP projects.

This study's detailed literature survey of principal factors for PPP implementation revealed the following research gaps:

There is a need to continue to study the principal factors for PPP implementation in the country context (Gap 1).

As discussed above, although late-comers to PPPs can benefit from the learning experiences of the trailblazers who implemented advanced PPP markets, most PPP projects differ in nature. They greatly depend upon an individual country context (Abdullah and Manjur 2013). There are no standard or universal PPP models. Each country has its own strategy for developing PPPs depending upon the country context, institution, funding, and the particular characteristics of the project (Hardcastle et al. 2005, Ward and Sussman 2005). This statement is further confirmed by Deloitte (2013) with a suggestion that each country should develop its PPPs in its own way, tailored to the country's situation and characteristics in terms of local geography, political, social and cultural climate, and sophistication of the capital market. Ke et al. (2009) and Tang et al. (2010) also conclude that the experience of PPP implementation cannot be just simply copied from countries with high levels of PPP maturity by a particular country adopting PPPs. Therefore, continuing to study PPPs in a country context remains important.

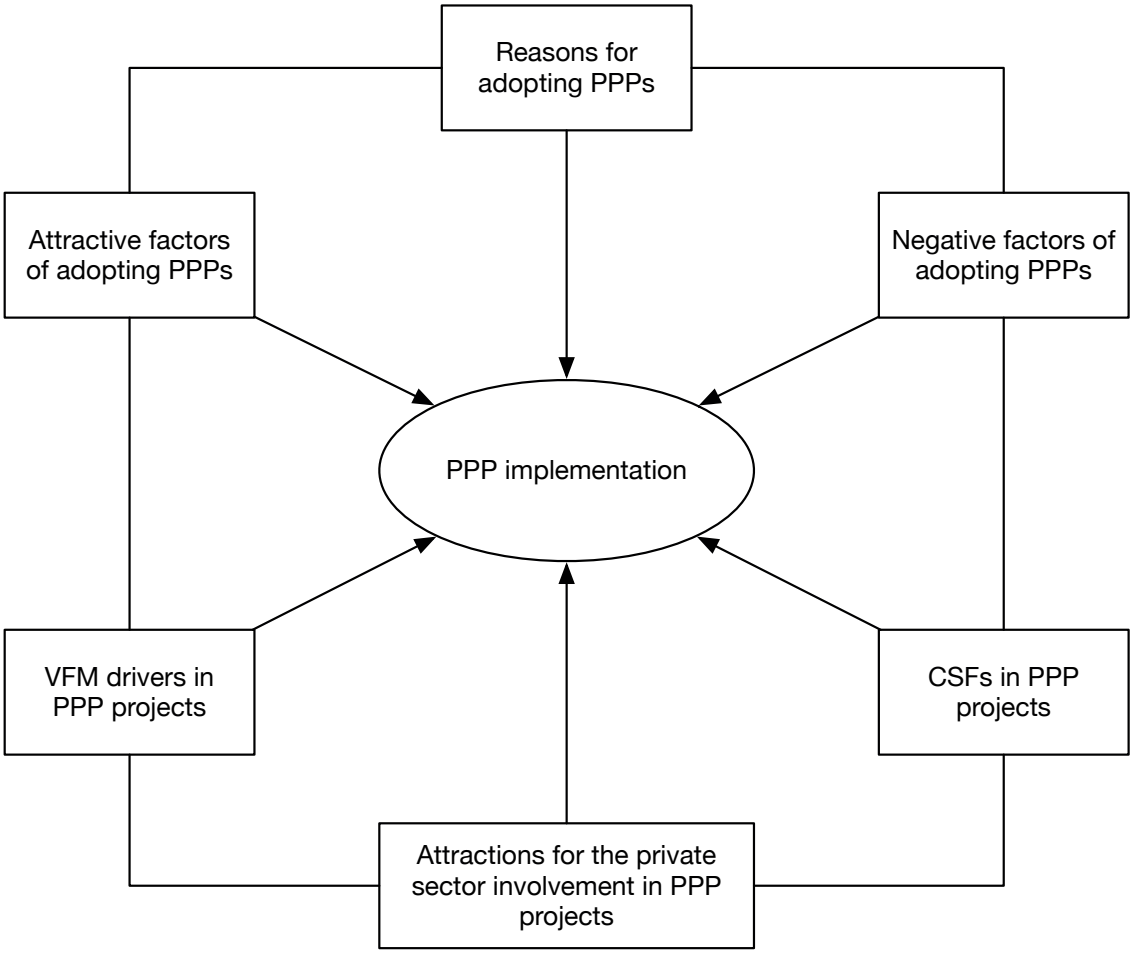


Figure 7: Theoretical framework for PPP implementation.

PPPs have become popularly adopted in various countries around the world. For this reason, issues related to PPP implementation have been studied and summarised in a diversified range of writings. Having explored the research studies examining the principal factors for PPP implementation in different country context, the results of these studies indicated that the principal factors for PPP implementation among countries are almost virtually unchanged with only minor modifications; but, their criticality as perceived by different countries is not the same. The differences in the perceptions of the public and private sectors, while significant in some countries, are insignificant in others. The literature review revealed that countries that have examined these factors include: the United Kingdom, Australia, Hong Kong, Singapore, New Zealand, China, Taiwan, Malaysia, Indonesia, Ghana, and Syria. While these factors have been studied in some developed and developing countries, no similar evidence has been found in Vietnam. Additionally, although some previous studies have conducted comparisons between two or three country contexts, no comprehensive comparisons of these factors were found to show the similarities and differences between the

developed and developing countries or between countries with mature and infant PPP markets. Therefore, studying principal factors for PPP implementation in Vietnam, which are then compared with those found in other countries, is considered a research gap.

The fact that PPPs have been successfully adopted in many countries worldwide does not ensure their successful application in Vietnam. The Vietnamese government has based its adoption of PPPs on western models to some extent. However, it was not fully justified whether it was suited to procuring public infrastructure facilities and services peculiar to Vietnam. Due to this omission, the outcome of PPP implementation in Vietnam is still somewhat limited and inefficient.

There is a need to study the principal factors for PPP implementation at deeper levels of understanding (Gap 2).

Earlier research studies of principal factors for PPP implementation tended in the main to be conducted using only a questionnaire survey and a relative small sample size. They did not examine in depth how and why these factors are critical in a specific context and why there are significant differences between respondent groups concerning the criticality of some particular factors (Li 2003, Ismail 2013*a*,*b*,*c*). Closing of the research gap will require study of these factors at a deeper level of understanding using a combination of the employment of research methodologies, e.g., case studies and interviews.

There is a need to assess the covariances among the principal factors for PPP implementation (Gap 3).

Earlier research studies used mean value analysis to assess the principal factors for PPP implementation. This facilitated easy interpretation of the survey results, and identified the relative importance of each factor through statistical calculations of mean scores on the Likert rating scale. However, Chou et al. (2012) claim that the key limitation of mean value analysis lies in its underlying assumption that each factor is independent and that the covariance from one factor to another is subsequently ignored. In practice, factors identified from literature reviews may be empirically dependent upon each other. Therefore, by their employing of simple mean value analysis, previous studies have seemingly ignored the covariance between factors, leading to a need to assess these co-variances using other methods rather than the mean value analysis solely.

The next chapter aims to present distinctions in the context of Vietnam constituted by the history of many wars and the governance of an unopposed government party, and then provide an overall picture and analysis of PPP imple-

mentation in Vietnam. A further research gap is identified, and the core research questions of the study are concluded and determined respectively at the end of next chapter.

3 PPP IMPLEMENTATION IN VIETNAM

3.1 INTRODUCTION

This chapter aims to provide a detailed picture of distinctions in the context of Vietnam. Its focus is upon public infrastructure (current status, future demand and financial capacity), political climate, and the regional differences between the two halves of the country. In addition, the current status and results of PPP implementation in Vietnam are reviewed in this chapter.

Section 3.2 is divided into the following three parts: Part one outlines the existing infrastructure system and analyses the infrastructure viral to coping with economic and social development pressures. Problems relating to certain typical forms of infrastructures, e.g. roads, railways, seaports and airports, electricity and urban drainage are also discussed in this section. Also, reviewed is Vietnam's investment capacity for infrastructure development. The provision of these details has required scrutiny of the four main investment funds: the state budget; government bonds; Official Development Assistance (ODA); and, private financing. In the second part, in which discussion centers on Vietnam's political climate, focus is upon the impact of the country's political climate on the investment environment. Vietnam's single form of governance, i.e., the Communist Party of Vietnam (CPV), and its policy vis-à-vis maintaining a state sector are debated. These impacts are concentrated in three elements: corruption, transparency, and accountability. Part three analyses the differences between two regions of the country (North and South Vietnam). Section 3.3, which provides a summary of the current status and results of PPP implementation in Vietnam, also analyses the differences between the two halves of the country based on the results of PPP implementation in each region. This chapter closes with Section 3.4. In this section, another research gap is identified. And, the research questions for this study are proposed and summarised.

3.2 DISTINCTIONS IN THE CONTEXT OF VIETNAM

Vietnam, a developing country located in South-east Asia, has a total surface area of over 330,000 km^2 and a total population in excess of 90 million (GSO 2014). It has 63 provinces and cities distributed rather[1] equally in the two northern and southern zones (see Figure 8). The history of Vietnam, together with governance by the existing political institutions, has resulted in the country's three main distinctions in terms of (1) public infrastructure, (2) political climate, and (3) the differences between the two parts (North and South) of the country.

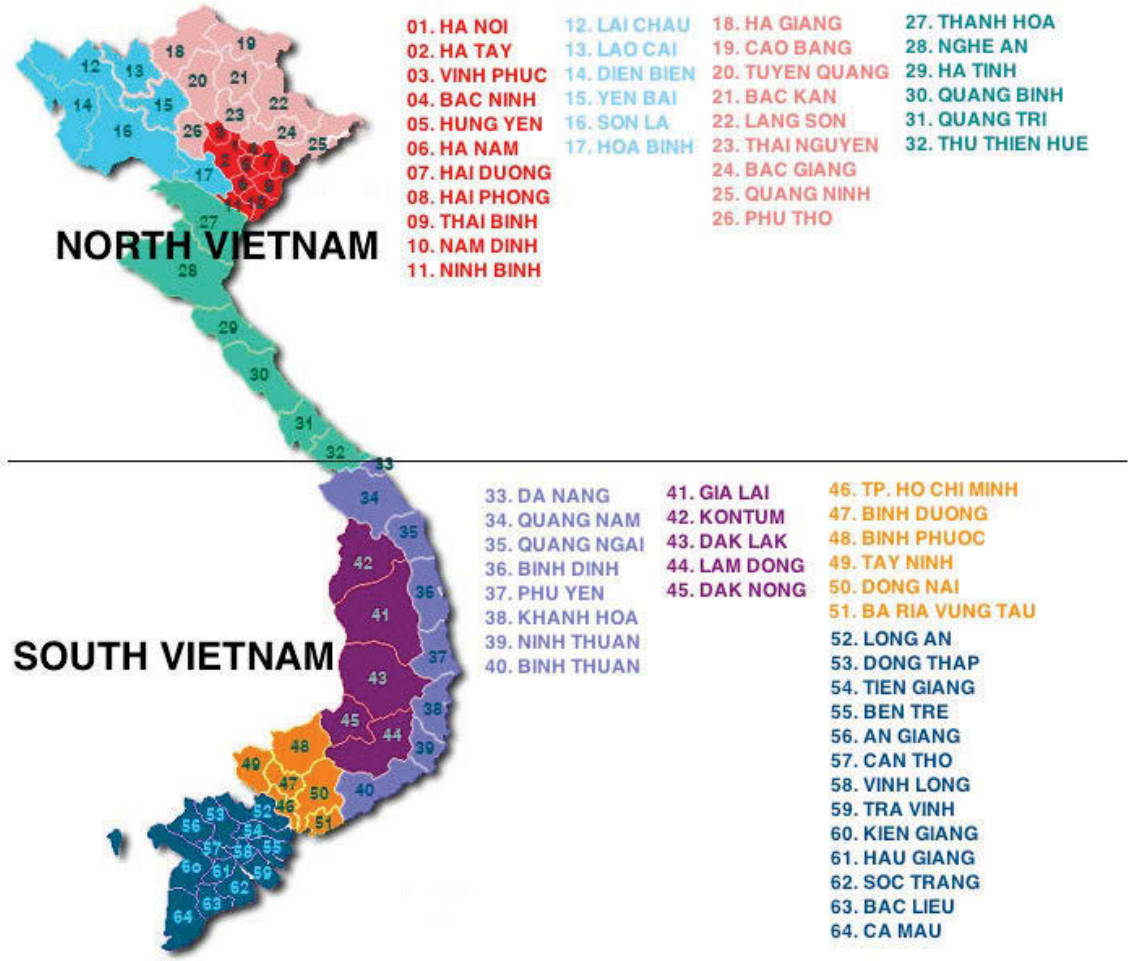


Figure 8: The map of cities and provinces in Vietnam.

1 After August 1st 2008, Ha Tay province was legally merged into Ha Noi capital city. Therefore, the North Vietnam contains only 31 provinces and cities, and Vietnam has currently a total of 63 provinces and cities.

3.2.1 *Public infrastructure*

3.2.1.1 *Current status and demand*

After a long period of disruption by wars, most of Vietnam's infrastructure has been destroyed. Clodfelter (1995, p. 134) claims that one of the best examples of the destruction of the infrastructure system was "the United States bombing during the Rolling Thunder campaign of the late 1960s. These aerial attacks destroyed 65 per cent of the North's oil storage capacity, 59 per cent of its power plants, and 55 per cent of its major bridges". In addition, the existing infrastructure system in the country was built a long time ago. Over the course of time, it has been damaged by repeated landslides and flooding. Adding to this problem was the fact that newly-built infrastructures were considered to be of poor quality. According to a survey of businesses by the Vietnam Business Forum in 2009 - a recognised forum to connect foreign enterprises to Vietnamese policy-makers for collectively discussing issues related to foreign investment in Vietnam - the quality of infrastructure in Vietnam was ranked as either "Bad" or "Very Bad" by the majority of respondents. As such, 88 and 83 per cent of foreign and local enterprises and up to 96 per cent of foreign trading companies were ranked "Bad" or "Very Bad"[2]. A similar result was found in the 2009 Global Competitiveness Report produced by the World Economic Forum. Infrastructure quality was evaluated lowest in a set of Vietnam competitiveness indicators and ranked 103 out of 125 countries. Updated information from the World Economic Forum in 2014 still ranked it very low (110/148)[3]

Many researchers have shown that infrastructure development has positive effects on socio-economic development in both developed and developing countries. In developing countries, for example, Bogdan and Monika (2013), who studied the impacts of infrastructure on economic growth and poverty in some Asian countries, found that infrastructure has an important role to play in economic growth. In particular, infrastructure development contributes to performance improvement and effectiveness of the economy, and has a positive effect on poverty reduction. Another research project which took seven East Asian countries as examples to analyse how the growth of public infrastructure and private production interrelated with economic development (during the time frame 1979 to 1998) showed that "keeping a balance between infrastructure expansion and

2 More detailed information about the survey may be found in the full report of the Vietnam Business Forum at the URL http://www.vbf.org.vn/documentation-center/cat_view/309-document-center/15-forum-reports/34-2009-full-reports.html. Accessed 5/2013.

3 Global competitiveness reports 2009-2010 and 2013-2014 may be found at the following website http://www.weforum.org/reports/. Accessed 5/2013.

private sector growth is crucial for rapid economic development" (Wang 2002, p. 1). Lam, Chiang and Chan (2011) also showed that:

> Rapid urbanisation currently is a worldwide phenomenon, especially in Asian developing countries that have large populations but insufficient infrastructure. Asian countries are facing the great challenge of developing major infrastructure construction that is crucial both for improving the overall performance of their national economies and for reducing poverty (Lam et al. 2011, p. 191).

The same results have also been found by research studies conducted in developed countries. For example, Servén and Calderón (2004) studied the impacts of infrastructure on growth and income distribution over 100 countries in the period from 1960 to 2000. They showed that infrastructure development has a positive impact on long-term economic growth, decreases income inequality, and plays the most important role in poverty reduction.

In Vietnam, public infrastructure, particularly transport infrastructure, has boosted the development of the economy over the past decade, contributing directly to poverty reduction (Agénor and Moreno-Dodson 2006). Sánchez Rodríguez (2011) report that "the number of fixed and mobile phones per 100 people has multiplied nine-fold since 1995. Access to improved water grew from 26 per cent of the population to 49 per cent between 1993 and 2002, and during the same period, access to hygienic latrines grew from 10 to 25 per cent of the population" (Sánchez Rodríguez 2011, p. 24). Another study conducted by the World Bank on the impact of infrastructure development in Vietnam has shown that investing US$50 million in the transportation sector of the 15 poorest provinces in the country would reduce poverty by 6 to 7 per cent (Larsen, Huong Lan and Rama 2004). As a result, poverty in Vietnam measured at the threshold of US$1 per day has declined from 51 per cent of the population to approximately 8 per cent (World Bank 2007).

Assessment of the financing framework for a municipal infrastructure report noted that Vietnam's transition to a market economy was accompanied by economic growth of approximately 7.3 per cent between 1990 and 2010. Due to the international financial slump, the growth rate fell by 2.3 per cent from 8.5. This was followed by a further 0.9 per cent decrease to 5.3 per cent during the period 2007 to 2009. But, the growth rate immediately recovered to reach 6.8 per cent of Gross Domestic Product (GDP) in 2010. The report also affirmed that infrastructure investment was one of the key drivers behind this rapid recovery (World Bank 2011). Vietnam's rapid economic growth, accompanied by rapid urbanisation built around an existing backward infrastructure system depleted

by prolonged weakness has resulted in serious infrastructure bottlenecks, and obstacles to its trading capacity. In addition, many Vietnamese people still live in remote and rural areas where accessibility to essential services and markets is limited. Taken together, all of these factors exert pressure on infrastructure development.

The following represents a summary of the descriptions as well as related issues of some typical infrastructure sectors in Vietnam, e.g., road, railway, seaport and airport, electricity, and urban drainage.

Road. Due to the geographical concentration of population and economic activities in Vietnam, the transport network is centralised, with its highest concentration in the centres of the northern and southern plains. The north - south traffic route is connected by infrastructure networks of roads, railways, seaports and airports, of which the roads system is the most important means of reaching out to neighbouring countries e.g., Laos, China, and Cambodia. However, in practice, traffic jams occur frequently, especially in Hanoi and Ho Chi Minh city. The main means of transport in these cities is mostly motorcycles (60-65 per cent), bicycles (25 per cent), automobiles (approximately 5 per cent) and buses (approximately 7 per cent) (World Bank 2014). While Vietnam's economy is growing, and the quality of life is improving, the number of cars is increasing rapidly. According to a forecast provided by the Ministry of Transport, by the year 2020, there will be approximately 2.8 to 3 million cars, and 33 to 36 million motorcycles in Vietnam, triple the number recorded in 2005 (MOT 2007). Not surprisingly, the old road and bridge transport infrastructure is unable to meet this demand.

One of the ways of assessing the road transport infrastructure of said country is to compare the road density index[4] of that country with other countries in the region and the world. Although the road density index for Vietnam is moderate compared to regional standards (see Figure 9), the quality of road infrastructure in Vietnam is poor (see Figure 10).

Railway. According to an Asian Development Bank report published in 2012, titled "Viet Nam: Transport Sector Assessment, Strategy, and Road Map", the railway network in Vietnam consists of eight lines with a total of 2,525 km of track. The country's railway density is 0.8 km per 100 km^2, of which apart from two international routes, Hanoi - Lao Cai - Kunming and Hanoi

4 Road density index of a country is defined as "the ratio between the total length of road networks in the country and the total length of the country" (Warlters 2006).

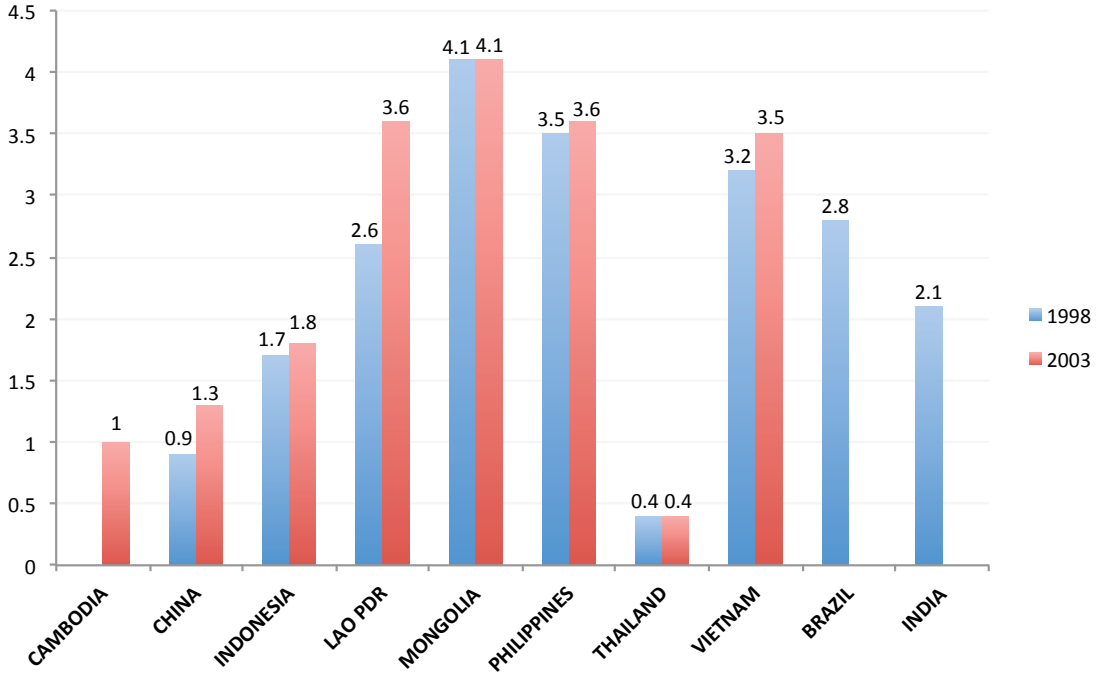


Figure 9: Road density index of some countries in the world (km/km^2) (Warlters 2006).

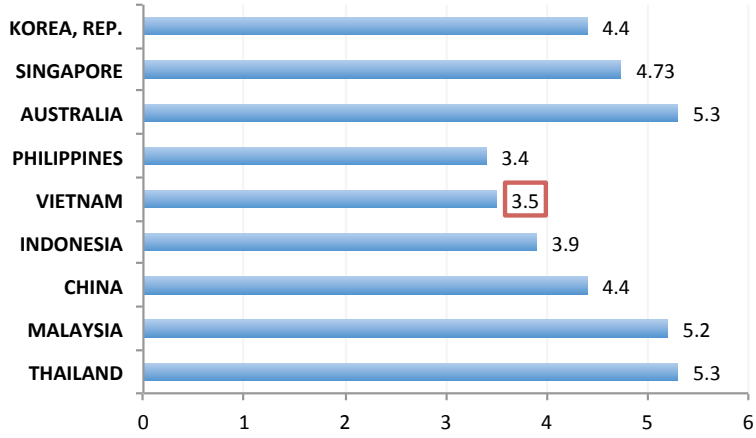


Figure 10: The quality of road infrastructure in some countries (1 - very bad, 7 - very good) (Warlters 2006).

- Dong Dang - Beijing, the north - south railway line, the main line is currently being reinforced and upgraded (ADB 2012). This system is a monopoly route; one small jam in one location will likely cause the system to suspend operations. The rail is also of low quality and narrow. This prevents trains from reaching high speeds, and too many intersections with public roads result in many accidents along the route (World Bank 2014).

Seaports and Airports. The port systems are distributed throughout thel two regions, the North and South of Vietnam. Although the international sea ports of Saigon, Da Nang, and Hai Phong receive large numbers of ships, the services offered by these ports have failed to meet the stipulated requirements set by the government. Despite charging high service costs (estimated US$1.7 billion per year), there is international container transshipment port. Poor services result in ships experiencing long clearance times (MOT 2007). The country's airport systems are also overloaded, especially its international airports which are marked by low passenger capacity, low service quality, and frequent delay problems in domestic air routes (PCI 2010).

Electricity. Electricity demand is increasing from 16 to 17 per cent annually, a two-fold increase compared to economic growth[5]. Electricity production in the local provinces does not meet domestic demand; thus, sometimes electricity has to be imported from Laos and China (Economist 2013). The electricity industry has had to adopt strict measures to save energy. The average number of power shutting-down hours for enterprises has increased from 50 hours in 2009 to 89 hours in 2010 (PCI 2010).

Urban drainage. According to the Ministry of Agriculture and Rural Development cited in a World Bank report in 2006 (Warlters 2006), the municipalities of Vietnam generally do not have separate sewage systems. They use a common system for both rain water and sewage. A drainage system has been invested in over different periods but is still incomplete; and, many culverts have become degraded, resulting in poor drainage. In addition, waste water from industrial zones heavily pollutes rivers, e.g., the Dong Nai, Sai Gon, Thi Vai, Nhue, To Lich, and Cau rivers. The country's main cities frequently experience flooding. This phenomenon often occurs in large urban areas whenever there is heavy rain or high tides. It may be noted that the drainage and sewage treatment systems constitute a major problem for the water sector in Vietnam.

In recognition of the significant role of public infrastructural development in economic growth, and of the weaknesses and backwardness of current infrastructure systems in Vietnam, over the last ten years, the government has annually invested 9.2 per cent of its GDP in infrastructure development. Of this percentage,

5 More information about Vietnam and Energy may be found in the report of the World Bank at the address: http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/VIETNAMEXTN/0,,contentMDK:20506969~pagePK:141137~piPK:141127~theSitePK:387565,00.html

Table 11: Government budget deficit during the period 2005 to 2013.

	2005	2006	2007	2008	2009	2010	2011	2012	2013
MoF1	- 4.9	- 5.0	- 5.7	- 4.6	- 6.9	- 5.6	- 4.9	- 4.8	- 5.3
MoF2	- 0.9	- 0.9	- 1.8	- 1.8	- 3.7	- 2.8	- 2.1	- 3.1	
IMF	- 3.3	- 0.2	- 2.5	- 1.2	- 9.0	- 5.7			
ABD	- 1.1	- 1.3	- 1.0	0.7	- 6.6				

MoF1: Budget deficit including payment for principal debt (Ministry of Finance)
MoF2: Budget deficit excluding payment for principal debt (Ministry of Finance)
IMF: World Economic Outlook (International Monetary Fund)
ADB: Key Economic Indicators (Asian Development Bank)

approximately a quarter (approximately 2.5 per cent) is for the transportation sector (Thanh 2010). With a view to the future, the World Bank has advised that in coming years infrastructure investment should amount to roughly 11.5 per cent of GDP, a 2 per cent increase of GDP over recent figures, reaching US$300 billion in 2020 (World Bank 2006). However, taking into consideration the period from 2010 to 2014, the Ministry of Planning and Investment estimates that some US$140 billion of new investment is necessary if transport, energy, and environment are to meet the expected demand (Hoang 2013). This will require the government to mobilise more than US$26 billion annually for the period 2015 to 2020. In order to ascertain how the government could do so, it is necessary to review the investment capacity for public infrastructure.

3.2.1.2 *Investment capacity*

Investment funding for infrastructure varies across different sectors; e.g., state budget, government bonds, ODA, and private financing. Taking the road transport sector as an example (see Figure 11), funding for road projects is drawn mainly from the state budget, accounting for between 40 and 55 per cent. Government bonds account for approximately 15 to 25 plus per cent), followed by ODA funding (approximately 15 to 20 per cent). Earlier, private sector funding was the lowest (less than 9 per cent); however, it quickly increased to approximately 16 per cent in 2010 at which time strong government policy called for investment capital from the private sector to offset investment shortage for infrastructure. A detailed discussion of the country's investment sources is provided as follows.

State budget

In recent times, the economic situation in Vietnam has changed in positive ways, leading to an increase in state budget revenues. However, although the propor-

tion of domestic revenue has increased, it has been significantly affected due to the laxity of budget discipline. Additionally, total state budget spending increased, resulting in a budget deficit.

In Vietnam, budget deficit has occurred continuously at increasingly levels over the recent decade. As shown in Table 11, budget deficit excluding payment for principal debt remained at an average 1.3 per cent of GDP during the period 2005 to 2007. This figure became increasingly significant during the period 2008 to 2013, reaching more than 5.3 per cent of GDP. However, international organisations provided markedly different numbers from those reported by the Ministry of Finance. Accordingly, in 2009, the budget deficit excluding payment for principal debt announced by the Ministry of Finance was 3.7 per cent of GDP. The corresponding figures provided by the Asian Development Bank and the International Monetary Fund were higher, 6.6 and 9.0 per cent respectively. Calculating an average for the two years from 2009 to 2010, for example, Vietnam's budget deficit was around 6 per cent of GDP per year, the highest compared to other countries in the region. This figure was approximately 6 and 2 times higher than the corresponding figures for Indonesia and Thailand respectively (ECNA 2012).

The country's continuous budget deficit has led to an increase in public debt. Vietnam's total public debt increased from approximately 40 per cent of GDP in

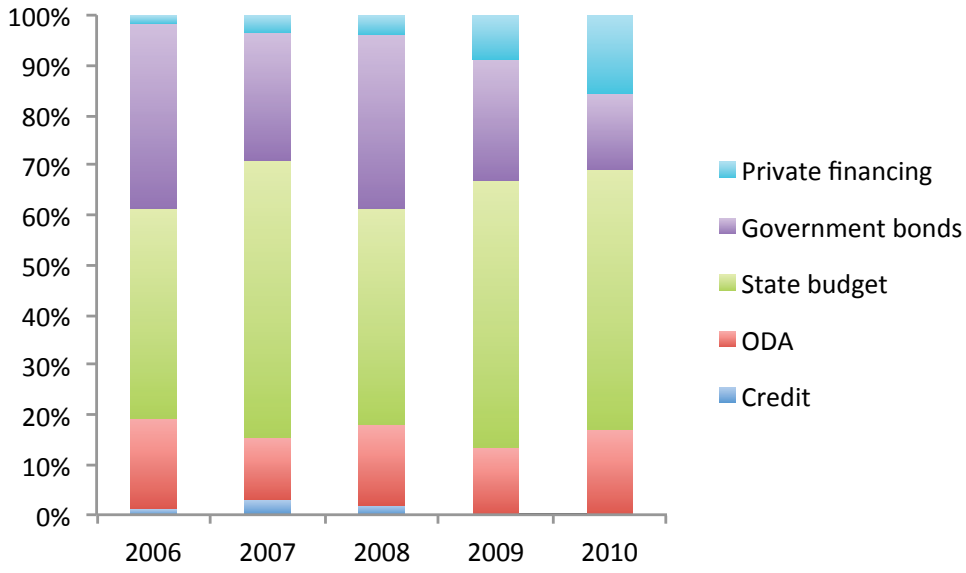


Figure 11: Funding for road transportation in Vietnam (Information about funding for road transportation in Vietnam may be obtained from the General Statistics Office at website http://www.gso.gov.vn/default.aspx?tabid=432&idmid=3. Accessed 5/2013).

late 2007 to 57 per cent of GDP by the end of 2010[6]. In the interim, public debt pressure remained high due to government spending to support and promote rapid economic growth. A report tabled by the Economics Committee of the National Assembly titled "Thach thuc con o phia truoc" (Challenges are still ahead) indicated that "by the end of 2012, Vietnam's total public debt had reached 55.4 per cent of GDP, of which foreign public debt and domestic public debt had been 29.6 per cent and 25.8 per cent respectively" (ECNA 2013*b*, p. 67). However, the Committee also stated in another report titled "No cong va tinh ben vung o Vietnam: Qua khu, hien tai, va tuong lai" (Public debt and sustainability in Vietnam: past, present and future) that if counting included foreign debt linked to enterprises such as SOEs which are not guaranteed by the government, SOE bank debt, and bond debt, Vietnam's total public debt would be 95 per cent of GDP. This could pose a real threat to Vietnam's public debt sustainability" (ECNA 2013*a*, p. 97).

Along with the problems of budget deficit and public debt, the ability to use public sector funding for infrastructure development is also a major issue in Vietnam. Currently, this is paradoxical because despite its high rate of investing in infrastructure, Vietnam is increasingly faced with weak infrastructure, evident in the Incremental Capital and Output Rate (ICOR) indicator. According to Vuong (2012), while Vietnam's ICOR was approximately 5:1 during 1997-2007, it increased to approximately 6:1 from 2008 to 2011, and reached approximately 7.56:1 in 2012. This suggests that among the countries in the region, Vietnam is using funding inefficiently. While Vietnam needs from five to more than seven units of capital to create one unit of growth, other Asian economies at the same stage of development need no more than two to four units of capital to gain higher growth rate (see Table 12). Such a high ICOR indicates lack of efficiency, i.e., flawed budget utilisation by the public sector.

As a result of inefficiency, the reduction of public investment was made more severe. In June 2011 approximately VND$5,556 billion (approximately US$280 million) of capital investment for 2048 projects funded by the state budget was cut (MPI 2011). To add to the government's dilemma, from 2004 on, inflation became more serious, reaching a level of 23.1 per cent in 2008 and staying above 18 per cent in following years (18.6 per cent recorded in 2011). While this was partly due to the global financial crisis, in the main it was due to the government's weak managing capability in the macro sphere (Vuong and Nguyen 2010). Vietnam is trying to reduce inflation. But, this will require the government to decrease

6 More information may be obtained from the General Statistics Office at the following URL `http://www.gso.gov.vn/default.aspx?tabid=428&idmid=3`. Accessed 5/2013.

Table 12: ICOR comparison between Vietnam and other countries in the region during the same period of development, calculated from the World Development Indicators of the World Bank.

Country	%GDP	ICOR
Vietnam 1997 - 2007	7.2	5.1
Malaysia 1977 - 1996	7.4	4.9
Korea 1969 - 1988	8.4	2.8
Thailand 1976 - 1995	8.1	3.6
Taiwan 1963 - 1982	9.8	2.9
Indonesia 1977 - 1996	7.2	2.6

ICOR: the Incremental Capital - Output Rate.

money supply, tighten credit, reduce the budget deficit, and keep public debt at a secure threshold. The above problems have all resulted in the state budget's inability to provide funding for infrastructure projects.

ODA funding

Although ODA funded by multilateral donors (the World Bank, Asia Development Bank) and bilateral donors (especially Japan) accounts for only approximately 4 per cent of GDP, it occupies a significant proportion of the total infrastructure financing (approximately 35 to 40 per cent on average) (Cuong 2013). This is especially significant when one considers that Vietnam is faced with limited state funding for development, and an enormous demand for infrastructure development. Generally speaking, ODA may be considered the catalyst for development, helping Vietnam to implement successful development strategies and plans. However, as a general rule, sponsors will not continue to provide ODA, nor will they offer other forms of loans when Vietnam's income per capita extends beyond the threshold of the less developed countries.

Today, Vietnam's GDP per capital has risen above US$1000. This has seen the country removed from the list of less developed countries. At this level, ODA loan terms become less favourable. They are marked by shorter duration and higher interest rates. According to the Ministry of Planning and Investment's annual report from 2013, Vietnam will have to start paying back the principal on some ODA loans. As a result, the mobilisation of funding for infrastructure development will decrease and increasingly decline in the future (MPI 2012*a*).

Government bonds

In recent years, the government has issued 5-year to 10-year term bonds in an attempt to partially offset the budget shortfall. This is primarily funding for in-

frastructure projects. According to the Finance and Budget Committee's report, the funding from government bonds demanded by Ministries and sectors increased sharply from 60 per cent in 2010 to 75 per cent in 2011 (see Table 13), exceeding the ability of this source. And, according to the Committee's analysis, the balance of middle- and long-term resources to implement the approved projects will increase the public debt rapidly. The year 2009 saw 40 government bond issuances in VND and 2 issuances in foreign currency. But, 36 of the 40 VND issuances completely failed because the ceiling interest rate that the publishers offered was lower than the lowest interest rate that the bidder registered. The ability to mobilise this type of capital in the next period will be extremely difficult (FBC 2011).

Table 13: Estimated demand of government bonds of some Ministries in Vietnam in 2011 (Source: Budget and Finance Committee).

Ministries	Estimated demand in 2011 (VND$ billion)	(%) increase compared to 2010
Ministry of Transportation	7,700	62.6%
Ministry of Agricultural and Rural Development	54,000	70%
Ministry of Education and Training	7,240	60.8%
Ministry of Health		75.9%

Government bonds are considered risk-free in terms of liquidity. However, if the interest rate of a loan is not large enough to meet the interest rate risk premium required by the market, investors will not hold bonds. After the central bank increased its rediscount rate to 12.5 per cent, this raising channel became almost paralysed. For example, the bond issuance on 31 March 2011 offering VND$3000 billion (approximately US$150 million) failed with no successful bidding partners and no bonds sold (FBC 2011). The public and investors seem to have underestimated this tool due to its low profit rate and low liquidity.

Private financing

From the above analysis, it is clear to see that three financing resources (state budget, ODA and government bonds) are not only extendable, but also likely to be increasingly limited for infrastructure development in near future. The World Bank stated that because Vietnam cannot totally depend upon the state budget to sponsor infrastructure building, it should seek funding from the private sector. To meet the infrastructure development needs totalling US$300 billion in 2020, these three financing resources make up only 50 to 60 per cent of the finance

needed (Ugwumadu 2014). Thus, the country will require greater involvement of capital markets from the private sector.

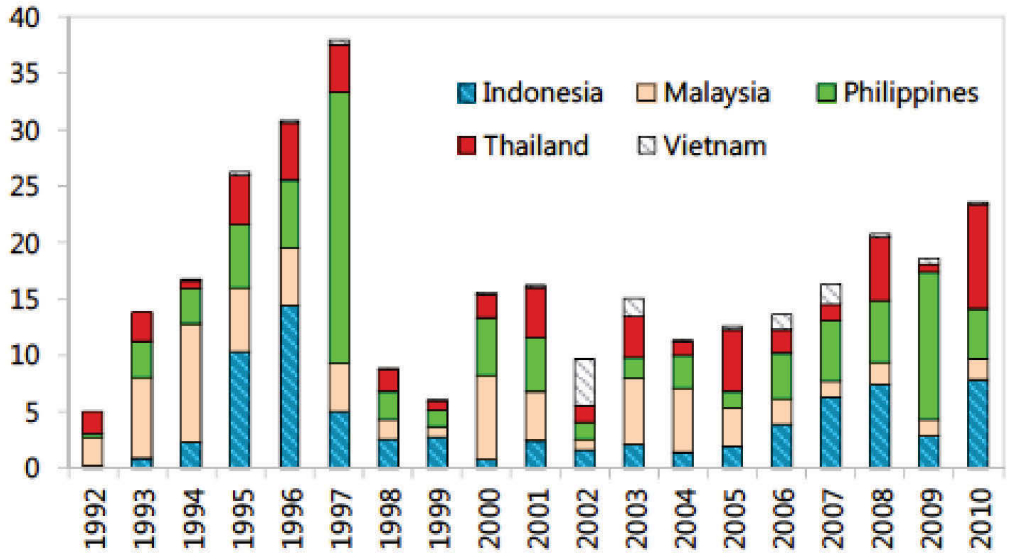


Figure 12: Investment commitments to infrastructure projects with private participation, calculated in US$ billion (Sources: World Bank and Private Participations in Infrastructure Project Database PPIAF).

However, according to a report compiled by the Ministry of Planning and Investment, private financing is currently limited (MPI 2012*a*). This limitation becomes evident in the project database of the World Bank after comparing investment commitments to infrastructure projects with private participation of five Asian and Pacific countries including Vietnam, Indonesia, the Philippines, and Thailand during the period 1992 to 2010 (see Figure 12). The investment commitments of the private sector to infrastructure projects in Vietnam not only ranked low, but have increasingly declined in recent years compared to other countries in the region.

With this status of investment funds, funding for infrastructure projects will be a huge challenge for the Vietnamese government in the coming decades. Consequently, the establishment and development of PPPs to attract private financial backing is an urgent requirement needed to tackle the problem of investment shortage.

3.2.2 *Political climate*

Another distinction in the context of Vietnam lies in its political climate. In this section, Vietnam's political climate is analysed specifically as follows: (1) governance by just one unopposed government party; and, (2) the maintenance of

SOEs in a socialism-oriented market economy with emphasis on an associated issue of corruption.

After the two major regions of the country were reunited in 1975, Vietnam had to start building the country from the ground upwards. At the time, the government chose to direct the country's economy towards a centrally planned economy. With the target of forming an economy for a socialist society, the state sector was considered the only driver to run said economy proficiently. However, this strategy proved to be a mistake. It left behind a milieu of low productivity and inefficiency together with many inadequacies that seemed unsolvable. In an attempt to resolve the problem, after 11 years, in 1986, an important economic policy known as "Doi moi" (Renovation) was set in motion. This time, the effort moved from building up a market economy towards a socialist orientation. A major socio-economic revolution was implemented in order to decentralise the management of the state economy with new and more appropriate administrative methods, leading to government focus on other economic sectors. The biggest change was that the private sector now became an official and significant driver of the economy.

However, although moving to a market economy, Vietnam was still governed by one party, the CPV, the pursuit of which was socialism. In its efforts to govern the country during the transition, the CPV followed the principle of "democratic centralism" which meant that the CPV retained central power over all aspects of government at all levels.

Since the transition, the CPV has retained the leading role of the state-owned economic sector in a market economy with socialist orientation. The CPV claims that the dominant role of SOEs in the economy is consistent with the principles of socialism, an ideology which the whole country is pursuing. To confirm its direction, the government founded many large SOEs. In March 1994, the government issued Decree 91/TTg, the focus of which was on the pilot establishment of business groups. This led to the creation and emergence of many SOEs, which numbered approximately 5900 SOEs by the 1990s (JBIC 2003). Subsequently, due to a privatising or equitising process and the restructure of SOEs, in 2004 this figure fell to 4500. Nevertheless, until 2005, it could be seen that equitization had not motivated a real revolution as expected; it accounted for only 9 per cent of gross governmental capital for SOEs (Nguyen 2006). In the same year, some state economic groups emerged after the government initiated a pilot scheme for implementation by several state corporations. Currently, this implementation has been temporarily stopped, and the number of state economic groups has been

stated by the government to be eight groups[7]. These groups still hold a major amount of state funding and oversee all of the critical economic fields. This implies that after decades of transiting to a market-oriented economy, Vietnam still maintains a significant state sector.

The World Bank affirmed that:

> The state's monopoly on coercion, which gives it the power to intervene effectively in economic activity, also gives it the power to intervene arbitrarily. This power, coupled with access to information not available to the general public, creates ample opportunities for public officials to promote their own interests, or those of friends or allies, at the expense off the general interest" (World Bank 1997, p. 1).

The CPV, which enjoys the status of monopoly party, has its hands in every single activity of the economy. Unfortunately, this has provided opportunities for state officials to operate independent of general scrutiny. Their links to the CPV have engendered in them a perception that they have ultimate power and are virtually untouchable (Truong 1999). In addition, the lack of a transparent or accountable legal framework has provided incentives for government officials to behave in an opportunistic manner (ANU and CIEM 2003), inevitably leading to corruption. As a result, when considering the best possible achivement of the "Doi moi" program, Vietnam still needs 25 years to catch up with other regional countries such as Thailand (Truong 1999), for example. Vietnam's underdeveloped status has spawned an high degree of corruption, a severe social disease rife at all governmental levels.

As Figure 13 shows, the Corruption Perceptions Index (CPI) of Vietnam has increased slightly in recent years from 2.5 in 1998 to 3.1 in 2012. After 15 years, Vietnam still suffers from a high level of corruption: ranked 123 out of 174 countries in 2012. In a recently published research studying the relationship between corruption and economic growth, Anh, Minh and Tran-Nam (2016) analysed data from CPI and the World Bank's Governance Indicators for the period from 2000 to 2012 in Vietnam, and indicated that corruption had considerately negated the growth rate of the economy in Vietnam. Although the fact is that Vietnam does not belong to the group of countries with the lowest CPI, the key problem in Vietnam may lie in the dominant role of the SOEs, which receive support from the government governed by the CPV.

7 The state-owned groups include PetroVietnam (Petroleum), Vinacomin (coal and minerals), Vinashin (ship-building), VNPT (telecommunications), EVN (electricity), Vinatex (textiles and garments), VRC (rubber), Bao Viet Finance Insurance Group, Viettel (telecommunications), Vinachem (chemicals), Vinaconex (construction), HUD Holdings (housing and urban development).

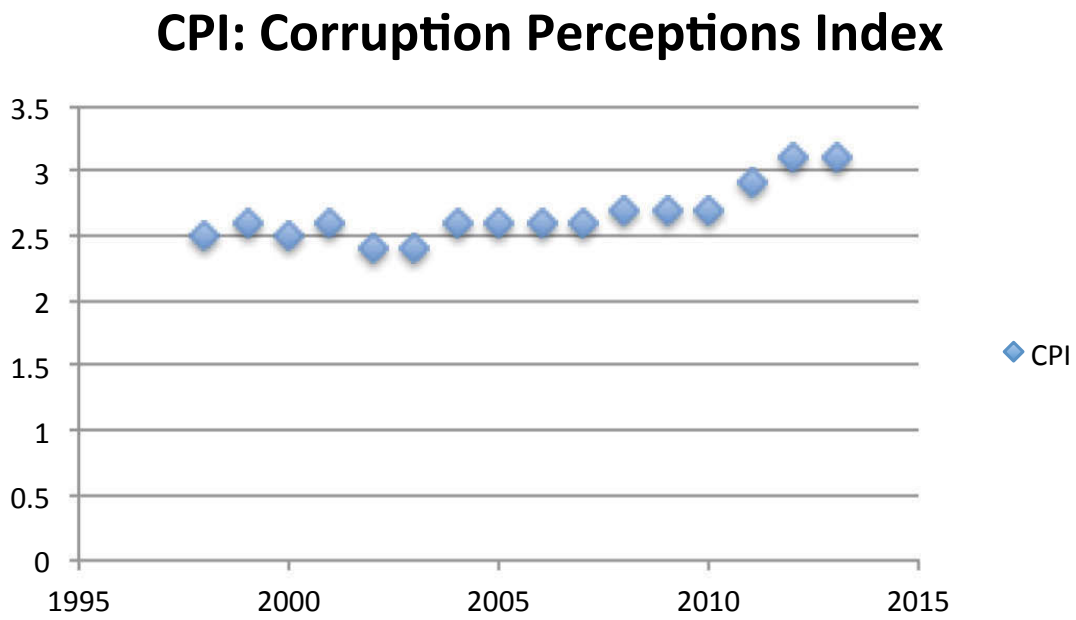


Figure 13: CPI of Vietnam (1998 to 2013).

The above is attributable to the fact that the government indulges state economic groups and/or corporations by guaranteeing their borrowing of capital from governmental fund or state banks. Even in international markets, this form of guarantee is still offered by the government. As a result of its indulgence, the government actually creates bad outcomes, slowly ruining the operation of these economic organisations and, in the process, creating an ideal background for corruption (Nguyen 2006). Due to the fact that these organisations do not have to raise funding independently for their own plans and strategies, their managers feel perplexed by suggestions that using this funding results in a huge waste of money. In effect, it leads to low efficiency organisations. Taking the year 2009 as a typical example, the public sector generated only 35.13 per cent of GDP while obtaining 40.6 per cent of the total budget used for investing that year. Moreover, from 1995 to 2009, the SOEs' contribution to GDP fell from approximately 41 to 35.13 per cent, whereas the contribution to GDP from the remaining sectors increased from 23.7 to 31 per cent[8]. In fact, the establishment of the state sector was not derived from market motivation: it was mostly the product of bureaucratic problems. Among the developing countries, of which Vietnam is a typical example, these negative effects may become increasingly more severe due to a heavy-handed bureaucracy.

8 More information may be obtained from General Statistics Office at the following URL http://www.gso.gov.vn/default_en.aspx?tabid=468&idmid=3&ItemID=12976. Accessed on 5/2013.

One of the most obvious problems relating to the state sector lies in the huge amount of bad debt it accrues. This information is usually kept confidential. Bad debt is more often than not handled discreetly so as not to discourage interest groups seeking to expand their influence. However, there is an old saying that "truth will out". Insights into the losses chalked up by SOEs after a certain time can not be completely hidden from the public. For example, with reference to these large losses, Nguyen (2006) claims that 11 State Civil Engineering Construction Corporations (CIENCOs) suffered. One of these firms lost VND$2 trillion, a figure roughly equivalent to US$130 million. He similarly revealed that subsidiaries of the Vietnam State Paper Corporation made a loss of more than US$ 2 million. A further report from CIEM (2006) claimed that at the local level, more than 2000 projects were inspected in 2003 and almost all were discovered to commit violations of state financial regulations. They were thus required to revoke VND$136 billion (approximately US$6.5 million) of the state budget.

Most recently, the case of the Vietnam Ship Industry Group (VINASHIN), a state enterprise which upgraded to a state economic group in 2006, offers a prime example of an SOE losing a large amount of the state budget through corruption. With the expectation of becoming a leading state economic group, VINASHIN, one of Vietnam's SOEs enjoyed favoured privileges from the government. In 2005, the government granted US$750 million bonds from the international financial market to finance VINASHIN. This was in addition to the US$600 million it had already borrowed from international banks. VINASHIN was also given a tremendous amount of funding credit from state-owned commercial banks. However, despite the special favours it receives from the government, VINASHIN processed a series of high risk projects under its lax and weak management. In addition, the huge cost of corruption, which led to the incurring of a debt of at least US$4.6 billion in 2010, accounted for 83 per cent of its total value (Lan 2013). In an attempt to salvage the situation, the government has been forced to continuously pump money into its "prodigal son". The question of who is responsible for these huge losses is non-ending. The general answer is that it is the responsibility of the entire governance party.

Another example is the case of the Vietnam National Shipping Lines (VINALINES), one of the largest state-owned corporations in Vietnam. The organisation contributed to a VND$92 trillion (US$4.5 billion) deficit in the state budget (Pham 2015). Clearly, the government's advocacy of state-owned conglomerates has escalated corruption in the country dramatically. The scandals at VINALINES and VINASHIN proved the most obvious examples. As pointed out by Mauro (1997), Vietnam has most of the causes of corruption, i.e., trade

restrictions (in forms of import and export quotas for sugar, rice, sodium chloride), government subsidies, price controls (especially on essential goods such as electricity, gas and water), multiple exchange rate practices, low wages for civil servants (that has led to state cadres abusing power to receive bribes), natural resource endowments (to better connected businesses or political ties), and sociological factors (in which the giving and receiving of bribes is exceptionally common in this relation-based Confucian society). Corruption in Vietnam is so endemic that some ODA donors have at times threatened to withdraw their funds if the situation does not improve. In 2012, Sweden, an important donor, announced that it would withdraw aid to Vietnam due to the country's unimproved economic conditions and blatant corruption in ODA projects (VN-Businessreg 2013).

Transparency and accountability in governance constitute two of the important measures for fighting corruption (Truong 1999). Due to pressure from international organisations such as the World Trade Organisation and/or donor international banks such as the World Bank and the Asian Development Bank, the Vietnamese government has had to commit to improving transparency. In fact, this situation has improved slightly in recent times, particularly since legal documents or decisions by the public sector have been made available to the public by means of the Internet, for example. However, there are still dark areas not accessible to the public where information is not provided clearly and openly; for example, information regarding the public budget, the public debt, bad debts of the state banking system, and subsidies or explicit/implicit support for SOEs. Also, it is not unusual for government institutions to promulgate unpredictable decisions, all of which render the extant lack of transparency even more perturbing.

Until now, despite being a member of the World Trade Organisation, Vietnam's economy has yet to be regarded as a market economy as per organisational provision for accession. In fact, the government still applies inappropriate measures vis-à-vis moving towards a market economy; for example, price control. In some cases, the government overtly guarantees SOEs' borrowing from state-owned commercial banks. In some other cases, government control is evident in instruction to SOEs to keep prices steady or for state-owned commercial banks to regulate their interest rates. These interventions have negative consequences for the competitive environment and contain hidden risks for both SOEs and state owned commercial banks. As a result, these government tactics put Vietnam's immature financial system at considerable risk in the medium to long-term (Wilkinson, Dapice, Perkins, Nguyen, Vu, Huynh, Pincus and Saich 2008).

In terms of accountability, in an ideal state, good governance constrains and holds accountable all levels of government. This control not only extends to the private sector, but also to other organisations in society. In fact, there have been many situations where accountability has not been determined even when decisions made by the public sector or actions conducted by organisations in the private sector led to negative effects in terms of money. These could include loss of state budgets, damage to private property, or environmental damage. These outcomes result from: (1) lack of transparency and weak rule of law; and, (2) stagnation of the bureaucratic system (Truong 1999).

Vietnam lacks basic but important institutions to fight corruption such as independent institutions strong enough to supervise government activities. The implementation of other anti-corruption measures seems to have been ineffective. Corruption as well as lack of transparency and accountability therefore has flourished in many fields, damaging both the business environment and the image of the country.

3.2.3 *Differences between the North and South of Vietnam*

Due to the fact that Vietnam has experienced many wars and has seen the splitting and reuniting of its two major Northern and Southern regions, there is concern regarding the differences between the two halves of the country. As Ralston et al. (1999) state, these potential regional differences between North and South Vietnam must be addressed. In order to identify the differences that characterise the northern and southern regions of Vietnam, it is important to look first at the history of Vietnam, especially the history of the two regions under scrutiny. According to Truong et al. (1997), Vietnam is usually regarded as a country comprising two halves, i.e., the northern and southern regions. In early times, the Vietnamese people started to establish the country on the northern side, the starting point being the Red River Delta. This point is frequently called the "cultural cradle" of the whole country: it has been referred to as such for more than 2000 years. Later, the people started extending their land to the southern region, to the Mekong Delta. Between 1627 and 1673, the history of Vietnam for the first time documents that Vietnam was divided into two separate halves ruled by two families, the Trinh and the Nguyen. At that time, the border (the Gianh River) was located in Quang Binh province. More recently, between 1954 and 1975, the United States joined in the war of invasion of Vietnam, cutting the country into two nations run by two totally different forms of government. Therefore, despite the fact that Vietnam has been a united country since 1975, there are still many distinguishing factors separating North from South Vietnam.

On the one hand, North Vietnam, which is geographically adjacent to the south-west region of China, was significantly influenced by China through out one thousand years of Chinese domination. Considered a somewhat traditional, conservative and bureaucratic region, it has operated under socialist rule since the 1940s (Ralston et al. 1999). On the other hand, South Vietnam suffered two-decades of domination by France and the United States until 1975 when the United States withdrew (Engholm 1995). Having been subjected over time to periods of partition and unification resulting from long wars, North and South Vietnam continue to show differences in various spheres. For example, Engholm (1995), Quinlan (1995) claim that the significant differences between the two regions in terms of modes of operation and manners of behaviour may create challenges for investors. Another example is that provided by Ralston et al. (1999), who studied the managerial work values of the northern and southern managers in Vietnam and concluded that:

> Managers in North Vietnam appear to exhibit a more western orientation toward individualism, while managers in South Vietnam seem to hold a more traditionally Asian collectivist bent. Ironically, it appears that for individualism - the bedrock of western market-oriented economies - North Vietnam is facing west while South Vietnam is facing east (Ralston et al. 1999, p. 669).

The differences were also indicated in terms of trade unions, ideology and institutions. Prior to the reunification of Vietnam in 1975, trade unions were characterised by close relationships with the government in the North, whereas in the South they adopted a more adversary attitude towards the government and ultimately became more independent (Edwards and Phan 2008). Following reunification in 1975, although the laws and government structure became identical throughout the whole country, some of the ideological and institutional differences between the two parts of the country persist until today (Kim 2008). Zhu, Collins, Webber and Benson (2008) argue that companies in the North remain more oriented towards socialist personnel practices including government wage scales and union involvement as government agents, whereas those in the South indicate a higher rate of adoption of modern human resource management. More recently, Torm (2014) noted a substantial wage premium revealed for workers employed within Southern unionised companies.

According to Dapice and Bui (2004), people in the North are generally known to be more rigid about regulations; and, the North is a more difficult place in which to conduct private business. Dapice and Bui (2004) observe that bureaucrats in the North still do not know how to work productively with private business. Others including Gainsborough (2002) take issue with this characterisation, arguing

that government bureaus and elites in the South have also exhibited predatory action towards private business, the same as in the rest of the country. In addition, claims of difference between the North and the South depend upon social perceptions. For example, Kim (2007) writes: "In the South you may tax profits but the attitude is good for you whereas in the North they have a criminal atmosphere...The South also has more of a consumer culture and the concept of advertising has been adopted more readily, fueling market demand, whereas people in the North are characterised as savers" (Kim 2007, p. 2083).

3.3 PPP IMPLEMENTATION IN VIETNAM

Due to the huge demand for capital for infrastructure development, over the last 20 years the government has implemented policies to attract capital markets from other sectors to invest in public infrastructure projects. Accordingly, the policy of "socialisation" of infrastructure projects, which aims to resolve the problem of government budget deficit, has opened up opportunities for private sector participation and investment. This section first presents the adoption and development of PPPs in Vietnam, followed by the results obtained from PPP implementation during the period.

The adoption and development of PPPs in Vietnam

In the 1990s, Build-Operate-Transfer (BOT) was first adopted in Vietnam according to the Decree 77-CP in 1997 (used for domestic investment) and Decree 87-CP in 1993 (used for foreign investment in Vietnam). Subsequently, two other PPP types, Build-Transfer-Operate (BTO) and Build-Transfer (BT) were supplemented in 1998 according to Decree 62/1998/NĐ-CP (only applicable for foreign investment in Vietnam), and continued to be finalised with Decrees 78/2007/NĐ-CP and 108/2009/NĐ-CP. Continuing to invest in BOT, BTO or BT projects could still generate some growth; but, the infrastructure development demanded by approved plans could not be guaranteed. Therefore, in 2010, in order to promote PPP implementation, Prime Minister approved and signed the issuance of Decision 71/2010/QĐ-TTg regulating pilot PPP projects. However, the Decision did not outline specific PPP models clearly. Taking effect from January 2011, the Decision was expected to promote the development of PPP projects in Vietnam in a pilot phase lasting from three to five years. During this period, the government organised many conferences and workshops exploring PPPs which attracted significant numbers of investors. For example: the "Mekong Forum" workshop organised in Hanoi in March 2011; the "PPP Program" organised in Hanoi in May 2011; the workshop for PPPs between Italy and Vietnam organised

in Ho Chi Minh in March 2011; and, the conference focusing on PPPs convened by the World Bank in Da Nang in April 2011.

However, while three years have elapsed since the legal framework for the implementation of pilot PPP projects was first issued, to date no projects have been implemented. Ministries and local authorities have proposed a total of 30 projects to be undertaken according to new PPP models. But, after review of the proposed projects, none was suitable for immediate implementation (ECC 2013). And, while many investors have expressed their desire to invest in PPP projects; they are afraid to contemplate the numerous legal issues of PPP legislation, i.e., regulations and policies. In an effort to encourage the private sector to invest in public infrastructure projects and to adapt to the diversity in practice of PPP implementation, in addition to the above mentioned three types (BOT, BTO and BT), Decree 15/2015/NĐ-CP issued on 14 February 2015, extended to include four additional PPP types: Build-Own-Operate (BOO), Build-Transfer-Lease (BTL), Build-Lease-Transfer (BLT), and Operate-Maintain (OM). The current legal framework base for PPP implementation in Vietnam is summarised in Table 14.

Table 14: List of legislation documents required for PPP implementation in Vietnam.

Document	Issue Date	Content
Decree 87-CP	22/11/1993	Decree on investments in the form of BOT contracts
Decree 77-CP	18/6/1997	Decree promulgating the regulation on investment in the form of BOT contract applicable to domestic investment
Decree 62/1998/NĐ-CP	15/8/1998	Decree promulgating the regulation on investment in the forms of BOT contracts, BTO contracts and BT contracts applicable to foreign investment in Vietnam
Decree 78/2007/NĐ-CP	14/5/2007	Decree on investment in the form of BOT, BTO or BT contracts
Decree 108/2009/NĐ-CP	27/11/2009	Decree on investment in the form of BOT, BTO or BT contracts (revised for the Decree 78/2007/NĐ-CP)
Decision 71/2010/QĐ-TTg	09/11/2010	Decision promulgating regulations for pilot PPP investment
Circular 03/2011/TT-BKHĐT	27/1/2011	Detailed guideline for implementing the Decree 108/2009/NĐ-CP
Decree 15/2015/NĐ-CP	14/02/2015	Decree on PPP investment form

When assessing the quality of the legal framework regulating PPP implementation, it is important to first look at the regulatory environment in Vietnam. In general, it is considered unattractive for private investors, a fact illustrated by

the Country Policy and Institutional Assessment (CPIA)[9] rating peculiar to the regulatory quality of Vietnam. As suggested by the World Bank, this rating indicates "capturing perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development" (Kaufmann, Kraay and Mastruzzi 2011, p. 4). Figure 14 shows that the regulatory quality of Vietnam ranked last in both 2005 and 2010 when compared to other countries. The country's incomplete legal framework poses a barrier for private sector development in Vietnam.

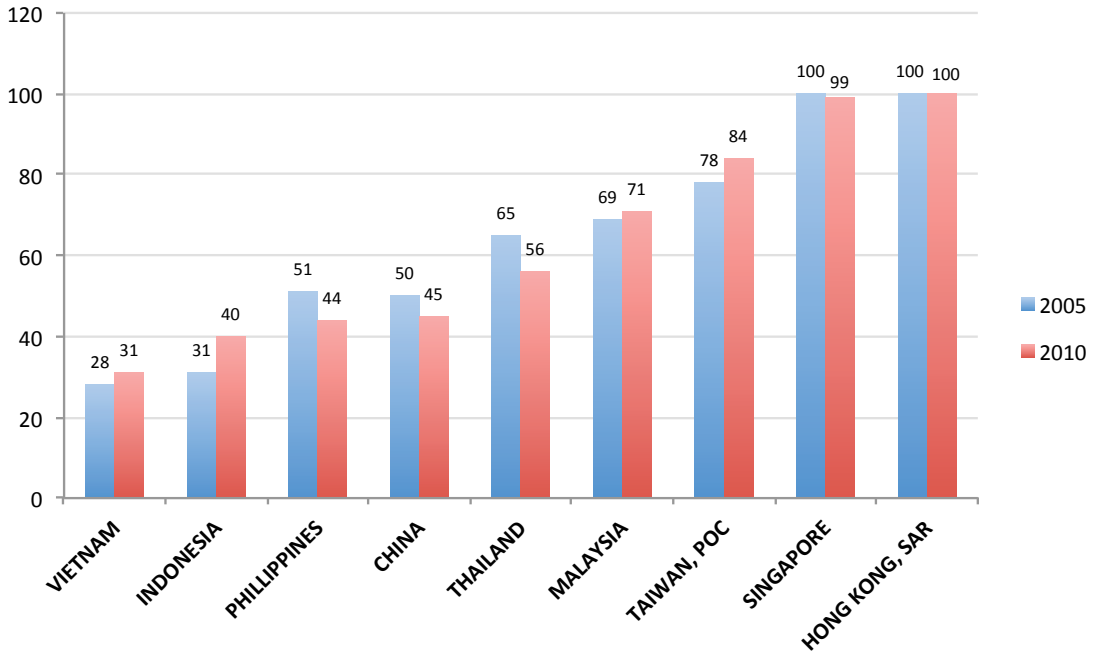


Figure 14: CPIA Rating: Regulatory quality - A higher rating indicates a better regulatory environment. (Sources: the World Bank, Worldwide Governance Indicators).

Regarding the legal framework for PPP implementation, Giang (2012) whose focus is on evaluating Decision 71/QD-TTg, points out the limitations of the legal document. The Decision was regulated for amendments to some limitations on investment in the three forms of BOT, BTO and BT. This was considered a positive sign for raising capital for infrastructure projects in conditions where the state budget faces constraint and cannot meet the current demand for infrastructure development. Conversely, there are still outstanding issues related to policy for the capital contribution ratio of the government to PPP projects, the establishment of project companies, funding mobilisation for PPP projects, and the evaluation of PPP projects' effectiveness.

9 The CPIA, a diagnostic tool, intends to capture the quality of a country's policies and institutional arrangements.

The ECC (2013) has also reviewed issues of regulations appertaining to PPP implementation, and assured that they have not set the overall framework for the scope, principles, forms and feasibility policies as the basis to formulate, negotiate and sign contracts, in contrast to models in other developed countries. They also have yet to create an "open" mechanism that will afford state agencies flexibility when negotiating and signing contracts, especially in cases where the participation and support of the state is needed to enhance the viability and/or attractiveness of projects that otherwise would not be considered profitable. This lack of attractiveness is the result of the government's price ceilings on toll fees, electricity, water supply and sanitation, which makes it harder for investors to anticipate an adequate return from projects.

The issuance of Decree 15/2015/NĐ-CP aimed to amend issues of the previous Decree 108/2009/NĐ-CP and Decision 71/2010/QĐ-TTg. However, according to Frasers (2015), Decree 15 failed to provide the desirable substantial amendments to the previous BOT and pilot PPP regimes as expected. This was because the numerous bank-ability issues facing Vietnam's infrastructure development, e.g., viability gap funding, tariffs, land acquisition, and lender security over land are not still addressed adequately. Apart from this, international lenders and project sponsors remain nervous vis-à-vis participating in PPP projects in Vietnam due to the incompleteness of the legal framework for PPP implementation. As well, they question sovereign guarantees for foreign currency conversion and the absence of a robust and transparent pipeline of bankable infrastructure projects.

Results of PPP implementation in Vietnam

After nearly 20 years, there has been no official report on the results of PPP implementation in Vietnam. Up until 2012, the Ministry of Planning and Investment conducted inspections and required central ministries and local authorities to report on aggregating data concerning their implementation of the three PPP models. These data, however, are not sufficient to reflect the whole picture of the implementation of BOT, BTO and BT projects in Vietnam. There is no record of projects implemented with later introduced PPP models. The results of the final report, cited in the research report of the Economic Committee of Vietnamese Congress published in 2013 (ECC 2013), may be used as a reference because they are the only data source available to date.

According to reports from 48 out of 64 cities and provinces, by the end of 2010, the number of BOT, BTO, BT and combined BOT and BT projects was 384, with the total capital value of VND$1.114.663 billion (approximately US$55 billion)

Table 15: Proportion of the total number of projects and total capital value of projects, calculated in VND$ billion, by types of investment (Source: the Economic Committee of Vietnamese Congress).

PPP models	BOT	BTO	BT	Combined BOT and BT	Total
Number of projects	129	2	211	42	384
Percentage	33.59%	0.52%	54.95%	10.94%	100%
Capital value of projects (VND$ billion)	604,389	918	324,129	185,227	1,114,663
Percentage	54.22%	0.08%	29.08%	16.62%	100%

of which local authorities implementation of 342 projects accounted for approximately 89 per cent. In terms of types of investment, the arrangement in order from high to low is as follows: BT (211 projects), BOT (129 projects), combined BOT and BT (42 projects) and BTO (two projects) (see Table 15). The majority of projects, i.e., BT, account for 54.95 per cent, followed by BOT projects with 33.59 per cent. BOT combined with BT projects account for 10.94 per cent; and, last, just two BTO projects, occupy 0.52 per cent. Among the total of 384 projects nationwide, 108 projects have selected investors (with a total capital value of approximately US$18 billion). Among these, the majority are BOT projects (72 projects), followed by BT projects (35 projects). Only one BTO project has been approved, and no BOT combined BT project has been implemented to the date of the report. The remaining projects are either calling for investors or planning to procure in these models (ECC 2013).

In terms of the projects' total capital value as presented in Table 15, BOT constitute the highest proportion with 54.22 per cent. BT projects only occupy 29.08 per cent of the total capital, representing the second highest although in term of numbers of projects, the highest. Next are BOT combined with BT projects (16.02 per cent of total value) followed by BTO with only 0.08 per cent. It is noted here that although the government approved for many combined BOT and BT projects, no projects of this type have successfully found investors.

Regarding investment sectors (see Figure 15), projects conducted in five sectors included transportation, water supply, waste and sewage, electricity, and public housings. Among these, transportation projects accounted for 66.15 per cent (254 projects) followed by public housing, waste and sewage with 15.36 and 13.02 per cent respectively (59 and 50 projects). Last, with 3.39 per cent (12 projects) and 2.08 per cent (8 projects) were electricity and water supply sectors.

The differences between North and South Vietnam are clearly reflected in the implementation of BOT, BTO and BT projects in the two regions (see Table 16

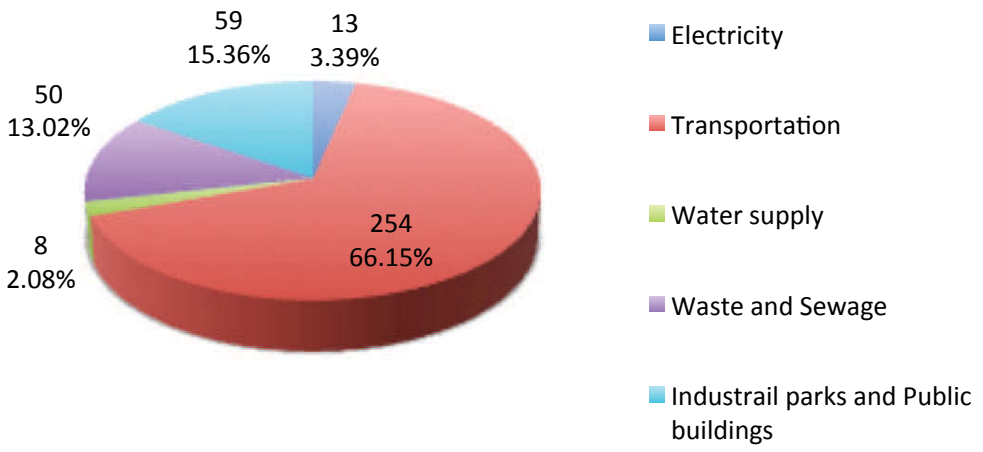


Figure 15: Proportion of numbers of projects by investment sectors. (Source: the Economic Committee of Vietnamese Congress).

illustrating the differences in numbers and in total investment values of the BOT and BT projects recorded in North and South Vietnam).

Table 16: Numbers and capital values of BOT and BT projects implemented by the northern and southern regions of Vietnam (capital values were calculated in VND$ billion).

Region	Number of project		Capital value	
	BOT	BT	BOT	BT
North Vietnam	8	43	3,653	55,478
South Vietnam	30	35	22,022	36,704

It may be seen from the above Table that: first, South Vietnam has implemented more BOT and BT projects than North Vietnam, corresponding to a total of 65 and 51 projects respectively; second, the total investment values spent for BOT and BT projects appear equally shared between the two regions with approximately VND$59,000 billion (or equivalent to US$2.95 billion); third, while very few BOT projects have been conducted in the northern region (only eight BOT projects) and the majority of total investment in this region went to BT projects (approximately VND$55,000 billion, accounting for 93 per cent), the investment trend of the private sector in the southern regions was totally different from that of the northern region. The number of BOT and BT projects invested were relatively in balance with a little higher for BT projects (30 and 35 projects re-

spectively). While corruption, lack of transparency and accountability occurred frequently in BT projects, BOT projects required private investors to have sufficient financial capability. The above figures show significant differences in the investment trend, and in perception of the private sector in the two regions.

Although these PPP-type projects have contributed to attracting private financing for public infrastructure, and obtained some advantages of these types of projects. e.g., promotion of local development, provision of more jobs for local workers, technology transfer from private foreign experts to local staff (ECC 2013), they have also evidenced the following underlying issues:

(1) Many foreign-funded projects have failed at the negotiation stage. As regards attracting foreign investment, although the legal framework regulation for attracting these funds in the forms of BOT, BTO and BT was issued no later than that for domestic investment, from 1998 to the present only 10 foreign-funded BOT projects have been approved and implemented, with a total investment of US$5.9 billion. This number seems modest compared with the actual demand. The reasons for the failure of these projects at the negotiation stage include: unclear and incomplete legal framework, low profit ratio due to insufficient revenue to offset costs, unstable macro-economic policies and exchange rate risk due to continual VND devaluation (ECC 2013).

(2) The project success rate is still rather low (108/342 projects, approximately 25 per cent), with the successful among them being mainly small-scale projects. A common characteristic of successful projects is their huge capacity for attraction (the so-called "super projects") such as arterial roads construction. Typical examples have been the Truong Son - Tan Son Nhat road, Co May bridge. Private investors in these projects were tempted to engage in corrupt practices to win these projects which often promise excessive profits to private investors. Many other projects have either been delayed or failed due to issues related to site clearance and lack of financial capacity. Although there have been difficulties vis-à-vis site clearance for some projects supported by state budgets, the problem can hardly compare with the level of difficulty that some private investors have encountered. In addition, project equity contributed by the private sector was regulated by the government from 10 to 15 per cent of total capital. Due to this small percentage, the private sector has only enough to pay its debt interests in the short term (probably two to three years), insufficient to ensure project implementation by the pre-determined schedule. As a result, some of these projects have been transferred back to the government, drawing upon state budgets to

continue their work, giving rise to the slogan "head BOT, tail state budget" (Giang 2012).

(3) BT projects have proven unsuitable for both the public and private sectors. BT project investors build the infrastructure, then transfer it back to the government. In return, the government allocates lands for the investors to exploit, to make money to pay back their investment and at the same time make a profit; or, the government directly pays the full cost of the investment. BT projects, which are fewer than BOT projects in the number of successfully implemented projects, have proven unattractive to both the public and private sectors. They have failed to solve the problem of budget deficit for the government and the requirement for huge upfront investment by the private investor. In addition, the "exchange lands to get infrastructure" agreement (another name for BT projects) has proven unsuitable due to various other reasons including: the non-transparency of the projects can lead to a rise in corruption and loss of state resources; investors are willing to implement non-feasible projects in order to attain valuable land; and, investment based on land exchange as a form of subsidy would not be feasible for the government as most of the valuable land in the country's urban areas and along the coast has been allocated to investors. And, the bubble price of land in the region is making the market nervous (Giang 2012).

(4) According to figures included in the report, as of 2010, the rate of projects which have directly appointed private investors is 140 out of 155 projects. Apropos of these projects, private investors are responsible for composing project proposals and preparing business cases. Accordingly, private investors usually propose projects with lower total investment to ensure that the projects will be allocated. However, after the project is officially approved, they are more likely to significantly increase the total project investment, often up to two or three times the initial value. At the same time, the public sector's responsibilities for project evaluation and appraisal has been conducted carelessly. In addition, many SOEs assigned to implement PPP projects lack the capacity to proceed (Giang 2012).

Finally, due to the urgency of some projects that lack interested private investors, the government has employed some special support mechanisms for each specific project. These forms of support may include accelerating site clearance, supporting capital raising and loans for project implementation, ensuring recovery of investment capital, and managing toll stations to generate money flow. These initiatives have been seen as active government support for promoting road infrastructure development. However, these projects have not met the determined

schedule because the SOEs assigned to implement the projects lack the capacity to proceed (Giang 2012).

It is important to stress here that although the political climate in Vietnam creates a healthy environment for corruption, lack of transparency and accountability, by extension allowing these anomalies to become more entrenched, the current legislation framework regulated for PPP implementation in Vietnam is considered incomplete. From the above analysis, one of the most concerning issues is that it has not established a base for anti-corruption, increasing transparency, and accountability in public procurement in general and PPP procurement in particular, which was also indicated in the studies conducted by ECC (2013), Giang (2012). More specifically, it lacks both an evaluation and appraisal methodology and scientific methods to identify and assess a PPP project compared to traditional procurement. In addition, there is no market test in the first phase of the PPP process to determine whether PPP projects can attract private sector participation. Also, the suitability of the adoption of PPPs in Vietnam has not been assessed.

3.4 SUMMARY AND LITERATURE GAP

In this chapter, an overall review of what is distinct in the context of Vietnam in terms of public infrastructure (current status, future demand, and financing capacity), political climate, and the differences between the two regions (North and South) of the country has been provided. The adoption, development and results of PPP implementation in Vietnam have also been reviewed. The existing infrastructure in Vietnam is old. It has been severely damaged by long periods of war. Thus, it is hardly surprising that the quality of the current infrastructure is evaluated as bad or very bad by foreign enterprises. Under enormous pressure to produce economic growth and the social demand for infrastructure development, plus shortage of government budget, the decline of ODA and the inefficiency of government bonds, the government urgently needs to implement other approaches. Rather than continuing to utilise traditional procurement to attract private-sector funding for infrastructure projects and improve the quality of infrastructure facilities, the Vietnamese government has adopted PPPs from western models to solve the problem of infrastructure development. However, to date, the result of PPP implementation in Vietnam is limited and inefficient.

Over the years, Vietnam has encountered many problems. One of the most destructive underlying issue in Vietnam today include corruption. Not only does

Vietnamese political climate support the growth of these issues: its legal framework for PPP implementation remains incomplete and ill-equipped to fight these problems. More specifically, one of the most serious problems is the lack of evaluation and appraisal methods to support decision-making in the early stage of the PPP process. In any attempt to build evaluation and appraisal tools to supporting decision-making, it is essential to first study the principal factors for a PPP profile in Vietnam. A review of the context of Vietnam has revealed another research gap (see below):

There is a need to study the differences between the two halves of Vietnam (North and South) regarding the importance of principal factors for PPP implementation (Gap 4).

The differences of PPP implementation within one country have been referred to some limited cases found in the literature survey. For example, Hong Kong is subject to China's "one country, two systems" form of government. When Hong Kong, hitherto a the 156 year-old British crown colony, was returned to Chinese sovereignty at midnight on July 1997, two distinct policy systems were brought within the framework of one country (Holliday and Wong 2003, So 2011). However, the reunification of these two parts of China could not remove the differences between them due to their long-time separation. Interest is also being expressed in the unifying of Taiwan with China. It is important to note here that both Hong Kong and Taiwan may in time become "parts" of the "big" China, the literature survey in Chapter 2 indicated the differences regarding the importance of principal factors for PPP implementation among Hong Kong, Taiwan and China.

Another example may be seen in PPP implementation in Australia, where different states of the country regulated separated guidelines for PPP implementation, e.g., the NSW guideline, Victoria guideline, Queensland guideline[10]. However, a common legal framework for PPP implemenation is still provided nationwide.

In the context of Vietnam where PPP implementation is still new, as suggested earlier the history of the country has created significant differences between its two halves. In addition, the results of PPP implementation in Vietnam have shown significant differences between the northern and southern regions of the country, In reality, the South seems to indicate better results than the North.

Regarding the limited literature studying regional differences within countries, because no similar study was found in the context of Vietnam, there is a need to

10 More information about PPP implementation in Australia can be found in the following link: http://infrastructureaustralia.gov.au/

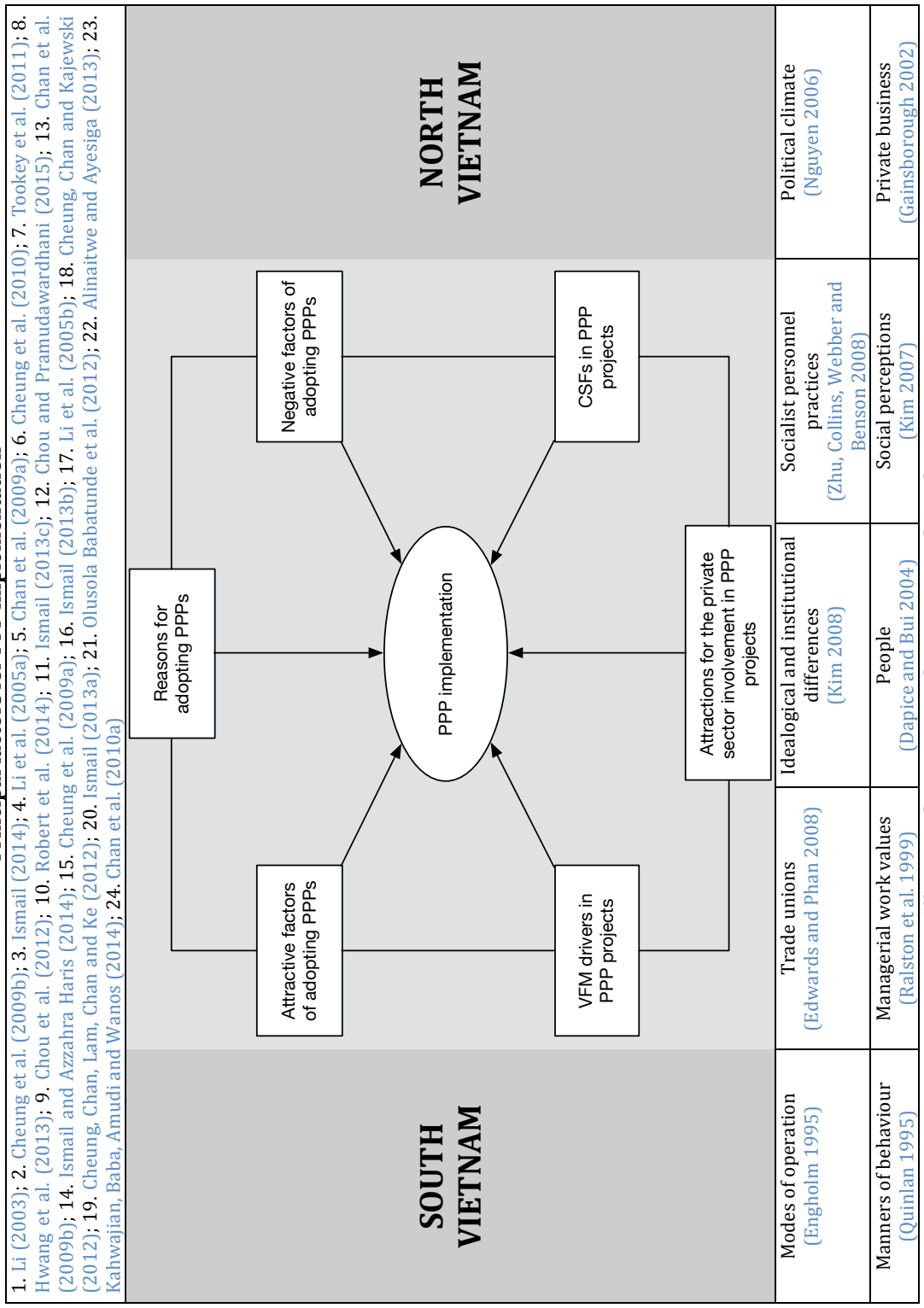


Figure 16: Theoretical foundation for the study.

study the differences in criticality of the principal factors between the two parts of the country.

In this thesis, the review of the extant literature has focused on two major areas: (1) a general review of PPPs in terms of theory, practice and conducted research

studies, see Chapter 2; and (2) PPP implementation in the context of Vietnam, see Chapter 3. A review of the extant literature on these areas revealed pointed out four research gaps. A set of factors for PPP projects derived from research studies via the literature survey presented in Chapter 2 and the detailed analysis of the Vietnamese context and its PPP implementation obtained from Chapter 3 form the theoretical foundation for this study, which is presented in Figure 16.

4 RESEARCH METHODOLOGY

4.1 INTRODUCTION

One of the most important tasks of any academic research is to establish an appropriate and comprehensive methodology approach. This chapter, which aims to outline the methodology and to present an overview of the research, is organised as follows: Section 4.2 presents a brief overview of the academic research design. Focus is upon the differences that distinguish quantitative, qualitative and mixed methods designs. Section 4.3 reviews the rationale for the application of a mixed methods design and, particularly, the sequential explanatory design. The section then presents a visual diagram of the research methodology design utilised for the study, including the data gathering process and how the data were managed and analysed in both the quantitative and qualitative phases. The reliability and validity methods applied during the two phases are also described. In Section 4.4, issues relating to research permission and ethical considerations are discussed. The chapter ends with a summary of the tasks alluded to above (Section 4.5).

4.2 OVERVIEW OF ACADEMIC RESEARCH DESIGN

When attempting to establish a research design that depicts the whole process of collecting, analysing and interpreting research data for any research study, it is essential to determine the epistemological premise upon which the study is based. In other words, it is essential to establish how to advance new knowledge by identifying the combination of three elements: philosophy, strategies of enquiry, and specific methods (Creswell, Tashakkori, Jensen and Shapley 2003). Among these, there is the need to first identify philosophical assumptions affecting the ways in which claims are made about knowledge, including what knowledge is (ontology), how it is known (epistemology), what value to put on it (axiology), how it is written (rhetoric), and how it is studied following specific procedures (methodology) (Creswell, Tashakkori, Jensen and Shapley 2003).

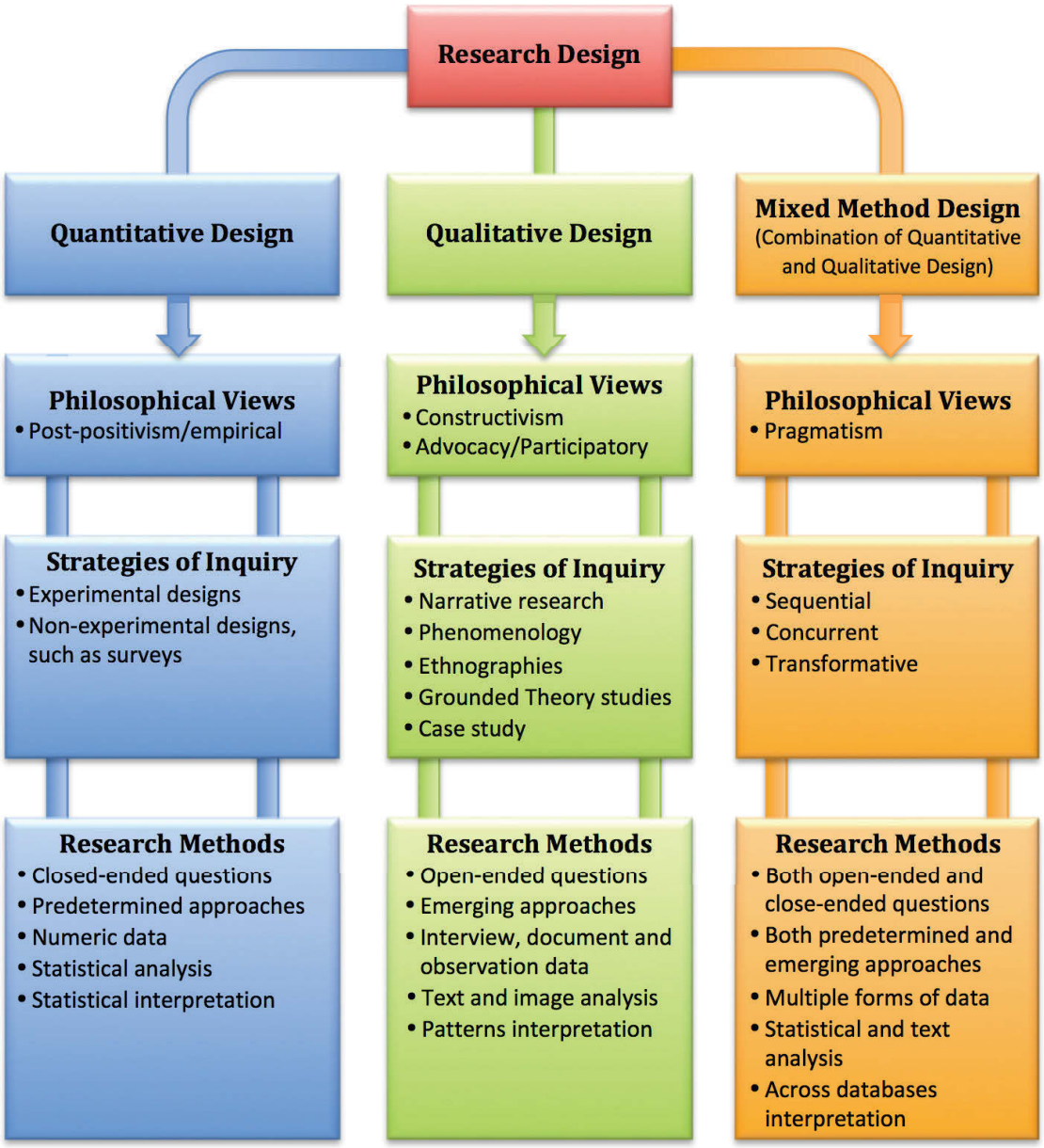


Figure 17: A framework of various research designs (Creswell 2003).

Creswell (2003) constructed a framework to highlight the differences among the various research designs in terms of philosophical views, strategies of inquiry, and research methods (see Figure 17). In the following section, three research approaches: quantitative; qualitative; and, mixed research methods, will be discussed.

The quantitative approach can be traced back to the late 19^{th} century when it was a popular form of research in the social sciences before the emergence of qualitative methods from the 1950s on (Creswell 2003). Its core idea is to test theories by studying the relationships among variables. Researchers are then able to measure these variables to analyse the data by using statistical methods. In this

approach, assumptions are made to test theories in a deductive way (Creswell 2003). In other words, it means using deductive reasoning logic, which is sometimes referred to as the "hypothetico-deductive" method, or the conjecture and refutation method (Blaikie 2007). Blaikie observes that this strategy is constructed using two elements, i.e., "cautious realist" ontology and the epistemology of "falsificationism" (Blaikie 2007). As Figure 17 shows, the quantitative approach accesses the world from the view of a post-positivist[1], and employs experimental strategies of enquiry and pre- and post-test measures of attitudes (Creswell 2003). This approach uses closed-ended questions and the collection of data based on set tools yielding statistical information (Creswell, Tashakkori, Jensen and Shapley 2003). In summary, the quantitative approach is considered the most suitable approach for confirmatory, explanatory and hypothesis-testing purposes.

Alternatively, qualitative methods have been applied since the 1950s (Creswell 2003). According to Cresswell (1998, p. 15), qualitative research is "an inquiry process of understanding where the researcher develops a complex, holistic picture, analyses words, reports detailed views of informants, and conducts the study in a natural setting". In the qualitative research design, researchers view the world from a constructivist perspective exploring how individuals study the world in everyday life (Creswell, Tashakkori, Jensen and Shapley 2003). Based on specific objects or events, individuals construct their own meanings of what they have experienced. Often their experiences are varied and complicated. As a result, researchers seek complex meanings rather than narrow perspectives. Having assembled them, they sort them into specific categories. In this type of research, due to the fact that the result of the research relies on how the participants perceive the situation that is currently being studied, the questions are presented in broad and general forms to help the participants to identify and construct the situation's meaning.

Creswell (2003) identifies the five strategies of enquiry that researchers employ using the qualitative approach as follows: (1) ethnography; (2) grounded theory; (3) case studies; (4) phenomenological research; and, (5) narrative research. In terms of methodologies, the qualitative approach employs open-ended questions so that participants can share their views. Here, instead of using pre-determined methods of data collection, emerging methods are employed which could involve conducting interviews, observation, and the collection of documents as well as audio-visual data. Collected data are then analysed using text and image analysis and interpreted using themes and pattern interpretation. Most of the

1 More information about the post-positivist perspective may be found in Phillips and Burbules (2000).

data in qualitative research are descriptive in nature, making this method most suitable for exploratory studies which can prove useful when building or developing a theory. Creswell, Tashakkori, Jensen and Shapley (2003) suggest that it could also be designed for use in confirmatory studies of an existing theory.

The mixed methods approach dates back to the late 1980s when many publications focused on describing and defining what is now known as "mixed methods" (Creswell and Clark 2007). It may be defined as "a procedure for collecting, analysing and mixing or integrating both quantitative and qualitative data at some stage of the research process within a single study" (Creswell 2003). In a mixed methods approach, researchers make knowledge claims based on pragmatism. For example, Tashakkori and Teddlie (1998) select the approaches, variables and units of analysis that are most suitable in order to respond to their research questions. A key presumption of pragmatism is that due to the compatibility of quantitative and qualitative methods, both numerical and text data, no matter how they are collected (sequentially, concurrently or transformatively), can provide a clearer understanding of the research problems. The basic purpose of mixed methods research design is to integrate quantitative and qualitative data, i.e., to draw upon the strengths of each, broad in a quantitative and depth in a qualitative approach, resulting in more complete analysis (Creswell and Clark 2007).

When considering a mixed methods design, four issues should be taken into consideration: interaction, priority, timing, and mixing (Creswell and Clark 2007). Interaction refers to the level of combination between the quantitative and qualitative phases with two general options (independent and interactive levels) of the design. Priority, which refers to the weighting of the two phases of the design, may be classified in three types: equal, quantitative or qualitative priority. Timing refers to the temporal relationship between the two phases within a design. It may be a concurrent, sequential or multiphase combination. Mixing refers to the explicit interrelating of the two phases of the design. It can occur during interpretation: data analysis, data collection, or at the level of design. Taking into consideration the combination of the above four issues, Creswell and Clark (2007) summarise the six most commonly used mixed method designs in practice. These include: (1) the convergent parallel design; (2) the explanatory sequential design; (3) the exploratory sequential design; (4) the embedded design; (5) the transformative design; and, (6) the multiphase design. It is recommended that careful selection of a research design best suited to the research problems and giving appropriate justification for mixing can provide better management and simpler implementation for the study (Creswell and Clark 2007).

4.3 RESEARCH DESIGN SELECTION FOR THIS STUDY

4.3.1 *Selection of mixed methods*

The world view chosen for this study was drawn from the pragmatic world view that prompted use of a mixed methods research design. It is important here to provide the rationale or main reasons for this choice. Generally speaking, the mixed methods design was adopted as neither quantitative nor qualitative methods are sufficient in themselves to provide the trends and detailed findings for the research issue. In the case of this thesis, this meant the complex issue of finding a set of principal factors for PPP implementation in the context of a particular country, Vietnam, a developing country with a range of special characteristics (see Chapter 3). The combination of quantitative and qualitative methods which complement each other can provide a broad and deep picture of the research problem (Johnson and Turner 2003). Creswell and Clark (2007) claim that employing this combination will enhance the integrity of the findings. The process can be referred to as putting "meat" (qualitative findings) on "the bones" of dry quantitative findings. The two authors also conclude that practitioners and others stand to benefit more from the application of this combination.

In essence, the reasons for adopting a mixed quantitative and qualitative research methods approach in this study can be justified by recourse to three main provisos. The first is due to the nature of the research problem. The main aim of the study is to develop a set of principal factors for PPP implementation in the context of Vietnam. On the one hand, Creswell (2003) suggests that in the case of social research problems which identify factors that influence an outcome, such as the research problem in this study, the quantitative approach is the best match. On the other hand, from another perspective, Morse (1991) opines that if a situation needs to be better understood because of the limitation of research studies conducted on it, adoption of a qualitative approach is advised. He further suggests other cases in which a qualitative method may be appropriate, including: a new topic that has never been studied with a certain sample, and existing theories under which a particular sample has not been applied.

According to the literature review of PPPs in general (see Chapter 2) and PPP implementation in Vietnam (see Chapter 3), the concept of PPPs is not new. Principal factors for PPP implementation have been studied in many countries with both developed and developing economies. However, the PPP topic is new to Vietnam: little or no documentation can be found on factors that impact the outcome of decision-making pertaining to implementation of PPPs. Not only has this topic not been examined from the perspectives of the public and private

sectors in Vietnam, but there is no evidence of perspectives of the two different region sample groups (North and South Vietnam). Previous studies, for example those of Li (2003), Cheung (2009), and Ismail (2013*b*,*c*, 2014), call for using qualitative methods to facilitate deeper understanding of these factors. Finally, the research questions including "What" and "How" are more in the form of exploratory questions. These all support the fact that either a quantitative and qualitative approach may be employed for the research purposes. There is a need to combine both approaches to enable the best possible outcome.

The second reason for the choice of a mixed methods approach is attributable to the researcher's own personal experience of PPP projects; in effect, the researcher's interest in the topic. This study attempts to examine principal factors for PPP implementation in Vietnam in both broad and reasonable depth despite the researcher's awareness that employing a mixed quantitative and qualitative methods design will lengthen the time it will take to conduct the study. Moreover, because the PPP topic is new to Vietnam, the majority of the study respondents may not possess in-depth knowledge of the relative concepts. In order to ensure that the participants' responses are valid and focused, it seems advisable to corroborate the details provided by those who have been involved in selected case studies with broader opinion obtained from a questionnaire survey. This will ensure comprehensive knowledge of the principal factors for PPP implementation in Vietnam.

The third reason is due to the researcher's desire to ensure the study's reliability and validity, an academic requirement essential to any research study (Thanasegaran 2009). This study is an endeavour that will not only culminate in the awarding of a higher degree, but will also improve the performance of PPP implementation not only in Vietnam, but in other developing countries as well. Therefore, by virtue of its very nature, this endeavour requires diligence, commitment, and considerable rigour if it is to be valid and reliable. Moreover, the knowledge claims in the study need to be validated and highly reliable. A combination of all of these factors led to the decision to employ a mixed methods approach. The latter is considered a useful tool for attaining complementariness, completeness of ideas, creditability, and diversity of views for the study.

4.3.2 *Selection of the sequential explanatory design*

Drawing from the six major mixed method designs in practice (Creswell and Clark 2007) as mentioned (see Section 4.2), this study uses a sequential explanatory mixed methods design including two separate phases. The collection and analysis of quantitative data were conducted first to address the study's research

problems. This was followed by the subsequent collection and analysis of qualitative data to explain the quantitative results in more depth. The results of both phases are integrated during the discussion of the interpretation of the entity analysis. A diagram of the design is shown in Figure 18.

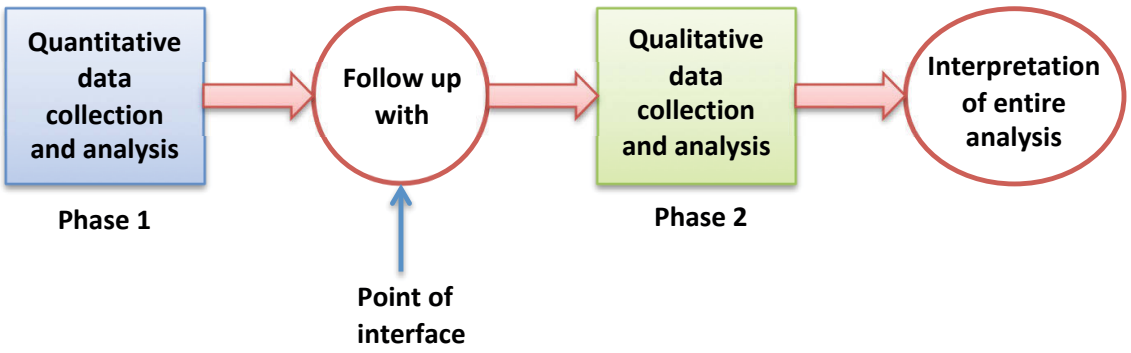


Figure 18: The explanatory sequential mixed methods design (Creswell and Clark 2007).

The purpose of the design is based upon two practical aspects. First, it is suitable when using qualitative data to explain quantitative findings in the following cases: significant (or nonsignificant) results, positive-performing exemplars, outliers, or surprising results (Morse and Niehaus 2009). Second, the design can also be adopted in other cases: the formation of groups based on quantitative results, followed up groups during the subsequent qualitative phase, or the use of participant characteristics in the quantitative phase while purposefully selecting a sample for the qualitative phase (Creswell and Clark 2007). Based on the two purposes, the selection of the sequential explanatory design is well suited to this study in the main because of the need to use qualitative data to explain important factors for PPP implementation or outlier results for new factors possibly found in the context of Vietnam through quantitative analysis. This design is also used for the purpose of identifying groups of respondents from the public and private sectors in the northern and southern regions of Vietnam based on quantitative results, and for subsequent qualitative research to study the groups in depth.

In accordance with the design of the sequential explanatory approach, the research questions for this study need to be refined. The research questions for the quantitative phase of the study (Phase 1) include:

1. What are the principal factors for PPP implementation in Vietnam?
2. How is the criticality of these factors regarded in Vietnam?
3. Is the adoption of PPP projects in Vietnam suitable?

4. In what ways do the perceptions of respondents between the public and private sectors and between North and South Vietnam differ vis-à-vis the importance of these factors?

For the qualitative part of the study (Phase 2), the overarching research question is:

5. How can the important results obtained in the quantitative phase be explained?

In this study, priority is on the quantitative phase in which quantitative data are collected using a questionnaire survey as an instrument for collecting the primary data. The goals of the quantitative phase are: to confirm and explore the important factors of PPPs in Vietnam; and, to identify any significant differences in their perceptions of their criticality among the four groups of public- and private-sector respondents from North and South Vietnam. In the subsequent qualitative phase, a multiple case study approach is adopted to collect qualitative data using semi-structured interviews. The results will help to explain the statistical results obtained in the first phase and provide a deeper understanding of the topic. The rationale for this approach is indicated as follows: while the quantitative data and its analysis provide the whole picture of the research problem, the qualitative data and results explain the picture in more depth through exploration of the participants' views.

Because this study's focus is on examining results in fine detail, this study uses the explanatory design variant as the follow-up explanations model. This is the most commonly adopted approach when using the explanatory design (Creswell and Plano 2011). The first priority is the quantitative phase, followed by a subsequent qualitative phase to provide detailed explanation of the quantitative results. Specifically, this study identified the important quantitative findings that require further explanation, e.g., important factors, the differences between the four groups (the public and private sectors from North and South Vietnam), or outliers of new factors. The study then collected qualitative data from participants to help explain these findings. The results of both the quantitative and qualitative phases are integrated with the interpretation of the study. At this point, the study also discusses the deviation of critical factors in Vietnam compared with those in other countries identified in the literature survey. Although the explanatory design is straightforward (Creswell and Plano 2011), it contains both advantages and challenges (see Table 17).

Table 17: Advantages and challenges of the sequential explanatory mixed methods design (Creswell and Plano 2011).

Advantages of sequential design	Challenges of sequential design
It attracts quantitative researchers as it begins with a strong involvement of collecting and analysing quantitative data.	It needs longer time for the implementation of the two phases than conducting an individual method.
Its two-phase structure is designed to be clear and straightforward to implement so that single researchers can conduct it.	Participants in the qualitative phase can be specified only after the quantitative findings are obtained.
It is straightforward to write the final report with its clear delineation for readers.	The researcher cannot plan precisely which quantitative results need to be further explained.
What is found in the initial quantitative phase can be used to design the subsequent qualitative phase.	It is difficult for researchers to plan the sample and criteria precisely to use for the selection of participants in the qualitative phase.

In addition to taking advantage of the sequential explanatory design, this study prepared solutions to overcome its disadvantages. First, as suggested in Section 4.3.1, it was realised that conducting the two-phase study would take longer. However, when considering the limitations of the respondents' knowledge of the new PPP topic in Vietnam and to ensure the study's reliability and validity, this lengthy time was worth the trade off. Second, in order to address the issue of selecting participants for the second phase before accessing the initial findings, the participants in the first phase were tentatively informed of the likelihood that they could possibly be contacted again for interviews in the second phase. Finally, by selecting the same sample of participants in the quantitative phase but a smaller sample size for the qualitative phase, any difficulties surrounding who to sample and what criteria to use for participant selection were reduced. The visual diagram of the procedures designed for this study is presented in Figure 19. The following sections will explain this visual diagram in detail.

4.3.3 *Phase 1 - Quantitative phase*

Having presented the strategy of enquiry selected for the study and reasons justifying the selection, this section continues by describing the procedures designed for the quantitative phase of the study, including data collection and tools for data analysis.

4.3.3.1 *Data collection*

Measures

PHASE	PROCEDURE	OUTPUT
Quantitative Data Collection	• Questionnaire survey through national seminars and workshops (N=250)	• Numeric data
Quantitative Data Analysis (Using SPSS statistics and SPSS Amos 22.0 softwares)	• Meaning score ranking	• Mean and Ranking
	• Kendall's coefficient of concordance, and Spearman rank correlation	• Level of agreement within each of the respondent groups
	• Independent two-sample t-test	• Levels of agreement between the respondent groups
	• Exploratory factor analysis	• Clean pattern matrix of factor indicators loaded
	• Confirmatory factor analysis	• Factor structure of the data
	• Group difference analysis	• Levels of agreement between the respondent groups
	• Two-dimensional importance analysis	• Important factors and differences between the respondent groups
	• Cronbach alpha	• Internal consistency of the data
	• Kaiser-Meyer-Olkin measure and Barlett test of Sphericity	• Sampling adequacy for factor analysis
	• Chi-square/degree-of-freedom ratio, Comparative fit index, Incremental fit index, and Root mean square error of approximation	• Goodness of the model fit
Case Selection and Interview Protocol Development	• Purposeful selection of one participant from each group (N=4)	• Four interviewees (Public from North, Private from North, Public from South, Private from South)
	• Developing interview questions	• Interview protocol
Qualitative Data Collection	• Individual in-depth face-to-face interviews with four participants	• Text data (Interview transcripts and Reflection notes)
	• Email follow-up interviews	• Further explanations
	• Project materials	• Project documents
	• Documents	• Government reports or legislation documents
Qualitative Data Analysis (Using Nvivo 10 software)	• Coding and thematic analysis, within-case and across-case theme development	• Themes and their detail
	• Cross-thematic analysis	• Similar and different themes and their detail
Interpretation of Entire Analysis	• Interpretation and explanation of the quantitative and qualitative results	• Discussion

Figure 19: Visual diagram of the sequential explanatory mixed methods design procedures for this study - Adapted from Ivankova and Stick (2007).

The purpose of data collection in mixed methods research is to provide answers to the research issues (Teddlie and Yu 2007). For data collection in the quantitative phase, a survey research method was employed in this study. According to Creswell (2003), survey research provides a numeric description of the trends, attitudes or opinions of a population by studying a sample of the population, then generalising back from the sample to that population. To collect data using the survey method in the quantitative phase for this study, a questionnaire survey was used as the primary data collection instrument. According to Blaxter, Hughes and Tight (2010), questionnaire surveys constitute one of the most popular techniques used in social research studies. This is because it is an effective method in quantitative analysis for obtaining a large-size sample. Questionnaire surveys require researchers to formulate precise questions for the respondents, whose opinions or experiences the researchers are interested in exploring. Although this seems to be an obvious strategy for finding answers to research queries, Blaxter et al. (2010) warn that it is not the simple task it appears to be. For this reason, care should be taken with the survey design.

For the purposes of this study, the questionnaire survey developed by Li (2003) was adopted. The rationale for adopting similar research questionnaires has been explained in numerous prior studies examining the same research direction; for example, by Cheung et al. (2009*b*), Cheung (2009), Cheung et al. (2009*a*), Cheung, Chan, Lam, Chan and Ke (2012), and Ismail (2013*a*,*b*,*c*). The first reason is that the value of Li's (2003) questionnaire has received recognition by both the industry and academics alike. A number of papers using Li's (2003) questionnaire have been published in the most recognised academic journals. Second, there is no value in reinventing previous work. However, it is believed to be worth reapplying this work in another specific context of PPP implementation. Third, by the usage of the same instrument, researchers from different countries will allow future studies to draw comparisons concerning a set of principal factors for PPP implementation in various countries. Given the above reasons, the adoption of Li's (2003) questionnaire survey for the purposes of this study seemed completely logical.

Recognising the uniqueness and complexity of each country, the principal factors for PPP implementation were collected from PPP projects in many countries around the world (see Chapter 2). This study aimed to develop a PPP profile for Vietnam. To increase the validity and reliability of the questionnaire survey, and to ensure that it would match the Vietnamese context, the questionnaire template was initially composed in English and then translated into Vietnamese. And, a pilot study was subsequently conducted. This took the form of internal

discussions with supervisors and colleagues at the University of Technology Sydney (Australia) and with PPP experts in Vietnam, who were working at the PPP office which comes under the Public Procurement Agency of the Ministry of Planning and Investment of Vietnam. The positions of the experts in the agency ranged from officials to the deputy director-general: all were in charge of the regulation and governance for PPP implementation in Vietnam. Based on the suggestions and advice provided by these experts and academies during the pilot study, some changes were made to the questionnaire in order to ensure that the selected factors would prove most suitable in the context of Vietnam. It is important to ensure that the target respondents can clearly understand the purpose and structure of the questionnaire and the factors about which then would be asked.

A total of 84 factor indicators were finally determined, including: 9 reasons leading to the adoption of PPPs; 15 attractive and 14 negative factors of adopting PPPs; 6 attractions for private sector involvement in PPP projects; 20 measures that enhance PPP projects' VFM; and, 20 factors critical to the success of PPP projects. These factors were used to design a structural questionnaire template for data collection in Vietnam, including the three parts shown in Appendix 8.4.

The first part of the survey, which sought general information about the respondents and/or their organisations, included contact information (optional), age, experience, academic qualifications, employment, their regions of experience, the numbers and types of PPP projects that they had participated in, and details of any typical projects they had been involved in. The second part measured the participants' perceptions of the importance of the 84 factor indicators for PPP projects in Vietnam. For this purpose, a five-point Likert scale from 1 to 5 as followings (1 $\rightarrow$ Not Important; 2 $\rightarrow$ Fairly (Less) Important; 3 $\rightarrow$ Important; 4 $\rightarrow$ Very Important; and 5 $\rightarrow$ Extremely Important) was used. The third (last) part contained open questions asking the participants to provide their own suggestions and comments regarding PPP practice in Vietnam.

Sampling and Procedures

Convenience sampling (Dillman 2000) rather than random sampling was adopted for the quantitative phase of the study. This decision was made because to apply random sampling would demand a huge database, and the population is known (Fellows and Liu 2015). There is no comprehensive or standard database of public organisations and private companies involved in PPP projects in Vietnam. And, although the number of organisations and private companies participating in PPP projects is growing due to the high demand for infrastructure

development in Vietnam, the total number is not known. The selection of questionnaire participants in this quantitative phase depended upon certain criteria. For example: participants had to have adequate knowledge of the field of PPPs; or practical experience of participating in PPP projects; or, at least, they needed to have followed closely the development of PPPs in Vietnam. To ensure these criteria, respondents were selected from lists of those who had attended national seminars and workshops on PPP implementation in Vietnam, organised by the PPP office operated under the Ministry of Planning and Investment. Those who met this criterion or planned to attend upcoming national seminars and workshops were contacted to request their participation in the survey.

A cover letter (see Appendix 8.4) and a copy of the questionnaire survey (see Appendix 8.4) were sent to each potential respondent. Those who had agreed to participate in the on-line survey were provided with the same information. Each questionnaire included a cover letter explaining the necessary information relating to the survey; for example, the purpose of the study, and assurance regarding the confidentiality of the responses and anonymity of the respondents. It took the respondents to the on-line or paper-based survey approximately 25 to 35 minutes to complete the questionnaire. The completed questionnaires were then submitted immediately on-line or collected at the end of the seminar. The on-line questionnaire survey used "Survey Monkey", a web-based tool that can automatically store participants' responses on-line and easily export them into numeric formats accessible via Excel or SPSS software.

A total of 250 questionnaires were distributed among the target respondents during February to April 2015; 165 were sent through the on-line survey, and the remainder (85 questionnaires) were distributed at the seminar on April 2015 using a paper-based approach. Apropos of the on-line survey, the three-phase follow-up sequence proposed by Dillman (2000) was utilised in order to ensure a reasonable response rate and minimise the response rate error. For participants who failed to answer by the set date, an email reminder was sent out one week after the initial sending of the on-line questionnaire. Two weeks later, a second email reminder was despatched; and, after another two weeks, a third email was sent out for the final reminder. The importance of the participants' responses to the study, and of the request to complete the survey was clearly stated in the reminder emails (see Appendixes 8.4, 8.4). Each email contained an explanation of the study goals, the survey URL, and a password. After each reminder, an additional number of participants completed the survey.

Sample size

As this study uses factor analysis to analyse the quantitative data, sample size should be taken under consideration. In factor analysis, it is required that sample size must be representative of a population and sufficient to produce reliable factors (Klein 1994) (or constructs in this case). There are different views on the number of cases required for factor analysis, for example: 51 more cases than the number of variables (Lawley and Maxwell 1971); at least 10 cases for each item in the instrument being measured and the subjects-to-variables (STV) ratio should be no lower than five (Bryant and Yarnold 1995); at least 100 cases and a STV ratio of no less than five (Suhr 2006); or, at lease 150 - 300 cases but more toward 150 where there are a few highly correlated variables (Hutcheson and Sofroniou 1999). The sample size used in this study can be considered acceptable due to four reasons. First, this study used Maximum Likelihood (ML) estimation, which required somewhat smaller sample sizes (Kline 2013). Second, fewer cases are needed if each construct has more factor indicators (MacCallum, Widaman, Zhang and Hong 1999). In this case, only one construct had 6 factor indicators: others had from 9 to 20 factor indicators. Third, previous studies that conducted factor analysis on this topic had very limited sample size. For example, Chou et al. (2012) used 64 valid responses to conduct factor analysis of 33 factor indicators in the Chinese context. And, Chou and Pramudawardhani (2015) analysed 35 factor indicators in Indonesia using 87 valid responses. The last reason is that PPPs are new to Vietnam which has a limited number of potential PPP experts.

4.3.3.2 *Data analysis*

For the purpose of this study, multiple analytical techniques (both descriptive and inferential statistics) were applied. The descriptive statistics involved analysis of uni-variants such as charts, percentiles, and measures of central tendency. These were also used to analyse demographic information about the respondents. Tools including the Mean score ranking technique, factor analysis, two-dimensional importance analysis, Kendall's coefficient of concordance, Spearman rank correlation, Independent-two sample t-test, and group difference analysis were employed for the inferential statistics. These statistical analyses were calculated by SPSS statistics and SPSS Amos 22.0 that is considered to be the most powerful tool for the calculation of structural functions (Chou et al. 2012). Other computations were conducted using Microsoft Excel, with easy production of charts including: Scatter to present mean values and standardised loading coefficients on the two-dimensional importance analysis; and, calculations of the model validity and reliability in factor analysis. A description of these statistical analyses is presented below.

Mean score ranking technique

The "mean score" method was initially employed by Chan and Kumaraswamy (1996) to establish the weighting of reasons for the delay in construction projects in Hong Kong. It was subsequently utilised by various studies in this field, e.g., Li (2003), Cheung, Chan and Kajewski (2012), Cheung, Chan, Lam, Chan and Ke (2012), Chan et al. (2009*a*,*b*), and Cheung et al. (2009*a*). The data collected from the questionnaire survey in the quantitative phase of this study was analysed using this method; four groups were classified, for example, the public and private groups, and the northern and southern groups. The five-point Likert scale was used: (1) to compute the mean score for each factor; and, (2) to identify its relative ranking of importance. The mean score (MS) for each factor was computed by Equation (1):

$$MS = \frac{\sum(f \times s)}{N}, (1 \leq MS \leq 5) \tag{1}$$

where:
s = score by which the respondents rate for each factor, ranging from 1 to 5 (1 = Not Important and 5 = Extremely Important);
f = frequency of each rating (1 - 5) for each factor; and,
N = total number of responses regarding that factor.
These rankings were then used to indicate the relative importance of the principal factors for PPP implementation to respondents from these four groups in the questionnaire survey of the quantitative phase of the study.

Kendall's concordance analysis

This survey's respondents were divided into four groups: the public and private sectors from North and South Vietnam. Kendall's concordance analysis had earlier been adopted by many studies, e.g., Cheung, Chan and Kajewski (2012), Cheung, Chan, Lam, Chan and Ke (2012), Chan et al. (2009*a*,*b*), Cheung et al. (2009*a*), and Cheung (2009). It was used to determine the agreement of different respondents within a particular group concerning their rankings of factors by using their mean values in that group. The measurements were determined using Kendall's coefficient of concordance (W), which was formulated by Grawe (2016) as Equation 2 :

$$W = 12\frac{\sum_{i=1}^{n}(R_i - R)^2}{p^2(n^3 - n) - pT} \tag{2}$$

where:
n = number of factors being ranked;
R_i = ranks assigned to the ith factor;

R = mean value of the R_i values;
p = number of respondents; and,
T = correction factor for the tied ranks.
If the W is statistically significant at a predefined level, i.e., 0.05, the indication of the relationship among the respondents within the group expressed through a degree of consensus on the ranking of factors would be obtained. As claimed by Grawe (2016), W is usable only in the case when n is not greater than 7; otherwise, an approximate variable (chi-square) is used instead. Its critical value is obtained through a Table of chi-square distribution Grawe (2016).

Spearman rank correlation test

The Spearman rank correlation coefficient (r_s) can be used to measure the relationship between respondent groups, e.g., between public and private groups, or between northern and southern groups. This method has also been used by many previous research studies in this field, e.g., Chan et al. (2009*a*,*b*), Cheung, Chan, Lam, Chan and Ke (2012). In the case that r_s is statistically significant at a predefined level, i.e., 0.05, the null hypothesis can be rejected. In this case it would appear a relationship between the two groups. The computation of this coefficient (r_s) for the factors can be expressed through Equation 3:

$$r_s = 1 - \frac{6\sum d^2}{N(N^2-1)} \tag{3}$$

where:
d = different rankings of the two groups for the same factor; and,
N = total number of responses in regard to that factor.

Independent two-sample t-test

An independent two-sample t-test was adopted for this study to test the difference between the two pairs of independent groups (public versus private, and northern versus southern groups) on the means of a continuous variable. According to Keller (2014), the t-statistic can be computed as follows (Equations 4 and 5):

$$t = \frac{(\overline{x_1} - \overline{x_2}) - (\overline{\mu_1} - \overline{\mu_2})}{\sqrt{s_p^2(\frac{1}{n_1} + \frac{1}{n_2})}} \tag{4}$$

$$s_p^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2} \tag{5}$$

where:
n_1, n_2 = number of observations for group 1 and group 2 respectively;
$\overline{x_1}$, $\overline{x_2}$ = mean of group 1 and group 2 respectively;
μ_1, μ_2 = population mean for group 1 and group 2 respectively; and,
s_1^2, s_2^2 = sample variance for group 1 and group 2 respectively.

Factor analysis

According to DeCoster (1998), factor analysis can be defined as a set of statistical methods used to examine the influence between underlying constructs and responses in relation to the variables measured. Two types of factor analysis include exploratory factor analysis (EFA) and confirmatory factor analysis (CFA).

The former attempts to establish how the construct naturally influences a set of responses, while the latter tests the influence between a specified set of constructs and responses in a predicted way (DeCoster 1998). In other words, EFA is a statistical approach which seeks to determine the correlation between the variables in a set of data. As well, it aims to provide a factor structure (a group of variables with strong correlations). CFA, which is the next step after EFA, determines the factor structure of the dataset. In short, EFA explores the factor structure by examining how to group variables based on inter-variable correlations. CFA confirms the factor structure extracted in the EFA.

As mentioned above, Mean value analysis (MVA) facilitates easy interpretation of survey results; and, it identifies the relative importance of each factor through statistical calculations of mean scores on the Likert rating scale. However, Chou et al. (2012) claim that the key limitation of MVA lies in its underlying assumption that each factor is independent and that the covariance from one factor to another is subsequently ignored. In practice, factors identified from literature reviews may be empirically dependent upon each other. For this reason, there is a need to assess the covariance in factors. The use of CFA can remedy the above disadvantage by deriving the loading coefficient of each factor within the construct (Chou et al. 2012).

According to Chou et al. (2012), the CFA measurement model uses a linear combination of factors (observed exogenous/endogenous variables) to assess latent (unobserved) variables. The computation for observed exogenous variables is determined by Equation 6:

$$X = \Lambda_x \xi + \delta \tag{6}$$

where:
X = the observed exogenous variable;

ξ = the latent exogenous construct;
Λ_x = the factor loading between ξ and X; and,
δ = the error term of X.

The computation for observed endogenous variables is determined by the Equation 7 as follows:

$$Y = \Lambda_y \eta + \epsilon \tag{7}$$

where:
Y = the observed endogenous variable;
η = the latent endogenous construct;
Λ_y = the factor loading between η and Y; and,
ϵ = the error term of Y.

MVA and factor analysis were combined to analyse the questionnaire data in this study. MVA was used to calculate the comparative importance: factor analysis was adopted to explore the factor structure and then assess the explanatory power of each factor out of the 84 factor indicators in the six categories (the term used by Chou et al. (2012)) or being called constructs (see Chou and Pramudawardhani (2015)). In this study, the term "construct" is used to indicate six categories of the principal factors (reasons, attractive factors, negative factors, attractions for private sector involvement, VFM drivers and success factors). In the factor analysis, CFA assessment was conducted following an EFA. The intention was to explore and detect the underlying relationships among the factors, then to provide a clean and valid pattern matrix usable for further analysis by CFA. An initial model was built, including latent constructs (unobserved variables) and a combination of factors (observed variables).

As regards EFA, Maximum likelihood for factor extraction was used in this study. Gaskin (2012) claims that Maximum likelihood is concerned with maximising the differences between factors, and provides a model fit estimate. It was selected to determine if the factors were unique and the correlations between factors. According to Gaskin (2012), it is frequently a suggested approach if the CFA is supposed to compute in AMOS. It can also provide a goodness of fit test for the model. Gaskin further suggests that although there are several rotation methods available in SPSS Statistics, the more commonly employed methods are Varimax for the Orthogonal type of rotation, and Oblimin and Promax for the Oblique. But, further exploration revealed that Promax can compute faster than Oblimin. It is especially powerful in cases where there are many factors in the model: it can account for the correlated factors. This study adopted the Promax

factor rotation method because it underlined the 84 factors in the six constructs, rendering the result of the pattern matrix for EFA more complicated.

Various tests were undertaken to detemine the validity and reliability of the factor analysis. In EFA, these tests included: Kaiser-Meyer-Olkin (KMO) measure to check the sampling adequacy; Cronbach's alpha measure to check the reliability or consistency of errors within a factor; Pattern matrix and factor correlation matrix to assess discriminant validity of factors; and, Total variance explained test to check the Convergent validity of the EFA result. In CFA, four tests were conducted to determine the validity and reliability of the model in this study. These included Average Variance Extracted (AVE), Maximum Shared Variance (MSV), and Average Shared Variance (ASV). In addition, the model fit indices used to verify the appropriateness of the model included: the chi-square/degree-of-freedom ratio ($\frac{\chi^2}{dof}$) (Hayduk 1987), the comparative fit index (CFI) (Bagozzi and Yi 1988), the incremental fit index (IFI) (Lederer et al. 2008), and the root mean square error of approximation (RMSEA) (Hu and Bentler 1999).

In order to investigate the differences between the respondent groups, this study employed the methods alluded to above, i.e., Kendall's coefficient of concordance for the rankings of factors, Spearman rank correlation tests to check the levels of agreement within each of the respondent groups, independent two-sample t-test and group difference analysis to identify the differences between the respondent groups. Finally, to compare the difference level between the factors, a two-dimensional importance analysis was adopted for this study. It is described in more detail in the following section.

Factor loadings are the correlation of a variable with a factor. In this case, it is the correlation between a factor indicator (variable) and its construct. Constructs and their associated variables should be sufficiently correlated to be meaningful. Stevens (2012) argues that statistical significance is linked with the number of responses (see Table 18. In this study, with 119 valid responses, the significant loadings should be higher than 0.5.

Criteria such as Kaiser-Meyer-Olkin Measure of Sampling Adequacy, which is an indicator of how much variables have in common (Kaiser 1974) and Bartlett's test of Sphericity (Popović 2015) should be drawn upon to gain greater confidence in factor analysis. Apart from checking the sampling adequacy, this research has also employed other criteria, i.e., Communalities, Cronbach's alpha, Component correlation, and Total variance explained, for evaluating the appropriateness (validity and reliability) of constructs.

Table 18: Measure of statistical significance (Stevens 2012)

Number of Responses	Significant Loading
50	0.72
100	0.51
140	0.43
200	0.36
250	0.33
400	0.26
800	0.18
1000	0.16

Two-dimensional importance analysis

Derived from importance-performance analysis (IPA) (Lewis 2004), which is typically used to determine customer satisfaction and performance by measuring service operations and attribute importance, this study applied two-dimensional importance analysis, which was earlier used by Chou et al. (2012) in the context of Taiwan, to measure the importance of principal factors for PPP implementation in Vietnam. The analysis was performed by combining the mean value from MVA (displayed graphically on the y-axis) and the loading coefficient from CFA (displayed graphically on the x-axis). Factors in which the mean value and the loading coefficient can fall in each of the four Quadrants from I to IV indicate different levels of importance, for example: Quadrant I where both the mean value and loading coefficient exceed the average, indicates a "more important" area; Quadrant III where both the mean value and loading coefficient are lower than the average indicates a "less important" area; and, both Quadrant II and IV where either the mean value or loading coefficient exceeds the average respectively indicate "important" zones (see Figure 20).

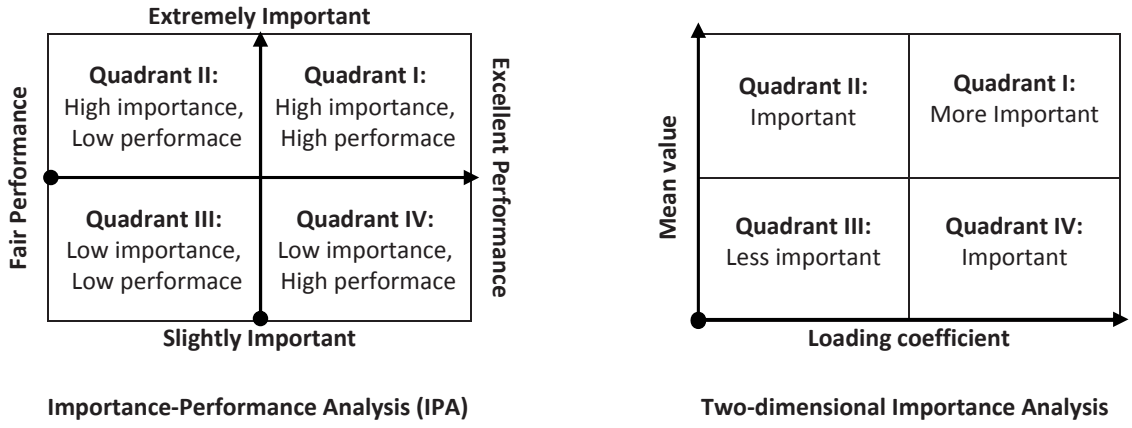


Figure 20: Two-dimensional importance analysis (Chou et al. 2012) derived from Importance-performance analysis (Lewis 2004).

4.3.4 *Phase 2 - Qualitative phase*

4.3.4.1 *Data collection*

The qualitative phase concentrated on the explanation of the important statistical results obtained from the quantitative phase. In this study, the quantitative and qualitative phases were connected via the intermediate point in the research process (see Figure 19). In this intermediate point, the selection of four interviewees and their respective typical projects for multiple case studies analysis and the development of the interview protocol for the qualitative data collection were conducted. For the case selection process, a two-step case selection procedure was used. In the first step, potential participants from each of the four groups were identified. Only one participant from each group was purposefully selected in the second step.

As regards the interview protocol development, the interview questions were developed based on the results of the quantitative phase. The interview protocol was pilot tested on one respondent purposefully selected from the same group, who passed the first step of the case selection but failed the second step. After conducting the pilot interview, the pilot case study was briefly analysed. Its results were used to improve the interview protocol before officially starting the qualitative data collection.

The qualitative data collection process included in-depth semi-structured face-to-face interviews with four participants, who were purposefully selected during the case selection process. The following three reasons justified the selection of the four cases: first, the difficulty experienced when seeking to find independent experts with sufficient knowledge in an emerging country context proved especially challenging; second, using a two-step procedure, the selection of each case was based on a typical respondent from each group who could at least to some extent ensure the validity and reliability of each representative extracted from each respondent group; and, third, the adoption of a mixed methods approach to this PhD research, with major focus on the quantitative phase, limited the time allocated to the qualitative phase. For this reason, the limiting of the selection of case studies for the purposes of this study to four could be considered reasonable. Details of the case selection process, the interview protocol development and the collection of quantitative data will be presented as following:

Case selection

According to Hanson, Creswell, Clark, Petska and Creswell (2005), the connection between the quantitative and qualitative phases in a mixed methods design starts with case selection. Due to the explanatory nature of the second phase of this design, focus was on a typical case for each group of respondents, including the public from North Vietnam (group one), the private from North Vietnam (group two), the public from South Vietnam (group three), and the private from South Vietnam (group four), purposefully selected according to the typical response in the second phase (Creswell 2002). In order to identify a typical respondent from each group, a two-step procedure of case selection was conducted.

In the first step, the following systematic procedure was conducted. The six constructs (reasons, attractive factors, negative factors, attractions, VFM drivers, and CSFs) with 84 factors were computed during the quantitative phase. Following the quantitative data analysis, 37 out of the 84 factors were determined to be valid in the context of Vietnam. Out of these, 23 factors were perceived as important or more important. As the second phase aimed to explain the important findings obtained from the first phase, based on the 23 important factors, the summed mean scores for all of the participants and their respective group means for the four groups were calculated. The standard errors of the means were also calculated to identify the lower and upper levels for the scores established around each group mean, and to limit the number of the target participants eligible for consideration as prototypical representatives.

Table 19: Means and standard error of the means of the four groups of participants.

Group	Total participants	Group mean	Standard error of the means
G1.Public in North	33	3.30	0.19
G2.Private in North	38	3.31	0.18
G3.Public in South	31	3.44	0.16
G4.Private in South	15	3.20	0.26

Using the descriptive procedure in SPSS, the total participants from each of the four groups, who met the condition that their mean scores lay within a boundary of one standard error of the means around the group mean, were identified and presented in Table 19. Using these criteria, potential participants from each group were finally identified, including: nine participants for group one; six participants for group two; two participants for group three; and, four participants for group four.

Table 20: Typical respondent for each of the four groups.

Group by Variable	Age	Experience	Education degree	Employment
G1.Public in North	31-40	6-10	Master's	Salaried employee or Manager
G2.Private in North	31-40	Less than 5 or 6-10	Bachelor's	Salaried employee
G3.Public in South	41-50	6-10	Master's	Manager
G4.Private in South	31-40	Less than 5 or 6-10	Bachelor's or Master's	Salaried employee

Within each of the four groups, the participants were compared according to the following four criteria: age, experience, education and employment. Table 20 depicts a typical respondent for each of the four groups in this study.

Table 21: Individuals selected for case study analysis.

Interviewee	Age	Experience	Education degree	Employment	Number of projects
G1.Public in North (Interviewee 1 - Dinh)	38	8	Master's	Manager	3
G2.Private in North (Interviewee 2 - Nguyen)	40	10	Bachelor's	Salaried employee	3
G3.Public in South (Interviewee 3 - Tran)	43	10	Master's	Manager	3
G4.Private in South (Interviewee 4 - Le)	40	10	Master's	Salaried employee	3

In the second step, the selection of one participant for each group was purposefully conducted using the following three criteria: (1) having the participant's contact with or without name; (2) having the maximum number of participated projects; and, (3) displaying a different dimension of each characteristic[2]. As a result, four participants were selected as having met the first two criteria and then purposefully selected to satisfy the third criteria. In order to protect their anonymity, pseudonyms were allocated to the interviewees as follows: Dinh, Nguyen, Tran, Le (see Table 21).

The four participants were contacted according to protocol (see Chapter 4). Each received a package including an invitation letter, information sheet, consent form, and the interview protocol. The letter described the goals of the qualitative phase of the study, and listed the reasons for selecting these individuals as potential participants (see Appendix 8.4). All four agreed to participate. After the study was completed, each participant received a summary of the findings and a "Thank you" message.

Interview protocol development

2 This criteria is a purposeful selection using a maximal variation sampling strategy (Creswell 2002). It starts with the identification of some characteristics, e.g., age, experience, education, and employment, and then selecting the participants displaying different aspects of each characteristic.

The development of the interview protocol aimed to explain the results obtained from the quantitative phase. Due to the nature of the sequential explanatory mixed methods design (Creswell, Plano Clark, Gutmann and Hanson 2003), the context of the interview questions focused on the results of the statistical analysis of the principal factors for PPP implementation in the context of Vietnam.

The interview protocol initially consisted of two parts with four questions in part one and two questions in part two. Part one asked logical questions about the participants' experience when participating in specific PPP projects in their home country. Part two asked general questions about PPP implementation in Vietnam. The first part started with a question as an ice breaker, asking the participants to talk about a typical project in which they had participated. The aim of this question was to obtain general information about the project case based upon which the participant's experience would be shared. The next two questions focused on six constructs for PPP implementation, including: reasons for adopting PPPs; attractive factors for adopting PPPs; negative factors for adopting PPPs; attractions for private sector involvement in PPP projects; VFM drivers in PPP projects; and, success factors of PPP projects. With each of the six constructs, important factors arising from the statistical analysis conducted in the quantitative phase were asked. A total of 23 factors were addressed during these two questions. The last question in this part asked the participants for any additional information they believed might be important and interesting, information that had not been discussed during the interview. Also, participants were asked if they could provide any documents relating to the project that might help to elucidate the project better.

The second part focused on the differences between the North and South of Vietnam when implementing PPP projects. The interview protocol was pilot tested on one participant, and then based on the pilot interview analysis, the protocol was considerably revised. The changes are discussed in the next section after the pilot interview description.

Pilot interview

The interview protocol was piloted on a participant anonymously named Hoang, who had been selected from among the respondents who fell into the most typical response category from the third group (the public in South Vietnam). Hoang was contacted according to protocol (see Chapter 4), and his interview was conducted in Binh Duong province in South Vietnam in early August 2015. The narrative detail of the pilot interview is presented in Appendix 8.4.

The pilot interview helped to clarify some matters relating to the principal factors for PPP implementation. e.g., problems relating to the participation of State-Owned Enterprises (SOEs) in PPP projects in Vietnam. Also, through this pilot interview, some limitations associated with the interview protocol were realised. As a result, considerable changes were made to the interview protocol. The latter was not divided into two parts as earlier proposed; and, it was re-arranged into a sequence of nine questions. This change was made due to two reasons: (1) the second part of the proposed protocol had only one question asking for differences between the two regions, which was believed to be more understandable and less complex if changed into one question instead of a part; and, (2) the focus of the interview protocol was not only on the four participants' experiences of the specific projects, but also on their knowledge of PPP projects in Vietnam in general. Some of their experiences could not be fully reflected in the four specific projects to share with the proposed protocol.

An introductory question was added at the beginning of the revised interview protocol. Each interviewee was asked to tell about him/herself, so that a rich description of the case could be developed. The second question still asked about a typical project that the participant had been involved in; but, more probes were added to cover the whole process of project identification, preparation, and development. Questions from three to eight focused on determining the 23 important factors resulting from the quantitative phase that were subject to be explored further in the qualitative phase, the specific project from the participant's experience, and on PPP projects in general according to his/her knowledge. The reason for this change was because their experiences of specific projects might not cover all of the factors. Additionally, the way of asking for more detailed answers for each factor was also learnt from the pilot interview and subsequently improved upon. The last question (question nine) asked for the differences between North and South Vietnam's implementation of PPP projects. The revised (final) interview protocol is presented in Appendix 8.4.

Qualitative data collection

In the second phase, qualitative data collection and analysis were conducted using a multiple case study design (Yin 2003), which uses detailed, in-depth data collection from multiple sources of information to explore a case over time in its rich context. More specifically in this study, a particular issue, i.e., successful adoption and implementation of PPP projects in Vietnam, was demonstrated via instrumental multiple cases. In order to provide insights into the issue, the cases were described and compared. The unit of analysis was a participant who had

participated in the first phase, and was selected based on the criteria discussed above in the second phase. Additionally, each case study was bounded by one individual's experience of participating in a typical PPP project and by his/her knowledge of PPP projects in Vietnam in general.

The primary data collection technique used in the qualitative phase was in-depth semi-structured face-to-face interviews with four purposefully selected participants. The four interviews, which were conducted during August of 2015, were recorded and saved as audio files. They were conducted in different locations and times. The interviews with Le and Tran were conducted on the 7th and 8th of August 2015 respectively in Ho Chi Minh city, and the interviews with Dinh and Nguyen were conducted on the 11th and 12th of August 2015 respectively in Hanoi. Prior to the pre-set dates of conducting the interviews, each participant received a set of four documents including an interview invitation letter, an information sheet, a consent form, and a list of interview questions. The invitation letter and information sheet informed the participants that subject to their consent, the interviews would be recorded and transcribed verbatim. After the data were analysed briefly, follow-up emails were sent to clarify some information. All four participants responded to the follow-up emails as requested.

Information related to the projects, e.g., project reports, government reports, and legislation documents, was also used to validate the information obtained during the interviews, to establish a rich context of the cases, and to gain additional insight into the projects. In case study analysis, triangulation of different data sources is important because it helps to establish rich and in-depth description of the case (Creswell 2002). Table 22 presents the information sources by cases selected for the qualitative case study analysis.

Table 22: Data collection matrix of information sources by cases selected for the qualitative case study analysis.

Case/Information Source	Individual Interviews	Reflection Notes	Follow-up Emails	Project Documents	Government Reports or Legislation Documents	Questionnaire Responses
Case 1: Dinh (The highway No.38 project)	Yes	Yes	Yes	Yes		Yes
Case 2: Nguyen (The Yen Lenh bridge project)	Yes	Yes	Yes			Yes
Case 3: Tran (The Co Chien bridge project)	Yes	Yes	Yes	Yes	Yes	Yes
Case 4: Le (The Trung Luong - My Thuan expressway project)	Yes	Yes	Yes	Yes	Yes	Yes

4.3.4.2 *Data analysis*

In the qualitative phase of the study, the interview transcripts, project documents, government reports or legislation documents were added, coded and analysed for themes using Nvivo 10 software. During the analysis, by situating each case in its context, the specific information related to the case was expressed through case description and themes (Miller and Salkind 2002). The participants' knowledge and experience of PPP projects were explored to explain the important principal factors for PPP implementation obtained from the quantitative phase.

Based on this analysis, detailed narrations of cases were provided. In a multiple case study approach, two levels of analysis (within each case and across cases) are conducted (Stake 1995). The analysis can be holistic in the entire case or embedded in a specific aspect of the case (Yin 2013). Thematic and narrative analyses were then conducted according to the qualitative data analysis. After each individual case was analysed for themes, a cross case comparison of the themes and their categories was performed.

For the purpose of qualitative data analysis, each interview was conducted using the same process of recording and then transcribing verbatim (Creswell 2002). To check the accuracy, the interview records were carefully listened to and compared line by line in the transcriptions. Nvivo 10, a qualitative analysis software package, was used to perform coding and analysis of the qualitative data.

According to Ivankova and Stick (2007), qualitative data analysis includes a sequence of the following seven steps: (1) preliminary exploration of the data by reading through all of the transcripts; (2) coding the data by segmenting and labelling the text; (3) inter-coder agreement check; (4) developing themes by aggregating similar codes; (5) connecting and interrelating themes; (6) constructing a case study narrative composed of descriptions and themes; and, (7) cross-case thematic analysis.

The multiple case study design used in this study was performed at two levels of case analysis: within each case and across the cases (Yin 2003). During the within each case analysis, each case was embedded within its context, and situated by a specific content through the case description and themes (Creswell and Maietta 2002). Based on this analysis, a detailed narration of the case was provided, using descriptions to situate and present the case, and the thematic analysis conducted to provide the case's perspectives. After each individual case

was analysed for themes, a cross case comparison of said themes and their contents was performed. Table 23 represents the multiple case study qualitative data analysis for this study.

Table 23: Multiple case study qualitative data analysis.

Step	Result
1.Initially reading through text data	Pages of text
2.Dividing text into segments of information	Segments of text
3.Labelling segments with codes	20-30 codes
4.Collapsing codes into categories	9 themes
5.Interrelating themes within each case across cases	A case study narrative
6.Comparing themes and categories	Similar or different themes

Apropos of the verification procedures, different from the quantitative phase which used validity and reliability measures for verification, the qualitative research design used the following five verification procedures to ensure credibility of information and its matching with reality.

- **Triangulation** by converging different sources of information (Hatch 2002): individual interviews, reflection notes, follow-up emails, project documents, government reports or legislation documents, and questionnaire responses from the quantitative phase were used to validate the information obtained from the interviews.

- **Member checking** by getting feedback from the interviewees regarding the accuracy of the content of the analysis (Creswell 2002). After each case study was written, a participant was asked to review the description of the case. All four participants answered the analysis accurately, reflecting their experience of the projects as well as their general knowledge of PPP projects.

- **Providing rich, thick descriptions** (Creswell and Miller 2000): the cases were described using rich and thick information to situate them in the context of PPP projects and provide details of the participants' experiences of the specific projects as well as PPP projects in general, thus adding an element of shared experience to the discussion.

- **Providing dis-confirming evidence** (Creswell and Miller 2000): the preliminary themes were identified, followed by a search of the interview transcripts for evidence that was consistent with or dis-confirmed the themes. Discussing contrary information added to the credibility of the findings.

- **Auditing** (Creswell and Miller 2000): the supervisors of the research study and the researcher's academic advisor conducted careful checks of all research procedures and data analysis in the study.

4.4 RESEARCH PERMISSION AND ETHICAL CONSIDERATIONS

Ethical issues, which are important considerations in social research studies, were addressed at each phase of this study. In compliance with Australia's ethics requirements, the research proposal was submitted on-line for approval by the Human Research Ethics Committee (HREC) of the University of Technology Sydney (UTS). Application for research permission included risk evaluation, project information, funding, methodology and procedures, participants, and research status. A survey instrument and an interview protocol were appended to the application. Permission to conduct the research was obtained in February 2015. The UTS HREC approval number for this study is 2014000534.

Following the HREC's approval of the study, first, the participants' consent to participate in the study had to be obtained. The questionnaire cover letter in the quantitative phase and the interview invitation letter, information sheet for interview participants, and consent form for interview participants in the qualitative phase all included a statement explaining the ethics approval process and advising the respondent to refer any queries or complaints they may have about the way the study was conducted to the complaints-handling officer of HREC at the University of Technology Sydney where the study was being undertaken. A telephone number was provided on each document to that effect.

Due to the nature of the sequential explanatory mixed methods design, each phase (quantitative or qualitative phase) was assigned a separate informed consent form. The statement in the forms included guaranteed certain rights for the participants, agreements for their involvement in the study, and acknowledgement of the protection of their rights and anonymity in the study. The informed consent form for the quantitative phase was either posted on the beginning page of the questionnaire survey on-line or handed directly to the participants at conferences or workshops. On-line participants clicked on the button, indicating that they agreed to participate in and complete the survey. Participants at conferences or workshops indicated their agreement to participate by completing the questionnaire survey at these conferences or workshops. Each person selected for the multiple case study in the qualitative phase received two copies of the informed consent form prior to her/his interview. These persons were asked to read the form and to agree to participate of their own volition. If they chose to

participate, they were asked to return the signed form and to keep a copy for future reference.

Apropos of scholarly participation, the chief investigator was the principal supervisor, an Associate professor who received an ARC ECR Discovery Grant to research PPPs in Australia. The Associate professor had published a number of articles on PPPs, been invited to attend an international PPP workshop at City University Hong Kong, and had presented refereed papers on PPPs at international conferences. The second investigator is a PhD student. Both investigators' names and contact numbers appeared on all of the documents distributed to the participants.

The anonymity of the on-line participants in the quantitative phase was protected by using unique numeric passwords to secure their access to the survey. Each completed questionnaire was automatically coded leaving no links to the name of the respondent. Participants selected in the qualitative phase were assigned fictitious names for use in their descriptions and in the reporting of the results, in this way ensuring that their responses remained confidential. All of the study data, including electronic survey files, interview records, transcripts, reflection notes, project documents, and government reports or legislation documents were secured in a locked metal filing cabinet in the researcher's office. They will be destroyed after a reasonable period of time.

There was a degree of difference in the manner of the investigators' involvement with data collection in the quantitative and qualitative phases of this study. In the quantitative phase, the research was undertaken using an arms-length approach. A female office employee, who assumed the role of administrative assistant, contacted and asked participants in previous seminars and workshops if they wanted to participate in the survey. After receiving confirmation, she sent them the questionnaire and instructed them how to conduct the on-line survey. She also distributed questionnaires to survey participants attending seminars and workshops and collected their responses. This method ensured that there was no imputation of coercion and redressed the investigators power imbalance.

4.5 SUMMARY

This chapter has justified the epistemological paradigm in accordance with which the research was conducted. The decision to employ a mixed methodology that combines both quantitative and qualitative phases in a single study is also explained, i.e., why a sequential explanatory design was selected. In addition, the methods adopted for data analysis in the two quantitative and qualitative phases

were described. The seeking of research permission, along with adherence to ethics considerations, were discussed in detail in this chapter. The next chapter will discuss the quantitative data analysis and results.

5 PHASE I - QUANTITATIVE RESULTS

5.1 INTRODUCTION

This chapter presents the quantitative results obtained from the analysis of the data collected from the questionnaire survey. A set of factors for adopting and implementing PPPs in Vietnam, e.g., reasons for adopting PPPs, attractive and negative factors for adopting PPPs, and attractions for private sector participation in PPP projects is documented. This chapter also explores success factors and measures taken to enhance VFM in PPP projects.

Based on the methodology employed for the quantitative data analysis (see Chapter 4), Chapter 5 is divided into six consecutive sections: Section 5.2 presents a primary assessment of the quantitative data and a summary of information appertaining to the respondents. In Section 5.3, a detailed summary of Exploratory Factor Analysis (EFA) is presented. Section 5.4 describes Confirmatory Factor Analysis (CFA). The results combine to provide a final model for the principal factors crucial to PPP implementation in Vietnam. Section 5.5 which presents the findings of the analyses of each of these factors, highlights the agreements and significant differences in the perceptions of the groups of respondents vis-à-vis the importance of said factors. The last section (Section 5.6) presents a summary of the tasks alluded to above.

Before commencing the data analysis, it is essential to conduct a reliability test for data in order to ensure the value of proceeding. The primarily data analysis presented in Chapter 4 provided an early surface assessment of the reliability of the data without confirmation of its consistency. Regarding the principal factors for PPP implementation, the internal consistency of the quantitative data (in other words, the reliability of the study) was measured using Cronbach's alpha index, which was statistically calculated and is presented in Table 24. Pursuant to Nunnally's suggestion (Nunnally 1978), a Cronbach's alpha index of higher than or at least equal 0.7 is needed to ensure the reliability of a study in the beginning stages of the research (see Chapter 4).

Table 24: Reliability of the questionnaire data.

Construct	Cronbach's Alpha
Driving forces (reasons) underpinning the adoption of PPPs	0.749
Attractive factors for adopting PPPs	0.909
Negative factors for adopting PPPs	0.868
Attractions for private sector involvement in PPP projects	0.830
Factors enhancing VFM in PPP projects	0.910
Factors contributing to the success of PPP projects	0.944

The results of Cronbach's alpha test shown in Table 24 were all greater than 0.7. Only one construct (reasons for adopting PPPs) had the value of being higher than 0.7; the remainder, which were all above 0.8 or even 0.9, suggested very good internal consistency reliability. In addition, the test showed the number of cases correctly without any negative values, indicating that the constructs were measured using the same underlying characteristic. This in effect meant that the data collected from the survey were valid and had very good inter-relations. The experiment was thus repeatable and the scale (or measurement) was reliable (Norusis 2007). Cronbach's alpha tests will continue to be conducted during the computation of the initial, revised, and final measurement models.

5.2 PRIMARY ASSESSMENT OF QUANTITATIVE DATA

A total of 141 out of the 250 sent questionnaires were received. To ensure the quality of the raw data for further analysis, a screening test was conducted using the following three steps: (1) the elimination of missing data if any. Although the on-line questionnaire survey could avoid this problem, it could still happen with the paper-based survey; (2) to ascertain any un-engaged responses, i.e., a participant responded by affording the same value to every single question in any part. In this step, any value, the standard deviation of which was found to equal zero, was removed; and, (3) to check if any unreasonable outlier was found. The purpose of this screening test was to minimise any problems that could emerge in the primary data.

Regarding the total responses, 22 questionnaires were excluded and the remaining 119 questionnaires were retained for data analysis. Of the 119 valid questionnaires, 54 and 65 were recorded for the on-line and paper-based survey respectively, accounting for an overall usable response rate of 47.6 per cent. This rate was rather good compared to previous studies in this field; for example: 12 per cent in Li (2003), 36 per cent in Cheung (2009), and, more recently, 48.8 per

cent in Ismail (2013c). A reasonably high response rate was expected due to two reasons: first, the adoption and implementation of PPPs is currently topical in Vietnam. They attract the attention of the public and private sectors; and, second, conducting questionnaire surveys on-site at conferences and/or seminars seems to invite better results (54.6 per cent in this case). It was interesting to note that 110 out of the total 119 respondents provided either their names and/or email addresses for potential follow-up interviews in the qualitative stage.

In the following content, a summary of information regarding respondents who completed the questionnaires is presented. Information pertaining to the respondents from the public and private sectors in North and South Vietnam is presented to show the distribution, disaggregated and aggregated outcomes. It is crucial to provide a context for the statistical analysis in the next sections.

Among the 119 respondents presented in Figure 21, 60.5 per cent were from North Vietnam and the remainder (39.5 per cent) from South Vietnam. The number of respondents from the public sector who participated in the survey was considerably more than that of those from the private sector (accounting for 53.78 and 44.54 per cent respectively). A small remaining number, i.e., researchers, totalled only 1.68 per cent. When considering the public and private sectors participating in the survey between the two regions, i.e., the northern and southern regions of Vietnam, it was important to note that while the number of participants working in the private sector in the northern side of Vietnam almost trebled those from the southern side (31.93 and 12.61 per cent respectively), the percentages of the public sector participating in the survey were relatively similar (27.73 and 26.05 per cent respectively).

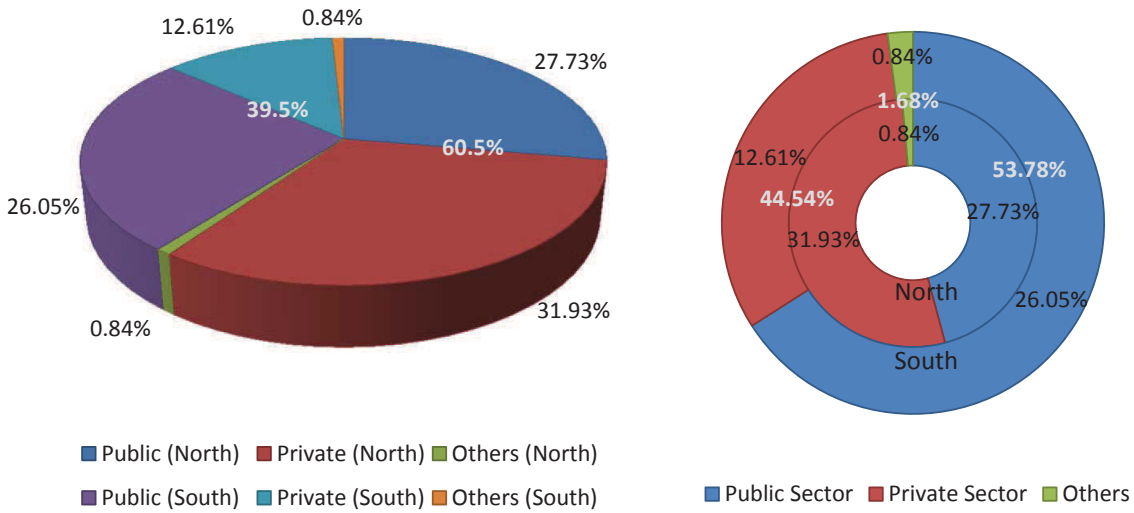


Figure 21: The distribution of respondents participating in the survey.

Table 25: The respondents' roles in PPP projects.

Sector	Respondents' Roles	Count	Percentage in Group	Percentage in Total
Public	Central Government	29	45.31%	24.37%
	Local Government	18	28.13%	15.13%
	State-Owned-Enterprise	17	26.56%	14.29%
	Subtotal	**64**	**100.00%**	**53.78%**
Private	Financier	15	28.30%	12.61%
	Design & Build Contractor	5	9.43%	4.20%
	Designer	3	5.66%	2.52%
	Contractor	10	18.87%	8.40%
	Consultant or Advisor	9	16.98%	7.56%
	Operator	2	3.77%	1.68%
	Sub-Contractor	5	9.43%	4.20%
	Equitized State-Owner-Enterprise	4	7.55%	3.36%
	Subtotal	**53**	**100.00%**	**44.54%**
Other	Researcher	2	100.00%	1.68%
	Subtotal	**2**	**100.00%**	**1.68%**

PPP project procurement has fundamentally changed project participation roles, from a single role by an organisation to multiple and complicated responsibilities. Table 25 shows the roles of the organisations in PPP projects in which the participants have been involved. According to the Table, those working for the central government accounted for the highest number of respondents, followed by people from local governments (24.37 and 15.13 per cent respectively). Next were the respondents working in SOEs, whose equity still mainly belongs to the government. This group of respondents accounted for 14.29 per cent. The remaining respondents came from the private sector. Financiers constituted the largest group, followed by contractors, consultants and advisers, who accounted for 12.61, 8.40 and 7.56 per cent respectively. Other groups of respondents, who effectuated smaller percentages in descending order from 4.20 per cent to 1.68 per cent, included design and building contractors, sub-contractors, equitised SOEs, designers, operators and researchers. While there were many SOEs involved in PPP projects, only a small number had equitization, approximately 19.04 per cent of the total SOEs.

Table 26, which presents the questionnaire respondents' age level, details practitioners at different ages. Primary focus is on those aged from 31 to 40 years, accounting for 49.58 per cent, followed by those aged between 41 and 50 years, accounting for 21.85 per cent. Respondents aged 21 to 30 or 51 to 60 years accounted for a relatively equal percentage (14.29 and 10.92 respectively). Among

those who participated in the survey, 3.36 per cent were in the 60 plus age group. While participants from the northern region mainly ranged from 31 to 40 years (35.3 per cent of the total participants), they included several practitioners aged between 21 and 30 (10.92 per cent of the total participants). Those from the southern side included more respondents in the 41 to 60 year age group, with 15.12 and 5.88 per cent of the total respondents in the 41 to 50 and 51 to 60 groups respectively. However, respondents older than 60 accounted for a slightly larger proportion of North Vietnam (approximately 2.52 per cent) compared to South Vietnam (0.84 per cent).

As Table 27 shows, the respondents' experience ranged from less than 5 to above 20 years. The highest proportion, i.e., those who had worked for 6 to 10 years

Table 26: The respondents' age levels in years according to region and sector.

Region	**North Vietnam**			**South Vietnam**			**Overall**			
Age	**Public**	**Private**	**Other**	**Public**	**Private**	**Other**	**Public**	**Private**	**Other**	**Total**
21-30	3	10	0	2	2	0	5	12	0	17
	2.52%	8.40%	0.00%	1.68%	1.68%	0.00%	4.20%	10.08%	0.00%	14.29%
31-40	20	21	1	8	8	1	28	29	2	59
	16.81%	17.65%	0.84%	6.72%	6.72%	0.84%	23.53%	24.37%	1.68%	49.58%
41-50	5	3		14	4		19	7		26
	4.20%	2.52%	0.00%	11.76%	3.36%	0.00%	15.97%	5.88%	0.00%	21.85%
51-60	3	3		6	1		9	4		13
	2.52%	2.52%	0.00%	5.04%	0.84%	0.00%	7.56%	3.36%	0.00%	10.92%
Above 60	2	1		1	0		3	1		4
	1.68%	0.84%	0.00%	0.84%	0.00%	0.00%	2.52%	0.84%	0.00%	3.36%
Total	33	38	1	31	15	1	64	53	2	119
	27.73%	31.93%	0.84%	26.05%	12.61%	0.84%	53.78%	44.54%	1.68%	100.00%

Table 27: The respondents' PPP experience in years according to region and sector.

Region	**North Vietnam**			**South Vietnam**			**Overall**			
Experience	**Public**	**Private**	**Other**	**Public**	**Private**	**Other**	**Public**	**Private**	**Other**	**Total**
Less than 5	10	16	1	8	5	0	18	21	1	40
	8.40%	13.45%	0.84%	6.72%	4.20%	0.00%	15.13%	17.65%	0.84%	33.61%
6-10	11	16	0	9	5	1	20	21	1	42
	9.24%	13.45%	0.00%	7.56%	4.20%	0.84%	16.81%	17.65%	0.84%	35.29%
11-15	6	3	0	8	3		14	6		20
	5.04%	2.52%	0.00%	6.72%	2.52%	0.00%	11.76%	5.04%	0.00%	16.81%
16-20	5	3	0	6	2		11	5		16
	4.20%	2.52%	0.00%	5.04%	1.68%	0.00%	9.24%	4.20%	0.00%	13.45%
Above 20	1		0	0	0	0	1	0	0	1
	0.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.84%	0.00%	0.00%	0.84%
Total	33	38	1	31	15	1	64	53	2	119
	27.73%	31.93%	0.84%	26.05%	12.61%	0.84%	53.78%	44.54%	1.68%	100.00%

on PPP projects, accounted for 35.29 per cent. Respondents with less than 5 years experience were the second most dominant, with only a slightly smaller ratio (33.61 per cent). The remainder were those who had more than 10 years experience: 16.81, 13.45 and 0.84 per cent were respectively recorded for the groups of respondents ranging from 11 to 15 years, 16 to 20 years, and above 20 years. Clearly, the information pertaining the respondents' experience evinced agreement with their age distribution. In effect, North Vietnam had more young respondents aged from 21 to 40 and more participants with less than 10 years experience. South Vietnam, which accounted for more 41 to 60 year old participants, showed more respondents with 10 to 20 years experience. Those participants with more than 20 years experience, and aged above 60 years were located in the northern region. PPPs are new to Vietnam although some models (BOT, BTO, and BT) emerged 20 years ago. The patterns delineating the age and experience distribution of the respondents indicate the reliability of the primary data collected for the study.

Table 28: The respondents' education levels according to region and sector.

Region	**North Vietnam**			**South Vietnam**			**Overall**			
Education	**Public**	**Private**	**Other**	**Public**	**Private**	**Other**	**Public**	**Private**	**Other**	**Total**
Diploma	0	1	0	0	0	0	0	1	0	1
	0.00%	0.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.84%	0.00%	0.84%
Bachelor	11	23	0	11	7	0	22	30	0	52
	9.24%	19.33%	0.00%	9.24%	5.88%	0.00%	18.49%	25.21%	0.00%	43.70%
Master	21	12	1	19	7	1	40	19	2	61
	17.65%	10.08%	0.84%	15.97%	5.88%	0.84%	33.61%	15.97%	1.68%	51.26%
PhD	1	1	0	1	1	0	2	2	0	4
	0.84%	0.84%	0.00%	0.84%	0.84%	0.00%	1.68%	1.68%	0.00%	3.36%
Post-Doctoral	0	1	0	0	0	0	0	1	0	1
	0.00%	0.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.84%	0.00%	0.84%
Total	33	38	1	31	15	1	64	53	2	119
	27.73%	31.93%	0.84%	26.05%	12.61%	0.84%	53.78%	44.54%	1.68%	100.00%

As regards the education level of the survey respondents as presented in Table 28, it is worth noting that the majority had achieved Bachelor's or Master's degrees, accounting for a total of 94.96 per cent (43.70 and 51.26 per cent respectively). Those respondents who had achieved higher qualifications, e.g., Doctoral or Post-Doctoral degrees, accounted for only a small proportion (4.2 per cent); and, only 0.84 per cent of the respondents held diploma degrees. The percentages of Bachelor's or Master's respondents were higher in North Vietnam compared to South

Table 29: The respondents' positions within their organisations according to region and sector.

Region	North Vietnam			South Vietnam			Overall			
Position	**Public**	**Private**	**Other**	**Public**	**Private**	**Other**	**Public**	**Privater**	**Other**	**Total**
Hourly Employee	2	5	0	2	0	0	4	5	0	9
	1.68%	4.20%	0.00%	1.68%	0.00%	0.00%	3.36%	4.20%	0.00%	7.56%
Salaried Employee	14	17	1	3	7	0	17	24	1	42
	11.76%	14.29%	0.84%	2.52%	5.88%	0.00%	14.29%	20.17%	0.84%	35.29%
Manager	14	10	0	20	3	1	34	13	1	48
	11.76%	8.40%	0.00%	16.81%	2.52%	0.84%	28.57%	10.92%	0.84%	40.34%
Senior Manager	2	5	0	6	5	0	8	10	0	18
	1.68%	4.20%	0.00%	5.04%	4.20%	0.00%	6.72%	8.40%	0.00%	15.13%
Executive	1	1	0	0	0	0	1	1	0	2
	0.84%	0.84%	0.00%	0.00%	0.00%	0.00%	0.84%	0.84%	0.00%	1.68%
Total	33	38	1	31	15	1	64	53	2	119
	27.73%	31.93%	0.84%	26.05%	12.61%	0.84%	53.78%	44.54%	1.68%	100.00%

Vietnam, 57.14 and 37.81 per cent respectively. Additionally, North Vietnam included one respondent who worked in the private sector, whose qualification ranked even higher than a doctoral degree. However, amongst the respondents from South Vietnam, no one had achieved a diploma degree.

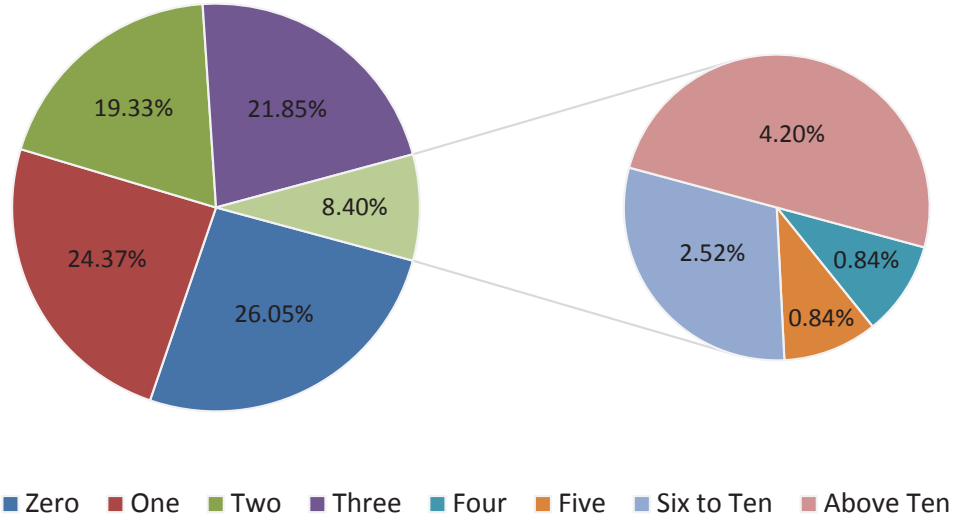


Figure 22: Number of PPP projects in which the respondents had participated.

It is important to note the information regarding the positions of the respondents within their organisations. As Table 29 shows, the positions of the survey respondents within their organisations were mainly as managers and full-time employees, accounting for 40.34 and 35.29 per cent respectively. Senior Managers and Directors accounted for 15.13 per cent, and the remainder, that is, those working part-time or as executives, totalled 7.56 and 1.68 per cent respectively. North Vietnam had more part-time employees: its numbers included all of

the executive respondents who participated in the survey. South Vietnam had more participants working as senior managers. Both regions had a relatively similar proportion of managers participating in the survey. Clearly, the information provided by the questionnaire respondents was contingent to their ages, experience, education, and positions within the organisations.

Given the fact that Vietnam was a late comer to PPPs, it was somewhat surprising to learn that 73.95 per cent of the respondents had previous experience of projects. While the remainder had not been involved in any PPP projects, they had closely followed the development of PPPs in Vietnam and would be likely to conduct PPP projects in the near future. The respondents' experience confirmed their responses' quality to the conducted questionnaire survey. Among those respondents who had gained experience directly from PPP projects, 8.4 per cent had previously been involved in from 4 to 10 projects. Another 4.2 per cent had worked on more than 10 projects (see Figure 22). Once again this ensured the validity and reliability of the responses. Considerable value lay in the fact that 45 of the 119 respondents (37.81 per cent) provided part or full details of projects they had been involved in. This proved extremely useful when selecting interviewees and case studies for further investigation in the next stage of the research study.

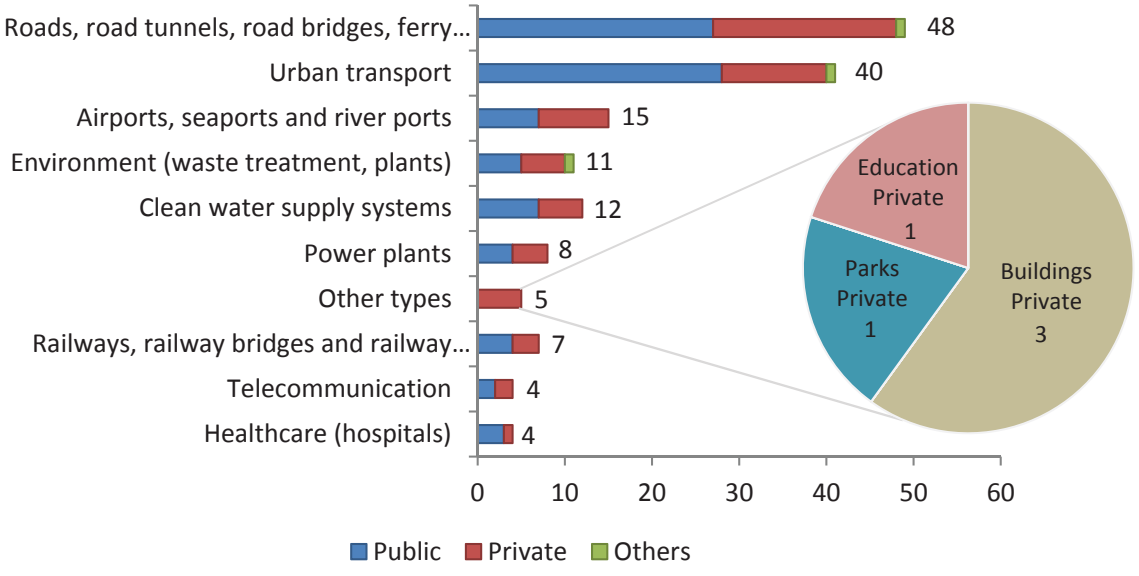


Figure 23: Types of projects in which respondents were involved.

The results also indicated the types of PPP projects in which the respondents had been involved (see Figure 23). The main categories were listed so that the respondents could indicate particular projects they had worked on. Apropos of their experience in the main categories, their highest involvement was in **Roads**,

followed by **Urban transport**. The categories that attracted the least involvement were **Hospital**, **Telecommunications** and **Railways**. Additional categories were **Education**, **Buildings**, and **Parks**. This result confirmed Akintoye, Taylor and Fitzgerald's (1998) and Li's (2003) findings that transport is an area wherein infrastructure facilities are in need of a greater amount of involvement than the public sector alone can provide. However, in contrast to these earlier findings, **Education** and **Health** emerged as less popular areas: they attracted the lowest numbers of respondents.

Generally, the questionnaire response rate was rather high compared to early research studies in this field. Many of the respondents who provided information not only had a good grounding, but also in-depth industrial experience of PPP projects. In addition, the information they provided had a certain level of homogeneity. Thus, the data collected at this quantitative stage was suitable for the detailed analysis presented in the following sections.

5.3 EXPLORATORY FACTOR ANALYSIS

When examining loadings and correlations of the observed factors to reach the requirements for reliability and validity, an EFA using Maximum Likelihood with Promax rotation for the principal factors of PPP implementation in Vietnam was undertaken (see Chapter 4). As suggested in Chapter 4, in EFA, 84 factor indicators were loaded, and the results of six constructs were expected to receive according to six categories of the principal factors (Reasons for adopting PPPs, attractive factors of adopting PPPs, negative factors of adopting PPPs, attractions for private sector involvement in PPP projects, VFM drivers in PPP projects, and success factors of PPP projects). The summary and details of the 84 factor indicators under six constructs are presented in Table 30.

Table 30: A summary and details of the factors.

Construct	Code	Name
Reasons	r1	Economic development pressure of demanding more facilities
(fR)	r2	Political pressure
	r3	Social pressure of poor public facilities
	r4	Private incentive
	r5	Shortage of government funding
	r6	Inefficiency because of public monopoly and lack of competition
	r7	High quality of service required
	r8	Avoid public investment restriction

(The Table continues on the following page...)

Table 30: A summary and details of the factor indicators.

Category	Code	Name
	r9	Lack of business and profit generating skill in the public sector
Attractive	af1	Solve the problem of public sector budget restraint
Factors	af2	Provide an integrated solution
(fAF)	af3	Reduce public money tied up in capital investment
	af4	Cap the final service costs
	af5	Facilitate creative and innovative approaches
	af6	Reduce the total project cost
	af7	Save time in delivering the project
	af8	Transfer risk to the private partner
	af9	Reduce public sector administration costs
	af10	Benefit to local economic development
	af11	Improve build-ability
	af12	Improve maintainability
	af13	Technology transfer to local enterprise
	af14	Non-recourse or limited recourse to public funding
	af15	Accelerate project development
Negative	nf1	Reduce the project accountability
Factors	nf2	High risk relying on the private sector
(fNF)	nf3	Few schemes have actually reached the contract stage
	nf4	Lengthy delays because of political debate
	nf5	Higher charge to direct users
	nf6	Less employment positions
	nf7	High participation costs
	nf8	High project costs
	nf9	A great deal of management time spent on contract transaction
	nf10	Lack of experience and appropriate skills
	nf11	Confusion over government objectives and evaluation criteria
	nf12	Excessive restrictions on participation
	nf13	Lengthy delays in negotiation
	nf14	Lack of government guidelines and procedures on PPPs
Attractions	a1	Government sponsorship
(fA)	a2	Government assistance in financing
	a3	Government guarantee
	a4	Tax exemption or reduction
	a5	Incentive of new market penetration
	a6	Provide transparently information of PPP projects
VFM	vfm1	Competitive tender
Drivers	vfm2	Efficient risk allocation

(The Table continues on the following page...)

Table 30: A summary and details of the factor indicators.

Category	Code	Name
(fVFM)	vfm3	Risk transfer
	vfm4	Output based specification
	vfm5	Long-term nature of contracts
	vfm6	Improved and additional facilities to the public sector
	vfm7	Private management skill
	vfm8	Private sector technical innovation
	vfm9	Optimal use of asset/facility and project efficiency
	vfm10	Early project service delivery
	vfm11	Low project life cycle cost
	vfm12	Low shadow tariffs/tolls
	vfm13	Environmental consideration
	vfm14	Profitability to the private sector
	vfm15	"Off the public sector balance sheet" treatment
	vfm16	Reduction in disputes, claims and litigation
	vfm17	Nature of financial innovation
	vfm18	Government support
	vfm19	Performance-based payment mechanism
	vfm20	Bidding cost
Success	csf1	Stable macro-economic conditions
Factors	csf2	Sound business climate
(fCSF)	csf3	Available financial markets
	csf4	Favourable legal framework
	csf5	Commitment and responsibility of public and private sectors
	csf6	Strong and good private consortium
	csf7	Good governance
	csf8	Shared authority between public and private sectors
	csf9	Well organized and committed public agency
	csf10	Multi-benefit objectives
	csf11	Appropriate risk allocation and risk sharing
	csf12	Project technical feasibility
	csf13	Political support
	csf14	Social support
	csf15	Competitive procurement process
	csf16	Transparent procurement process (process is made open and public)
	csf17	Government involvement by providing guarantee
	csf18	Thorough and realistic assessment of costs and benefits
	csf19	Clearly defined responsibilities and roles
	csf20	Clarification of contract documents

Table 31: The selected criteria in dialogue boxes in factor analysis for EFA.

	Dialoque Box	Selected Items
Descriptives	Statistics	Initial solution
	Correlation Matrix	Coefficients
		KMO and Bartlett's test of sphericity
		Reproduced
Extraction	Method	Maximum likelihood
	Display	Unrotated factor solution
	Extract	Based on Eigenvalues greater than 1
	Maximum Iterations for Convergence	25
Rotation	Method	Promax
	Display	Rotated solution
	Maximum Iterations for Convergence	25
Options	Missing Values	Exclude cases listwise
	Coefficient Display Format	Suppress small coefficients
		Absolute value below 0.3

The items set in dialogue boxes under factor analysis are summarised in Table 31. On the first attempt, the correlation matrix of all the 84 factor indicators was computed and resulted in disarray. After removing any factor indicator loaded inadequately with its value less than 0.5, the correlation matrix was still questionable, with 22 components. Some correlation factor indicators either loaded negatively, or did not load to any component. Others cross-loaded into more than one component. Factor indicators which did not load significantly (less than 0.5) or did not load to any component were eliminated. Factor indicators for which the absolute values of cross-loadings differed less than 0.2 were also considered for removal. Factor indicators with low communality (less than 0.4), which struggled to load significantly on any component, were also considered for deletion post examination of the pattern matrix (Hair, Black, Babin, Anderson, Tatham et al. 2006). This process was conducted slowly, carefully and repeatedly: only one factor indicator was eliminated at a time. Finally, a pattern matrix of 41 factor indicators loaded respectively into 10 components was obtained (see Table 32).

Table 32: Pattern Matrix for Exploratory Factor Analysis.

	Component									
	1	2	3	4	5	6	7	8	9	10
csf9	.915									
csf10	.818									
csf8	.733									

(The Table continues on the following page...)

Table 32: Pattern Matrix for Exploratory Factor Analysis.

	Component									
	1	2	3	4	5	6	7	8	9	10
csf7	.685									
csf19	.675									
csf6	.644									
csf18	.596									
csf5	.585									
csf20	.543									
af6		.939								
af7		.845								
af11		.784								
af13		.726								
af4		.681								
af5		.659								
af12		.614								
csf2			.955							
csf4			.838							
csf1			.771							
csf3			.567							
nf9				.838						
nf8				.794						
nf13				.688						
nf7				.588						
nf12				.522						
vfm6					.707					
vfm15					.673					
vfm16					.631					
vfm5					.597					
vfm17					.531					
a2						.911				
a1						.903				
a3						.628				
nf2							.849			
nf3							.814			
csf16								.969		
csf15								.627		
af1									.809	
af3									.789	

(The Table continues on the following page...)

Table 32: Pattern Matrix for Exploratory Factor Analysis.

	Component									
	1	2	3	4	5	6	7	8	9	10
r3										.959
r1										.611

Extraction Method: Maximum Likelihood

Rotation Method: Promax with Kaiser Normalisation

Rotation converged in 13 iterations

Each of the three characteristics (adequacy, reliability, and validity) for factor analysis was respectively assessed and depicted as follows:

Adequacy

To check the sampling adequacy of factor analysis, Kaiser-Meyer-Olkin Measure (KMO) and Bartlett's Test of Sphericity (see Table 33) were used. First, the value of the KMO statistic was 0.821. As suggested by Kaiser (1974), the KMO value is considered to be middling from 0.7 to 0.8, meritorious from 0.8 to 0.9 and marvellous if above 0.9. It was, therefore, considered satisfactory for factor analysis in this case. Second, Bartlett's Test of Sphericity was used to test the identity of the correlation matrix (Popović 2015). Accordingly, "1" or "0" represents all the diagonal terms or all off-diagonal terms respectively. The hypothesis vis-à-vis an identity matrix suggested that the variables could be rejected if the approximate Chi-square was large enough with its significance level being less than 0.05. In this case, a large value of 2940.96 associated with a very small significance level (p=0.000) of the test of Sphericity could lead to the rejection of the hypothesis.

In addition, the Communality of factor indicators were sufficiently high with all values above 0.5 and even above 0.6 in most cases. This indicated that the remaining factor indicators were adequately correlated for factor analysis.

Reliability

Table 33: KMO and Bartlett's Test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.821
Bartlett's Test of Sphericity	Approx. Chi-Square	2940.96
	df	820
	Sig.	0.000

Reliability may be understood as the consistency of errors within a single construct. In other words, the term "reliability" refers to a reliable set of factors loading consistently on the same construct. To examine reliability in EFA, a computation of Cronbach's alpha was conducted for each construct. This value should be at least equal 0.7 and will vary depending on the number of factor indicators. It will generally increase for constructs with more indicators and decrease for those with fewer indicators. Cronbach's alphas for the extracted factor indicators in the six constructs are shown in Table 34. As such, all Alphas were above 0.70. Among these, only the construct of the reasons and the construct of the VFM drivers were above 0.70: the remainder were all above 0.80 and even above 0.9 for the construct of success factors. The specifications of the constructs are all reflective in this case because their factor indicators are highly correlated to each other and are largely interchangeable (Jarvis, MacKenzie and Podsakoff 2003).

Validity

Discriminant validity, to some extent, means that factor indicators are distinct and uncorrelated, e.g., the correlation of a factor indicator with itself should be stronger than with another factor indicator. In this instance, two assessments were conducted to determine the discriminant validity of the EFA. The first was undertaken to examine the pattern matrix (see Table 32 above). Clearly, factor indicators loaded significantly on one component only. In other words, there were no problematic cross-loadings. The second assessment was conducted using examination of the factor correlation matrix (see Table 35). According to Gaskin (2012), correlations between factor indicators should not exceed 0.7. Otherwise,

Table 34: Cronbach's Alpha for the extracted factor indicators of the six constructs.

Construct	Cronbach's Alpha	Specification
Reasons (r1, r3)	0.720	Reflective
Attractive Factors (af1, af3, af4, af5, af6, af7, af11, af12, af13)	0.869	Reflective
Negative Factors (nf2, nf3, nf7, nf8, nf9, nf12, nf13)	0.819	Reflective
Attractions (a1, a2, a3)	0.823	Reflective
VFM Drivers (vfm5, vfm6, vfm15, vfm16, vfm17)	0.758	Reflective
Success Factors (csf1, csf2, csf3, csf4, csf5, csf6, csf7, csf8, csf9, csf10, csf15, csf16, csf18, csf19, csf20)	0.924	Reflective

a majority of shared variance would be indicated as accounting for 49 per cent (0.7 multiple 0.7). From the Table, the absolute correlations between the factor indicators were all less than 0.7. The maximum correlations were 0.504 between two components of the success factors indicating a majority of 25.4 per cent shared variance. Therefore, the obtained factor indicators demonstrated sufficient discriminant validity.

Regarding the Covergent validity, the Total Variance Explained was assessed. There are four key aspects when assessing the Total Variance Explained (see Table 36). These include: (1) the number of common factor indicators extracted; (2) the eigenvalues of each factor indicator; (3) the percentage of total variance accounted for by each factor indicator; and, (4) the cumulative percentage of total variance accounted for by the combined factor indicators. It is important to note that among the 41 factor indicators extracted, some may represent more adequately than others the list of the total 41 factor indicators. In order to determine the exact number of the factor indicators extracted to represent the data, it seemed appropriate to use the eigenvalues associated with the factor indicators. According to Popović (2015), only factor indicators with eigenvalues of 1 or greater should be retained. Applying this criterion in the analysis, the first ten factor indicators were obtained for rotation. These ten components had a total variance explained of 70.575 per cent; the remainder, taken together, accounted for only 29.243 per cent of the variance. Therefore, the ten components (constructs) may adequately represent the data. It should be noted here that as discussed above, a result of six constructs was expected. However, the result

Table 35: Component Correlation Matrix.

Component	1	2	3	4	5	6	7	8	9	10
1	1.000	.398	.504	.257	.459	.326	.131	.174	.211	.232
2	.398	1.000	.252	.327	.381	.291	.215	.060	.322	.189
3	**.504**	.252	1.000	.119	.262	.312	.336	-.102	.104	.138
4	.257	.327	.119	1.000	.212	.310	.135	-.009	.066	.129
5	.459	.381	.262	.212	1.000	.232	.159	.131	.154	.195
6	.326	.291	.312	.310	.232	1.000	.052	.067	.131	.239
7	.131	.215	.336	.135	.159	.052	1.000	-.298	.098	-.122
8	.174	.060	-.102	-.009	.131	.067	-.298	1.000	.165	.520
9	.211	.322	.104	.066	.154	.131	.098	.165	1.000	.214
10	.232	.189	.138	.129	.195	.239	-.122	.520	.214	1.000

Extraction Method: Maximum Likelihood

Rotation Method: Promax with Kaiser Normalization

found ten components, indicating that some constructs were divided into sub-constructs, specifically as follows:

Table 36: Total variance explained.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.730	28.611	28.611	11.730	28.611	28.611
2	3.959	9.657	38.267	3.959	9.657	38.267
3	2.755	6.719	44.987	2.755	6.719	44.987
4	2.023	4.935	49.922	2.023	4.935	49.922
5	1.964	4.791	54.713	1.964	4.791	54.713
6	1.628	3.972	58.685	1.628	3.972	58.685
7	1.420	3.463	62.148	1.420	3.463	62.148
8	1.247	3.042	65.190	1.247	3.042	65.190
9	1.210	2.950	68.140	1.210	2.950	68.140
10	1.073	2.617	70.757	1.073	2.617	70.757
11	0.959	2.340	73.097			
...						

- The construct of the success factors (coded fCSF) included three components: (1) four factor indicators (csf1, csf2, csf3, csf4) as indicated in component 3 and coded fCSFa; (2) nine factor indicators (csf5, csf6, csf7, csf8, csf9, csf10, csf18, csf19, csf20) as indicated in component 1 and coded fCSFb; and, (3) two factor indicators (csf15, csf16) as indicated in component 8 and coded fCSFc.

- The construct of the attractive factors (coded fAF) included two components: (1) two factor indicators (af1, af3) as indicated in component 9 and coded fAFa; and, (2) seven factor indicators (af4, af5, af6, af7, af11, af12, af13) as indicated in component 2 and coded fAFb.

- The construct of the negative factors (coded fNF) included two components: (1) two factor indicators (nf2, nf3) as indicated in component 7 coded fNFa; and, (2) five factor indicators (nf7, nf8, nf9, nf12, nf13) as indicated in component 4 and coded fNFb.

- The remaining three constructs of the reasons, attractions, and VFM drivers respectively included: two reasons (r1, r3) as indicated in component 10; three attractions (a1, a2, a3) as indicated in component 6; and, five VFM drivers (vfm5, vfm6, vfm15, vfm16, vfm17) as indicated in component 5. They were coded fR, fA, and fVFM respectively.

The six constructs including 10 components found in EFA will be further assessed using CFA. This particular analysis is discussed in the following section.

5.4 CONFIRMATORY FACTOR ANALYSIS

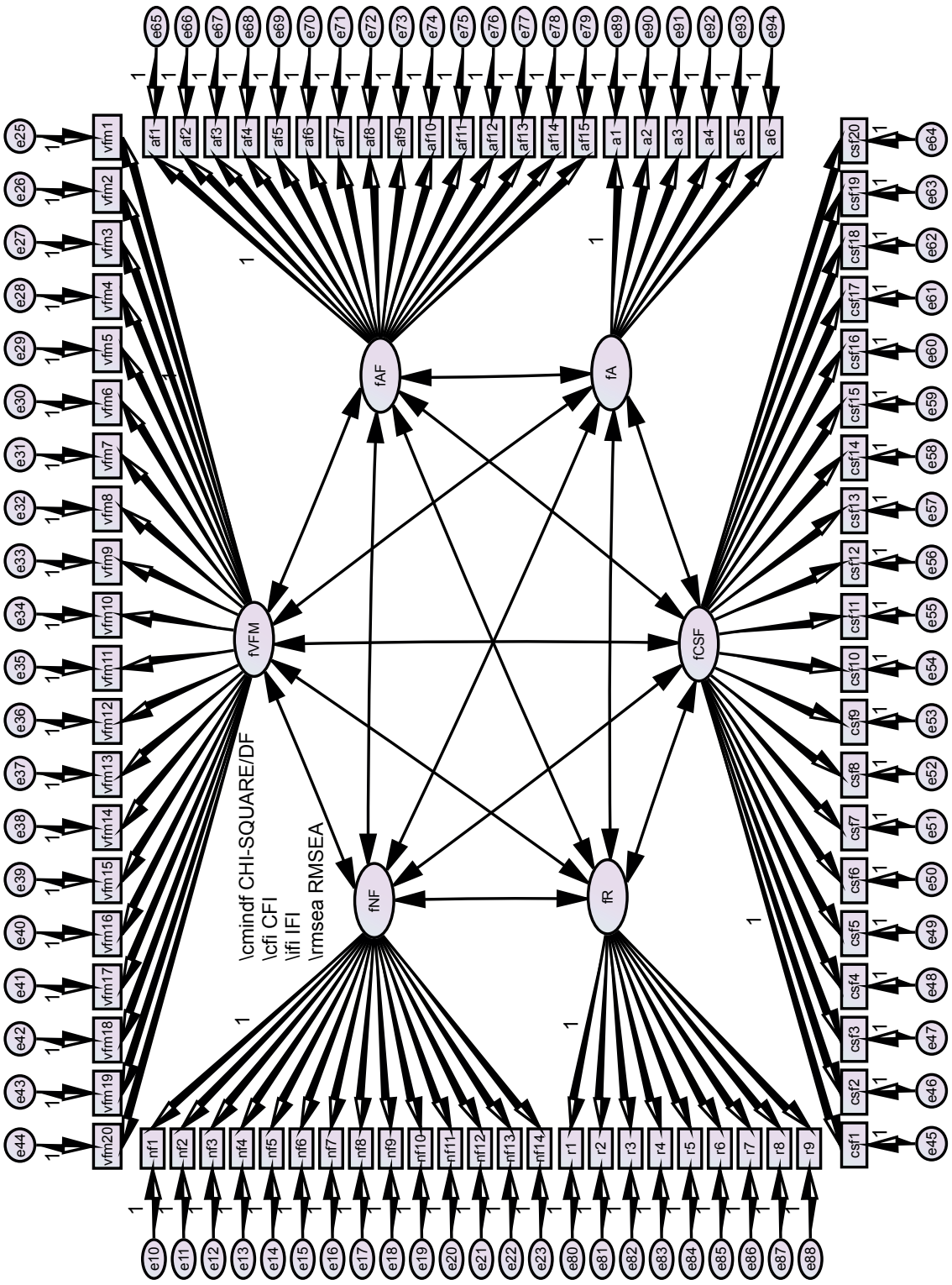


Figure 24: Initial Measurement Model containing the 84 factor indicators (Source: Thesis author).

Table 37: Validation assessment of the Initial, Revised, and Final Measurement Models.

Goodness of fit	Observed values of models			Recommended
Metric	Initial	Revised	Final	
cmin/df	2.099	1.648	1.684	< 3 (Hayduk 1987)
CFI	0.460	0.806	0.824	> 0.8 (Bagozzi and Yi 1988)
IFI	0.467	0.811	0.828	> 0.8 (Lederer et al. 2008)
RMSEA	0.097	0.074	0.076	> 0.05 and < 0.1 (Hu and Bentler 1999)

See Appendix 8.4 at Figure 40, Figure 41, and Figure 42 for the results

In order to determine the factor structure of the data, CFA was conducted after EFA (as mentioned above). During EFA, how exploration was undertaken of the factors related and grouped based on inter-factor correlations. The factor structure which was extracted during EFA was further assessed for confirmation by CFA.

The initial model of the six constructs with the 84 factor indicators (see Figure 24) was first assessed for model fit. The results obtained proved low and unsatisfactory: only one (cmin/df) out of four evaluation metrics reached the acceptable level (see Table 37). Thus, modification of the originally proposed measurement model was needed to improve its goodness of fit (Hair et al. 2006).

The revised model was constructed based on the result of EFA (see Figure 25). Second-order factors were used in this model because there were six constructs; however, the results obtained from EFA produced up to 10 components (as discussed above). In this case, the goodness of fit of the model reached the minimum acceptable levels (see Table 37). However, the revised model included factors with standardised regression weights less than 0.5 (vfm5 with 0.474 and vfm6 with 0.467). Additionally, the model had problems with its validity and reliability (see Table 38) because its measures were lower than the required threshold (Hair et al. 2006).

Specifically, the composite reliability (CR) of the construct (fAF) had a value (0.694) of less than the accepted level of 0.7. The discriminant validity of the model showed concern with the square root of the Average Variance Extracted (AVE) for the construct (fVFM), which was less than one with the absolute value of the correlations with another construct, and less than the Maximum Shared Variance (MSV) with a value of 0.508. Moreover, the convergent validity of the model indicated a problem with the AVE for the construct (fVFM), which was 0.401 less than 0.5 (see below for more information about how to test for validity and reliability of the model).

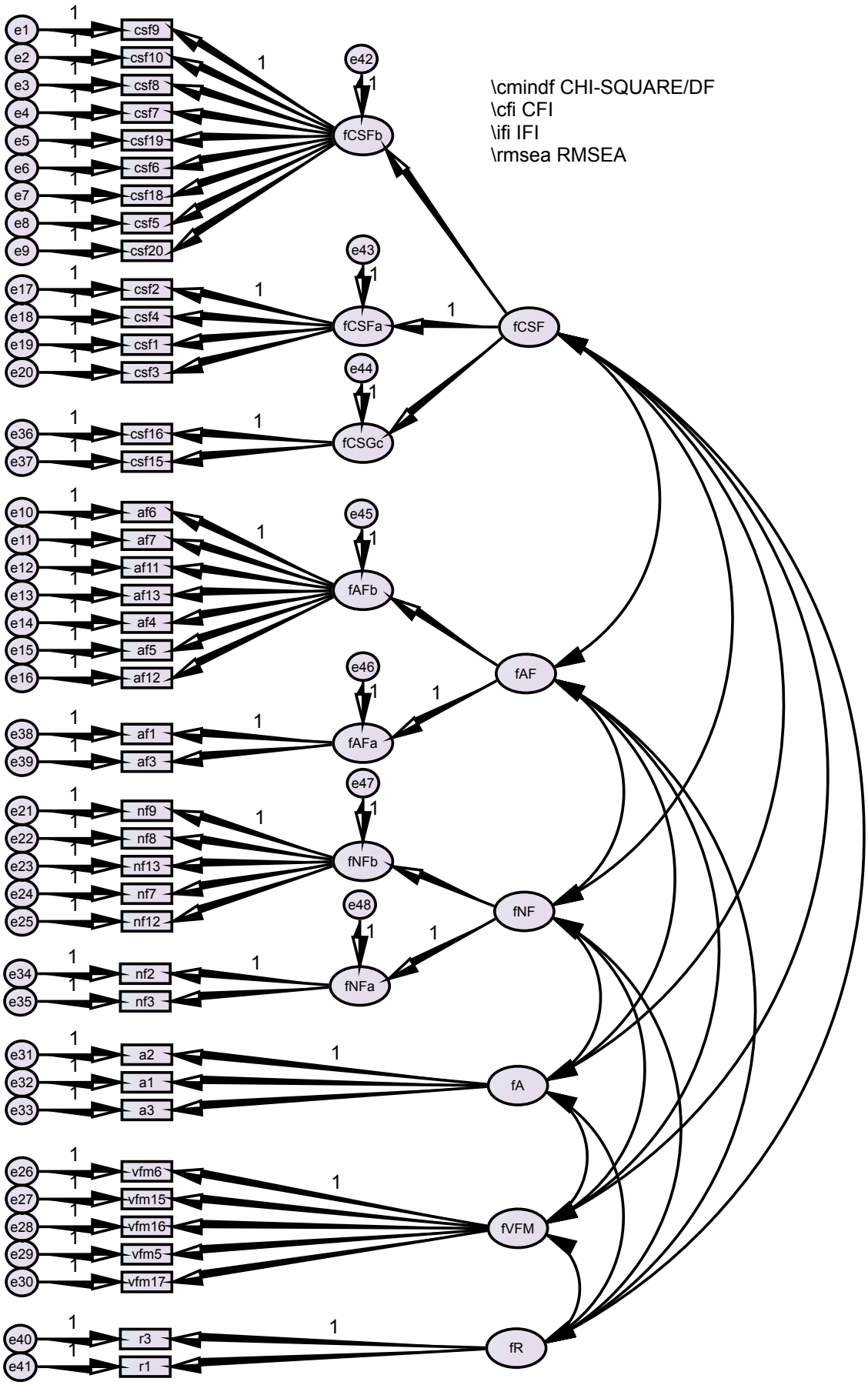


Figure 25: The Revised Measurement Model using the EFA results (Source: Thesis author).

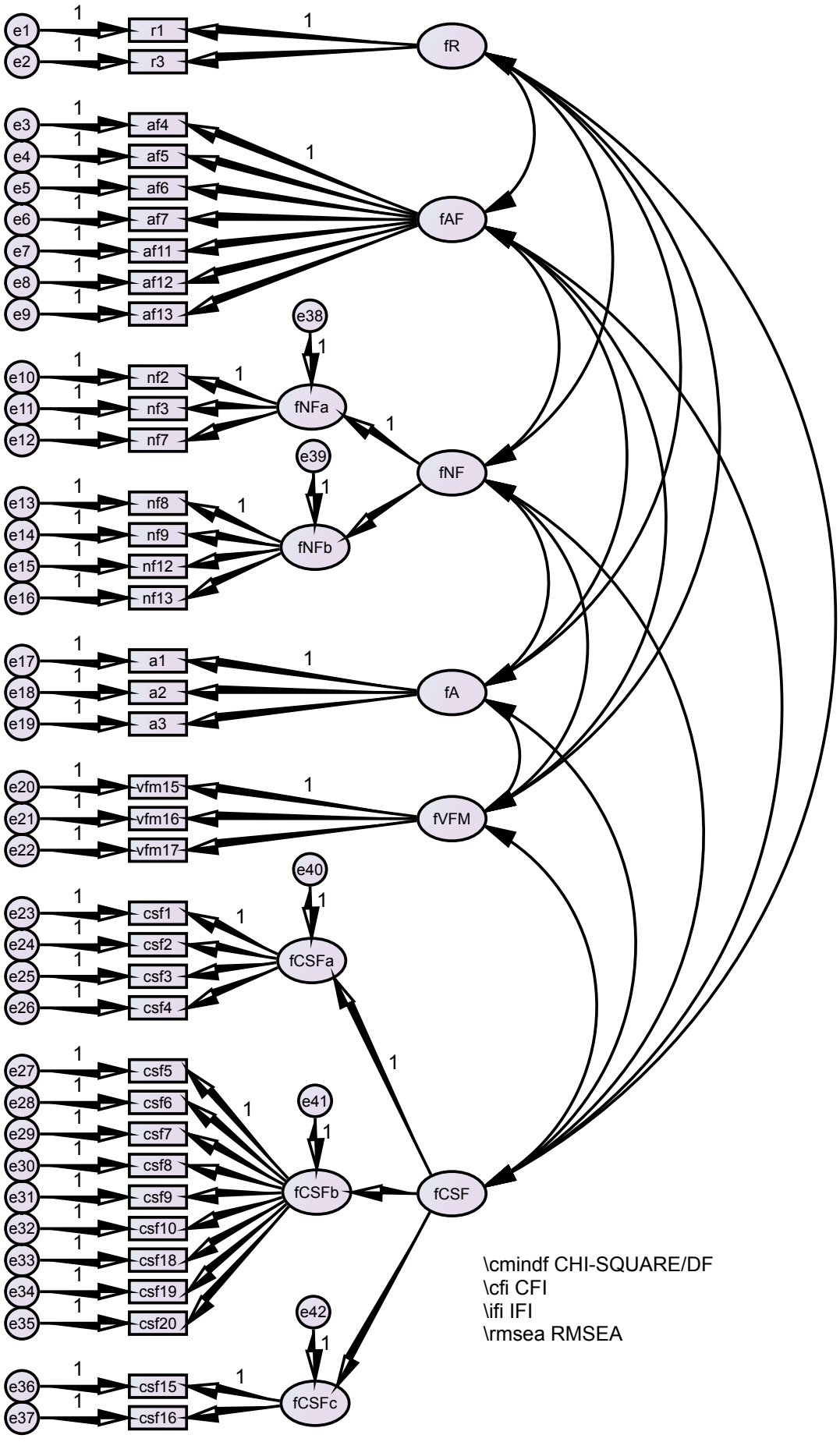


Figure 26: The Final Measurement Model (Source: Thesis author).

According to Chou et al. (2012), as the factor indicators adopted from the literature survey may be not dependent, leading to non-significant loadings. Thus, the exclusion should be done first with factors having lower loading coefficients. In this study, the elimination process conducted with factor indicators having loading coefficients of less than 0.5 was used to improve the goodness of fit. As a result, the two VFM drivers (coded vfm5 and vfm6) were removed. The goodness of fit for the model after eliminating vfm5 and vfm6 increased considerably. However, the model still had a problem with the composite reliability value of the construct (fAF) which was less than 0.7, the reason being that the standardised regression weight of the attractive factors (coded af1 and af3) obtained was low (lower than 0.6). These two factors were then eliminated, affording the final measurement model with the lowest standardised regression weight of 0.609. Modification indices and standardised residual covariances were also checked and consulted in the interests of improving the model.

The model was then tested back with an EFA. The pattern matrix of the EFA was consulted to reconstruct the final model. In effect, the negative factor indicator nf7 came together with two other factor indicators, i.e., nf2 and nf3, rather than with the component including nf8, nf9, nf12, and nf13. The result of the reconstruction showed a slight increase in the model fit. As a result, the final model provided an acceptable goodness of fit albeit this result was not particularly good. According to Hair et al. (2006), goodness of fit is inversely related to sample size and the number of factor indicators in the model. In this case, while the sample size was reasonable (not too large), innumerable factor indicators

Table 38: Validity and Reliability of the Revised Measurement Model.

	CR	**AVE**	**MSV**	**ASV**	fAF	fVFM	fA	fR	fCSF	fNF
fAF	**0.694**	0.541	0.310	0.242	**0.735**					
fVFM	0.762	**0.401**	**0.508**	0.277	0.553	**0.633**				
fA	0.837	0.635	0.247	0.189	0.402	0.354	**0.797**			
fR	0.760	0.623	0.450	0.245	0.423	0.423	0.469	**0.789**		
fCSF	0.831	0.622	0.508	0.321	0.557	0.713	0.497	0.671	**0.789**	
fNF	0.717	0.564	0.268	0.200	0.501	0.518	0.439	0.444	0.301	**0.751**

CR: Composite Reliability
AVE: Average Variance Extracted
MSV: Maximum Shared Variance
ASV: Average Shared Variance
fAF, fVFM, fA, fR, fCSF, fNF are the codes of the six constructs

were retained in the final model. And, because this study aimed to explore and confirm the principal factors for PPP implementation in Vietnam, the higher the number of factor indicators retained, the more preferable the outcome. Thus, the goodness of fit obtained for the final model was considered satisfactory for this study.

Figure 26 shows the final model obtained in this study, which was considered to be optimal. In comparison to the revised model and to the list of factor indicators obtained from the literature review, the final model contained fewer factor indicators. Two of the nine reasons for adopting PPPs in Vietnam were retained (r1 and r3). Seven of the 15 attractive factors for adopting PPPs in Vietnam were retained (af4, af5, af6, af7, af11, af12, af13). Seven of the 14 negative factors for adopting PPPs in Vietnam were retained, including two components with three factors (nf2, nf3, nf7) and four factors (nf8, nf9, nf12, nf13) for each respectively. Three of the 20 measures that enhance the achievement of VFM in PPP projects in Vietnam were retained (vfm15, vfm16, vfm17). Finally, 15 of the 20 factors that contribute to the success of PPP projects in Vietnam were retained. They were divided into three components with four factors (csf1, csf2, csf3, csf4), nine factors (csf5, csf6, csf7, csf8, csf9, csf10, csf18, csf19, csf20), and two factors (csf15 and csf16) for each respectively.

In the following part, other characteristics of the final model will be further discussed.

Validity and Reliability

Table 39: Validity and Reliability of the Final Model.

	CR	**AVE**	**MSV**	**ASV**	fVFM	fR	fAF	fNF	fA	fCSF
fVFM	0.778	0.540	0.487	0.259	**0.735**					
fR	0.759	0.622	0.461	0.243	0.450	**0.788**				
fAF	0.889	0.535	0.220	0.175	0.469	0.360	**0.731**			
fNF	0.798	0.664	0.277	0.194	0.526	0.448	0.463	**0.815**		
fA	0.837	0.635	0.250	0.177	0.333	0.471	0.336	0.433	**0.797**	
fCSF	0.831	0.622	0.487	0.297	0.698	0.679	0.443	0.303	0.500	**0.788**

CR: Composite Reliability
AVE: Average Variance Extracted
MSV: Maximum Shared Variance
ASV: Average Shared Variance
fAF, fVFM, fA, fR, fCSF, fNF are the codes of the six constructs

When conducting CFA, it is necessary to establish convergent and discriminant validity as well as reliability. Table 39 shows the results of the validity and reliability tests of the final model. The validity testing includes two tests (convergent and discriminant). With regards to convergent validity, the value of the AVE was calculated. Regarding all six constructs, the AVE was above 0.5 with four out of six even greater than 0.6, indicating good convergent validity for the final model (Hair et al. 2006).

When testing for discriminant validity, the following three conditions have to be met: (1) the AVE needs to be higher than the MSV; (2) the AVE also needs to be higher than the ASV; and, (3) the AVE needs to have its square root higher than the correlations between inter-constructs (Hair et al. 2006). In this case, the MSVs and ASVs of all six constructs were lower than their respective AVEs; and, the square root values of the AVE were all higher than all inter-construct correlations (see Table 39). This indicated that all the principal factors in the six constructs demonstrated adequate discriminant validity.

Table 40: Cronbach's Alpha Reliability of the Revised (Final) Model.

Construct	**Cronbach's Alpha**
Reasons leading to the adoption of PPPs (fR)	0.720
Attractive factors of adopting PPPs (fAF)	0.887
Negative factors of adopting PPPs (fNF)	0.819
Attractions for private sector involvement in PPP projects (fA)	0.823
Factors to enhance VFM in PPP projects (fVFM)	0.773
Factors contributing to the success of PPP projects (fCSF)	0.924

When testing for reliability, the Composite Reliability (CR) and Cronbach's Alpha for each construct were computed. In all cases, the CR (see Table 39) and Cronbach's Alpha (see Table 40) were all above 0.7, which indicated the reliability of the final model.

Table 41: Total Variance Explained for the Harman's Single Factor Test.

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.165	30.174	30.174	10.496	28.367	28.367
2	3.943	10.657	40.831			
3	2.632	7.115	47.946			
4	1.926	5.205	53.151			

Common Method Bias

There is frequently something excluded from the survey questions that may influence the responses, especially in cases where data collection uses only a single method, e.g., an on-line survey. A common method bias test is conducted to check if there is any bias in the dataset due to some external influences. According to Podsakoff, MacKenzie, Lee and Podsakoff (2003), a study in which a single factor can explain a majority of the variance may be considered biased. In this study, although both on-line and paper-based survey methods were applied, a Harman's single factor test was still conducted to determine if any single method affected the results of the final measurement model. Accordingly, the 37 factor indicators on the final model were constrained in the EFA to just one, and then used to examine the unrotated solution. The results appear in Table 41. Clearly, with one factor indicator, the total variance was explained only for 28.367 per cent. This means that a single factor indicator could not explain a majority of the variance. Thus, this study evinces a non-significant common method bias.

5.5 THE PRINCIPAL FACTORS IN THE FINAL MODEL

In this section, the principal factors for PPP implementation obtained from CFA for the final model are first analysed in order to identify which factors were more/less important or important in the context of Vietnam. The agreement and difference in the respondent groups' perceptions (e.g., the northern versus southern regions and the public versus private sectors) vis-à-vis the importance of the principal factors are then discussed.

5.5.1 *Important factors for PPP implementation in Vietnam*

5.5.1.1 *Reasons leading to the adoption of PPPs*

The mean scores and loading coefficients, and their respective rankings of the relative importance of each of the reasons leading to the adoption of PPPs in Vietnam are illustrated in Table 42. The results of the MVA show that the respondents perceived all nine reasons to be either important or fairly important. This is because the mean scores of the reasons ranged from 2.71 to 3.71, of which values above 3.00 would represent important reasons. Among said reasons, two driving forces that ranked below 3.00 were r2 and r9: the three most important reasons in descending order were r5, r3, and r1 with their respective mean scores of 3.71, 3.58, and 3.55. With a gap of only 1.0 between the lowest and highest mean values, the variation in the respondents' perceptions was relatively small. Statistically, this may have resulted from the fact that empirical reasons may depend

on each other. As suggested by Chou et al. (2012), CFA can be a good approach to examining the co-variance among the reasons.

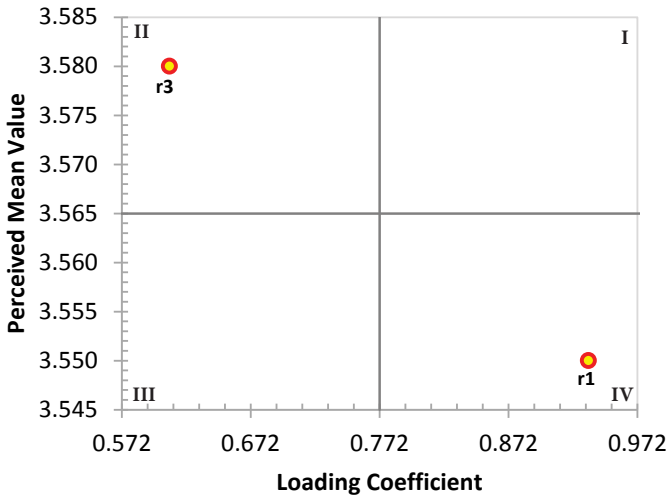


Figure 27: Importance analysis diagram of the reasons leading to the adoption of PPPs in Vietnam.

Upon completion of the CFA, only two reasons (r1 and r3) were retained. The limited number of the reasons remained in the final model due to two problems: (1) overall, the loadings coefficients of the reasons obtained were low; and, (2) the reasons and the attractive factors had rather close meanings. This resulted in many cross loadings between the two in the EFA. The loading coefficients were calculated using CFA for the final model range from 0.609 to 0.934, in which

Table 42: Mean scores and loading coefficients of the reasons leading to the adoption of PPPs in Vietnam.

r	Mean value analysis				Exploratory Factor Analysis (Initial Model)		Confirmatory Factor Analysis (Final model)	
	N	Mean	Stdev	Rank	Loading coefficients	Rank	Loading coefficients	Rank
r1	119	3.55	1.095	3	0.535	4	0.934	1
r2	119	2.71	1.167	9	0.318	9	_	_
r3	119	3.58	0.943	2	0.354	8	0.609	2
r4	119	3.44	1.071	5	0.447	6	_	_
r5	119	3.71	0.969	1	0.365	7	_	_
r6	119	3.46	1.056	4	0.470	5	_	_
r7	119	3.23	1.069	6	0.679	1	_	_
r8	119	3.13	1.157	7	0.605	2	_	_
r9	119	2.99	1.124	8	0.584	3	_	_

Stdev: Standard deviation
N: Number of survey respondents
Original factors: 84 factors loaded in EFA
r: Reasons for adopting PPPs

the reason r1 was more important than r3. A simultaneous combination of MVA and CFA was performed and presented in a diagram of the two-dimensional importance analysis (see Figure 27). As a result, two reasons, i.e., **Economic development pressure of demanding more facilities** (r1) and **Social pressure of poor public facilities** (r3) fell into Quadrants IV and II respectively. Both identified as important reasons for adopting PPPs in the context of Vietnam.

5.5.1.2 *Attractive factors of adopting PPPs*

The mean scores and loading coefficients, and the respective rankings regarding the relative importance of each of the attractive factors for adopting PPPs in Vietnam, appear in Table 43. The results obtained from MVA showed that all 15 attractive factors were perceived as either important or fairly important as their mean values ranged from 2.91 to 3.61. This indicated that the variation in the respondents' perceptions was very small, i.e., 0.7. Among the attractive factors, the only factor that was marginally lower than the important level cut point of 3.00 was af13. The three most important factors, in descending order, were af3, af10, and af14.

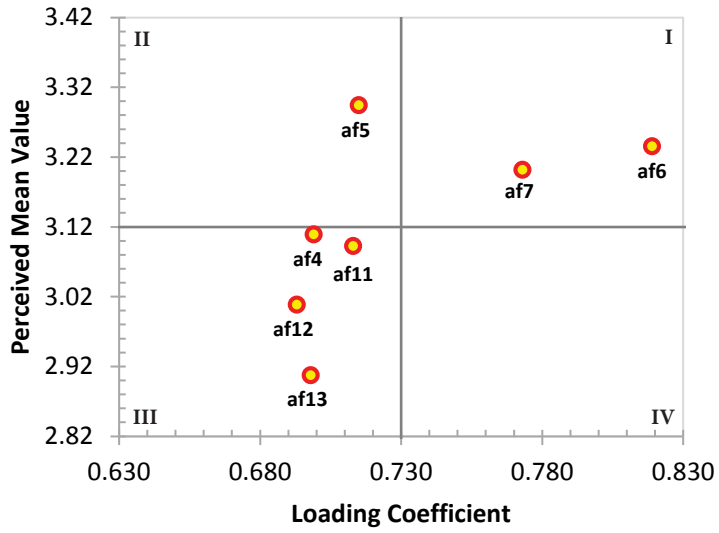


Figure 28: Importance analysis diagram of the attractive factors for adopting PPPs in Vietnam.

Following CFA, eight of the 15 attractive factors were removed. The remaining seven factors retained for the final model included af4, af5, af6, af7, af11, af12, and af13. The loading coefficients calculated via the CFA ranged from 0.693 to 0.819. The top three factors, in order of loading coefficient, were af6, af7, and af5: af12 was ranked last. As regards the simultaneous combination of MVA and CFA, as the diagram of the two-dimensional importance analysis (see Figure

Table 43: Mean scores and loading coefficients of the attractive factors for adopting PPPs in Vietnam.

af	Mean value analysis				Exploratory Factor Analysis (Initial Model)		Confirmatory Factor Analysis (Final model)	
	N	Mean	Stdev	Rank	Loading coefficients	Rank	Loading coefficients	Rank
af1	119	3.15	0.926	11	0.363	14	_	_
af2	119	3.18	0.917	10	0.579	10	_	_
af3	119	3.61	0.958	1	0.437	13	_	_
af4	119	3.11	1.095	12	0.685	7	0.699	5
af5	119	3.29	1.044	5	0.696	5	0.715	3
af6	119	3.24	1.087	7	0.729	1	0.819	1
af7	119	3.20	1.197	9	0.716	4	0.773	2
af8	119	3.30	1.078	4	0.337	15	_	_
af9	119	3.26	1.146	6	0.567	11	_	_
af10	119	3.46	1.015	2	0.583	9	_	_
af11	119	3.09	1.017	13	0.720	3	0.713	4
af12	119	3.01	1.004	14	0.724	2	0.693	7
af13	119	2.91	1.120	15	0.693	6	0.698	6
af14	119	3.32	1.008	3	0.542	12	_	_
af15	119	3.22	1.144	8	0.628	8	_	_

Stdev: Standard deviation
N: Number of survey respondents
Original factors: 84 factors loaded in EFA
af: Attractive factors for adopting PPPs

28) shows, two factors (af6, af7) fell into Quadrant I, one (af5) into Quadrant II, and the remainder (af4, af11, af12, af13) into Quadrant III. The factors **Reduce the total project cost** (af6) and **Save time in delivering the project** (af7) were perceived as more important than the others. The factor **Facilitate creative and innovative approaches** (af5) was considered important, while the remainder **Cap the final service costs** (af4), **Improve buildability** (af11), **Improve maintainability** (af12), and **Technology transfer to local enterprise** (af13) were evaluated as less important attractive factors for adopting PPPs in the context of Vietnam.

5.5.1.3 *Negative factors of adopting PPPs*

The mean scores and loading coefficients, along with their respective rankings of the relative importance of each of the negative factors for adopting PPPs in Vietnam, appear in Table 44. Regarding the hindrance factors associated with PPPs obtained from the MVA, the mean values ranged from 2.64 to 3.74. Eight out of the 14 factors were evaluated as importantly negative, with mean values above 3.00. The remainder (six factors) were deemed fairly important (mean

values under 3.00). The variations in the respondents' perceptions in this case were also small (1.0).

Table 44: Mean scores and loading coefficients of the negative factors for adopting PPPs in Vietnam.

nf	Mean value analysis				Exploratory Factor Analysis (Initial Model)		Confirmatory Factor Analysis (Final model)	
	N	Mean	Stdev	Rank	Loading coefficients	Rank	Loading coefficients	Rank
nf1	119	2.84	1.142	13	0.494	10	_	_
nf2	119	3.01	1.013	8	0.475	11	0.684	3
nf3	119	3.08	0.984	5	0.466	12	0.674	5
nf4	119	3.06	1.084	7	0.381	13	_	_
nf5	119	3.15	1.047	3	0.557	8	_	_
nf6	119	2.64	1.155	14	0.583	6	_	_
nf7	119	2.89	1.126	12	0.669	1	0.676	4
nf8	119	2.91	1.073	11	0.664	2	0.774	2
nf9	119	3.08	1.059	6	0.663	3	0.805	1
nf10	119	3.34	1.011	2	0.560	7	_	_
nf11	119	3.09	1.135	4	0.511	9	_	_
nf12	119	2.97	1.061	9	0.663	4	0.618	7
nf13	119	2.97	0.947	10	0.636	5	0.641	6
nf14	119	3.74	1.045	1	0.321	14	_	_

Stdev: Standard deviation
N: Number of survey respondents
Original factors: 84 factors loaded in EFA
nf: Negative factors for adopting PPPs

Among the eight importantly negative factors, nf14 was perceived as the most important factor impeding the adoption of PPPs. The remaining seven factors,

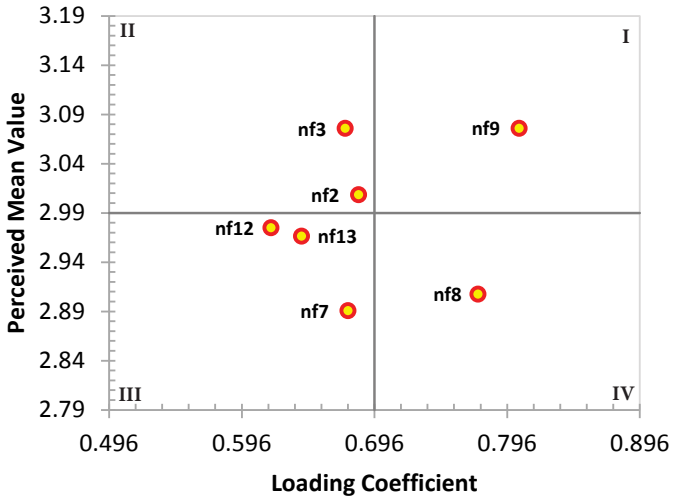


Figure 29: Importance analysis diagram of the negative factors for adopting PPPs in Vietnam.

in descending order of importance, included nf10, nf5, nf11, nf3, nf9, nf4, and nf2. Among the six fairly important factors, nf6 was rated least likely to impede the successful adoption of PPPs in Vietnam.

Following CFA, seven of the 14 negative factors were eliminated; the remaining seven factors, which included nf2, nf3, nf7, nf8, nf9, nf12, and nf13, were then retained for the final model. The loading coefficients calculated via CFA ranged from 0.618 to 0.805. The top three factors, in order of loading coefficient, were nf9, nf8, and nf2: nf12 ranked last. With the simultaneous combination of MVA and CFA (see Figure 29), one factor (nf9) fell into Quadrant I, three factors (nf7, nf12, and nf13) into Quadrant III, and the remainder (nf2, nf3, and nf8) either into Quadrants II or IV. In effect, the factor **A great deal of management time spent on contract transaction** (nf9) was perceived as very important. Three factors, i.e., **High risk relying on the private sector** (nf2), **Few schemes have actually reached the contract stage** (nf3), and **High project costs** (nf8) were considered important. The remainder, including **High participation costs** (nf7), **Excessive restrictions on participation** (nf12), and **Lengthy delays in negotiation** (nf13) were considered less importantly negative factors, not truly relevant to the adoption of PPPs in the context of Vietnam.

5.5.1.4 *The suitability of adopting PPPs*

The survey respondents were asked to rate 15 attractive factors and 14 negative factors for adopting PPPs in Vietnam. Upon completion of the CFA, seven factors for each were retained for the final model (as discussed above). A comparison of these factors was required to determine the suitability of adopting PPPs in Vietnam. However, it proved difficult to compare them immediately for the two following reasons: (1) their meanings were not always the opposite of each other; and, (2) even if their meanings were deliberately constructed opposite each other, they risked being misunderstood by the respondents due to their different wording.

Table 45: Differences in averaged mean scores and averaged loading coefficients between the attractive and negative factors.

Comparison	Averaged means	Averaged loading coefficients
Attractive factors	3.12	0.730
Negative factors	2.99	0.696
Differences	0.14	0.034

Cheung et al. (2010) evaluated the suitability of procuring large PPP public works in Hong Kong using a simple comparison of the average mean scores of attractive and negative factors. However, mean scores comparison could lack reliability. Also, as Chou et al. (2012) argue, the validity of variance explanation may possibly be affected by the empirical dependence of factors on each other identified in previous studies. In this study, a comparison of averaged mean scores and averaged loading coefficients was adopted to avoid the limitations included in Cheung et al.'s (2010) study. The results were then presented in a two-dimensional important analysis diagram to identify the suitability of adopting PPPs in Vietnam.

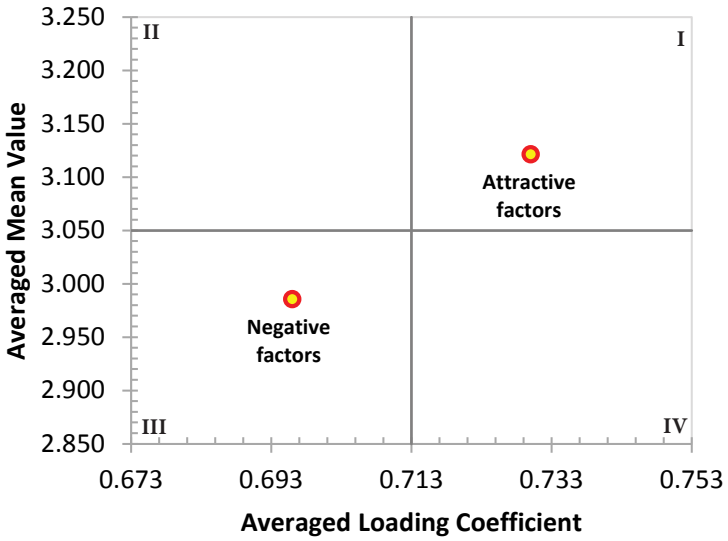


Figure 30: Importance analysis diagram of the attractive and negative factors for adopting PPPs in Vietnam.

The results in Table 45 show the averaged mean scores and averaged loading coefficients of the attractive and negative factors and their respective differences. The obtained differences were both positive, indicating that the respondents reasoned that the attractive factors were more affirmative than the negative factors. The diagram of the two-dimensional importance analysis (see Figure 30) further indicates the degree to which the attractive factors triumphed over the negative factors. Accordingly, the attractive factors were located in Quadrant I and identified as more important than the negative factors located in Quadrant III. Therefore, it may be assumed that the adoption of PPPs was broadly accepted as suitable for procuring public projects in Vietnam.

Table 46: Mean scores and loading coefficients of the attractions for private sector involvement in PPP projects in Vietnam.

a	Mean value analysis				Exploratory Factor Analysis (Original factors)		Confirmatory Factor Analysis (Final model)	
	N	Mean	Stdev	Rank	Loading coefficients	Rank	Loading coefficients	Rank
a1	119	3.16	1.105	6	0.577	5	0.689	3
a2	119	3.39	0.992	5	0.741	2	0.890	1
a3	119	3.48	1.134	4	0.846	1	0.798	2
a4	119	3.55	1.102	2	0.647	3	_	_
a5	119	3.55	1.118	3	0.598	4	_	_
a6	119	3.81	0.977	1	0.326	6	_	_

Stdev: Standard deviation

N: Number of survey respondents

Original factors: 84 factors loaded in EFA

a: Factors attracting private sector involvement in PPP projects

5.5.1.5 *Factors attracting private sector involvement in PPP projects*

The mean scores and loading coefficients, and the respective rankings of the relative importance of each attraction to private sector involvement in PPP projects in Vietnam are presented in Table 46. Regarding the attractions identified in the MVA, the mean values ranged from 3.16 to 3.81. All were rated important (mean values above 3.00). The variations in the respondents' perceptions in this case were very small, i.e., 0.65. Of the total six attractions, a6 was perceived as the most important, followed by a4. Other attractions considered important offers by the government included a5, a3, a2, and a1, listed in descending order of importance. Among them, a1 was the least important.

Following CFA, three of the six attractions were eliminated: three attractions (a1, a2, a3) were retained for the final model. The loading coefficients obtained through the CFA ranged from 0.689 to 0.798; a2 was considered the most important attraction, followed by a3. The last position in the list was allocated to a1. Two-dimensional importance analysis, using a combination of MVA and CFA, is presented in Figure 31; a2 and a3 were located in Quadrant I, while a1 remained in Quadrant III. It may thus be concluded that among the three attractions obtained from the final model for private sector involvement in PPP projects in the context of Vietnam, **Government assistance in financing** (a2) and **Government guarantee** (a3) were rated more important whereas **Government sponsorship** (a1) was rated less important.

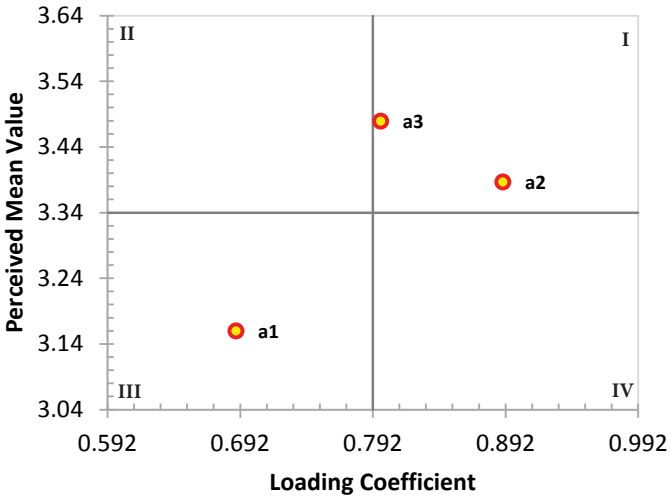


Figure 31: Importance analysis diagram of the attractions for private sector involvement in PPP projects in Vietnam.

5.5.1.6 *VFM drivers in PPP projects*

The mean scores and loading coefficients, and the respective rankings of the VFM drivers in PPP projects in Vietnam, are presented in Table 47. Apropos of the measures obtained from MVA, the mean values ranged from 2.98 to 3.79. Among the 20 VFM drivers, 19 measures with mean values above 3.00 were deemed important: only one was identified as fairly important (mean value less than 3.00). The variation in response was 0.81; in other words, relatively small. But, it showed that the respondents rated the measures fairly consistently. Out of the 19 important measures, vfm1 was considered the most likely to affect project VFM. This was followed by vfm18, and vfm19 (in third position). The VFM driver (vfm20) was the least important driver.

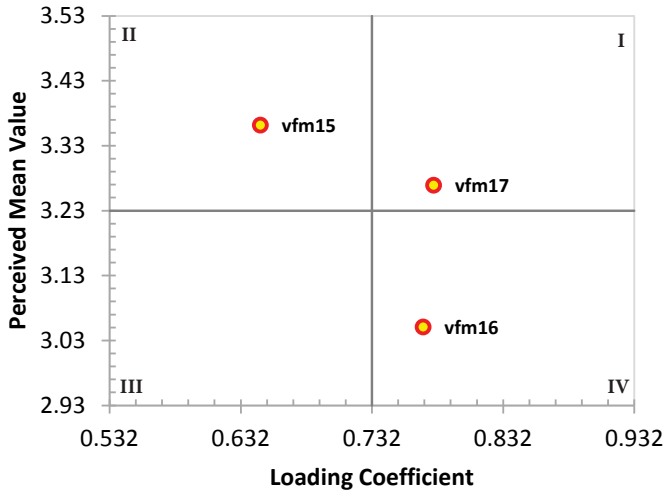


Figure 32: Importance analysis diagram of VFM drivers in PPP projects in Vietnam.

Following CFA, 17 out of the 20 measures were eliminated. Thus, the final model had only three VFM drivers (vfm15, vfm16, and vfm17). The reasons for the limited number of measures contributing to VFM achievement in PPP projects included the fact that many of the VFM drivers cross-loading to the success factors loaded more significantly on the EFA. The loading coefficients obtained through CFA ranged from 0.647 to 0.779; vfm17 was seen as the most important, followed by vfm16 which was slightly less important than vfm17. In last position on the loading coefficient list drawn from the CFA was vfm15. Subsequent to simultaneous combination of MVA and CFA, a two-dimensional importance diagram (Figure 32) showed that **Nature of financial innovation** (vfm17) had relocated into Quadrant I and was identified as more important, while **Off the public sector balance sheet treatment** (vfm15) and **Reduction in disputes, claims and litigation** (vfm16) were located in Quadrants II and IV respectively, signalling that they were important measures.

Table 47: Mean scores and loading coefficients of the VFM drivers in PPP projects in Vietnam.

vfm	Mean value analysis				Exploratory Factor Analysis (Initial Model)		Confirmatory Factor Analysis (Final model)	
	N	Mean	Stdev	Rank	Loading coefficients	Rank	Loading coefficients	Rank
vfm1	119	3.79	1.049	1	0.537	9	_	_
vfm2	119	3.42	0.961	7	0.495	14	_	_
vfm3	119	3.08	0.869	18	0.503	12	_	_
vfm4	119	3.30	0.953	12	0.604	7	_	_
vfm5	119	3.20	1.078	16	0.478	16	_	_
vfm6	119	3.27	0.918	13	0.512	11	_	_
vfm7	119	3.34	1.084	11	0.682	1	_	_
vfm8	119	3.36	0.918	8	0.682	2	_	_
vfm9	119	3.47	0.946	5	0.627	4	_	_
vfm10	119	3.34	1.037	10	0.579	8	_	_
vfm11	119	3.45	0.954	6	0.463	17	_	_
vfm12	119	3.10	1.108	17	0.497	13	_	_
vfm13	119	3.22	1.035	15	0.489	15	_	_
vfm14	119	3.49	0.891	4	0.323	20	_	_
vfm15	119	3.36	1.079	9	0.513	10	0.647	3
vfm16	119	3.05	1.056	19	0.606	6	0.771	2
vfm17	119	3.27	1.031	14	0.641	3	0.779	1
vfm18	119	3.66	0.914	2	0.405	19	_	_
vfm19	119	3.56	1.022	3	0.624	5	_	_
vfm20	119	2.98	1.058	20	0.442	18	_	_

Stdev: Standard deviation

N: Number of survey respondents

Original factors: 84 factors loaded in EFA

vfm: Measures for enhancing VFM in PPP projects

5.5.1.7 *Success factors of PPP projects*

The mean scores and loading coefficients, and the respective rankings on the CSFs of PPP projects in Vietnam, are presented in Table 48. As the results of the MVA showed, the mean values for all CSFs ranged from 3.29 to 4.16. The mean difference in CSF values was 0.87, relatively small. All of the ratings agreed that CSFs were important contributors to the success of PPP projects in Vietnam: even the mean value of the least important CSF (3.29) was important. Out of the twenty CSFs, csf4 was ranked the most important, followed by csf16. Next was csf2 in third position. The least important CSF in the MVA was csf10.

Table 48: Mean scores and loading coefficients of the success factors of PPP projects in Vietnam.

csf	Mean value analysis				Exploratory Factor Analysis (Initial Model)		Confirmatory Factor Analysis (Final model)	
	N	Mean	Stdev	Rank	Loading coefficients	Rank	Loading coefficients	Rank
csf1	119	3.55	1.031	12	0.601	14	0.788	3
csf2	119	3.73	0.890	3	0.614	12	0.842	2
csf3	119	3.56	1.014	11	0.609	13	0.733	11
csf4	119	4.16	0.974	1	0.558	16	0.724	13
csf5	119	3.68	1.041	5	0.745	1	0.753	6
csf6	119	3.65	0.979	6	0.722	6	0.752	7
csf7	119	3.55	1.079	14	0.729	5	0.751	8
csf8	119	3.40	0.960	17	0.735	4	0.738	10
csf9	119	3.33	1.074	18	0.640	10	0.687	15
csf10	119	3.29	1.028	20	0.695	7	0.727	12
csf11	119	3.54	0.990	15	0.437	20	_	_
csf12	119	3.55	0.980	13	0.686	8	_	_
csf13	119	3.32	1.096	19	0.534	17	_	_
csf14	119	3.61	1.082	7	0.514	19	_	_
csf15	119	3.59	0.986	8	0.621	11	0.862	1
csf16	119	3.75	1.019	2	0.576	15	0.760	5
csf17	119	3.56	0.997	10	0.534	18	_	_
csf18	119	3.48	1.064	16	0.679	9	0.696	14
csf19	119	3.58	1.116	9	0.741	3	0.770	4
csf20	119	3.69	1.079	4	0.743	2	0.747	9

Stdev: Standard deviation
N: Number of survey respondents
Original factors: 84 factors loaded in EFA
csf: Critical success factors of PPP projects

Following CFA, 15 of the 20 CSFs were extracted from the final model by eliminating five CSFs. The retained 15 CSFs included csf1, csf2, csf3, csf4, csf5, csf6, csf7, csf8, csf9, csf10, csf15, csf16, csf18, csf19, and csf20. The loading coefficients

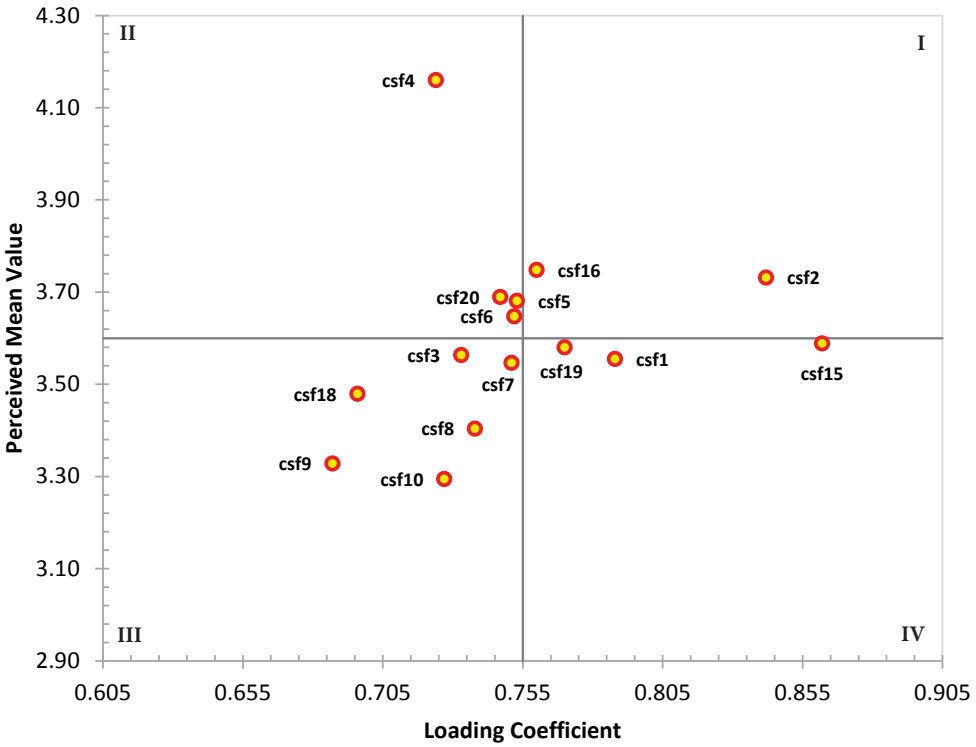


Figure 33: Importance analysis diagram of the success factors of PPP projects in Vietnam.

obtained from CFA were all relatively high, ranging from 0.687 to 0.862. In first position was csf15, the most important CSF. Those considered the second and third most important were numbered among the macro success factors, i.e., csf1 and csf2. Occupying last position on the loading coefficient list obtained via CFA was csf9.

The simultaneous combination of MVA and CFA is presented in a diagram of the two-dimensional importance analysis (see Figure 33). Accordingly, the two CSFs considered more important, i.e., **Sound business climate** (csf2) and **Transparent procurement process** (csf16), fell into Quadrant I. A further seven CSFs were perceived as important due to their locations in Quadrants II and IV: **Stable macro-economic condition** (csf1); **Favourable legal framework** (csf4); **Commitment and responsibility of public and private sectors** (csf5); **Strong and good private consortium** (csf6); **Competitive procurement process** (csf15); **Clearly defined responsibilities and roles** (csf19); and, **Clarifications of contract documents** (csf20). The remaining six CSFs in the final model considered less important in the two-dimensional importance analysis were: **Available financial market** (csf3); **Good governance** (csf7); **Shared authority between public and private sectors** (csf8); **Well-organised and committed public agency**

(csf9); **Multi-benefit objectives** (csf10); and, **Thorough and realistic assessment of costs and benefits** (csf18).

5.5.2 *Differences between groups of respondents*

In this section, the agreements and differences between the two pairs of respondent groups will be analysed and discussed, that is between the public and private respondent groups and the northern and southern groups. A combination of MVA in SPSS and CFA in AMOS was adopted for analytical purposes. In MVA, before analysing the agreement between the respondents - between those from North Vietnam and South Vietnam - it was deemed essential to conduct an investigation into the agreement reached between each of the respondent groups. Kendall's coefficient of concordance for the rankings of the principal factors, and Spearman rank correlation tests were used to check the levels of agreement within each of the respondent groups. Independent two-sample t-tests were then conducted to identify the differences between the respondent groups. Groups difference analysis was further conducted in CFA. The combined significant differences between the groups were finally evaluated using two-dimensional importance analysis.

Agreement and difference among respondents from North Vietnam and South Vietnam, concerning the importance of principal factors for PPP implementation in Vietnam

Table 49: Results of Kendall's concordance analysis between two groups; i.e., the northern and southern respondents, of the principal factors for PPP implementation in Vietnam.

Kendall's coefficient concordance analysis		**North Vietnam**	**South Vietnam**
Factors	k	37	37
Number of survey respondents	m	72	47
Ties	T	514968	407430
Kendall's coefficient of concordance	W	0.113	0.073
Chi-square value	χ^2	293.484	124.149
Critical value of chi-square at 5%		55.760	55.760
Critical value of chi-square at 1%		63.690	63.690
Degree of freedom	df	36	36
Asymptoxic significance	p-value	0.000	0.000

As shown in Table 49, Kendall's coefficient of concordance (W) for the rankings of the principal factors for PPP implementation was 0.113 and 0.073 for North Vietnam and South Vietnam respectively. The computed W values were all statistically significant, with asymptotic significance (p-value) level at 0.000.

According to Grawe (2016), if the number of factors totalled more than seven, Chi-square value would be used instead of W value. In this case, the number

of factors totalled 37, much above seven. Chi-square was then referred to, and obtained from the Table of Chi-square distribution (Sheskin 2003). The critical value of Chi-square according to the degree of freedom (df) of 36 was found to be approximately 55.760 and 63.690 at .05 and .01 levels of significance respectively. For the two groups (North Vietnam and South Vietnam), the obtained Chi-square values were all much higher than the aforementioned values (293.484 and 124.149 for North Vietnam and South Vietnam respectively). Therefore, the alternative hypothesis stating that the population sample that represented the correlation between the sets of the respondents' ranks was not zero was supported at both the .05 and .01 levels. It may thus be concluded that the agreement within each group of the respondents' ranking of the principal factors for PPP implementation in Vietnam was considered consistent. This finding ensured that there was significant agreement within each of the two respondent groups from North Vietnam and South Vietnam, validating further analysis of the difference between the two groups.

Table 50: Results of Spearman rank correlation test between the respondents from North Vietnam and South Vietnam for the principal factors for PPP implementation in Vietnam, calculated from the mean scores and rankings of the principal factors rated by those from North Vietnam and South Vietnam (see Appendix 8.4, Table 65).

Comparison	rs	Significance
Ranking of the northern respondents versus ranking of the southern respondents	0.861	0.000

The next stage of the analysis used the Spearman rank correlation coefficient (r_s) to check if there was agreement among the respondents from the two locales. As shown in Table 50, the correlation coefficient of the rankings between the respondents from North Vietnam and South Vietnam of the principal factors for PPP implementation was 0.861, with a significance level at 0.000. Therefore, the combination of the low significance value and very high Spearman rank correlation indicated significant agreement vis-à-vis the rankings of the principal factors for PPP implementation between respondents from the two regions in Vietnam.

Furthermore, significant differences in mean value responses between the northern and southern respondent groups for each of the 37 principal factors for PPP implementation in Vietnam were determined through the computation of an independent two-sample t-test. A large variation between the opinions of the two groups of the respondents is detected only if the significance level was obtained lower than a significant level of 0.05 or 0.01. The results show that among the

Table 51: Summary of the independent two-sample t-test results of the principal factors for PPP implementation, identified by the two northern and southern region respondents in Vietnam.

Independent Samples Test		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
nf12	*Equal variances assumed*	0.301	0.584	-2.757	117	0.007**
	Equal variances not assumed			-2.810	104.600	0.006

Notes: ** p-value < 0.01; * p-value < 0.05

t-test results for the 37 principal factors for PPP implementation between the respondents from the two regions, only the negative factor **Excessive restrictions on participation** (nf12) fell below the significance level of 0.01 (see Table 51). The others were not statistically significant. In the case of the negative factor (nf12), the equal variances assumed was selected because Levene's test for equality of variances of this factor was above the significant level of 0.05.

Table 52: Group differences that emerged during the CFA between respondents from North and South Vietnam concerning the importance of the principal factors for PPP implementation.

Group Differences			North Vietnam		South Vietnam		z-score
			Estimate	P	Estimate	P	
r1	<—	fR	2.590	0.000	1.118	0.000	-1.816
r3	**<—**	**fR**	**0.386**	**0.000**	**0.894**	**0.000**	**2.092***
af4	<—	fAF	0.918	0.000	1.384	0.000	1.235
af5	<—	fAF	1.089	0.000	0.723	0.000	-1.421
af6	<—	fAF	1.299	0.000	0.918	0.000	-1.415
af7	<—	fAF	1.150	0.000	1.296	0.000	0.478
af11	<—	fAF	0.874	0.000	1.019	0.000	0.556
af12	<—	fAF	0.903	0.000	0.905	0.000	0.006
af13	<—	fAF	0.904	0.000	1.209	0.000	1.050
a1	<—	fA	0.894	0.000	0.745	0.000	-0.688
a2	<—	fA	1.118	0.000	1.342	0.000	0.646
a3	<—	fA	1.059	0.000	1.453	0.000	1.063
vfm15	<—	fVFM	0.794	0.000	0.921	0.000	0.469
vfm16	<—	fVFM	1.260	0.000	1.086	0.000	-0.481
vfm17	<—	fVFM	1.191	0.000	1.016	0.000	-0.502
nf2	**<—**	**fNFa**	**1.120**	**0.000**	**0.302**	**0.325**	**-2.173***
nf3	<—	fNFa	0.893	0.000	3.312	0.325	0.718

(The Table continues on the following page...)

Table 52: Group differences that emerged during the CFA between the respondents from the North and South Vietnam, concerning the importance of the principal factors for PPP implementation.

Group Differences			North Vietnam		South Vietnam		z-score
			Estimate	P	Estimate	P	
nf7	<—	fNFa	0.922	0.000	7.026	0.317	0.870
nf8	<—	fNFb	0.894	0.000	1.466	0.000	1.762
nf9	**<—**	**fNFb**	**1.119**	**0.000**	**0.682**	**0.000**	**-2.05***
nf12	<—	fNFb	0.730	0.000	0.544	0.000	-0.861
nf13	<—	fNFb	0.632	0.000	0.656	0.000	0.123
csf1	**<—**	**fCSFa**	**1.238**	**0.000**	**0.755**	**0.000**	**-2.133***
csf2	<—	fCSFa	0.808	0.000	1.325	0.000	1.782
csf3	<—	fCSFa	0.828	0.000	1.448	0.000	1.899
csf4	<—	fCSFa	0.801	0.000	1.246	0.000	1.453
csf5	<—	fCSFb	0.954	0.000	1.289	0.000	1.025
csf6	<—	fCSFb	1.048	0.000	0.776	0.000	-1.173
csf7	<—	fCSFb	1.106	0.000	1.013	0.000	-0.358
csf8	<—	fCSFb	0.835	0.000	1.105	0.000	1.092
csf9	<—	fCSFb	0.798	0.000	1.318	0.000	1.804
csf10	<—	fCSFb	0.851	0.000	1.239	0.000	1.377
csf18	<—	fCSFb	0.937	0.000	0.986	0.000	0.183
csf19	<—	fCSFb	1.159	0.000	0.953	0.000	-0.768
csf20	<—	fCSFb	1.003	0.000	1.035	0.000	0.117
csf15	<—	fCSFc	1.146	0.000	0.925	0.000	-0.760
csf16	<—	fCSFc	0.873	0.000	1.081	0.000	0.814

Notes: ** p-value < .01; * p-value < .05

Identification of any significant difference between the respondents from North Vietnam and South Vietnam was also conducted during CFA. Based on the regression weights and critical ratios for differences between the two groups of respondents, a Table of group differences was computed and presented in Table 52. Accordingly, the following four factors emerged showing significant differences between the respondents from the two regions: **Social pressure of poor public facilities** (r3); **High risk relying on the private sector** (nf2); **A great deal of management time spent on contract transaction** (nf9); and, **Stable macro-economic conditions** (csf1). These factors obtained p-values were below the significant level of 0.05.

The combination of MVA and CFA revealed significant agreement between the two groups of respondents concerning the importance of the principal factors for

PPP implementation in Vietnam with the exception of five factors (nf12, r3, nf2, nf9, and csf1), which indicated significant differences between the two groups of respondents. These factors were further evaluated using two-dimensional importance analysis (see Figure 34). When considering the importance level of a factor rated by the two respondent groups, if they were placed in Quadrants I and III respectively, the difference between the two could be determined. Conversely, if they were located in Quadrants II and IV respectively, this would suggest that one group of respondents had attributed a higher or lower mean value to a factor, and a lower or higher respective loading coefficient to the factor compared to the other group. In this case, the difference could not be concluded. In other words, imagining that there was a connecting line between two points of a factor rated by the two respondent groups respectively, if the line sloped downward, the difference could not be concluded. Conversely, if the line sloped upward, the difference could be determined.

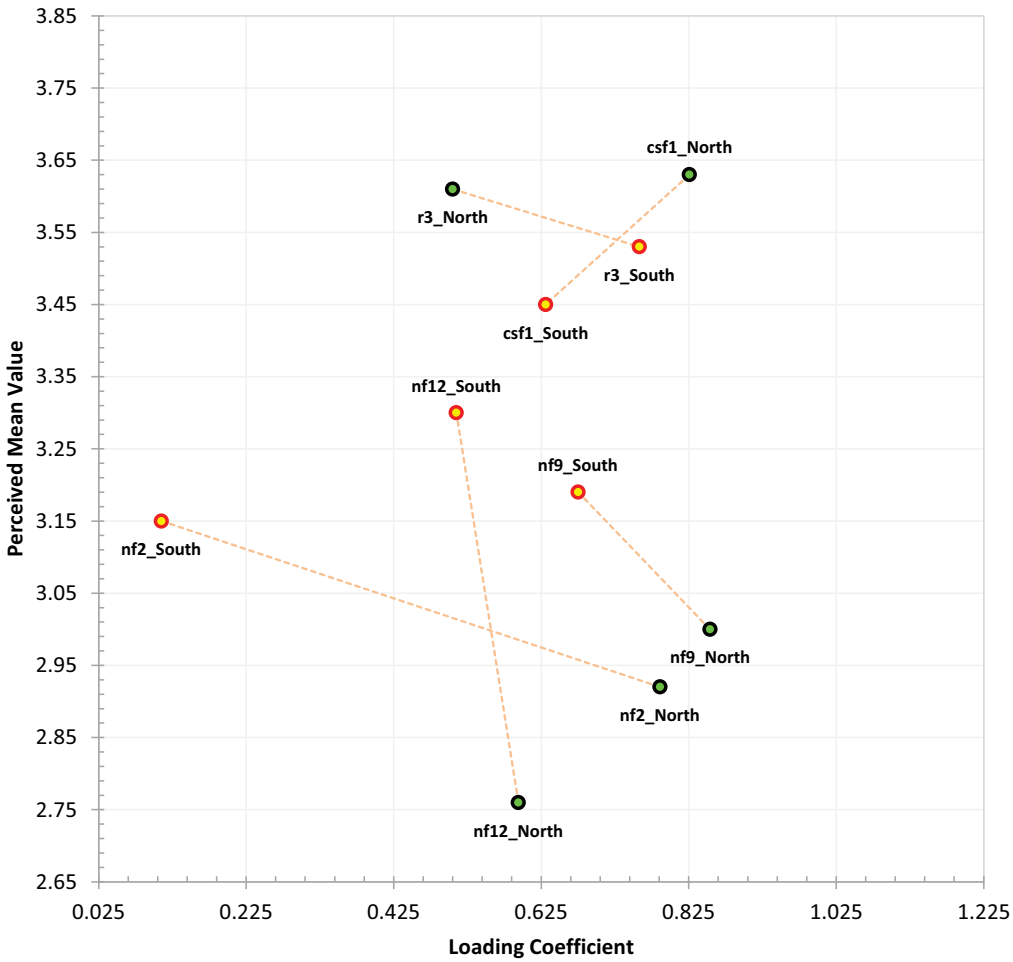


Figure 34: Importance analysis diagram of the differences between the two respondent groups from North Vietnam and South Vietnam.

From Figure 34, it may be deduced that only csf1 showed any significant difference between the two respondent groups. The respondents from the northern region considered the success factor **Stable macro-economic condition** (csf1) significantly more important than did the respondents from the southern region. It may be concluded that the macro-economic conditions in the southern region are better than in the North. This will be confirmed and discussed more broadly the following chapter. Other factors that the two respondent groups rated differently, pertaining to either MVA or CFA, could not be concluded as significantly different in the two-dimensional importance analysis which combined MVA and CFA.

Agreement and difference among the respondents concerning the importance of principal implementation for PPP projects in Vietnam: Questions pertaining to the public and private sectors

The same process was conducted with the respondents from the public and private sectors to identify the agreement and difference between the two groups. As Table 53 shows, Kendall's coefficient of concordance (W) for the rankings of the principal implementation of PPP projects was 0.101 and 0.093 for the public and private sectors respectively. The computed W values were all statistically significant with asymptotic significance (p-value) at 0.000.

Table 53: Results of Kendall's concordance analysis between the two groups, i.e., the public and private sector respondents for the principal factors for PPP implementation in Vietnam.

Kendall's coefficient concordance analysis		**Public**	**Private**
Factors	k	37	37
Number of survey respondents	m	64	53
Ties	T	520842	387048
Kendall's coefficient of concordance	W	0.101	0.093
Chi-square value	χ^2	233.670	177.573
Critical value of chi-square at 5%		55.760	55.760
Critical value of chi-square at 1%		63.690	63.690
Degree of freedom	df	36	36
Asymptoxic significance	p-value	0.000	0.000

In this case, Chi-square was also used. Reference was made to the Table of Chi-square distribution (Sheskin 2003). The critical value of Chi-square according to the degree of freedom (df) of 36 was approximately 55.760 and 63.690 at 0.05 and 0.01 levels of significance respectively. The computed Chi-square values of

the public and private sector groups were all much greater than the aforementioned critical values (233.670 and 177.573 for the public and the private sectors respectively). This confirmed the consistency of the assessment made by the respondents from each of the two groups concerning their rankings of the principal factors for PPP implementation in Vietnam. This finding confirmed that there was significant agreement within each of the two respondent groups from the public and private sectors. The result validated further analysis of the differences between the two groups.

It was then decided to examine the Spearman rank correlation coefficient (r_s) to detect any agreement among the respondents regarding the two sectors. As Table 54 shows, the correlation coefficient of the rankings allocated by the respondents from the public and private sectors of the principal factors for PPP implementation in Vietnam was 0.822 with a significance level at 0.000. This implied that there was significant agreement regarding the rankings of the principal factors for PPP implementation between respondents from the public and private sectors in Vietnam.

Table 54: Results of Spearman rank correlation test. Respondents from the public and private sectors ranking of the principal factors for PPP implementation in Vietnam, calculated from the mean scores and rankings of the principal factors rated by the respondents from the public and private sectors (see Appendix 8.4, Table 66).

Comparison	rs	Significance
Ranking by the northern respondents versus ranking by the southern respondents	0.822	0.000

Table 55: Summary of the independent two-sample t-test results for the principal factors for PPP implementation as identified by the two respondent groups from the public and private sectors in Vietnam.

Independent Samples Test		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
nf8	*Equal variances assumed*	1.037	0.311	2.051	115	0.043*
	Equal variances not assumed			2.037	107.650	0.044
nf9	*Equal variances assumed*	3.745	0.055	2.041	115	0.044*
	Equal variances not assumed			1.991	95.982	0.049
csf18	*Equal variances assumed*	0.026	0.872	2.548	115	0.012*
	Equal variances not assumed			2.534	108.286	0.013

Notes: ** p-value < 0.01; * p-value < 0.05

In order to discern the significant differences in MVA expressed by the respondents from the public and private sectors regarding each of the 37 principal factors

for PPP implementation in Vietnam, an independent two-sample t-test was conducted. Among the t-test results of the 37 principal factors for PPP implementation provided by respondents from the two sectors, three factors (nf8, nf9, csf18) fell below a significant level of 0.05 (see Table 55). The others were not statistically significant. In the case of all three factors, i.e., **High project costs** (nf8); **A great deal of management time spent on contract transaction** (nf9); and, **Transparent procurement process** (csf18), the equal variances assumed were selected because the Levene's tests for equality of variances of these factors were all above the significant level of 0.05.

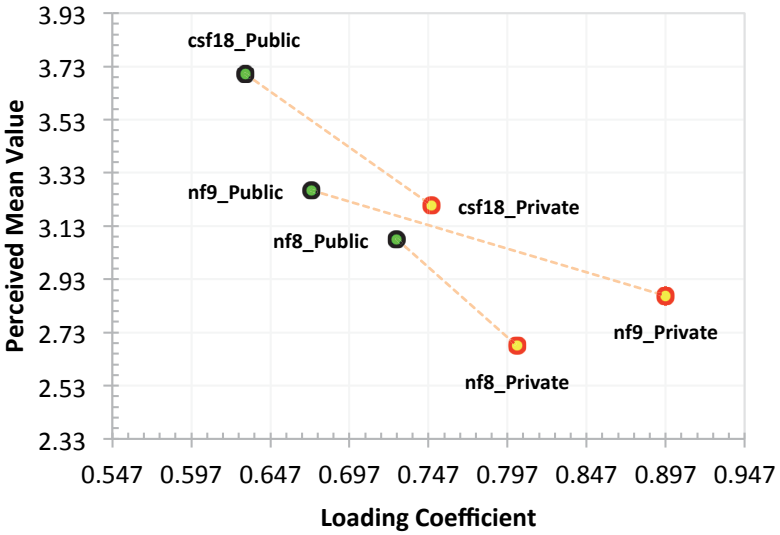


Figure 35: Importance analysis diagram of the differences between the two respondent groups from the public and private sectors in Vietnam.

Identification of any significant difference between the respondents from the public and private sectors was also undertaken during CFA based on the regression weights and critical ratios for differences between the two groups. A Table of group differences was computed and presented in Table 56, in which no factor elicited significant differences between the respondents from the two sectors.

The combination of MVA and CFA showed significant (albeit not total) agreement between the respondents from the public and private sectors concerning the importance of the principal factors for PPP implementation in Vietnam. Three factors (nf8, nf9, and csf18) evinced significant differences between the two groups of respondents. These factors were further evaluated using two-dimensional importance analysis (see Figure 35). No significant difference was found in the perceptions of the respondents from the public and private sectors regarding rating of the importance of the principal factors for PPP implementation in the context of Vietnam.

Table 56: Group differences revealed by CFA between the respondents from the public and private sectors concerning the importance of the principal factors for PPP implementation in Vietnam.

Group Differences			Public sector		Private sector		z-score
			Estimate	P	Estimate	P	
r1	<—	fR	2.063	0.000	1.652	0.000	-0.635
r3	<—	fR	0.485	0.000	0.606	0.000	0.640
af4	<—	fAF	0.883	0.000	1.115	0.000	0.829
af5	<—	fAF	1.133	0.000	0.897	0.000	-0.818
af6	<—	fAF	1.316	0.000	1.109	0.000	-0.679
af7	<—	fAF	1.260	0.000	1.205	0.000	-0.168
af11	<—	fAF	1.194	0.000	0.682	0.000	-1.789
af12	<—	fAF	1.072	0.000	0.691	0.000	-1.373
af13	<—	fAF	1.213	0.000	0.850	0.000	-1.169
a1	<—	fA	0.709	0.000	0.959	0.000	1.189
a2	<—	fA	1.411	0.000	1.043	0.000	-1.112
a3	<—	fA	1.558	0.000	0.858	0.000	-1.954
vfm15	<—	fVFM	0.650	0.000	0.873	0.000	0.922
vfm16	<—	fVFM	1.538	0.000	1.146	0.000	-0.825
vfm17	<—	fVFM	1.699	0.000	0.923	0.000	-1.556
nf2	<—	fNFa	1.218	0.000	0.945	0.000	-0.715
nf3	<—	fNFa	0.821	0.000	1.059	0.000	0.726
nf7	<—	fNFa	1.340	0.000	0.923	0.000	-1.121
nf8	<—	fNFb	1.198	0.000	0.816	0.000	-1.399
nf9	<—	fNFb	0.834	0.000	1.226	0.000	1.576
nf12	<—	fNFb	0.922	0.000	0.761	0.000	-0.619
nf13	<—	fNFb	0.676	0.000	0.835	0.000	0.696
csf1	<—	fCSFa	1.078	0.000	1.124	0.000	0.195
csf2	<—	fCSFa	0.928	0.000	0.890	0.000	-0.197
csf3	<—	fCSFa	0.887	0.000	0.843	0.000	-0.192
csf4	<—	fCSFa	0.777	0.000	0.941	0.000	0.723
csf5	<—	fCSFb	1.003	0.000	1.212	0.000	0.751
csf6	<—	fCSFb	0.997	0.000	0.825	0.000	-0.771
csf7	<—	fCSFb	1.158	0.000	0.880	0.000	-1.134
csf8	<—	fCSFb	0.928	0.000	0.896	0.000	-0.146
csf9	<—	fCSFb	1.084	0.000	0.854	0.000	-0.927
csf10	<—	fCSFb	0.965	0.000	0.925	0.000	-0.172
csf18	<—	fCSFb	0.863	0.000	0.954	0.000	0.385
csf19	<—	fCSFb	1.038	0.000	1.133	0.000	0.386
csf20	<—	fCSFb	1.005	0.000	1.002	0.000	-0.011

(The Table continues on the following page...)

Table 56: Group differences revealed by CFA between the respondents from the public and the private sectors, concerning the importance of the principal factors for PPP implementation in Vietnam.

Group Differences			The public sector		The private sector		z-score
			Estimate	P	Estimate	P	
csf15	<—	fCSFc	0.866	0.000	1.336	0.000	1.214
csf16	<—	fCSFc	1.154	0.000	0.749	0.000	-1.499

Notes: ** p-value < 0.01; * p-value < 0.05

5.6 SUMMARY

The quantitative data analysis presented in this chapter suggests principal factors for PPP implementation in the context of Vietnam.

Regarding the principal factors for PPP implementation in Vietnam, from the 84 factors for PPP projects obtained from the literature survey, only 37 were found to be applicable to the PPP profile in Vietnam, including two reasons for adopting PPPs, seven attractive factors for adopting PPPs, seven negative factors for adopting PPPs, three attractions for private sector involvement in PPP projects, three VFM drivers for PPP projects, and 15 factors that contribute to the success of PPP projects. Some key findings emerge from this analysis.

(i) The two reasons for adopting PPPs in Vietnam included: **Economic development pressure of demanding more facilities** (r1); and, **Social pressure of poor public facilities** (r3). These two reasons (r1 and r3) are both deemed important.

(ii) Seven attractive factors for adopting PPPs in Vietnam included: **Cap the final service costs** (af4); **Facilitate creative and innovative approaches** (af5); **Reduce the total project cost** (af6); **Save time in delivering the project** (af7); **Improve buildability** (af11); **Improve maintainability** (af12); and, **Technology transfer to local enterprise** (af13). Among these, af6 and af7 rated more important, af5 important, while af4, af11, af12, and af13 were less important.

(iii) Seven negative factors against adopting PPPs in Vietnam included: **High risk relying on the private sector** (nf2); **Few schemes have actually reached the contract stage** (nf3); **High participation costs** (nf7); **High project costs** (nf8); **A great deal of management time spent on contract transaction** (nf9); **Excessive restrictions on participation** (nf12); and, **Lengthy delays in negotiation** (nf13). The factor nf9 was found to be more important, nf2, nf3, and nf8 were rated important, and nf7, nf12, and nf13 were rated less important. Analysis of both

the attractive and negative factors showed that PPPs are well suited to adoption by Vietnam as the attractive factors outweigh the negative factors.

(iv) The three factors that attract private sector involvement in PPP projects in Vietnam are as follows: **Government sponsorship** (a1); **Government assistance in financing** (a2); and, **Government guarantee** (a3). Factors a2 and a3 are more important while a1 is less important.

(v) Three factors that contribute to the achievement of VFM in PPP projects in Vietnam are: **Off the public sector balance sheet treatment** (vfm15); **Reduction in disputes, claims and litigation** (vfm16); and, **Nature of financial innovation** (vfm17). Factors vfm15 and vfm16 are important while vfm17 is more important.

(vi) In total, there were 15 critical success factors of PPP projects in Vietnam. Of these, two CSFs, i.e., **Sound business climate** (csf2) and **Transparent procurement process** (csf16) were ranked more important. A further seven CSFs were ranked important. These included: **Stable macro-economic condition** (csf1); **Favourable legal framework** (csf4); **Commitment and responsibility of public and private sectors** (csf5); **Strong and good private consortium** (csf6); **Competitive procurement process** (csf15); **Clearly defined responsibilities and roles** (csf19); and, **Clarifications of contract documents** (csf20). The remaining six CSFs were ranked less important: **Available financial market** (csf3); **Good governance** (csf7); **Shared authority between public and private sectors** (csf8); **Well-organised and committed public agency** (csf9); **Multi-benefit objectives** (csf10); and, **Thorough and realistic assessment of costs and benefits** (csf18).

Therefore, among the 37 factors, 23 factors were finally obtained to be important or more important than the rest. These important factors included: two reasons (r1 and r3); three attractive factors (af5, af6, af7); four negative factors (nf2, nf3, nf8, nf9); two attractions (a2, a3); three VFM drivers (vfm15, vfm16, vfm17); and nine CSFs (csf1, csf2, csf4, csf5, csf6, csf15, csf16, csf19, csf20), which will be used for further explanations in the following chapters.

Apropos of the differences of perception between the groups of respondents concerning the importance of the principal factors, the results of the analysis found that respondents from North Vietnam considered the success factor **Stable macro-economic condition** more important than those from South Vietnam. The result indicated that the macro-economic conditions in South Vietnam might be better than those in North Vietnam. This will be confirmed and discussed in the following Chapters. No significant difference was found in the comparison of the public and private sectors.

In this chapter, the findings of the quantitative data analysis have been detailed. However, in order to understand these findings deeper and more comprehensively in the context of Vietnam, it is necessary to conduct further analysis of the qualitative data using further interviews. This information will be presented in Chapter 6.

6 PHASE II - QUALITATIVE RESULTS

6.1 INTRODUCTION

The aim of the qualitative phase in this study is to explain the important results obtained from the statistical analysis undertaken in the quantitative phase. According to Creswell, Tashakkori, Jensen and Shapley (2003), the selection of participants for the qualitative data collection and analysis is based on what is found in the quantitative phase. In this study, an intermediate or connected phase in the research process was established between the quantitative and qualitative phases. It was used for two purposes: (1) selecting the participants for data collection and for multiple case study analysis in the qualitative phase; and, (2) developing the interview protocol for the qualitative phase. The results of the two phases were integrated during the interpretation of the final findings of the whole study (see Chapter 7).

This chapter is structured as follows: In Section 6.2, rather than presenting qualitative results according to the four individual case studies, and in order to avoid long and repeated presentation of the results and content description, the result of a cross case analysis of the four cases is provided. The chapter concludes with a summary (Section 6.3) of the qualitative findings.

6.2 QUALITATIVE RESULTS

Analysis of the interviews with each participant, created themes related to each participant's experience of participating in typical PPP projects. Other material, i.e., reflection notes, follow-up emails, project documents, and government reports or legislation documents were used to verify the information provided by the interviewees and to enrich the context of case studies in the presentation of the qualitative results. Themes and sub-themes were determined in the analysis. Themes included: personal information; project information; reasons for adopting PPPs; attractive and negative factors for adopting PPPs; attractions

for private sector involvement; VFM drivers; critical success factors, and differences between North and South Vietnam. However, the themes and sub-themes differed in their detail. To avoid long presentation of the results and content description being repeated, instead of presenting detailed narration of each case, followed by cross-case analysis, the cross-case analysis was straight away described with supporting evidence drawn from the narrative analysis of each case. This mode of presentation made it more compact and comprehensive to follow.

Information about interviewees

All four interviewees were around 40 years old of age: Dinh was 38, Tran was 43, Nguyen and Le were both 40 years old. They were all graduates: one had a Bachelor's degree (Dinh), and the remaining three had Master's degrees. Dinh had a Bachelor's degree in construction engineering. Nguyen graduated from Hanoi Transport and Communication College, majored in Bridge and Road Engineering, then graduated from Vietnam Maritime University having majored in Marine Economy. He subsequently did a three-year-training course at seaports in the Soviet Union. Tran first obtained a Bachelor's degree in 1995, majored in Bridge and Tunnel Engineering, and then obtained a Master's degree in Business Administration. Le also had a Master's degree in Business Administration.

They all had considerable experience in the construction industry: all had from 8 to 10 years experience of PPP projects. Their positions included two full time salaried employees (Dinh and Tran) and two managers (Nguyen and Le), equally divided for each region (North and South Vietnam). Each side had a manager and salaried employee participants. Their highly experienced work records helped to ensure the validity and credibility of the valuable information they provided. Dinh had 15 years of experience in infrastructure construction, of which more than half (8 years) was in construction PPP projects. Although Dinh was only a construction engineer, he had been involved in many PPP projects stretching from the northern to the southern regions of Vietnam. Nguyen had 17 years experience in maritime infrastructure construction management, 10 years of which were spent working on PPP projects. He was appointed Head of Seaport Department under the Vietnam Maritime Administration. Tran had 20 years' experience in construction, design, consultancy, supervision and project management of infrastructure projects. Ten years of this experience were spent on PPP projects. Tran had been No.2 Project Manager, No.7 Project Management Unit (PMU) under the Ministry of Transport. Le was currently working for No.17 Thang Long Investment and Construction Joint Stock Company as a Vice General Director. In the past, Le had worked as the head of the Investment and

Planning Department for a BIDV Expressway Development Joint Stock Company. He had 17 years' experience in construction projects, of which ten were with PPP projects.

Project information

The projects that the four participants opted to discuss included two road construction projects and two bridge construction projects, evenly distributed in each region (North and South Vietnam), i.e, each region had a road construction project and a bridge construction project. The first project (**Project one**), about which Dinh related his experience, was the construction of the national highway No.38, which stretched from the Yen Lenh bridge to Vuc Vong junction in North Vietnam. The company that Dinh worked for at that time was a partnership between the Thang Long Group (THANG LONG-CTCP) and Civil Engineering construction Corporation No.4 Joint Stock Company (CIENCO4). He had participated in the project both as an investor and as an implementer on private sector side.

This highway was an important route. It had a total length of 82.5 km, crossed the territories of a province and three cities, i.e., Ha Nam province (28km), Bac Ninh city (22.5 km), Hai Duong city (14 km), Hung Yen city (18 km), and connected with main national highways No.1 and No.5. highway No.38, the section from Yen Lenh bridge to Vuc Vong junction totalling 12.4 km in length (of which 4.2 km was coincident with the old highway No.38), included the main gateways of Ha Nam province and Hung Yen city. It connected with the main national highway No.1 and the Phap Van - Ninh Binh freeway leading to Ha Noi capital city and to South Vietnam.

This project, which was initially proposed by the Directorate for Roads of Vietnam, was approved by the Ministry of Transport after being accepted by the government. According to Dinh, the Ministry subsequently appointed No.6 PMU the Ministry's representative to manage and sign the project contract with the project company.

The second project (**Project two**) to which Nguyen was alluded the Yen Lenh bridge construction project, which crossed the Red River and connected Ha Nam province to Hung Yen city through Dong Van, a district of Ha Giang province in North Vietnam. Nguyen, who was the representative of the public sector, was assigned to manage the project directly. His main tasks included supervising its progress, and monitoring the contract performance. The bridge, which was

2230m long and 15m wide, was designed and constructed by Vietnam with investment capital raised from the private sector.

The project was initially proposed by the Ministry of Transport, then evaluated and appraised after consultation with the relevant ministries, branches and localities. It was then assigned to East Sea PMU (No.7) as its representative to manage the project. The project was then publicised as an open competitive procurement to select investors. The procurement result was subsequently evaluated by No.7 PMU and approved by the Ministry of Transport. Three investors participated in the procurement. The result saw a partnership of Civil Engineering construction Corporation No.4 Joint Stock Company (CIENCO4) and the Thang Long Group (THANG LONG-CTCP), who finally won the project.

Tran's project (**Project three**), which was located in the South-West region of Vietnam, was the Co Chien bridge project. His role while working on this project was of an operational director, working on behalf of competent governmental agencies. He managed and operated the construction tasks implemented by construction contractors, design consultants, and the project's supervision and appraisal.

The bridge project had a total length of 1.619 km with four lanes in scale. Its starting point was in Da Phuoc Hoi commune, Mo Cay district, Ben Tre province; and, its end point was in Binh Phu commune, Cang Long district, Tra Vinh province. The project was proposed by the government. The Ministry of Transport assigned No.7 PMU to manage the project. The private investor in this project was Rach Mieu Bridge BOT Limited Company.

The last project (**Project four**) in which Le took part was the Trung Luong - My Thuan expressway construction project in South Vietnam. While engaged with this project, Le worked for a company which was the biggest shareholder of the project company (in the private sector).

This expressway, with its total length of 54.11 km, was one part of the Ho Chi Minh - Can Tho cities expressway. The first part linking Ho Chi Minh city with Trung Luong was being constructed. The project also included the construction of several roads connecting national highway No.1A with the expressway, frontage roads and intersections along the expressway. The authorised government agency was the Ministry of Transport; and, the project investor was a combination of five jointed investors including: the Bank for Investment and Development of Vietnam (BIDV), Investment and industrial development corporation (BECAMEX IDC), Vietnam Urban and Industrial Zone Development Investment

Corporation (IDICO), Civil Engineering construction Corporation No.5 Joint Stock Company (CIENCO5), and Petro Vietnam Finance Corporation (PVFC).

The four projects were all undertaken using the BOT model, and were all consulted by Transport Engineering Design Incorporated (TEDI). After the project's construction phase was finished, the investors managed, maintained and operated the facility to recover the invested capital, pay for the loans, and gain the agreed interest. The facility will eventually be transferred back to the government's management and exploitation when the project life-cycle ends. All four projects have or were proposed to have long periods of time to manage constructed facilities, i.e., 25 years (Project one), 30 years (Project two), 19 years and three months (Project three), and not decided yet for Project four.

There are two ways of proposing a public construction project in Vietnam: by the public sector or by the private sector. In this case, all four projects were proposed by the public sector. However, while only one project in North Vietnam (Project two) selected private investors through competitive procurement, the remaining three, one in North Vietnam (Project one) and two in South Vietnam (Projects three and four) used direct appointments to choose private investors.

It is also important to note here that all four projects had the participation of SOEs as private investors at that time. The total budgets for each of the projects were considerable, ranging from US$16.5 million (Project two), US$42 million (Project one), US$115.4 million (Project three) to US$1.5 billion (Project four). Three of the four projects had successfully completed the construction stage with costs overrunning by only 5 to 10 per cent and with time saved from 25 to 58 per cent. Project one was proposed to be constructed in 24 months. This was then shortened to 18 months, and it was finally completed 15 days earlier. The originally proposed progress for Project two was 36 months. But, due to a request to finish before the flood season of the Red River, the construction works were enhanced to shorten the time to 24 months, during which for 4 months the construction could not be done due to the high water level of the Red River. Therefore, the actual lead-time was only 20 months. In Project three, the lead-time was 15 months less than expected (reduced from 36 months as expected to 21 months as actuality). One project (Project four), which budgeted the biggest investment (US$1.5 billion), failed due to the effect of the global financial crisis during 2007-2008. Private investors were not able to mobilise extremely large capital investment for this project.

Reasons for adopting PPPs

All four participants stressed the urgency of having the facilities constructed as the key driving force for adopting PPPs. Also, half of the participants indicated facilitating the participation of SOEs in public projects as another reason for adopting PPPs. They explained that this urgency depended on locations where the facilities were located, at which pressures of economic development demanding newer facilities and social pressures caused by old poor facilities became urgent under shortage of government funding. Ten years ago, Vietnam's economy grew rapidly, giving rise to many demands on infrastructure development in conditions wherein investment capital to meet said needs was very limited. While the government sought to invest in various projects, it could not mobilise enough funds to invest in all of the projects at the same time. Transportation, the most concerning and top priority sector, was struggling with a budget that was too small to meet its investment demands. Nguyen detailed his experience in the Yen Lenh bridge project:

> The government had approved the intention of the project's implementation, conducted the pre-feasibility, but not had a budget to implement. The project needed to be invested in as soon as possible due to the pressure of promoting regional economy through the improvement of goods transportation between the two economic regions (the northern and southern areas of Red River) without causing any obstruction in the Hanoi capital. It was also urgent demand for local people to have a more convenient travelling way, especially in the flood season (Nguyen).

Similarly, Le said that the main reason for the application of a PPP to the Trung Luong - My Thuan expressway was the importance of the route. Upon completion, it would resolve the issues of economic development and the social pressure of poor infrastructure on the area. However, total investment in this project was extremely high, and the government lacked the requisite capital to implement it. Le further explained that:

> This was the arterial route, so it was really important. The government had approved Vietnam expressway network, and had already invested in one part of the route using the government funding. The demand on infrastructure development was high while the government funding was restricted. The government had therefore to call for capital socialisation to mobilise private investments (Le).

When emphasising the two aspects **Economic development pressure of demanding more facilities** and **Social pressure of poor public facilities**, the four participants illustrated how these pressures reflect in the projects. With reference to the highway No.38 project, Dinh observed that the location included four major industrial parks (Dong Van 1,2,3, and Hoa Mac) employing a total

of 25,000 workers in approximately 200 enterprises. This created an extremely large demand for the transportation of goods and materials. The route had been upgraded in 2002; but, in more recent times, it had become degraded and seriously damaged. The regional economy was considerably affected by the single trading route connecting the region to other surrounding areas. Dinh claimed that the urgency of having the old route upgraded and the new route constructed was attributable to the pressure of regional economic development and the improvement of people's lives in the region.

Highway No.38, sectioning from Yen Lenh bridge to Vuc Vong intersection, had a 1.7 km road passing through Hoa Mac town centre and another 1.5 km road passing through densely populated areas. During the peak hours, these roads were often congested. In addition, the route had a 3 km road going through the planned new administrative centre of the region, and a 1.5 km road through the industrial centre of Hoa Mac. Dinh singled out as among the main factors causing congestion and unsafe transportation along the route. He added that according to provincial statistics, every year there were increasing numbers of traffic accidents on this route, accounting for 30 per cent of the total accidents in the whole province. This became one of the province's most urgent social problems. The project implementation was expected to reduce the number of traffic accidents, connect the town with surrounding areas in the region, and facilitate the improvement of social conditions. According to Dinh, it also had important implications for security in the region.

In the Yen Lenh bridge case, Nguyen observed that highway No.38, which connected the main national highways No.1A and No.5, had to pass through the Yen Lenh ferry route; and, there was no bridge across the river. This important traffic route, which was obstructed at Yen Lenh due to the ferry, caused hazards and reduced the traffic's capacity. Furthermore, the part of the Red River from Hanoi capital city to Nam Dinh city, which was approximately 100 km long, had no bridge. In the rainy season, due to the fast-flowing water, travel by ferry was delayed. Building a bridge across the river was crucial; it would facilitate a smooth flow of traffic, and reinforce the connection between the region and the neighbouring economic areas.

Nguyen also maintained that due to population growth, the number of vehicles plying the route increased extremely quickly; and, the number of vehicles also increased. As a result, traffic jams regularly occurred on that road, causing huge losses of both lives and property. The people's response to the social problems related to traffic became increasingly urgent. Thus, it was essential to build the

bridge. "The pictures showing the happiness of people when the bridge was finished showed their urgent needs of building the bridge. Even some people said that it was the millennium bridge they ever dreamed of". Nguyen further explained that in the past, people travelling from Hung Yen city to Hanoi capital city had either to take a ferry or travel on a remote circle road. But, the ferry service was discontinued in the rainy season. Hence the requirement for a bridge, something about which the Hung Yen people had dreamed for a long period of time.

In the cases of the Co Chien bridge and the Trung Luong - My Thuan expressway, both facilities were located in the Mekong Delta, an important economic zone. Tran indicated that the construction of the Co Chien bridge played an extremely significant role in developing the regional economy.

> The Co Chien bridge was connected to national highway No.60 and synchronised with the planned network of national transportation. It thus created motivation for economic development in the region. It was also part of the coastal corridor development strategy to facilitate investment attraction in the region. The project was appropriate for the Mekong Delta's economic development policy; and, it enhanced security and defence in the region. Additionally, by connecting with the Ham Luong and Rach Mieu bridges, it created a link between the national highway No.60 and main national highway No.1A. At the same time, it created a circulation connection among Ben Tre, Tien Giang, Soc Trang, Tra Vinh provinces and between these provinces and Ho Chi Minh city, reducing the increasing traffic pressure on the main national highway No.1A (Tran).

Tran further listed the social benefits that the project had brought to the community, e.g., reducing traffic disruption, reducing damage and losses to people and goods, promoting agricultural products, enhancing social and regional development, and improving the regional environment.

Le also emphasised the importance of the Mekong River Delta zone where the Trung Luong - My Thuan expressway, a part of Ho Chi Minh - Can Tho expressway, was located. He said:

> The Mekong River Delta is the country's basket of rice. This region is the biggest exporter of food, agricultural, forest and aquatic products in the country. The expressway of the project played an important role in trade between the Mekong River Delta and the world. This delta produces the highest yield of food, seafood and tropical fruit in the country. This economic zone is rich in natural resources and has favourable conditions for economic cooperation (Le).

He further indicated that the status of the transport system in the Mekong Delta at that time was very poor, causing great annoyance to people. Demand for

building the expressway running to six Mekong Delta provinces was urgent, as main national highway No.1A was overwhelmed, very small, went through many provinces, restricted the speed and caused multiple traffic accidents. Additionally, Le observed that based on the statistics of average population growth rate in the region, experts had shown that while the population structure in the region throughout which the project extended was stable, each locality had a different economic growth rate, a factor partially attributable to transport restriction, especially road traffic. He finally stressed the significance of constructing the remaining sections of the expressway stretching from Trung Luong to Can Tho in terms of national defence-security, politics, and culture for the Mekong River Delta and neighbouring provinces. It would boost the development of the region in particular and of the whole country in general.

Second, Dinh and Tran both indicated a common driving force for SOEs to participate in PPP projects, derived from specially favours offered by the government, e.g., loan guarantees with preferential interest rates. They raised doubts regarding the adoption of PPPs, saying they may be due to the facilitation for SOEs to participate in public projects. The fact that SOEs used government money or borrowed investment capital from state banks with specially guaranteed interest rates to invest in PPP projects could indicate the phenomenon which Dinh metaphorically considered to be "old wine in new bottles". Thus, the aim of adopting PPPs to mobilise private investment for public projects was completely destroyed in this sense according to Dinh. However, Tran pointed out that although the nature of funding that SOEs had invested in previous PPP projects was still questionable, the issuance of Decree number 15 in early 2015 had to some extent minimised the perception that SOEs received preference in PPP projects. Tran said:

> According to the Decree number 15, regulating investment in forms of PPPs, preferences for SOEs were minimised by the requirement that SOEs participating in PPP projects have to provide the compulsory equity, which must be not related to public budget and also receive no governmental guarantees for the loan of private capital. The subsequent issue is only how stakeholders participating in PPP projects will follow and implement this Decree (Tran).

Attractive and negative factors for adopting PPPs

The four participants pointed out the attractive factors for adopting PPPs, factors primarily evident in the **Facilitation of creative and innovative approaches** by the private sector, which was rigorously applied in the projects. For example, when discussing the application of new technologies during the construction of the Yen Lenh bridge project, Nguyen said:

> This was a big bridge. Technical requirements for the project were considerably complex because cable-stayed concrete bridge with such the long spans had not ever been in Vietnam before. Meanwhile, Red River's water level was rising and fast flowing. Therefore, the contractor had to apply specially creative and innovated techniques in this project (Nguyen).

Nguyen added that creativity and innovation were also clearly reflected in the project through the smart use of construction equipment layout and the efficient but economical supply of raw materials appropriately to meet construction capacity in low water, flood, rainy seasons or hot summers.

Le said regarding the Trung Luong - My Thuan expressway that creative and innovative solutions were evident in: the financial mechanism which saw toll fees collected from nearby national highway No.1A to cover project costs, the way of mobilising extremely large upfront project capital through loans from foreign commercial banks, and approved policy to allow the segmentation of private investment so as to reduce capital pressures for private investors. Le further emphasised that "in this project the government allowed private investors to propose the supporting mechanisms for implementing the project. We then had on-board communications about project objectives. We encouraged and appreciated creative ideas proposed by employees, design partners, construction partners, suppliers, and donors...".

With reference to the highway No.38 project, Dinh said that innovation was achieved through a compact, simple, and efficient way in which the PMU was established. Creativity was reflected in the successful selling and managing of advertising services across the highway. Regarding the last aspect, Tran expressed a slighly different point of view, saying that investors still mainly focused on fee collection overlooking other business services with constructed facilities, e.g., advertisements across the highways or bridges, when formulating their financial plans. He said:

> Monitoring this project and other projects, I found that the ability to apply the creativity and innovation of the private sector has not to be maximised yet because the main work still focused on the construction stage while the business with infrastructure services was normally small and insignificant. Even when the investors built financial plans, they only calculated the estimated toll fees collections. They skipped the business plans on the infrastructure services (Tran).

Although creativity and innovation were clearly reflected in the projects, Dinh noted that it was not easy to independently evaluate the effectiveness of creative and innovative solutions applied in PPP projects because they were normally

expressed through a combination of cost savings, shorter project times, and improved project quality. While cost and time could be measured, the project quality was hard to quantify.

As well as stressing the advantage of facilitating creative and innovative solutions, the four participants also emphasised the advantage of using private investment, which ultimately resulted in cost minimisation and time savings. Regarding **Cost minimisation**, Dinh, Tran and Le all agreed that the private sector invested their own money in PPP projects. While the nature of the private investments was for profit, they had to think of ways to minimise the total project cost. Savings were made throughout the various stages of the projects, i.e., from costs related to the selection of consultants and contractors to construction, operation and maintenance costs. For example, Dinh said: "Private investors invested their own money, so they had to think of constructing high quality facilities to reduce maintenance costs in subsequent stages of the projects". During the construction of the Yen Lenh bridge, although the project cost increased more than expected due to additional labour mobilisation, it was still a positive figure compared to similar infrastructure projects using government funding. As Nguyen said: "Ministry of Transport had said that this was the cheapest bridge ever if calculated in m2. Total expense, divided in m2, was only about VND$7 - 8 million per m2 (approximately USD$350 - 400 dollars per m2)". Nguyen further commented:

> The parties involved in the project at that time participated in procuring the project with a sole aim of creating jobs rather than in-depth studies on the organisation and operation of collecting toll fees. This project was invested by the private capital with the calculation based on domestic costs. Therefore, the cost was reasonable and consistent with investors' ability (Nguyen).

Apropos of **Time saving**, all four participants alluded to the reasons for late delivery of public infrastructure projects using full or partial government funding. They indicated that the first reason was the ineffective disbursement of government money, a result of bureaucratic and cumbersome administrative procedures on the public side. In traditional projects, the government funding allocation was frequently insufficient and not provided on time, resulting in passive facilitation of the deployment process. In PPP projects, private investment usually included equity capital and loans from commercial banks. Cash flows were thus adequate, stable and timely for the work undertaken by the private sector. Once receiving the capital, if the investors and/or contractors were capable, they would be fully prepared for project deployment given that unlike the public sector, the decision was not subjected to sophisticated levels of decision-making and approval.

Tran additionally maintained that although the government was aggressively implementing measures to reform administrative procedures in order to minimise unnecessary procedures, the effectiveness was not clear enough. This was one of the barriers feared by investors. He said:

> I had a conversation with a foreign lawyer, a leading expert on investment in Vietnam. He said that many investors were willing to spend hundred of millions of dollars on PPP infrastructure projects in Vietnam, but the projects had to be approved by 11 different agencies which made them frustrated. Furthermore, I saw that magazines and presses were still mentioning that some officials of government authorities made harassment by not facilitating enterprises who came to work with them (Tran).

Dinh and Nguyen suggested that bureaucratic and cumbersome administrative procedures strongly affected project progress. The procedures, e.g., submission, appraisal and approval of the project implementation would pass through so many levels and agencies that much time was wasted. In some not rare cases, in order to disburse the capital, the private sector had to spend more costs for lubrication, which was the basis of corruption. Government agencies had called for a fight against corruption but there was still no obvious result.

The second reason offered by Nguyen, Tran, and Le was delays to site clearance. For example, Nguyen said: "Yen Lenh over the Red River, where there was no house, only the corn fields on the river banks so the site clearance took a huge advantage. However, for PPP infrastructure construction projects going through residential areas or urban areas, the compensation and resettlement were major problems". They all agreed that the justification for this emergent issue was generally attributed to unsatisfactory compensation unit price. Investors using private funding could provide extra compensation to solve this issue.

Additionally, while Dinh nominated the incomplete and complex legal framework as another reason for the delays, Le added further concerns. For example: projects approved by the public sector were not guaranteed, leading to the fact that adjustment and supplement within the implementation process tended to happen; private companies that tried to win the project at all costs constructed the facilities very slowly; pressure on the accountability of the PMU was not high; or, when using government funding, because the project company had to comply with procurement laws and other relevant laws, the project's progress tended to be slow.

Tran said regarding PPP projects using 100 per cent of private capital that some items such as monitoring and consultancy should use government funding to

tightly control both capital and quality when organising and implementing PPP projects. He further said that "if the entire capital was invested by a private company, he would be the boss and select the contractors, consultants by himself. He would dominate all of these for his profits". Tran cited the Co Chien bridge project as a vivid illustration.

> In this project, the investor's capital was mainly used in the construction. For other items, the government funding was used. Therefore, the control over this project was tightened from the design stage to the selection of consultants and supervisors. Although the investor invested to construct the bridge by their own money, consultants and supervisors for this project were selected by the No.7 PMU. That was the thing the investor did not want. This was very interesting. I was wondering if the regulators knew this or not. Recently, inspectors of Ministry of Construction had gone to inspect, and they highly appreciated the effectiveness of this monitoring mechanism (Tran).

With reference to negative factors for adopting PPPs, all of the participants agreed that PPP projects incurred **High risks relying on the private sector**. They cited five potential risks that private investors may encounter when participating in PPP projects: site clearance and compensation; difficulty in forecasting traffic flows; change of government policies; difficulty in mobilising capital for projects requiring extremely high costs; and, difficulty in handling specific technical characteristics.

First, Nguyen, Tran and Le said that the life-cycle of a PPP project was often extremely long and accompanied by many unpredictable factors, e.g., traffic flows that could not be precisely measured. For example, in the case of the Yen Lenh bridge project, the financial calculation for the construction stage was relatively accurate. Nguyen said: "This was because the government first calculated the cost for building the bridge with a reasonable price. The investors then recalculated and found it also feasible". However, according to Nguyen, the operation stage of the project entirely failed due to the fact that the investors miscalculated the traffic flows through the bridge. Tran also said that not only in the Co Chien bridge project, but also in the most current transport PPP project, the private sector recovered project capital mainly by collecting toll fees, in the process enduring high risk due to difficulties in forecasting traffic flows. In concordance with Nguyen and Tran's opinions, when addressing the case of the Trung Luong - My Thuan expressway project, Le also maintained that the risk of traffic flow forecasts to calculate the time of collecting toll fees for capital recovery was to say the least difficult. He said: "I think the risk of traffic flow forecast is really high because it is difficult to measure accurately. It depends on the accuracy of the statistics and the stability of the regional development and planning".

Second, site clearance and compensation were indicated as potential risks for the private sector according to Dinh and Tran. They both said that site clearance and compensation in construction projects were especially sensitive to conduct, and could easily lead to disputes and litigation which would slow down the implementation stage of the PPP projects. For example, regarding the highway No.38 project, Dinh observed that the location passed through densely-populated areas; and, the compensation task was therefore difficult due to the unsatisfactory level of compensation for people's property. This finally led to non-compliance, litigation, and delay of the process of project implementation. Tran further maintained that when this process was delayed, other domino effects, e.g., inflation, would likely follow.

Third, as both Nguyen and Tran agreed, the private sector could be faced with changes in government policy. The risk lay in the fact that PPP construction projects often lasted up to 30 years or more. During such a long period of time, changes in government policies are likely to occur. For example, Tran said with reference to the Co Chien bridge project that the government opened horizontal roads and other branches of the roads causing a decrease in traffic flows. As a result, the collection of toll fees faced difficulties. A similar example can be found in the case of the Yen Lenh bridge project. Nguyen said:

> This project was unsuccessful in the operation stage and when collecting toll fees because after the infrastructure had been put into operation for five years, Hanoi built three more bridges, the Thanh Tri, Vinh Tuy, and Nhat Tan, connecting the second and third ring roads for traffic heading toward the northern provinces. Thus, the traffic flows across the Yen Lenh bridge reduced significantly and made the project business fail (Nguyen).

Finally, Le personally specified the difficulties in mobilising huge amount of up-front capital for large PPP projects, and in the handling of the specific technical characteristics of the areas in which the facilities were built. These characteristics included the hydro-graphic conditions (vulnerable to flood), geological conditions (weak strata of 20 to 30m in depth), lack of construction materials used for embankment, and terrain conditions (required large quantity of sluices and bridges).

All four participants emphasised the fact that **Few schemes have actually reached the contract stage**. In other words, many PPP projects have failed before reaching this stage. There were many reasons for the failures. First, in his attempt to explain this phenomenon, Dinh suggested that the adoption of PPPs was still new in Vietnam. And, because both the public and private sectors were not familiar with PPPs, they lacked experience of implementing them. According to Dinh, the

government should have specialised advisory units for PPP implementation at governmental and/or municipal levels, aiming at long-term sustainable policies, anticipating different scenarios, and preparing timely solutions. Another reason was that the government promoted the deployment of PPP projects based on an incomplete legal framework and without specialised units. PPP project participants from both the public and private sectors conducted PPP projects too rapidly. If something went wrong, the policies were adjusted and readjusted, hoping the issue would be fixed. Dinh said "Just following these adjustments made us too tired". Similar observation was made by Le, who said that an incomplete legal framework could diminish the stakeholders' strong determination regarding PPP projects.

Second, another reason provided by both Tran and Le was that the feasibility and effectiveness of the PPP projects had not been seriously assessed. Tran suggested that shortage of government funding currently gave rise to increasing social-economic pressure on infrastructure development. Many projects had adopted PPPs. However, this did not mean that all of the projects were feasible. He said:

> I saw that it was still a pending problem that ministries, agencies and localities rampantly established and developed numerous PPP projects to call for private investment. However, the feasibility and effectiveness of these projects had not yet been seriously assessed, leading to the infeasible and failed implementation of many projects (Tran).

He suggested a possible consequence, i.e., that although some projects were approved to be procured by PPPs, either the donors did not lend or the investors were not interested in the projects' deployment when the financial plan for the projects proved non-feasible.

The last justification for the failure was expressed in political terms. Nguyen and Le's opinions differed here. Le was convinced that in some cases, political concerns can affect the success of a PPP project. For example, if it is close to an election, leaders do not want to make decisions and/or commitments that could risk their re-election chances. Conversely, Nguyen observed that there was no or little connection between a project's failure and political terms although the latter could on occasion delay the implementation of PPP projects. Nguyen also said that the Yen Lenh bridge project had received enthusiastic and strong support from the country's top leaders. The matter depended on the level of importance of a project.

High project costs were also agreed upon by the four participants as a disadvantage of adopting PPPs although each provided different reasons to support their

conclusion. The first reason indicated by Tran was procurement fraud, which could easily happen in the current non-competitive procurement situation. He said that:

> Although there was no final particular assessment on the profitability and efficiency of PPP projects, many authorities were questioning why the total investment and/or estimated costs of PPP projects were higher than other projects using other capital sources. It may include procurement fraud. Recently, the majority of PPP projects had been using direct appointments to select investors or contractors. This was the reason that the project costs could not be saved due to lack of competitiveness in bidding prices (Tran).

Le alluded the lack of capacity of private investors as the second reason, evident in the fact that they had to hire foreign experts and/or take higher profit margins to compensate for the risk costs that increased the total costs. According to Le, the profit for the private sector in PPP projects could prove attractive only when it was at least higher than the current bank interest rate. He added that due to the long lead-time and the high risk associated with infrastructure investment projects, the threshold for the private sector should be from 22 to 24 per cent, calculated by the sum of the bank interest rate (10 per cent), inflation (7 per cent), and risk (5 - 7 per cent).

However, Nguyen, highlighting a different angle of the issue said that previous PPP projects were not costly because they were conducted at the pilot stage of PPP programs. Hence, they had been undertaken under an incomplete legal framework and had less experience of project assessment. But, later PPP projects would incur higher costs as project proposals and feasibility would be carefully prepared and assessed. He took the Yen Lenh bridge project as an example:

> The cost of the project was not high because at the time of starting the Yen Lenh bridge project, there was not many PPP projects done in North Vietnam. And, the government wanted to pilot more PPP projects. Therefore, the key difference of the project compared to other projects using traditional government funding was only that the private sector had spent their own investment capital in building the bridge, operated, and collected toll fees for 30 years to recover the upfront spendings. The other parts of the project, e.g., design, construction consultancy, monitoring the project implementation were invested and implemented by the government (Nguyen).

A considerable amount of management time spent on contract transaction was also of concern. All three participants considered this as another disadvantage of adopting PPPs. They provided three reasons: long time spent on signing the credit agreement; long time spent on negotiating project contracts; or, long time spent on approvals due to the involvement of various ministries, sectors and localities.

First, as both Dinh and Nguyen agreed, the private sector could be faced with the complexity of project approval and development as a result of the involvement of many ministries, e.g., Ministry of Transport, Ministry of Planning and Investment, Ministry of Natural Resources and Environment, sectors, and localities. One consequence was that the whole process took a long time to undertake.

> Deploying PPP projects actually often involved many ministries, sectors and localities. Therefore, approval had to be gained. The presentations of project proposals and contracts had to be done again and again. These presentations might be for the right audience or wrong audience who did not understand. Thus, it normally took a long time for these projects to be approved (Nguyen).

Second, in the case of the Co Chien bridge project, Tran said that it took a long time to sign the credit agreement. The banks conducted many surveys and assessments of the project costs and capital recovery ability of the investors. He also said that the banks were under considerable pressure to lend to PPP projects due to bad debts. The state banks had sent official documents to other banks in the system, warning them to be cautious when lending for PPP projects. Therefore, before making decisions vis-à-vis lending, the banks would assess the projects very carefully; and, in this way, valuable time would be wasted.

Third, Le added that contract negotiations for PPP projects were extremely important because if the government officials who negotiated the PPP contracts with the private sector were not professional and responsible, the total investment in the projects would be increased by the private sector to prolong the fee collection period. However, if the government tightened the contract negotiation process, it would discourage private investment. Therefore, this process usually took considerable time. In this project, Le said, there were two reasons for the long contracting stage: (1) the donors were not identified; and, (2) the legal framework was incomplete, causing difficulties for the ministries and departments that advised the government regarding a suitable support mechanism for the project. Regarding this aspect, Nguyen commented that there was evidence in the Yen Lenh bridge project that if private investors had strong financial and technical capacity, the contract negotiation would be processed smoothly and quickly. He said:

> The government proposals were agreed upon, and immediately invested in and implemented by the investors who won the project. This was a partnership of two construction companies who were among the most powerful companies in terms of capacity, finance, organisational and management mechanisms. The partnership had an outstanding procurement document, so it would easily win the project. The negotiations involving the project contract were also conducted smoothly because

> all the contents in the bidding documents and in the contract met the requirements of the procurement invitations (Nguyen).

Regarding the suitability of adopting PPPs in Vietnam, three out of the four participants (Dinh, Tran and Le) indicated that adoption was suitable in the context of Vietnam but to different extents. Dinh and Le were optimistic that it was completely suitable, giving reasons respectively following the common trend of many other countries in the world and achieving considerable improvement of the infrastructure in Vietnam in recent years. Tran, on the other hand, expressed a sceptical opinion that no formal evaluation or studies of the appropriateness of PPP adoption in Vietnam were found. However, he indicated that in terms of government funding deficits, raising funds from the private sector could be considered a reasonable option.

Attraction for private sector involvement

The four participants all agreed that **Government assistance in financing** and **Government guarantees** played an important role in the financial feasibility of PPP projects. PPP projects are usually sizable and implemented over a long period of time. They face numerous risks and unexpected factors; and, the key motivation for private investors participating in PPP projects is profit. To this end, they have to mobilise a large amount of upfront investment but cannot expect a payback in the short term. The fact was that in the case of PPP transport projects, it would be difficult to recover upfront capital investment based solely on toll fees collection. There were many cases where planned recovery was evaluated as a feasibility; but, in reality it failed. Finally, the government had to take the projects back. As a result, private investors would tend towards non-participation without government support for financing and/or guarantees.

Regarding the first attraction (**Government assistance in financing**), Dinh and Nguyen indicated respectively that while the government offered a reduction of income tax in the case of highway No.38 project, the government accepted the policy for the investors in the Yen Lenh bridge project to collect fees not only on the 220om long bridge but also on highway No.38 at two ends of the bridge (total length 50km). Tran with reference to the Co Chien bridge project, said that the government contributed 49 per cent of the total project investment. He added that without this amount of capital, the project would not have been feasible because the capital recovery plan of collecting toll fees would take too long. Banks and credit institutions would therefore not favour lending. He further alluded to the change of policy involving the contribution of government capital:

> According to Decree No.108 (currently expired), regulating for the usage of PPP forms, e.g., BOT, BT, and BTO, the maximum government capital contribution was 49 per cent. However, the fixed number of 49 per cent made project proposals inflexible. Thus, the new decree No.15 had no regulation on a fixed percentage of government funding contribution. The proposals of private capital would depend on the financial capability of investors (Tran).

In an attempt to emphasise the importance of having government assistance for financing PPP projects, Le claimed the most decisive reason for the failure of the Trung Luong - My Thuan expressway project was that both the public and private sectors could not agree on investment plans for the project. Le said:

> Japan International Cooperation Agency (JICA) consulted and recommended the government to assist at least 40 per cent of investment for the feasibility of the project as the commercial loan interest rate was very high at that time. Once the project was feasible, donors would lend. However, the government did not agree, and did not even approve ODA for the project. The government only agreed about the mechanism of collecting toll fees for investment recovery. Meanwhile, the project had a weak point that main national highway No.1A ran parallel with this project, and there were no tollbooths on this national highway. It would divide the traffic flow and significantly reduce the traffic volume passing through the project. Finally, the government agreed and allowed collecting fees on the main national highway No.1A to compensate the costs of this project. However, even with this mechanism, after calculating the financial plan, the project was still infeasible (Le).

Le personally observed that some projects could still recover upfront investments with only toll fees collection; for example, those with low investment and large traffic flows. Other projects with high investment and shared traffic volumes found it very difficult to obtain payback through toll revenues only. Le's experience of this project revealed that mobilising capital for PPP transport projects with large total investment in Vietnam was far from simple. The government discouraged borrowing from domestic banks, a move reflected in the high interest rate loan of approximately 19 - 20 per cent during the period 2007 to 2008. Moreover, if the loan was from domestic banks, it required borrowing from a combination of many banks to raise enough capital for the project. Foreign investors, who were genuinely interested and wanted to invest in the project, required a feasible financial plan with partial financial support from the government.

Apropos of the second attraction (**Government guarantees**), Tran and Le claimed that this method in PPP projects could reduce risks and increase the reliability of the projects for private investors as well as for the financial lending sector. However, it was difficult to obtain government guarantees for PPP projects in

the context of having such a high public debt, except in special situations when private investors had what Tran called a "relationship". He said: "This was a delicate matter, as far as what I had experienced, 'relationship' played an important role, accompanied with many other issues".

In addition, Dinh and Nguyen warned of the possibility of abusing government support and/or guarantees if government management was not tight enough. Some possible consequences included excessive profits for private investors, and the introduction of corruption through which private investors and/or groups of interest could profiteer. Nguyen said that:

> Because of the lack of experience and knowledge or corruption, some local authorities had agreed about beneficial guarantees and support for private investors which were contrary to the PPP legislation and objectives or long-term interests of the public sector. Taking advantage of this activity, the private investors signed unfair and non-transparent contracts which profited both themselves and groups of interest in the public sector (Nguyen).

Nguyen further claimed that to some extent, the participation of private investors in PPP projects was "safe" as they would always be able to transfer the failed projects back to the government. He said: "I saw this had happened when some private investors usually procured with low costs to win projects and could be entitled to deploy, manage, and exploit the projects. After several years of operation, these investors declared their losses and returned the projects to the government".

VFM drivers

As suggested above, the four participants all stressed the advantage of raising investment capital from private investors. They believed it to be the only convincing explanation for the VFM driver **Off the public sector balance sheet treatment**. In principle, financing public projects using government funding would be calculated on the public accounting system, increasing of the pressure on the public debt. Other sources from which the government could raise capital for the projects included ODA and government bonds. But, these two options were restricted. Raising capital from the private sector could remove the investment from the balance sheet of the public sector's accountability. For this reason, it would not affect the public debt.

However, this depended on whether the government's partners in PPP projects were from the public or private sector. Dinh, Nguyen and Le raised the issue of SOEs participating in PPP projects. Investments from SOEs remained state capital in nature. In many cases, SOEs were guaranteed by the government for

loans from state banks. In such cases, it destroys the aim of adopting PPPs to mobilise private investment for public projects. It was obvious that the VFM factor in these projects was not ensured. For example, in the case of the Yen Lenh bridge project, Nguyen said:

> At that time, the private investors in the project were a partnership of two SOEs that were not equitized yet. I think that the amount of money from the government capital and loans from the state banks given to unequitized SOEs were the same: they were both from government funding. It meant nothing to get investment capital from government funding to invest in PPP projects (Nguyen).

Although recently the two SOEs were equitized according to Nguyen, the proportion of government capital in the two enterprises was still rather high.

Another VFM driver peculiar to PPP projects was **Reduction in disputes, claims and litigation**. Dinh and Le explained that in traditional projects using government funding, the issues were normally related to particular aspects, e.g., insurance liabilities, inadequate wages for workers, and not paying taxes. But, they mainly stemmed from site clearance because the compensation price was lower than the market price. When applying PPPs using the investment capital of private investors, they may have instant solutions of additional compensation for the people at the clearance site, by extension resulting in the reduction of these issues. Nguyen and Tran added that if the connection between the public and private sectors worked perfectly, the disputes normally seen in public projects using government funding would be minimised. Tran, however, individually insisted that there was no difference in comparison with traditional projects regarding the level of disputes, claims, and litigation. He gave the Co Chien bridge project as an example:

> In this project, the private sector invested in and constructed the bridge, operated, maintained and collected toll fees. The government invested in and took responsibility for other work, e.g., the processing mechanism, policy, supervision and site clearance. They collaborated very well to each other. Therefore, no dispute, claim or litigation appeared. However, in regards with the level of disputes, complaints and litigations between PPP and traditional projects using government funding, I found them similar (Tran).

Nature of financial innovation was also an important factor to create VFM for PPP projects, giving three justifications. First, as Le observed, private investors often invested in many projects at the same time. This required the introduction of new and effective ways to optimise the input and output of the projects. Otherwise, it could place financial pressure on projects in which they were investing.

Second, Le added, in the case of public projects using government funding, appraisals were normally conducted by assessments of economic efficiency, income distribution and the basic needs of the projects. However, for PPP projects, financial plans were also appraised to ensure the recovery of investment and loan repayment, which ultimately encouraged innovative financing methods. The last reason given by Tran was that motivated by using their own money, private investors' financial analyse were done carefully, as they sought to find creative elements and optimal solutions to financing the projects. The government was motivated by tightening its control on its money. Innovative financial supervision of the projects would thus be encouraged.

Success factors

The first important factor affecting the success of PPP projects was related to **Macro-economic conditions**, which was considered as relatively stable in Vietnam by the four participants, evidence of the government's success in curbing inflation, according to Tran. Dinh and Le opined that stability had a positive influence on PPP projects, creating an attractive environment for domestic and foreign investors to participate in the PPP market in Vietnam. However, Nguyen and Le both claimed that stable government policies also played an important role in the success of PPP projects. Nguyen said that the government's changing decision to build three new bridges across the Red River had a serious impact on the traffic flows through the Yen Lenh bridge. This was one of the main reasons for the failure of the project in the operation stage. Le further suggested that the government should also aim to build long-term policies, and have reasonable and timely adjustments in place to ensure economic-social development fast and sustainable enough to attract potential investors.

The four participants nominated **Sound business climate** as another important factor to attract domestic and (especially) foreign investor participation in PPP projects, by extension contributing to the success of the projects. However, they all stated that the business climate in Vietnam was not good in terms of fairness between SOEs and private companies. Nguyen commented: "I think if SOEs still receive special favours from the government, domestic private enterprises would find hard to develop while foreign companies would hesitate to participate in the local PPP market". Tran added that the participation of private investors and approval for project winners depended in part upon what he called "relationships".

Favourable legal framework was another success factor that all participants agreed upon. They concurred that at the time of the projects' implementation,

the legal framework was incomplete, resulting in many difficulties. However, after the passing of some important PPP legislation, i.e., Decree No.15 specifying the regulations for investment in PPP projects, Decree No. 30 specifying some detailed articles on procurement law about selecting investors, and Decision No.2777 specifying the organisation and performance of the functional competent state agencies when signing and implementing PPP projects, the legal framework for PPP projects became adequate. Three out of the four participants (Dinh, Tran, and Le) commented that detailed guidelines and corresponding contract templates for PPP projects needed to be issued early to facilitate the implementation of laws and decrees relating to PPPs. Tran further used the Phu My bridge project, a different project in which he had participated, as a striking example of how an incomplete legal framework could affect a PPP project's results. He said:

> Previously, the Decree No.108 did not regulate for equity contributions to PPP projects. Therefore, in the case of the Phu My bridge project, the government was the guarantor for the private sector to acquire loans, and the private sector borrowed the entire capital for the construction of the bridge. Thus, in that project, the role of the private sector was only one of organiser of financial brokerage and helping the government to manage the project. The result was that the cost for the Phu My Bridge project climbed from an estimated VND$1,800 billion (approximately US$90 million) to VND$3.250 billion (approximately US$162.5 million). The reason for the increase was justified by the large amount of interest. However, today, the new Decree No.15 regulates more clearly for the equity of private investors in PPP projects (Tran).

Commitment and responsibility of the public and private sectors to contribute their best resources to the public-private relationship in the long term also played an important role in the success of PPP projects, according to the four participants. Dinh and Le said that in order to create the motivation for the parties with the highest commitment and responsibility, three aspects needed to be focused on: binding their responsibility, ensuring their benefits, and cooperation between the parties. Dinh and Le further suggested that in cases in which the private sector invested the total project capital, the government should ensure its roles in managing and supervising project contract implementation, e.g., project timing and planning, construction quality, supervision of hygiene, and environmental safety. Tran, with reference to the Co Chien bridge project, said that the project had just started to collect toll fees; thus, its final result has not been carefully assessed as yet. This factor was clearly reflected in the example of the Phu My bridge project as one of the main reasons leading to the high cost of the project (in other words, it meant a failure). Tran said:

> In the Phu My bridge project, three commitments which the People's Committee of Ho Chi Minh city did not implement as being agreed upon included: first, the ramification for all heavy trucks to travel on the route which would go over the bridge; second, approval for policy which allowed collecting toll fees off motorcycles on the bridge; and, third, synchronous construction of the east ring road of the bridge to facilitate vehicles travelling on it. Consequently, the revenue from collecting toll fees from the bridge was not achieved as planned, even not enough to pay for the loans interest of that project (Tran).

With regard to the success factor **Strong and good private consortium**, all participants agreed that private sector participation in PPP projects should be highly qualified to complete projects as the private sector could not solely invest and conduct half of the projects. In cases where a private company wanted to participate in PPP projects but its capacity was not strong enough, the solution was partnership with other companies to complement each other's capabilities and weaknesses. However, the companies in such partnerships should enter into long-term relationships, and understand each other. Tran added that the capability of an investor could be expressed in many ways; but, the most obvious way was through equity. For example, he said regarding the Co Chien bridge project that the investors were asked to pay ten per cent cash into a nominated bank account. After receiving the money, the bank would lend to the investors. Through this action, both the government and bank lenders could preliminarily assess the real capability of the prospective private investors. He also highlighted the disturbing situation of many investors in other PPP projects:

> On 29th July 2015, Deputy Prime Minister Hoang Trung Hai had signed an official document, which was then sent to Ministry of Planning and Investment, Ministry of Finance, and Ministry of Transport to request these ministries to review and closely examine the capability of investors participating in PPP projects. That was to say many PPP projects currently had problems with this matter (Tran).

The other two success factors that invited the agreement of all four participants were **Competitive procurement process** and **Transparent procurement process**. In theory, to achieve cost effectiveness and creative and innovative solutions from the private sector, procurement of public projects in general and PPP projects in particular should involve an appropriate number of contractors or investors participating in a competitive and transparent bidding environment. Accordingly, open and international bids would be preferred. In some cases, e.g., projects requiring to be invested in and implemented earlier due to the urgency of the whole region's development, it would have to sacrifice some criteria to achieve bigger goals in each specific project. In such cases, directly appointed biddings could be a consideration. Public procurement laws and related PPP regulations

had clearly defined the conditions for direct appointments of contractors or investors in public projects. Nguyen, commented on the competition and transparency of the Yen Lenh bridge project said:

> The competitive procurement and participation of three investors led to the fact that cost effectiveness, creativity and innovation were obtained. The transparency of the project was evident in the open dialogue between the public and private sectors. Moreover, the winner prepared a clear bidding document for the project. Therefore, it was easy for the government to appraise and approve. As a result, the construction stage of the project was truly successful (Nguyen).

However, in Vietnam, not only in PPP projects but also in public projects in general, direct appointments of investors or contractors happen frequently. Therefore, as Dinh suggested, many cases were not really competitive and there was no evidence of transparent bidding. Nguyen also expressed scepticism on this issue: "I did not understand why so many investors or contractors were appointed. It was difficult to understand reasons why international, open biddings were not held: direct appointments of investors or contractors were obtained instead. Obviously, there could be a question of competition and transparency". Tran, who frankly said it was due to corruption, added: "If you had a good 'relationship', you would have projects because direct appointments meant that you would win the projects for sure".

In addition, **Clearly defined responsibilities and roles** and **Clarification of contract documents** were also stated by the four participants as two other important factors for PPP projects' success. The importance of these success factors were clearly shown in the projects because: the PPP topic was new in Vietnam at that time; legal framework for PPP implementation was still incomplete; standardised forms of contracts had been deficient; and, both the public and private sectors had little experience in implementing PPP projects. Tran stressed that the number of investors who had capability and experience in management and operation was small, especially in an uncompetitive and non-transparent procurement environment. And, the reality was that contracts were rarely respected because their feasibility was not high. Le further observed that in some cases, the deep intervention of the public sector in PPP projects reduced the creativity of the private partners; in other cases, the government failed to provide enough commitment and necessary support for the private sector. More specifically, Nguyen stressed a painful consequence of the two factors in the Yen Lenh bridge project:

> As the project did not achieve the revenue as expected, the private sector returned the project to the government for management. However, the PPP topic was relat-

> ively new at that time. Neither the public sector nor the private sector had experience of the selection and structure of PPP projects. Even the roles and responsibilities of the parties participating in the project were not clearly defined. Contract was not sufficiently built. All caused difficulties for those resolving the disputes when they occurred. Finally, the government had to receive the project and suffered losses (Nguyen).

Other success factors were also suggested by the participants. Tran and Le said that **the attention and care of top leaders** and **the coordination of relevant government ministries and departments** played an important role in the success of the PPP projects. Le, explaining the reasons, said that a business or country would have limited resources; and, there were many projects seeking investment. If close attention, the support of the top leadership and good coordination between all at the relevant governmental levels were obtained, the projects would be prioritised in the allocation of resources and receive support (in acceptable ways) for the success of the projects. This would apply from the preparation stage to construction, operation and exploitation throughout the project's lifecycle.

Dinh, Tran, and Le also agreed that **the support of civilians** was also extremely important. Le observed that while many of the projects had been completed to the construction stage, the local people fenced off the facilities. Operation activities were disallowed due to doubt surrounding the environmental pollution that the projects could cause in the surrounding residential areas. Dinh said: "In the case of the highway No.38 project, the support of the people played an important role in the success of the project because the project implementation directly affected those who were living in the area. Thus, if the project could meet the people's expectations, it would always be welcome".

Differences between North and South Vietnam

All four participants recognised the advantages for PPP implementation in South Vietnam compared with North Vietnam. However, while South Vietnam had more favourable conditions (Le), even much more favourable conditions (Dinh and Tran), Nguyen insisted that South Vietnam had more advantages albeit the difference between the two regions was not considerable. Some advantages to which the participants alluded are listed as follows:

Relating to economic aspects, Dinh, Nguyen and Le argued that South Vietnam is an economic area which includes many economic centres and industrial parks. Thus, due to stronger economic development, the government funding allocated to the southern provinces was considerably higher, which led to higher capital

contribution of the government to PPP projects. Additionally, Dinh and Nguyen indicated that the business environment in South Vietnam was better. South Vietnam had a better service system, and a clearer and more open management mechanism. It could boast of many private companies with strong financial capability and experience, enterprises that were willing to invest in large projects, take risks, be creative, and pursue their profits.

Apropos of the political factor, Nguyen claimed that North Vietnam was heavily influenced by bureaucratic and cumbersome administrative procedures. In addition, it was affected by political factors because the location is close to the central government. This made the investment environment considerably less attractive. Nguyen further said that compared to South Vietnam, North Vietnam had a lower investment rate but a higher corruption rate. In line with this, Le commented that the activities of the real estate markets in South Vietnam were evaluated as stronger. There were fewer price bubbles resulting in a more advantageous and transparent environment for PPP implementation than in North Vietnam, especially for Build-Transfer (BT) projects which exchange lands for infrastructure facilities.

Regarding the infrastructure and weather conditions, the four participants all recognised the advantage of having better transport infrastructure facilities in South Vietnam, e.g., deep-water seaports, seemingly advantageous inland waterway transport systems, more completed roads, and more convenient freight over the river wharf. Le said that the transportation demand in South Vietnam was also higher due to the various kinds of transport. North Vietnam used only roads. Tran additionally stressed that even the weather in South Vietnam is more favourable than that in North Vietnam.

With reference to cultural and human matters, Nguyen, Tran and Le commented that the people in South Vietnam were considered to be more generous, open-minded, more easy going, and business-oriented. They were also more decisive. They thus had more potential to participate in PPP projects. The working style of the people in South Vietnam was more liberal than in North Vietnam. For example, they did what they said. Therefore, site clearance and compensation payment was easier. Furthermore, the people in South Vietnam had a better chance of earning money than those in North Vietnam; thus, their incomes were higher and, as a result, their purchasing power was stronger.

Tran further suggested that the government should build a legal framework with common regulations for PPP implementation nationwide. But, in each region,

specific guidelines still needed to be issued separately to fit the context and cultural practices of each region.

6.3 SUMMARY

This chapter has provided a presentation of the whole process of developing case selection and interview protocol structure. A qualitative data description of a cross case analysis, evident from the four case studies is also presented. Although no emergent theme was found, the main aim of this chapter has been to further explain the 23 important principal factors for PPP implementation obtained from the quantitative phase. Their details have provided an insight into the principal factors of PPP implementation in the context of Vietnam. Four additional factors were obtained, which contributed to the success of PPP projects in Vietnam. These are stable government policies, supports from civilians, attention and care of top leaders, and the coordination between relevant governmental ministries and departments. In addition, the differences between North and South Vietnam were analysed. The findings in this chapter will be integrated with those found in the previous chapter in order to synthesise and facilitate further discussion in Chapter 7. A comparison will be drawn with what has been found in the literature survey.

7 DISCUSSION

7.1 INTRODUCTION

The primary purpose of this Chapter is to integrate the findings from the two previous Chapters (Quantitative and Qualitative analysis and results). This analysis is undertaken in the context of the research questions. It is, of course, acknowledged that the quantitative findings are more comprehensive than the qualitative findings. The qualitative findings nevertheless provide illustrative and more in-depth elucidation of the details surrounding a number of important factors relating to PPPs in the context of Vietnam. Second, the Chapter develops an ideal model of PPPs in Vietnam derived from the empirical research. Third, it considers the case of PPPs in Vietnam in the context of the literature, especially findings of research conducted in other countries in the region and beyond. This is to determine whether there are specific factors for Vietnam or whether relevant factors relating to PPPs are common or different across countries.

This chapter, which presents a discussion of the interpretation of the quantitative and qualitative phases of the study, is structured as follows: In Section 7.2, the quantitative and qualitative findings are interpreted and discussed by responding to each of the research questions posed. This then leads to the development of an ideal model for the principal factors for PPP implementation in Vietnam (Section 7.3). A comparison between the important results obtained in Vietnam and those found to be important in other countries alluded to in the literature survey appears in Section 7.4. In this section, discussion centres on 23 common and specific important factors for countries, and on four new specific factors for Vietnam that emerged during the qualitative data analysis. Section 7.5 presents the study's limitations, and offers suggestions for future research. The chapter concludes with a summary of the tasks alluded to above (Section 7.6).

7.2 INTERPRETING THE QUANTITATIVE AND QUALITATIVE RESULTS

The integration of the quantitative and qualitative findings are presented in this section to respond directly to the research questions.

Question one: What are the principal factors for PPP implementation in Vietnam?

This study investigates a pool of 84 factors obtained from the literature survey (see Chapter 4, Section 4.3.3.1). Only 37 out of the 84 factors were confirmed to affect the successful implementation of PPP projects in Vietnam (see Chapter 5, Section 5.3). These factors included:

- Two reasons for adopting PPPs, in relation to the economic and social pressures of developing public facilities
- Seven attractive factors of adopting PPPs, which are related to: cost advantage; time saving; creative and innovative facilitation; improvement of maintainability; and, technology transferring to local enterprises
- Seven negative factors of adopting PPPs, which are divided into two groups reflecting excessive commercialisation and problems of participation
- Three attractions for private sector involvement in PPP projects relating to government guarantee, sponsorship and assistance in financing
- Three VFM drivers in PPP projects relating to: balance sheet treatment; reduction in disputes, claims and litigation; and, nature of financial innovation
- 15 CSFs of PPP projects. These CSFs are divided into three groups: group one indicates macro-environment CSFs; group two reflects micro CSFs relating to a competitive and transparent procurement process; and, group three focuses on other micro CSFs relating to specific projects

These 37 factors were found to be valid and workable in the context of Vietnam, reflecting the real practice of PPP projects in this country. This confirmed the benefits of applying the quantitative data analysis tools used in this study. Earlier studies in the literature review generally obtained many more valid factors, and did not disregard those that were invalid or lacked relevance to a specific country context. It is noted here that although the qualitative interview protocol was designed to explain the important factors of PPP implementation in Vietnam only, both important and unimportant factors will still be discussed in response to the second research question. The qualitative findings have provided illustrative

and deeper explanation of the important factors relating to PPPs in the context of Vietnam.

Although two further attractive factors for adopting PPPs (**Solve the problem of public sector budget restraint** and **Reduce public money tied up in capital investment**) were also obtained through Exploratory Factor Analysis (EFA), they were finally excluded after Confirmatory Factor Analysis (CFA) in the quantitative phase. These findings are understandable when looking at the problem of PPP implementation in Vietnam. Many SOEs have participate in PPP projects, and most of the investment in these SOEs comes either from government budgets or is guaranteed by state banks. And, because the relationships engendered by these projects are basically public-public partnerships rather than public-private partnerships, they are not likely to solve the public financing issues.

Previous studies also indicates that although financing influenced government decisions across the world adoption of PPPs, many experienced practitioners in PPP implementation claim that other attractions rather than financing should be taken into consideration. They further claim that financial motivation should not be considered the only reason for the adoption of PPPs (Chan et al. 2009*a*, Cheung et al. 2010). While the results of the attractive factors were inconsistent with those of many previous studies (Li et al. 2005*a*, Chan et al. 2009*a*, Chou et al. 2012, Ismail 2013*c*, Robert et al. 2014), they were consistent with those obtained in Cheung et al.'s (2010) study, indicating that public sector budget restraints were not of major concern. However, before reaching a conclusion, their results require further investigation because the views expressed were from 11 respondents only.

A further point to note is that two VFM drivers (**Long-term nature of contracts** and **Improved and additional facilities for the public sector**) were eliminated from CFA in the quantitative phase. These factors were determined to be not significantly loaded and removed from the final results in order to obtain better goodness of fit. A possible justification for the first factor is that the PPP topic was new to Vietnam. Both the public and private sectors had an experience deficit, the legal framework regulated for PPP implementation was incomplete, and there was a lack of standardised PPP contracts. As a result, efficiencies arising from long-term contract management were not truly appreciated. Regarding the second factor, it is noted that while improved and additional facilities were closely considered in the areas of urban regeneration and/or project refurbishment (Li 2003), they were not popular in PPP projects in Vietnam.

Question two: How is the criticality of these factors regarded in Vietnam?

In order to sort out the important factors, a two-dimensional importance analysis was conducted. The result showed that only 23 out of the obtained 37 factors were found to be important or very important (see Chapter 5, Section 5.5.1). The important factors included: two reasons for adopting PPPs; three attractive factors of adopting PPPs; four negative factors of adopting PPPs; two attractions for private sector involvement in PPP projects; three VFM drivers in PPP projects; and, nine CSFs of PPP projects. The remaining 14 factors were determined to be less important. It is important here to first explain why these factors were evaluated as less important in the context of Vietnam.

With reference to the four less attractive factors of adopting PPPs, the first factor related to technology transfer to local enterprise, which was occasionally considered a requirement for accepting foreign investment in Vietnam. However, its immediate results were not readily seen. Therefore, other factors were evaluated as relatively more attractive. The result of the first factor was completely consistent with those of earlier studies which rated it less important. It was even ranked bottom in some studies (Li et al. 2005*a*, Chan et al. 2009*a*, Cheung et al. 2010), and not considered an attraction for adopting PPPs in others, e.g., Ismail (2013*c*) and Hwang et al. (2013).

Similar results were also found with two other less attractive factors relating to maintainability and buildability improvement, indicating a perception consistent with previous studies' findings. The last less attractive factor relating to capping the final service costs was rated less important in this study. And, it was considered invalid in some other studies, e.g., Ismail (2013*c*) and Robert et al. (2014). The justification here may be that in practice, the cost advantage in the service provision of PPP projects has yet to be clearly determined. While many PPP projects were completed with cost efficiency, some resulted in escalating costs compared to traditional projects. Moreover, PPP projects usually last a lifetime; that is, 20 years or more. This can result in difficulty evaluating their performance, especially in Vietnam that has only lately adopted PPPs.

Apropos of the three less negative factors, the findings vis-à-vis excessive restrictions on participation and high participation costs found in this study were consistent with those obtained from the literature, e.g., Li et al. (2005*a*), Cheung et al. (2010), Hwang et al. (2013) and Ismail and Azzahra Haris (2014) (all of which rated them less important). However, the factor relating to lengthy delays in negotiation showed some difference. While it was ranked within the top four factors in the previous studies, the Vietnamese respondents ranked it rather low. There could be two justifications for this: first, direct appointments of in-

vestors or contractors were common in PPP projects in Vietnam. Lengthy delays in contract negotiation were not popular as both public and private parties had worked informally with each other prior to the projects being approved; and, second, the participation costs in PPP projects in Vietnam were initially backed by government kick-start programs, e.g., "Project Preparation and Start-up Support Facility" to support the preparation and development of PPP projects in Vietnam (PPSSF 2015). These kinds of programs were normally funded by international organisations, e.g., the World Bank and the Asian Development Bank (ADB). Therefore, in effect, the three negative factors did not impact much on PPP projects in Vietnam.

The factor that attracted private sector involvement in PPP projects using government sponsorship was rated less important in Vietnam because it is rarely used in PPP projects as it causes the problem of high public debt to become more severe. This result was consistent with Chan et al.'s (2009*b*) finding, but opposite to the conclusion that Cheung et al. (2010) reached in their studies.

Among the six less important CSFs of PPP projects, the first factor relating to an available financial market was evaluated as less important, which again confirmed the problem of frequent SOE participation in PPP projects. A consequence was that the private financial market had not become genuinely involved in PPP projects in Vietnam. This result showed some differences compared to the results of previous studies. It was noted that developing countries normally rated this factor more important because the development of a mature financial market in developing countries would be of some importance. It would encourage the private sector to initiate PPP projects due to its reduction of financing costs and diversity of financial products (Ismail 2013*a*). Conversely, the developed countries, which had better financial markets, tended to consider this factor relatively less important compared to other factors (Cheung, Chan, Lam, Chan and Ke 2012).

Regarding the last five CSFs, although the reason for these factors being perceived as of low importance in Vietnam has not been convincingly explained, it may be assumed that other CSFs were considered more important. The results were slightly different from those in previous studies, which rated two CSFs, i.e., well organised and committed public agency and good governance, particularly important. For example, in Hwang et al.'s (2013) study, the result indicated that the public sector should take the public interest into consideration when performing PPP projects, and ensure their capacity to procure PPP projects. Ismail

(2013*a*) claims that government inefficiency mostly contributed to the failure of the implementation of PPPs in Malaysia.

The multiple case study analysis conducted in the qualitative phase provided an explanation for the findings revealed by quantitative analysis. The detailed information provided by the four participant groups helped to explain the 23 important principal factors for PPP implementation in Vietnam. This study's quantitative and qualitative findings provide deeper understandings of the principal factors for PPP implementation in Vietnam that impact on the outcome of decision-making when considering the adoption and preparation of PPP projects. The following section features discussions of the findings of each of the 23 important principal factors and four new factors for PPP implementation outlined in this study in the context of Vietnam. Tables 36 and 37 present a summary of the integration of the quantitative and qualitative results with a note that factors marked in bold and in italics indicate very important ones.

Reasons for adopting PPPs

The quantitative findings revealed that the following two important driving forces lead to the adoption of PPPs in Vietnam: **Economic development pressure of demanding more facilities** and **Social pressure of poor public facilities** (see Chapter 5, p. 143). The qualitative findings emphasised both reasons. The first driving force for adopting PPPs in Vietnam agreed upon by all respondents was the necessity to develop facilities for economic development and social improvement under government funding shortages as key reasons to adopt PPPs in Vietnam (see Chapter 6, p. 172). For example, facilities such as roads, bridges, and other forms of transportation infrastructure for densely populated regions, important economic zones, or essential to regional transportation and trading would normally be considered suited to PPP projects.

The finding regarding the importance of financial driving forces in this study, e.g., government budget deficit, further confirmed the results of previous studies. For example, Yehoue et al. (2006) claim that the problem of government funding shortage for infrastructure development persists in all countries, not only in developing countries, but also in those countries with developed economies. Cheung et al. (2009*b*) maintain that many governments first adopted PPP projects due to the shortage of government funding or to avoid public investment restriction in cases of tightened budget control.

The quantitative and qualitative results of this study referred more to the importance of constructing facilities to tackle Vietnam's economic and social pressures

Important factors	Quantitative findings	Qualitative findings
Reasons for adopting PPPs	1. Economic development pressure of demanding more facilities 2. Social pressure of poor public facilities	- Urgency of having facilities due to the importance or location of facilities - Facilitation for SOEs to participate in public projects (conflicted opinions)
Attractive factors of adopting PPPs	1. Facilitation of creative and innovative approaches	- Application of new technologies - Smart use of construction equipment layout and raw materials - Toll fee collection from another nearby highway - Mobilising large capital and segmenting investment - Compact, simple, and efficient Project Management Unit - Selling and managing advertisement services (conflicted oppinions) → BUT still limited and not easy to be independently evaluated
	2. Reduce total project cost ***3. Save time in delivering***	Limitations of using government funding: - No incentives to deliver public projects more efficiently - Ineffective disbursement of government funding due to cumbersome bureaucratic administrative procedures → costs for lubrication, the basis of corruption - Delay in site clearance due to unsatisfatory compensation unit price; and, delay for complying with procurement and other relevant laws
Negative factors of adopting PPPs	1. High risk relying on the private sector	- Difficulty in forecasting traffic flow - Sensitivity of conducting site clearance and compensation - Change in government policies - Difficulty in mobilising capital for large PPP projects; and, complexity of project approval and development
	2. Few schemes have actually reached the contract stage	- PPPs are new in Vietnam; both the public and private sectors lack experience; and, incomplete and unstable legal framework - Feasibility and effectiveness of PPPs had not been seriously evaluated or examined - Effect of political terms (conflicted opinions)
	3. High project costs	- Larger profit margin - Lack of capacity of private investors due to hiring foreign experts - Procurement fraud - Incomplete legal framework and limited experience of project assessment (conflicted opinions)
	4. A considerable amount of management time spent on contract transaction	Time spent on: - Signing credit agreements - Contract negotiation - Approval process due to the involvement of various ministries, sectors, and localities

Figure 36: A summary of the quantitative and qualitative results (Reasons for; Attractive and Negative factors of adopting PPPs).

Important factors	Quantitative findings	Qualitative findings
VFM drivers	1. Off the public balance sheet treatment	- Depending on whether the government's partners are the public or private sector - Avoiding financial restrictions and facilitating more investment in constructing public facilities
	2. Reduction in disputes, claims and litigation	- Instant solutions of additional compensations for site clearance (conflicted opinions)
	3. Nature of financial innovation	- Investing in many projects at the same time - Financial plans must be carefully evaluated and appraised - Difference in motivation between the public and private sectors
Attractions for private sector involvement in PPP projects	***1. Government assistance in financing***	- Hard to be feasible without support due to long-time toll fees collection and difficult in lending capital from banks and credit institutions
	2. Government guarantee	- Hard to be applied due to causing high public debt except in case of corruption, leading to the possibility of abusing government supports
Macro-environmental related CSFs	1. Stable macro-economic conditions	- Stable macro-economic environment evident in curbing inflation - Also need to have stable government policies
	2. Sound business climate	- Not good in Vietnam due to the unfairness between the public and private sectors, indicating the importance of having "relationship"
	3. Favourable legal framework	- Incomplete currently, so detailed guidelines and corresponding contract templates need to be issued early
Specific projects related CSFs	4. Strong and good private consortium	- More difficult in Vietnam where many domestic private companies lack finance and technology capability → Need to partnership with other companies
	5. Clearly defined responsibilities and roles 6. Clarification of contract documents	Contracts were rarely respected because the feasibility of contracts was not hight → Government intervention was sometimes either too overreaching or too little
	7. Commitment and responsibility of the public and private sectors	- Binding responsibility - Ensuring project benefits - Cooperation between parties
Transparency and competition related CSFs	8. Competitive procurement process ***9. Transparency procurement process***	- Procurement process lacks transparency and competition, evident in many direct appointments of investors in PPP projects, a sign of corruption
Differences between the North and the South	Difference in terms of macro-economic environment	- Procurement process lacks transparency and competition, evident in many direct appointments of investors in PPP projects, a sign of corruption

Figure 37: A summary of the quantitative and qualitative results (VFM drivers; Attractions for private sector involvement; CSFs of PPP projects).

as key driving forces for the adoption of PPPs. The country's infrastructure system is old. Severely degraded after long periods of war, it cannot cope with the fast pace of economic growth and emerging social change, e.g., urbanisation, rapid boom in population, traffic jams and associated accidents. Any attempt to alleviate these problems will require a corresponding development of new facilities and an upgrading of the country's old infrastructure systems. Regrettably, government expenditure, which is already at record levels, cannot tackle the situation. As a result, financially free-standing projects such as tolled roads or bridges appear a promising solution.

Half of the respondents indicated the facilitation of SOEs to participate in public projects as another reason why the public sector has adopted the PPP approach to deliver their projects. But, this is a dysfunctional way of operating PPPs in Vietnam. An interesting finding that to date has never been addressed in the literature. It is one of the important clues to recognising the haphazard and incomplete models of PPPs in action in Vietnam. As indicated by one of the respondents from the North, it could be metaphorically considered to be "old wine in new bottles". In other words, its implicit meaning may be related to corrupt activities. The respondent from the South expressed a positive indication that this issue had been minimised by the introduction of new legal documents issued recently. However, this statement could be considered an advocacy for the issue as the equitisation process of SOEs is still happening slowly.

Attractive factors of adopting PPPs

Quantitative analysis confirmed the three following important attractive factors urging the adoption of PPPs in Vietnam: **Facilitate creative and innovative approaches**, **Reduce the total project cost**, and **Save time in delivering the project** (see Chapter 5, p. 145). The qualitative results help to explain these factors in the context of Vietnam (see Chapter 6, p. 175). Integration of the quantitative with the qualitative results revealed that drivers rated important in Vietnam were efficiency-related. Qualitative analysis showed that apart from the economic pressure of demanding more facilities, another important motivation to implement PPPs is social pressure to improve poor public infrastructure. Therefore, efficiency-related factors appeared to be attractive for adopting PPPs in Vietnam, which is logical when considering the driving forces leading to the adoption of PPPs in Vietnam as discussed above.

Regarding the first attractive factor relating to creative and innovative facilitation, qualitative analysis of multiple case studies provided additional insight into the

respondents' experiences of facilitating the private sector's creativity and innovation in the PPP projects. For example: the application of new technologies; the smart use of construction equipment layout and raw materials during construction of the Yen Lenh bridge project; the creative use of toll fee collection from another nearby highway; the innovative way of mobilising large capital through loans from foreign commercial banks and segmenting investment in the Trung Luong - My Thuan expressway project; and, a simple but effective way of organising a Project Management Unit on highway No.38 project and creativity in selling and managing advertisement services across the highway.

However, as indicated by half of the respondents, the urge for creativity and innovation in PPP projects in Vietnam was still limited or not easy to be independently evaluated, due to the fact that PPP projects in Vietnam are undertaken in a limited competitive commercial environment due to frequent involvements of SOEs and many direct appointments to PPP projects. Ismail's (2013*c*) study stresses the role of operating in a competitive environment to achieve creativity and innovation of PPP projects.

The importance of this attractive factor, which was confirmed by both quantitative and qualitative analyses of the study, additionally supported Birnie's (1999) finding that as opposed to traditionally procured public projects, which use detailed definitions of inputs, output-based specifications in PPP projects encourage competition among private companies to seek and develop creative and innovative solutions to delivering the projects. Creativity and innovation in PPP projects could also be facilitated through the combination of different projects into a single contract (Li et al. 2005*a*).

Regarding the second and third attractive factors, which involve cost reduction and time savings, qualitative analysis explained these two factors in the Vietnamese context as follows: Vietnam, a newcomer to PPPs, has found both benefits in terms of time saving and cost reduction important attractive factors, stressing the limitations of traditional projects compared to PPP projects. First, while there are no financial incentives for the public sector working on traditional projects to deliver these projects faster, PPPs encourage the private sector to complete the design and construction of public facilities as quickly as possible. This is because the private sector will receive the revenue to pay the initial costs and generate profit once the public facilities are ready for operation. In addition, using its own money prompts the private sector to think of new ways to ensure cost minimisation throughout the various stages of the projects. For example, by

using its own money, the private sector is motivated to construct better quality facilities in order to reduce maintenance costs in subsequent stages.

Second, all four respondents stressed the ineffective disbursement of government funding due to cumbersome bureaucratic administrative procedures. This could potentially affect the traditional projects' costs and progress. According to statistics obtained from the e-portal of the Ministry of Planning and Investment (MPI 2012*b*), delayed projects occur frequently. For example, the year 2011 saw 4436 delayed public infrastructure projects. This became a matter of fierce debate in the 2012 parliamentary session. One of the main reasons for the delays was due to bureaucratic complex administrative procedures. Government officials estimated that in the case of Vietnam, more than US$320 million could be saved, not to mention improvement in the local investment environment if a reduction of all 256 administrative procedures was effectively achieved (Vietnam Briefing 2010). It was even argued that the private sector should spend more money on lubrication in order to ensure smooth disbursement of government funding for public projects.

In addition, other reasons provided by three fourths of the respondents when discussing the limitations of using government funding for public projects included site clearance delays due to unsatisfactory compensation unit price and delays in complying with procurement and other relevant laws. For example, by using private funding, private investors can shorten the time spent on finding contractors or suppliers for their projects because they do not have to adhere to the procurement laws.

Negative factors of adopting PPPs

Quantitative analysis revealed the four following important negative factors for adopting PPPs in Vietnam: **High risk relying on the private sector**; **Few schemes have actually reached the contract stage**; **High project costs**; and, **A considerable amount of management time spent on contract transaction** (see Chapter 5, p. 146). The qualitative results help to explain these factors in the context of Vietnam (see Chapter 6, p. 175). Integration of quantitative and qualitative analyses indicated that these negative factors have seriously affected the implementation of PPP projects, evident in the fact that the government's target for PPP spending by the end of 2010 was US$55 billion for 384 projects. However, it spent only US$18 billion on 108 projects (less than one-third) (ECC 2013).

Regarding the first hindrance relating to risks imposed on the private sector, it was theoretically argued that the majority of PPP projects are large, representing

exposure to huge commercial risk (Li 2003). And, because they are usually implemented over long periods of time, they are prone to many unpredicted risks, e.g., traffic volume that cannot be accurately predicted (Cheung et al. 2010). In the context of Vietnam, private investors in PPP projects could face high risks due to issues surrounding: traffic calculation; site clearance and compensation; change in government policies; and, the complexity of project approval and development.

Apart from the risk of miscalculating the traffic flow, the respondents' key reasons for PPP project failures in the operation stage included the sensitivity of conducting site clearance and compensating construction projects in Vietnam. This could easily lead to disputes and litigation, by extension causing more delays and perhaps stalled projects. In practice, land would be at risk if private investors signed PPP contracts without first ensuring that the land was "clean", i.e., had been completely cleared and compensated for. While in reality this sense there are few "clean" lands in Vietnam, in other countries, Australia for example, the government supplies "clean" lands for private investors (Nguyet and Nam 2013). The private sector could face changes in government policies causing a decrease in traffic flows. For example, an illustrative example was found in the Yen Lenh bridge project when three additional bridges were built by the government during the project implementation, leading to a significant reduction in the traffic flow and finally to the failure of the project. Additionally, the private sector could experience complexity of project approval and development due to the involvement of many ministries, sectors, and localities. Extensive and lengthy discussion could cause delays in processing and incur additional lubrication costs. International investors seek to work with one leading agency that will be responsible for the whole process of the project.

Apropos of the second negative factor relating to the fact that few schemes have actually reached the contract stage, the respondents provided many reasons for why this has happened in Vietnam. The first related to the fact that because Vietnam was a relatively newcomer to PPPs, both the public and private sectors conducted PPP projects less efficiently. The respondents also stressed the incomplete and unstable legal framework as another reason for the failure of many PPP projects. An additional reason was the changes in government policies affecting the traffic volume of PPP projects. Issues regarding the feasibility and effectiveness of PPP projects, which has neither been seriously evaluated nor examined, was an additional cause for the failed implementation of the projects. The last reason was rooted in political terms; here, different respondents expressed different opinions. In practice, no previous studies had shown the link between a

project's failure and political terms in Vietnam. But, it seemed feasible to claim a connection between the lengthy delays and the political debate that resulted in projects being delayed in Vietnam. A typical example was the Long Thanh airport project where political interference caused the project to be delayed (VTV 2014). However, issues relating to political disagreement in Vietnam were not as serious as in some other countries, for example, Hong Kong (Chan et al. 2009*b*, Cheung et al. 2010), because the Vietnamese government appeared better at political compromise.

With regard to the third negative factor relating to high project costs, it was claimed that PPP projects are not expected to increase project costs because they concentrate on life-cycle costs and VFM in the long term rather than on initial capital (Chan et al. 2009*b*). However, higher costs may be theoretically attributable to the private sector seeking a larger profit margin to cover unfamiliar risks (Li et al. 2005*a*). This issue also happened in Vietnam as indicated by qualitative analysis. Apart from this, other reasons may have contributed. First, PPP projects involve more expensive transaction costs compared to traditional projects because of the inclusion of many other costs, e.g., consultant and legal fees due to the involvement of lawyers, and the cost of establishing a project consortium. In the case of Vietnam, wherein the private sector lacks capacity, the public sector had to hire foreign experts. This in turn increased the project costs. In addition, high costs can result from procurement fraud due to bidding being undertaken in a non-competitive environment. In such cases, if private investors are construction companies, the possibility of procurement fraud occurring would be higher than in cases involving financial organisations. Other reasons highlighted by a respondent from the North were an incomplete legal framework and less experience of project assessment. According to him, when these issues improved, projects costs would be increased to cover risks.

With reference to the last negative factor relating to consumed management time spent on contract transaction, no explanation was given for this factor in previous studies. In this study, justifications provided by the respondents in the qualitative phase included time spent on signing credit agreements and contract negotiations. The participant from the private sector in the northern group explaining the former said that problems involving bad debts in the banking system in Vietnam have become increasingly serious. A message from the national bank warning other banks in the system to be cautious when lending for PPP projects made the banks view PPP projects more carefully, often resulting in long delays. The public sector in the southern group found contract negotiations between the public and private sectors often lengthy because the government at-

tempted to ensure that the public interest was protected. But, notwithstanding, there was still enough encouragement for private sector participation in PPP projects. Another reason could be that management time took longer as a result of the involvement of various ministries, sectors and localities in the approval process.

Attractions for private sector participation in PPP projects

The following two important attractions for the participation of the private sector in PPP projects in Vietnam were obtained from quantitative analysis: **Government assistance in financing** and **Government guarantee** (see Chapter 5, p.150). Apart from this study, only Chan et al. (2010*a*) have studied the two attractions; but, they did not provide specific explanations. The qualitative results of this study (see Chapter 6, p.184) revealed that PPP projects face numerous risks as they are usually large and implemented over a long period of time. The private sector has to mobilise huge capital upfront; but, it cannot expect recompense in the short term. For projects with low investment but high traffic volume, capital recovery may be possible without government financing and/or guarantees. However, for those that require high investment and share traffic flows, payback from toll revenues will prove an unreal expectation without government support. In some countries, e.g., Korea, transportation projects require 30 to 50 per cent government capital sharing to be feasible (Gil 2013).

The importance of having government financing in PPP projects in Vietnam was emphasised by all four respondents. They saw it as a critical component of the projects' feasibility. However, the respondents from the public and private sectors in the northern side groups also indicated the difficulties surrounding the use of government guarantees in PPP projects in countries with high public debt like Vietnam. The exceptions were special situations using what are called "relationships". In such cases, the possibility of abusing the government's support heightened.

VFM drivers in PPP projects

Quantitative analysis indicated three important VFM drivers, including: **Off the public sector balance sheet treatment**, **Reduction in disputes, claims and litigation**, and **Nature of financial innovation**(see Chapter 5, p.151). As well, it helped to explain these factors in the context of Vietnam (see Chapter 6, p. 186). With reference to the first driver, an "Off the public sector balance sheet" treatment was expected to provide the public sector with a way to avoid financial restrictions, and to facilitate more investment in constructing public facilities. However, two

groups of respondents (the public and private sectors in North Vietnam) indicated that this depended on whether the government's partners in PPP projects were from the public or private sector. Many SOEs that were guaranteed by state banks, participated in PPP projects. But, ultimately, they impacted on the VFM achieved from PPP implementation because investment in this case still involved state money.

The result of the first driver differed from those obtained in some earlier studies. For example, Ismail (2013*b*) observes that this factor was not quite relevant to the context of Malaysia because the Malaysian government was still using a cash basis for recording its transactions. Another example alluded to the United Kingdom. In the past, PPP transactions recorded in government books were subject to debate until the revisions made ensured appropriate treatment of PPP transactions (HM Treasury 1999*a*,*b*).

The second driver relating to reduction in disputes, claims and litigation was viewed controversially. Half of the respondents claimed that disputes and litigation relating to site clearance and its unreasonable compensation price happened frequently in traditional procurement. By mobilising capital from the private sector in PPP projects, another solution that could be considered was extra compensation for those living in the clearance sites. By extension, this could see a reduction in the number of disputes and litigation appertaining to this issue. However, the remaining half insisted that the level of disputes, claims, and litigation would remain the same in traditional and PPP projects as long as good relationships and efficient work collocations between the public and private sectors are ensured and maintained.

With regard to the third driver relating to the nature of financial innovation, it was consistent with earlier studies which perceived this factor as more important than the other two drivers alluded to above. This is because aspects of finance constituted the core difference between PPPs and traditional projects. In PPP projects, the private sector becomes the actor; and, project finance is regarded as more efficient (Li 2003). In the context of Vietnam, the respondents proposed three reasons to explain this factor: (1) the private sector would be likely to experience pressure when project financing if new and innovative financial solutions are not introduced because this sector usually invest in many projects at the same time; (2) as PPPs differed from traditional projects, financial plans must be carefully evaluated and appraised to ensure the recovery of investment and loan repayment, which in turn will encourage the innovative proposal of financing solutions; and, (3) in PPP projects, while private investors, motivated by having

to use their own money, are driven to find innovative solutions to financing their projects, the government, motivated by tightening its control on government money, is driven to apply innovation in its financial supervision of the projects.

Critical success factors for PPP projects

Quantitative analysis indicated nine CSFs for PPP projects in Vietnam. These were divided into three components: macro-environment CSFs including three CSFs (**Stable macro-economic market**, **Sound business climate**, and **Favourable legal framework**); micro CSFs relating to specific projects including another four CSFs (**Commitment and responsibility of the public and private sector**, **Strong and good private consortium**, **Clearly defined responsibilities and roles**, and **Clarifications of contract documents**); and, micro CSFs relating to a competitive and transparent procurement process with the remaining two CSFs (**Competitive procurement process** and **Transparent procurement process**) (see Chapter 5, p.153). Qualitative analysis helped to explain these factors in the context of Vietnam (see Chapter 6, p. 188). Regarding the first component, a stable economic environment, wherein the market exhibits reasonable certainty, can reduce risks, e.g., the interest rate, exchange rate, employment rate, and inflation rate, thus enabling a reasonable investment return for private investors (Cheung, Chan and Kajewski 2012, Cheung, Chan, Lam, Chan and Ke 2012). One of the key solutions to governments creating and maintaining a stable environment is the manipulation of economic policy levers to ensure stable prices and maintain a balanced budget (Li et al. 2005*b*).

In Vietnam, according to the private sector in both northern and southern regions, the macro-economic environment is considered relatively stable, evident in the government's success in curbing inflation. However, government policies are criticised for not being stable. This has been shown to be one of the main reasons for the failure of PPP projects at the operational stage. A non-reasonable business climate is also regarded as potentially affecting the macro environment, especially the macro investment environment, evident in the unfairness that persists between the SOEs and private investors. This is the reason why both quantitative and qualitative analyses revealed a sound business climate, another critical success factor in Vietnam. Somewhat paradoxical is the fact that SOEs receive special support from the government and have participated in many PPP projects. But, most of these projects have either failed or succumbed to inefficiency. Private investors, especially SMEs, found it hard to become involved in PPP projects; and, foreign investors hesitated to join the local PPP market. Once again, the public sector in the southern group' comments subjected to qualitative ana-

lysis indicated that "relationships" play an important role in the involvement and winning of private investors in PPP projects.

A similar pattern was found with the success factor relating to a legal framework in Cheung, Chan and Kajewski's (2012) study, indicating that an independent, fair and efficient legal framework plays an important role in successful PPP project implementation. Qualitative analysis also indicated that the main reason for the problems impeding PPP projects in Vietnam is an inadequate legal framework. A typical example given by the public sector in the South about how a project failed due to this incomplete legal framework is the Phu My bridge project. However, with the issuance of a new public investment law and some decrees regulating PPP implementation in Vietnam, PPP legislation has become more complete although detailed guidelines and corresponding contract templates for PPP projects are still missing. This omission has impeded facilitation of the implementation of laws and decrees relating to PPP projects.

With reference to the second component, the first critical success factor for PPP projects obtained in Vietnam was attributable to the commitment and responsibility of the public and private sectors. The following three aspects were suggested by the respondents for the public and private sectors to participate in PPP projects with the highest commitment and responsibility, including binding their responsibility, ensuring project benefits, and cooperation between parties. For example, the Phu My bridge project failed because three commitments made by the public sector were not implemented according to the indication of the public sector in the southern group. The result reached in this study, which paralleled those of previous studies, confirmed the finding that to ensure the success of PPP projects, both parties should dedicate their skills and expertise, and commit to allocating their best resources in order to secure a good long-term relationship (NAO 2001).

Together with the above factors, a strong and good private consortium also played an important role in achieving the success of PPP projects in Vietnam. It further confirmed that this factor was seen as highly relevant to the success of PPP projects. When contracting out PPP projects, it is essential to ensure that private sector stakeholders are sufficiently competent and financially capable of undertaking the projects. Therefore, private companies should be in partnership to complement each other's weaknesses, and to exploit their individual strengths (Cheung, Chan and Kajewski 2012). Private companies in partnerships need to maintain mutual long-term understandings to support good relationships because they must all bear the relevant risks, and will all benefit from

the co-operation. However, this could prove difficult in Vietnam where many domestic private companies lack capability in terms of finance and technology. Ideally, local companies should partner with potential foreign companies. However, a good relationship between private companies undertaking PPP projects is not easy to achieve due to different languages, cultures, and work styles, and especially to the financial capability of the domestic companies.

Two other important CSFs for PPP projects in this component obtained in Vietnam were related to defined responsibilities, roles and clarification of contract documents. The results were consistent with those found in Hwang et al.'s (2013) and Chou and Pramudawardhani's (2015) studies wherein both factors were perceived as important for the success of PPP projects. But, no explanation was provided. In Vietnam, possible justifications suggested by the respondents in qualitative analysis included the feasibility of PPP contracts (not high) which were not respected due to two reasons: (1) PPPs have only recently introduced in Vietnam. The legal framework for PPP implementation is still incomplete, especially the deficit of standardised forms of contracts; and (2) both the public and private sectors have little experience in conducting PPP projects. As a result, the government's intervention in PPP projects is sometimes too overreaching, causing a reduction in the private partners' creativity. Then again, sometimes it is too little, leading to failure to provide sufficient commitment and the necessary support to the private sector. The Yen Lenh bridge project result was a typical painful consequence of the absence of these two factors as indicated by the private sector in the northern group.

Regarding the third component, an effective procurement process which demonstrates transparency and is competitive throughout the process was perceived as important in Vietnam. The results were consistent with those obtained in earlier studies, which indicated that an effective procurement process significantly contributed to the success of PPP projects. In the context of Vietnam, the procurement process in public projects in general, and in PPP projects in particular, lacks transparency and competition, evident in the many direct appointments of investors or contractors being recorded. In a transparent and competitive procurement environment, open and international bids are preferred. The exception would be special cases which have been regulated clearly in procurement laws and decrees. However, direct appointments are frequently made without legal justification. The respondents again cited corruption as a reason for this issue. Their explanation was consistent with Alinaitwe and Ayesiga's (2013) finding that a considerable ratio of project transactions were processed informally, and

that the procurement processes were significantly affected by non-transparency and corruption.

Question three: Is the adoption of PPP projects in Vietnam suitable?

In this study, the respondents in the quantitative phase were asked to rate 15 attractive factors and 14 negative factors of adopting PPPs in Vietnam. The quantitative data analysis results revealed that the top three attractive factors in Vietnam included:

- Reduce total project cost
- Save time in delivering
- Facilitate creative and innovative approaches

The top four negative factors of adopting PPPs ranked by the respondents from Vietnam were:

- A considerable amount of management time spent on contract transaction
- High risk relying on the private sector
- Few schemes have actually reached the contract stage
- High project costs

The averaged means and averaged loading coefficients of the attractive and negative factors were then calculated and analysed using a two-dimensional important analysis diagram to identify the suitability of adopting PPPs in Vietnam. The quantitative results showed that the attractive factors outweighed the negative factors, indicating the suitability of adopting PPP projects in Vietnam. It reflected the reality of PPP implementation in Vietnam, which was further explained through the qualitative data analysis. All of the respondents in the qualitative phase agreed that the adoption of PPPs in Vietnam was a suitable decision at least in term of raising funds from the private sector to solve the issue of government budget shortage for infrastructure development, evident in the considerable improvement in Vietnam's infrastructure in recent years.

Although the results obtained in previous studies on this issue were mixed, the majority of scholars, e.g., Li et al. (2005*a*), Chan et al. (2009*b*) and Cheung et al. (2010) found that the adoption of PPPs is feasible and preferred. In fact, the adoption of PPP projects is a common trend in both developing and developed countries. The world trend was clearly seen after the 2007 - 2008 global financial crisis. Governments not only opted not to exclude PPPs, but rather became

more aggressive in utilising PPPs for public projects (see 8.4 for more information). However, there have been also other cases. For example, Hwang et al.'s (2013) study shows that the adoption of PPPs was not broadly accepted by the private sector, and that the negative factors outweighed the attractive factors. Hence, investigation into the suitability of PPP adoption needs to be conducted carefully if it is to identify effective measures to promote PPP projects according to different contexts. The result found in this study again confirmed the suitability of adopting this approach for infrastructure development, irrespective of the distinctions in specific country contexts. Previous studies used mean value analysis to evaluate the suitability of adopting PPPs in other countries. By using a combination of mean values and loading coefficients, the results obtained in this study are believed to be more precise and more understandable.

Question four: In what ways do the perceptions of respondents between the public and private sectors and between North and South Vietnam differ vis-à-vis the importance of these factors?

In order to answer this question, two pairs of respondent groups were compared and analysed in the quantitative phase, i.e., the public and private sector groups and the northern and southern groups. Regarding the rankings of the respondents within each group (the public or private sector; the northern or southern region) concerning the importance of the principal factors, the results of Kendall's coefficient of concordance indicated a statistical consistence in this study. However, regarding the first pair of respondent groups (the public and private sectors), the Spearman rank correlation test confirmed that the principal factors between the public and private sector respondents were not associated, indicating a positive correlation - at least to a certain extent - between two sets of rankings obtained by the two groups.

Disagreement was noted for three factors, including two negative factors (**High project costs** and **A considerable amount of management time spent on contract transaction**) and one success factor (**Transparent procurement process**). However, no factors elicited significant differences between the two groups found through the group difference assessment. The combined results finally showed significant agreement between two public and private sector groups regarding the factors with the two-dimensional importance analysis by rejecting the conclusions regarding their differences (see Chapter 5, Section 5.5.2).

Previous studies from the literature, e.g., Li et al. (2005*b*), Cheung, Chan, Lam, Chan and Ke (2012), Cheung, Chan and Kajewski (2012) and Ismail (2013*a*) found many factors, the importance of which was perceived differently by the

public and private sectors. Generally speaking, due to their different backgrounds, objectives, responsibilities as well as ultimate rewards of the two parties, the public sector tended to perceive some factors as more or less important than its private counterpart and vice versa.

Many examples can be presented here. Some among them are listed as follows: in Li et al.'s (2005*a*) study, the attractive factors (**Improve buildability** and **Save time in delivering the project**) were rated significantly more important by the private sector than by the public sector because the responsibility of the former is to seek innovative solutions to enhancing productivity and reducing construction time. In Ismail's (2013*a*) study, while only one success factor (**Government involvement by providing guarantee**) was considered significantly more important by the private sector, its public counterpart rated another three CSFs (**Multi-benefit objectives**, **Competitive procurement process**, and **Shared authority between public and private sectors**) significantly more important. Ismail claims that for the private sector, a government guarantee is vital for reducing any risks. Ismail and Azzahra Haris's (2014) study reveals that while the hindrance factor (**High participation costs**) was considered significantly more important by the private sector, another negative factor (**High project cost**) was rated significantly more important by the public sector. Clearly, the ultimate objective of the private sector is to maximise profit; so, the first factor would be an important challenge for the private sector when considering in PPP projects. The public sector would consider the high cost of a PPP project (the second factor) a serious barrier to any approval of a PPP project.

However, this study's findings differ to some extent: they are not in line with those of previous studies. Few or no factors were found to be perceived differently by the public and private sectors in Vietnam. The similarity in perception between the two sectors concerning the importance of the factors was also confirmed in the qualitative results (see Chapter 5). There could be three possible reasons for this result: (1) Previous studies customarily used Kendall's coefficient of concordance and Spearman's rank correlation in Mean Value Analysis (MVA) to analyse the differences in perceptions of the two parties towards the importance of factors. In an attempt to consider the co-variance among factors, this study additionally assessed group differences in CFA, the combination of which with the assistance of the two-dimensional importance analysis is believed to provide fewer different factors but more accurate results, reflecting the reality of PPP implementation in Vietnam; (2) The adoption of PPPs is new in Vietnam. Neither the public sector nor the private sector has much experience in implementing PPP projects. As a result, the roles and responsibilities of the two parties

concerning PPP projects remain vague and not clearly determined; and, (3) The majority of PPP projects executed in Vietnam use direct appointments when selecting private partners. The fact is that the winning companies (the private sector) are usually SOEs, still reflecting the public sector policy.

In this study, the different viewpoints of the northern and southern respondents vis-à-vis the importance of the factors were also investigated. The results suggested that the two respondent groups' views of the factor **Stable macro-economic condition** differed significantly (see Chapter 6, Section 5.5.2). Although operating under the same political institution and applying the same legal framework of PPP implementation, statistical quantitative analysis revealed that the two groups differed to some extent. This became evident in their different perceptions of the success factor relating to the macro-economic conditions. The northern respondents considered this factor significantly more important than those in South Vietnam.

Qualitative analysis (see Chapter 6, Section 6.2) confirmed the quantitative results by delineating the economic advantages of South Vietnam compared to North Vietnam. As well, other aspects in terms of politics, infrastructure and weather conditions, and cultural and human matters were mentioned. This result is consistent with what was expected and is analysed in Chapter 3. In effect, macroeconomic stability is the prerequisite for any area's or country's sound and healthy financial market (Shahbaz, Shamim and Aamir 2010), confirming the crucial role of having a developed financial market for the successful implementation of PPP projects. Investors, especially foreign investors, prefer to invest in stable macroeconomic environments because it reflects both a degree of certainty and fewer unpredicted situations. As a result, an area that can claim stable macroeconomic conditions will attract more stable foreign direct investment inflows than one with a volatile economy (Bose and Jha 2011). Due to the differences between the two regions, in order to promote the maximum development of PPPs in each area, the public sector in South Vietnam suggested a way to improve the existing legal framework for PPP implementation in Vietnam. This required that a common system of laws and decrees for PPP implementation should be maintained; however, separate guidelines for each half of the country would help to facilitate the implementation of PPP projects according to the specific contexts of North and South Vietnam.

7.3 DEVELOPING AN IDEAL PPP MODEL FOR VIETNAM

The research confirms there is strong potential for the PPP model, in whatever configuration, to be a useful and meaningful means of procurement for both the government and the private sector in Vietnam. While the findings indicated in both quantitative and qualitative analyses show that the PPP model in practice is still problematic to a significant extent, an ideal model (see Figure 38) can be constructed using the most critical factors elicited from the empirical evidence. It is noted, however, that there are many potential enabling and confounding variables that can have an impact upon the way in which any PPP model is implemented. Some of these identified from the research are: 27 important and very important factors (23 factors obtained from the quantitative data analysis and the four new factors that emerged during the qualitative data analysis). The differences between North and South Vietnam obtained from this study are also indicated in the model.

The solid arrow lines represent the effect of eight factors, which were found to have very significantly impacted on the success of adopting and identifying PPP projects in Vietnam. They included: two attractive factors of adopting PPPs (**Reduce the total project cost** and **Save time in delivering the project**); one negative factor of adopting PPPs (**A considerable amount of management time spent on contract transaction**); two attractions for private sector involvement in PPP projects (**Government assistance in financing** and **Government guarantee**); one VFM driver in PPP projects (**Nature of financial innovation**); and, two CSFs of PPP projects (**Sound business climate** and **Transparent procurement process**).

The dash (broken) arrow lines represent the effect of the 15 factors found to have significantly impacted on the successful adoption and identification of PPP projects in Vietnam. They include: two driving forces (reasons) leading to the adoption of PPPs (**Social pressure of poor public facilities** and **Economic development pressure of demanding more facilities**); one attractive factor for adopting PPPs (**Facilitate creative and innovative approaches**); three negative factors for adopting PPPs (**High risk relying on the private sector**, **Few schemes have actually reached the contract stage**, and **High project costs**); two VFM drivers for PPP projects (**"Off the public sector balance sheet" treatment** and **Reduction in disputes, claims and litigation**); and, seven CSFs of PPP projects (**Commitment and responsibility of the public and private sectors**, **Strong and good private consortium**, **Clearly defined responsibilities and roles**, **Clarification of contract**

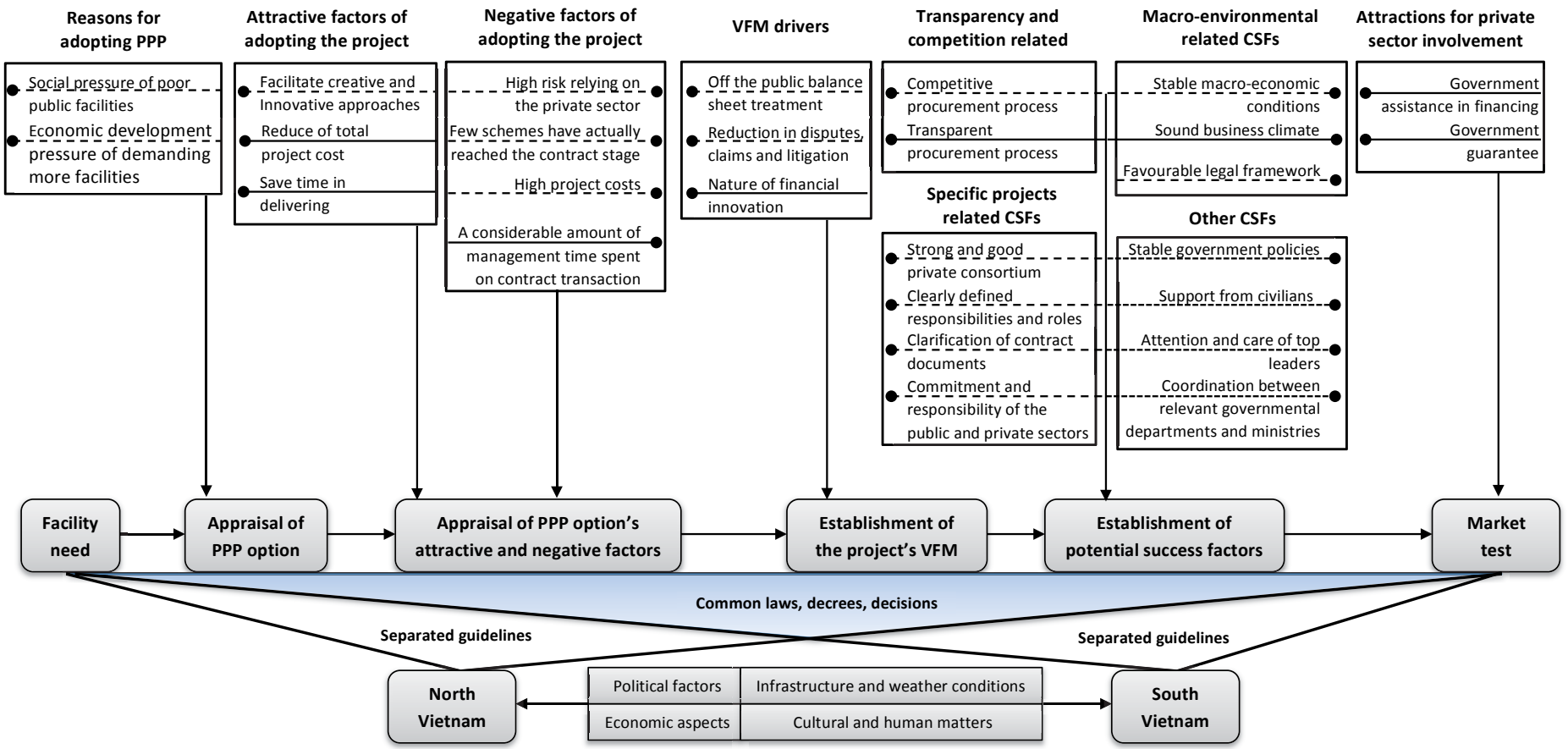


Figure 38: Model of principal factors for PPP implementation in Vietnam (Source: Thesis author).

documents, **Competitive procurement process**, **Stable macro-economic conditions**, and **Favourable legal framework**).

Four other CSFs were added to the model from the qualitative multiple case study analysis: **Stable government policies**, **Supports from civilians**, **Attention and care of top leaders**, and **Coordination between relevant governmental departments and ministries**. The dotted arrow lines represent the affect of these four factors, i.e., how they contributed to the success of PPP projects in Vietnam.

The model also presents the differences between North and South Vietnam in terms of political factors, economic aspects, infrastructure and weather conditions, and cultural and human matters, which were obtained from the qualitative findings. Based on these differences, it was suggested that the government can provide one legal framework for PPP implementation and essential tools for evaluating and appraising PPP adoption and identification nationwide. But, each region (North and South Vietnam) needs to provide separated guidelines in order to match its specific context.

7.4 COMPARISON WITH OTHER COUNTRIES IN THE LITERATURE

Table 57 shows the number of survey respondents and the mean scores of the principal factors for PPP implementation obtained by the countries found in the literature survey (see Chapter 2).

Exploration of the valid questionnaire responses received by research studies (see Table 57) revealed that Vietnam and Malaysia registered the highest numbers of usable survey responses (119 and 122 respectively). Indonesia showed a moderate number, e.g., 87 valid responses, while the remaining countries could only claim approximately half or even fewer than half of those received in Vietnam and Malaysia, for example. Taiwan received 64, the United Kingdom (61), China (53), Singapore (48), and Ghana (45). Hong Kong and Syria both received only 34 while Australia scored an even lower number of usable questionnaires (11). Thus, to some extent it may be suggested that the results obtained in this study are believed to be reliable compared with other countries under discussion.

Table 57: Comparison of the principal factors for PPP implementation among countries.

Code	UK		Australia		Hong Kong		Singapore		China		Taiwan			Malaysia		Indonesia			Vietnam			Ghana		Syria	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	Coeff	N	Mean	N	Mean	Coeff	N	Mean	Coeff	N	Mean	N	Mean
r1	61	3.34	11	3.64	33	3.48	_	_	_	_	_	_	_	122	4.57	_		_	119	3.55	0.93	_	_	_	_
r3	61	3.12	11	3.09	33	2.88	_	_	_	_	_	_	_	122	4.07	_		_	119	3.58	0.61	_	_	_	_
af5	61	3.36	11	4.36	34	3.74	48	4.29	87	3.43	64	3.86	0.61	122	3.53	87	3.60	0.81	119	3.29	0.72	45	3.36	_	_
af6	61	2.97	11	3.45	33	3.09	48	3.40	85	3.77	64	3.66	_	122	2.51	_		_	119	3.24	0.82	45	2.27	_	_
af7	61	2.75	11	4.18	34	3.21	_	_	87	3.26	64	4.13	0.59	122	3.31	_		_	119	3.20	0.77	45	2.86	_	_
nf2	61	2.22	11	2.27	34	3.09	48	3.71	53	3.36	_	_	_	122	2.39	_		_	119	3.01	0.68	_	_	_	_
nf3	61	1.71	11	1.36	34	3.41	_	_	53	3.57	_	_	_	122	2.16	_		_	119	3.08	0.67	_	_	_	_
nf8	61	2.43	11	2.18	34	3.03	48	4.13	53	3.15	_	_	_	122	2.38	_		_	119	2.91	0.77	_	_	_	_
nf9	61	3.86	11	2.55	34	3.29	_	_	48	3.58	_	_	_	122	2.33	_		_	119	3.08	0.81	_	_	_	_
a2	_	_	_	_	33	3.39	_	_	53	4.02	_	_	_	_	_	_		_	119	3.39	0.89	_	_	_	_
a3	_	_	_	_	33	3.61	_	_	53	4.02	_	_	_	_	_	_		_	119	3.48	0.80	_	_	_	_
vfm15	61	3.23	11	2.36	34	3.15	_	_	_	_	_	_	_	122	2.27	_		_	119	3.36	0.65	_	_	_	_
vfm16	61	2.81	11	3.18	34	3.09	_	_	_	_	_	_	_	122	1.80	_		_	119	3.05	0.77	_	_	_	_
vfm17	61	3.25	11	3.73	34	3.56	_	_	_	_	_	_	_	122	2.84	_		_	119	3.27	0.78	_	_	_	_
csf1	61	3.19	11	4.18	34	3.85	_	_	53	4.19	64	3.92	0.77	179	3.20	87	3.62	0.79	119	3.55	0.79	_	_	34	4.12
csf2	61	3.19	11	4.09	34	3.74	_	_	53	3.98	64	3.83	0.71	179	3.22	87	3.62	0.71	119	3.73	0.84	_	_	34	3.91
csf4	61	3.63	11	4.27	34	4.06	48	2.98	53	4.36	64	4.17	_	179	3.23	87	3.83	0.83	119	4.16	0.72	_	_	34	4.15
csf5	61	3.98	11	4.91	34	3.97	_	_	53	4.21	64	4.48	_	179	3.24	87	3.85	0.78	119	3.68	0.75	_	_	34	3.65
csf6	61	4.11	11	4.64	34	3.91	48	3.44	53	3.91	64	4.66	_	179	3.21	87	3.68	0.68	119	3.65	0.75	_	_	34	3.74
csf15	61	3.37	11	4.27	34	3.68	_	_	53	3.81	64	3.94	0.60	179	2.93	87	3.70	0.73	119	3.59	0.86	_	_	34	3.35
csf16	61	3.60	11	4.09	34	3.67	48	3.31	53	4.00	64	3.81	0.53	179	3.18	87	3.98	0.72	119	3.75	0.76	_	_	34	3.85
csf19	_	_	_	_	_	_	48	3.19	_	_	87	3.89	0.80	_	_	_	_	_	119	3.58	0.77	_	_	_	_
csf20	_	_	_	_	_	_	48	3.06	_	_	87	3.75	0.79	_	_	_	_	_	119	3.69	0.75	_	_	_	_

r1 : Economic,development pressure of demanding more facilities
r3 : Social pressure,of poor public facilities
af5 : Facilitate creative and innovative approaches
af6 : Reduce the total project cost
af7 : Save time in delivering the project
nf2 : High risk relying on the private sector
nf3 : Few schemes have actually reached the contract stage
nf8 : High project costs
nf9 : A considerable amount of management time spent on contract transaction
vfm15 : "Off the public sector balance sheet" treatment
vfm16 : Reduction in disputes, claims and litigation
vfm17 : Nature of financial innovation
csf1 : Stable macro-economic condition
csf2 : Sound business climate
csf4 : Favourable legal framework
csf5 : Commitment and responsibility of public and private sectors
csf6 : Strong and good private consortium
csf15 : Competitive procurement process
csf16 : Transparent procurement process
csf19 : Clearly defined responsibilities and roles
csf20 : Clarification of contract documents
a2 : Government assistance in financing
a3 : Government guarantee

The range of mean scores for the principal factors obtained in Vietnam was relatively small (1.25), in line with many other countries (late-comers to PPPs), for example: China (1.31), Taiwan (1.00), Ghana (1.09), Syria (0.80), and Indonesia (0.36). This index implied variations in the perceptions of the respondents participating in the research studies. To some extent, it indicated that countries with less experience of PPP implementation probably showed smaller variations, while those with mature PPP markets maintained high ranges. Specifically, the United Kingdom and Australia, two PPP-leading countries, had higher ranges of mean scores, 2.4 and 3.28 respectively. However, the comparison here proved only relative because the number of survey responses and factors were not the same among the countries. The times (years) when the research studies conducted in the countries were also totally different. For example, Hong Kong, a mature PPP market, had the range of 1.18 while Malaysia, a later PPP adopter, received 2.77 for the variation. This may have been because the study conducted in Hong Kong was undertaken approximately five years earlier than that in Malaysia.

After first taking into consideration the important principal factors for PPP implementation obtained in Vietnam in comparison with other countries found in the literature survey, evidence showed that they were divided into the three following groups: common factors for countries, specific factors for countries, and specific factors for Vietnam.

7.4.1 *Common factors for countries*

This study further confirmed that there were 13 common factors, which were perceived as important by all countries in the analysis (mean values were all more than 3.00). To some extent, they were pertinent to both developed and developing countries, and could be considered common important factors for PPP implementation irrespective of the different locations. These factors included: one reason for adopting PPPs (**Economic development pressure of demanding more facilities**); one attractive factor of adopting PPPs (**Facilitate creative and innovative approaches**); 9 CSFs (**Stable macro-economic market**, **Sound business climate**, **Favourable legal framework**, **Commitment and responsibility of the public and private sector**, **Strong and good private consortium**, **Clearly defined responsibilities and roles**, **Clarifications of contract documents**, **Competitive procurement process**, and **Transparent procurement process**); and, two attractions for private sector participation in PPP projects (**Government assistance in financing** and **Government guarantee**).

Although the findings vis-à-vis the aforementioned factors were rather consistent, their importance level was not viewed completely the same among the countries. Some examples can be mentioned here. First, Malaysia rated its reason for adopting PPPs relating to economic development pressure more important than other countries. It was ranked the most important in this country context with a mean value of 4.57. Its importance was practically indicated through a series of plans (since the Fourth Malaysia Plan onward) and a Malaysian government programmes, i.e., its Economic Transformation Programme, which aimed to foster the private sector's involvement in providing public projects to accelerate the country's economic development (Ismail 2014).

Second, while Australia and Singapore were keen on promoting creativity and innovation in PPP projects as an attractive factor to adopt PPPs (with mean values of 4.36 and 4.29 respectively), other countries showed lesser enthusiasm. Justification may be due to the fact that local governments in these countries showed a tendency to deliver similar packages of projects, e.g., schools and roads. The creativity difference was, therefore, often minimal (Cheung et al. 2010), resulting in a degree of sameness.

A two-dimensional importance analysis was applied to compare interest of Vietnam, Indonesia (Chou and Pramudawardhani 2015) and Taiwan (Chou et al. 2012) in this attractive factor. In Indonesia, the urge for creativity and innovation in PPP projects was higher than in Vietnam (both the mean score and loading coefficient for Indonesia were higher). However, no conclusion was reached vis-à-vis comparison between Vietnam and Taiwan due to higher mean value (3.29 and 3.86 respectively) but lower loading coefficient load (0.72 and 0.61 respectively) between the two countries. The results obtained by this method are generally considered more logical and accurate than those obtained from MVA conducted in previous studies. China (Chan et al. 2009*a*), Taiwan and Vietnam, for example, are considered to experience rather similar conditions; thus, Taiwan should not necessarily show different values whereas both Vietnam and China showed relatively similar results for this factor.

Third, different from those in China with a mean value of 4.02, Hong Kong and Vietnamese respondents rated the two attractions slightly lesser important. This finding coincided with the justification that in countries such as Hong Kong, where governments are financially able to deliver public projects using their own budgets, efficiency proved a more important attractive factor for adopting PPPs. In some other countries, which lack abundant financial budgets, economic drive was rated higher. However, when their financial situations improved, and more

experience had been gained, other advantages of adopting PPPs rather than for financial reasons alone were preferred. In the case of Vietnam, although the government budget deficit was a main concern, the nature of PPPs was limited to public-public games rather than true public-private relationships due to the frequent participation of SOEs in PPP projects. This did not solve the issue of lack of abundant financial budgets in this country.

Finally, with regard to the nine CSFs, the findings of this study show that all CSFs obtained in Vietnam can be applicable to PPP projects irrespective of different jurisdictions. It can also be noted here that while developing countries tend to focus more on macro factors, i.e., the investment environment or legal framework, the developed countries, to some extent, seemed more concerned with micro factors, i.e., private consortiums or the commitment and responsibility for the public and private sectors. This is because in the developing countries, e.g., China, Taiwan, Malaysia, Indonesia and Uganda, PPP markets are not particularly stable. Conversely, in the developed countries, e.g., the United Kingdom, Australia and Hong Kong, the markets are mature and predictable due to their well-established, stable macro-economic environments. Similarly, while developed countries, e.g., Australia and the United Kingdom indicated no particular concerns about their existing legal frameworks, which were already sufficiently well developed to implement PPP projects, developing countries such as Malaysia and Taiwan expressed more concern regarding the issue (Cheung, Chan and Kajewski 2012). They all agreed that an independent, fair and efficient legal framework plays an important role in successful PPP project implementation.

However, as regards Vietnam, quantitative analysis revealed that the CSFs appertaining to the macro-environment and effective procurement process were more important than the remaining CSFs, reflecting the specific context of Vietnam. According to the model-fit indices of the CSFs obtained in CFA, Vietnamese PPPs exhibited fewer CSFs than Indonesian and Taiwanese PPPs. However, Vietnam received considerbly more "very important" factors than those in Taiwan, similar to the results obtained in Indonesia.

7.4.2 *Specific factors for countries*

This study also indicated 10 factors, the importance of which significantly varied depending on the unique nature of each country's context. These factors included: one reason for adopting PPPs (**Social pressure of poor public facilities**); two attractive factors of adopting PPPs (**Reduce total project cost** and **Save time in delivering the project**); four negative factors of adopting PPPs (**High**

risk relying on the private sector, **Few schemes have actually reached the contract stage**, **High project costs** and **A considerable amount of management time spent on contract transaction**); and, three VFM drivers (**Off the public sector balance sheet treatment**, **Reduction in disputes, claims and litigation** and **Nature of financial innovation**).

Some of the specific country contexts that affected the importance of the factors are as follows: First, Hong Kong respondents considered the reason relating to social pressure fairly important, given its lower mean value of 2.88, and being the second least important driving force obtained in Hong Kong. The fact that Hong Kong is small in size and has a well-developed infrastructure system could serve as justification for the result obtained. Apropos of Vietnam, the two-dimensional importance analysis revealed that these two driving forces relating to economic and social pressures were both considered important without drawing the conclusion that one was more important than the other. Rather, it suggested two main driving forces that could effectively induce Vietnam to adopt PPPs.

Second, regarding the two attractive factors relating to cost reduction and time saving, the importance of the factors obtained in Vietnam paralleled those in some other countries, e.g., Hong Kong, Singapore (albeit the second factor was not available in this context), Australia, China and Taiwan. But, it was not completely in line with those in other countries, e.g., Malaysia which considered the former fairly important with a mean value of 2.51. And, it was even opposite to those found in the United Kingdom and Ghana (mean values of less than 3.00 for the two factors in both the United Kingdom and Ghana). In addition, quantitative analysis methodology employed for this study found that these two factors were considered more important than the attractive factor relating to creative and innovative facilitation mentioned above, which is consistent with other jurisdictions. Exceptions were found in China and Taiwan which claimed different results. Chinese and Taiwanese respondents ranked the attractive factors relating to time saving and cost reduction highest among the attractive factors.

Third, with regard to the four negative factors of adopting PPPs, the results obtained in Vietnam paralleled those of other countries, Hong Kong and China for example, however, they differed from those found in some others, e.g., the United Kingdom and Australia. These two last named countries generally rated these factors less important. Their justification was that Australia's and Britain's experiences of PPP projects were multiple. They had learned to conduct PPP projects confidently and were more experienced. In Hong Kong, implementation coincided with political debate. An exception was found in Malaysia. While

its PPP market is still not mature, it rated the negative factors less important. The last negative factor, which is related to management time spent on contract transaction, was perceived to be more important than the other three, a finding consistent with those found in the United Kingdom, Australia and China. Other countries showed different results. For example, Hong Kong reported more about aborted projects due to political disagreement: Singapore's concern was with total project costs; and, Malaysia's more problematic issues were related to high risk for the private sector.

Finally, apropos of the VFM drivers, while the results obtained in Vietnam were relatively consistent with those in Hong Kong, they differed from those obtained in Malaysia where these factors were rated not important. The justification in Malaysia was that the VFM drivers relating to "off the public sector balance sheet treatment" and reduction in disputes, claims and litigation were not quite relevant to the context of Malaysia. This was because: (1) a cash payment was still the preferred option for recording transactions involving the Malaysian government; and, (2) no reported cases of severe disputes between the public and private parties were ever recorded. The one exception was that these two VFM drivers were respectively rated less important by the United Kingdom and Australia.

7.4.3 *Specific factors for Vietnam*

This empirical study found the following four CSFs of PPP projects important specifically in the context of Vietnam: **Stable government policies**, **Support from civilians**, **Attention and care of top leaders**, and **The coordination between relevant governmental departments and ministries**.

Half of the respondents (the private sector in both the northern and southern regions) nominated change of government policy as a main reason for the failure of PPP projects. While the participant from the private sector in North Vietnam quoted the Yen Lenh bridge project as an example of how change in government policy affected the project, the participant from the private sector in South Vietnam suggested employing long-term policies, and introducing reasonable and timely adjustments to minimise the problem. This result can be explained by the "Public choice theory" of Duncan Black (see)Rowley (1993)). According to this theory, government polices are planned and controlled by self-interested individuals and groups. Thus, the participation of the public sector in public projects may encourage collusion and allow these people to profiteer. In fact, the problem became more serious in Vietnam due to the dominant participation

of SOEs receiving favoured policies in PPP projects. The investment environment in Vietnam is non-transparent and lacks competition, mainly because the government appoints the majority of investors and contractors in PPP projects. This is yet another reason to render the problem negative. Moreover, political terms, normally sets of 5 years, may increase the possibility of changing government policies because after each political term, new self-interest individuals and groups may change government policies to favour their own benefits. While the period of a PPP project usually lasts for a long time, 20 years (4 political terms) or more, government policies can easily undergo change during the project's life time, seriously affecting the project's chances of success. Therefore, together with a stable macro economy, the factor of stable government policies was considered important for the success of PPP projects in the Vietnamese context.

Additionally, three out of the four respondents subscribed to the importance of having the care and attention of top leaders for the success of the PPP projects. There could be two reasons to explain this result. From a positive perspective, the support of the top leadership could prioritise the allocation of resources for PPP projects or provide essential support in acceptable ways for the success of the projects. However, from a negative perspective, a question was raised regarding the reason for the numerous direct appointments of investors and contractors in PPP projects. By law, these direct appointments should not be approved without competent people's approval. While PPP projects usually attract huge investment, the authority to approve these projects legally belongs to the country's top leaders.

Three quarters of the total number of respondents said that coordination between relevant government ministries and departments was crucial for the success of PPP projects. This result is possibly linked to the problem of bureaucratic and cumbersome public sector administrative procedures which can be explained by the "X-efficiency theory" (Leibenstein 1966). When explicating this theory, Leibenstein focused on inefficient allocation of resources due to the nature of the bureaucracy of the public sector. Cooperation between the public and private sectors is necessary to improve the inefficiency of the public sector. However, in the case of Vietnam, SOEs participate in many PPP projects, despite the fact that the inefficiency of the public sector, to some extent, continues to threaten the success of the PPP projects. In addition, administrative procedures in Vietnam are cumbersome, and the legal framework for PPP implementation is still incomplete. Therefore, good coordination between the relevant government ministries and departments is crucial for the success of PPP projects.

Three-quarters of the respondents nominated civilian support as an extremely important factor affecting the success of PPP projects. Supportive evidence was provided by the participant from the public sector in North Vietnam who cited the highway No.38 project. In fact, whenever PPP projects successfully meet the expectations of civilians living in the surrounding residential areas, the civilians are always supportive. However, problems of site clearance and compensation and issues relating to environment pollution tend to be sensitive, especially in the contexts of non-transparency, and of self-interest individuals and groups involvement.

The result of qualitative analysis implied that while the above factors contribute to the success of PPP projects in Vietnam, more investigation is needed to confirm their criticality.

7.5 LIMITATIONS AND FUTURE RESEARCH

This study is not without its limitations. In effect, there are a few limitations inherent in this work that should be outlined in order to ensure fair interpretation of the findings.

(1) Different types of PPP projects or fields of facilities and services may have different unique factors leading to the adoption and identification of PPPs. Therefore, using a general questionnaire survey may not be the best method to elicit the principal factors for PPP implementation in all fields and various types of projects.

(2) The use of convenient sampling in this study is a potentially disadvantaged approach, which can be considered another limitation of this study. However, due to the limited size of the database of organisations and private companies participating in PPP projects in Vietnam, as well as the unknown population of sample, it was impossible to adopt random sampling for this study.

(3) A larger number of questionnaire responses would have increased the credibility of the results of the survey analysis. Also, the case studies explored in this study only focused on transportation projects. Therefore, generalisation of the results is limited. Additionally, the results would have been more representative had more case studies been conducted. But, due to time limitations, this was impossible.

(4) The requirement to answer questionnaires distributed at PPP events may impact upon the respondents' independence. Most of the government and private sector personnel who attend PPP conferences tend to be biased towards the use

of PPPs. For this reason, they cannot be regarded as independent contributors. Thus, while it may be preferable to include some 'independent' participants, it is quite often difficult. Recruiting independent experts with sufficient knowledge in an emerging country context is particularly challenging.

(5) The comparison of countries, by literature review, may lack validity due to the participants' different levels of understanding of PPP topics. It may also be attributed to the specific techniques used when analysing each country.

(6) New factors that emerged in the qualitative data analysis of the study need further quantitative investigation to improve generalisation of the results across a broader population.

Some recommendations for further research work are proposed below:

(1) One avenue for future research is to further investigate the principal factors for PPP implementation in specific sectors and/or types of projects.

(2) Future research might also conduct a deeper pilot interview at the first stage to develop its own questionnaire concerning the principal factors for PPP implementation that best suit the unique characteristics of PPPs in a particular country.

(3) Random sampling might be considered (if possible) to improve the limitation of convenience sampling and increase the validity and independent nature of the research. Also, future studies might apply other methods to obtain a greater number of questionnaire responses for increasing the credibility of the results from the quantitative analysis.

(4) Future studies can include more case studies and respondent representatives from other sectors, and extend to a variety of project fields - rather than focusing on transportation only - to obtain a better understanding of PPP implementation, and to investigate the differences in PPP implementation among the sectors.

(5) A survey instrument grounded in the participants' views of the principal factors for PPP implementation could be developed, using a sequential exploratory mixed methods design.

(6) Based on the results of this study, future studies can develop the evaluation and appraisal tools used in the first stage of PPP adoption and identification.

(7) Future research could consider using a mixed methods concurrent triangulation design, developing a structural equation model of principal factors for PPP

adoption and implementation based on the quantitative results, and a grounded theory model of these principal factors based on the qualitative data. A comparison of the two models in the final stage of the study might enhance understanding of the principal factors.

(8) Finally, further studies might focus on testing new factors found in the context of Vietnam using a broader sample.

7.6 SUMMARY

This chapter has presented a discussion of the findings of the quantitative and qualitative phases according to the research questions of the study. The quantitative questions guided the exploration of principal factors and their criticality for the PPP profile in the context of Vietnam, as well as of difference in the perceptions of the groups of respondents (the public sector vs the private sector and North Vietnam vs South Vietnam) vis-à-vis the importance of these factors. The qualitative questions were structured to explain the results obtained from the quantitative data analysis, which were based on the responses of four respondents purposefully selected from the pool of respondents who participated in the quantitative phase. The integration of the quantitative and qualitative results then led to the development of an ideal model of principal factors for PPP implementation in Vietnam. The results obtained in Vietnam were finally compared with those found in other country contexts, indicating common and specific factors for countries and for Vietnam.

The model is a first attempt to understand which principal factors contribute to and impact on the success of adopting and preparing PPP projects in Vietnam compared with other country contexts. It has been developed with the aim of solving problems that hinder PPP adoption and preparation in Vietnam, and could be replicated in other country contexts. However, the findings are unavoidably limited. More research is needed to extend these findings, to develop reliable models that will help decision-makers in the early stages of the PPP process. Detailed implications and suggestions relating to this study, will be presented and concluded in the following (final) chapter of the thesis.

8 SUMMARY

8.1 INTRODUCTION

This research, which was undertaken in two phases of a sequential explanatory mixed methods study, aims to identify the principal factors of PPP implementation in Vietnam. An intermediate phase between the quantitative and qualitative phases was conducted to develop an interview protocol, and to select participants for the qualitative data collection. This chapter, which concludes the study, is structured as follows: In Section 8.2, the research design for the study and its findings are summarised. Section 8.3 presents the study's implications and recommendations. A summary of the tasks alluded into this chapter, the concluding chapter of this thesis, is finally presented in Section 8.4.

8.2 STUDY DESIGN AND FINDINGS

In this study, emphasis was on the quantitative phase, which utilised deep factor analysis to identify and confirm factors suited to PPP implementation in Vietnam. Also explored were particular factors and differences in the perceptions of different groups regarding the importance of these factors. In the qualitative phase, focus was upon the in-depth explanation of the results obtained in the quantitative phase of the study, and upon providing a comparison with those found in other countries. These two phases were connected by an intermediate phase, in which two tasks were conducted: (1) selecting the four participants; and, (2) developing the interview protocol for the qualitative data collection and analysis for the second phase. These tasks were based on the results of the quantitative analysis in the first phase. The two phases were then integrated during the discussion of the outcomes of the whole study.

A literature survey was first conducted to review the research trend of PPP papers published between 1998 and 2013, the aim being to summarise research interests as well as authors and countries' origins and contributions during

the period. The survey then focused on research studies conducted during the period 1998-2014, on finding principal factors for PPP implementation. Investigation finally yielded 24 research studies related to this topic (see Appendix 8.4). Several countries conducted research on this topic in their country contexts including: (1) the United Kingdom (Li 2003, Cheung et al. 2009*b*, Ismail 2014, Li et al. 2005*a*, Chan et al. 2009*a*, Cheung et al. 2010, 2009*a*, Li et al. 2005*b*, Cheung, Chan and Kajewski 2012), (2) Australia (Cheung et al. 2009*b*, 2010, 2009*a*, Cheung, Chan and Kajewski 2012), (3) Hong Kong (Cheung et al. 2009*b*, Chan et al. 2009*a*, Cheung et al. 2010, Chan et al. 2009*b*, 2010*a*, Cheung et al. 2009*a*, Cheung, Chan, Lam, Chan and Ke 2012, Cheung, Chan and Kajewski 2012), (4) Malaysia (Ismail 2014, 2013*c*, Ismail and Azzahra Haris 2014, Ismail 2013*b*,*a*), (5) Indonesia (Chou and Pramudawardhani 2015), (6) Taiwan (Chou et al. 2012), (7) China (Chan et al. 2009*a*,*b*, 2010*a*, Cheung, Chan, Lam, Chan and Ke 2012), (8) New Zealand (Tookey et al. 2011), (9) Singapore (Hwang et al. 2013), (10) Nigeria (Olusola Babatunde et al. 2012), (11) Syria (Kahwajian et al. 2014), and (12) Uganda (Alinaitwe and Ayesiga 2013). Subsequent to these research studies, a pool of principal factors for PPP implementation was determined. Following the pilot study, which took the form of internal discussions with research supervisors, colleagues, and PPP experts in Vietnam, a total of 84 factors was selected for use in the questionnaire survey (nine driving forces leading to the adoption of PPPs, 15 attractive and 14 negative factors of adopting PPPs, six attractions for the private sector involvement in PPP projects, 20 VFM drivers, and 20 CSFs of PPP projects).

In the quantitative phase, data collection was conducted via web-based and on-site surveys (N=250). The survey instrument, adopted from Li (2003), included 84 factors. Three reasons were given to justify the adoption of Li's (2003) instrument, including: (1) His questionnaire has been recognised by both academics and practitioners; (2) There is no value in reinventing work that has been recognised, and it is additionally valuable to apply this work in another specific context of PPP implementation; and, (3) It will be beneficial to future studies for comparison purposes concerning the principal factors for PPP profiles in various country contexts. Out of the total 250 questionnaires, 141 participants responded. A total of 119 usable questionnaires were received, constituting 47.6 per cent. Of the 119 participants, 72 came from North Vietnam, accounting for 60.5 per cent; the remainder (47), who were from South Vietnam, constituted 39.5 per cent. Regarding the number of participants from the public and private sectors, the ratio was 53.78 (64) and 44.54 (53) per cent respectively. The two researchers who

participated in the survey, accounted for 1.68 per cent. Reliability and validity of the questionnaire survey designed for this study were reached.

Data screening was conducted to determine any or all usable questionnaires. The following computation was conducted using cross tabulation and a frequency count to analyse the demographies of the survey respondents. In the mean value analysis, the quantitative data collected were analysed using descriptive statistics, cross tabulation, and frequency counts. Factor analyses, including EFA and CFA, were then undertaken to identify the principal factors for PPP implementation in Vietnam. In the EFA, the reliability and validity of the factor analysis were assessed using: Kaiser-Meyer-Olkin measure and Bartlett's test of Sphericity to check the sampling adequacy; Cronbach's Alpha for checking the reliability; the Pattern matrix and the Factor Correlation matrix for checking discriminant validity; and, the Total Variance Explained for checking the covergent validity. During the CFA, Composite Reliability, Average Variance Extracted, Maximum Shared Variance, and Average Shared Variance were computed to assess the validity and reliability of the model. As well, four metrics were used to evaluate the Goodness of Fit of the model: Chi-square/degree-of-freedom ratio; Comparative fit index; Incremental fit index; and, Root mean square error of approximation. To check the bias in the dataset of the factor analysis, Total Variance Explained for the Harman's Single Factor test was conducted. By undertaking the combination of mean values in MVA and loading coefficients into CFA in the two-dimensional importance analysis, the important factors were subsequently identified. Regarding the differences between the groups of respondents, Kendall's coefficient concordance analysis was conducted, together with the computation of the Spearman rank correlation test and two-sample independent t-test. The differences were studied through a group difference analysis in CFA. The combinations of the results were then assessed using another two-dimensional importance analysis.

The study compared the following demographic characteristics: roles in PPP projects; age; experience; education; and, positions within their organisations. The respondents' demographic information ensured the reliability of the data they provided. Among the respondents, the following characteristics were noted:

- 53.78 per cent of the respondents worked in the public sector: the respondents from the private sector accounted for 44.54 per cent; and, the small remainder, a group of two researchers, accounted for 1.68 per cent;
- The majority of the respondents aged between 31 to 50 accounted for 71.43 per cent (49.58 and 21.85 per cent in the 31-40 and 41-50 groups respect-

ively). The remainder included 14.29, 10.92, and 3.36 per cent of respondents aged 21-30, 51-60, and above 60 respectively;

- More than two thirds of the respondents had less than 10 years experience with PPP projects, approximately half of which had less than 5 years experience; and, the remainder had 6-10 years experience. The remaining one third had more than 10 years experience, including: 16.81 per cent (11-15 years), 13.45 per cent (for 16-20 years), and, only 0.84 per cent had more than 20 years experience;
- The majority of the respondents, who held Bachelor's or Master's degrees, accounted for 94.96 per cent, of which the larger percentage (51.26 per cent) held Master's degrees and the remainder were Bachelor's degree holders. Other respondents included: 3.36 per cent PhD holders, 0.84 per cent who had attained a Diploma degree, and another 0.84 per cent who held a post-doctoral certificate;
- Three quarters of the respondents (75.63 per cent) held full-time or managerial positions: managers accounted for the highest proportion (40.34 per cent); and, the remainder were full-time employees. Other groups included: 15.13 per cent (senior managers); 7.56 per cent (part-time employees); and, 1.68 per cent (executive positions).

In addition, the majority of the respondents (91.6 per cent) had participated in fewer than four PPP projects. Among these respondents, 26.1 per cent were not involved in any PPP projects but were familiar with PPP implementation in Vietnam. Some, in excess of 73 per cent, had participated in various types of PPP projects, mainly in the transportation sector. The small remainder (8.4 per cent) had been involved in four or more PPP projects. These figures indicated that the adoption of PPPs was still new in Vietnam. For this reason, both the public and private sectors had minimal experience of implementing PPP projects. However, the results obtained from the demographic analysis indicated, to some extent, the reliability of the information that the respondents participating in the questionnaire survey had provided.

Apropos of factor analysis, EFA was deemed workable in the context of Vietnam. The following CFA revealed that 37 were suitable in the context, contributing to a reliable and valid model of the principal factors for PPP implementation in Vietnam. The reliability and validity of the model were obtained with acceptable or good results. Among the 37 factors, two-dimensional importance analysis

deemed 23 factors either important or very important. The results of the importance of the attractive and negative factors for adopting PPPs showed that the attractive factors were more affirmative than the negative factors, indicating the suitability of adopting PPPs in Vietnam. The methods used to explore the differences between the groups of respondents indicated a significant difference in the success factor **Stable macro-economic condition** between the northern and southern respondent groups. The respondents from North Vietnam considered this factor significantly more important than those from South Vietnam. No significant difference in the perceptions of the public and private sectors concerning the importance of the principal factors was found in the context of Vietnam.

In the qualitative phase, data collection was triangulated by multiple sources including: (1) semi-structured face-to-face interviews with the four participants; (2) notes taken during and after the interviews on reflected information obtained from each participant's experience and knowledge of the important principal factors for PPP implementation in Vietnam; (3) follow-up email interviews with each of the four participants to confirm important information and clarify new factors emerging; (4) the projects' documents and government reports and/or legislation documents to validate the obtained information, and to provide rich content related to the cases; and, (5) participants' responses to survey questions in the quantitative phase. The four participants, who were purposefully selected for the qualitative phase had good profiles: all were aged around 40 years; three of the four had 10 years experience, the fourth had 8 years experience working on PPP projects; 50 per cent had Master's degrees, the others had achieved Bachelor's degrees; half of them had worked as managers, the remaining half were full-time employees; and, all had been involved in at least three PPP projects.

Qualitative analysis was performed at two levels: within case and across cases using Nvivo 10. The steps in the qualitative analysis included: (1) initially reading through text data; (2) dividing text into segments of information; (3) labelling segments with codes; (4) collapsing codes into categories and themes; (5) interrelating themes within each case across cases; (6) and, comparing themes and categories. The verification procedures included: triangulation using different sources of information; member checking; rich and thick description of the cases; disconfirming evidence; and, supervisor and academic advisor auditing.

While eight themes were collapsed from codes in the qualitative analysis, the themes for each case differed in their detail. Themes included: personal information; project information; reasons for adopting PPPs; attractive and negative factors for adopting PPPs; attractions for private sector involvement in PPP

projects; VFM drivers in PPP projects; CSFs of PPP projects; and, differences between North and South Vietnam. All of the 23 important factors identified in the quantitative phase were explained in the qualitative data analysis. Regarding the success factors of PPP projects in the context of Vietnam, those CSFs related to macro-environment and effective procurement process were considered more important than the remaining CSFs. In addition, four new CSFs emerged from the qualitative data analysis: **Stable government policies**; **The support of civilians**; **Attention and care of top leaders**; and, **Coordination between relevant governmental ministries and departments**. Qualitative data analysis also indicated that South Vietnam enjoyed better economic conditions than North Vietnam. Therefore, the factor **Stable economic conditions** was considered more important by the northern participants vis-à-vis contributing to the success of PPP projects than those in South Vietnam. Apart from economic factors, other matters believed to be significantly different between North and South Vietnam included: political aspects; infrastructure and weather conditions; and, cultural and human matters.

The integration of the quantitative and qualitative findings of the study were then discussed and compared with what had been found in other countries. Among the 23 important factors for PPP implementation in Vietnam, the results of 13 factors were consistent with those obtained in other countries, by extension implying that these factors are pertinent to both developed and developing countries, and important irrespective of different jurisdictions. They included: one driving force leading to the adoption of PPPs (**Economic development pressure of demanding more facilities**); one attractive factor for adopting PPPs (**Facilitate creative and innovative approaches**); two attractions for private sector involvement in PPP projects (**Government assistance in financing** and **Government guarantee**); and, the nine CSFs of PPPs (**Stable macro-economic conditions**, **Sound business climate**, **Favourable legal framework**, **Commitment and responsibility of the public and private sectors**, **Strong and good private consortium**, **Clearly defined responsibilities and roles**, **Clarification of contract documents**, **Competitive procurement process**, and **Transparent procurement process**). The remaining 10 important factors were inconsistent among the countries. In other words, their importance was perceived differently, depending on specific country contexts.

Based on the quantitative and qualitative findings of the study in comparison with those obtained in other countries in the literature survey, an ideal model of the principal factors for PPP implementation in Vietnam was developed.

8.3 IMPLICATIONS AND SUGGESTIONS

This study, as well as providing insight into the principal factors that might contribute to the successful adoption and implementation of PPP projects in Vietnam, has also provided a comparison of the principal factors in different jurisdictions that support clearer understanding of PPP projects across geographic boundaries. In addition, the study has discussed the differences in the perceptions of two halves of Vietnam, i.e., North and South Vietnam, and indicated the similarity between the two public and private sectors' perceptions vis-à-vis the principal factors for PPP implementation.

The findings of this study have theoretical, methodological and practical value.

8.3.1 *Theoretical contributions*

This section, which centers on the study's theoretical contribution to the field of PPPs, includes: (1) a systematic review of the academic literature on PPPs and research trends and the merit of PPP publications; (2) dysfunctional, haphazard or incomplete models of PPPs in action in Vietnam; and, (3) similarities and differences of perceiving the important principal factors for PPP implementation between countries, sectors, and the two halves of the country, showing an ideal model of PPPs in Vietnam.

A review of the existing PPP literature by employing a three-stage method of quantitative systematic and content analysis approach was undertaken to provide a comprehensive review of the field. Particular emphasis is on the principal factors for PPP implementation. The findings of the review will assist members of the academic community to position their research on the map of PPP topics according to PPP process. The findings of the literature review revealed that previous PPP research topics focused more on issues pertaining to the first stage of the PPP process (PPP identification). Less attention has been given to each of the three remaining stages (PPP preparation, procurement, and implementation). Principal factors for PPP implementation ranked among the most focused topics in the first stage, while topics related to risk, i.e. risk assessment, risk mitigation, risk allocation, and risk analysis), captured the concern of researchers in stages two and three. The final stage variously focused upon risk management, project management, performance management and project governance. Beyond the specific research questions of this study, the review also noted increased research interest in PPPs following the 2007 - 2008 global financial crisis. Focus centred on finding solutions to and overcoming emerging problems peculiar to PPPs rather than on analysing the effects of the crisis. The

finding shows that the adoption of PPPs by governments has become a world trend, and that governments' options for adopting PPPs were confirmed by the global financial crisis.

Furthermore, this study makes a theoretical contribution to the PPP literature as it has put Vietnam on the world map of PPP research. It scrutinises the dysfunctional, haphazard and/or incomplete model of PPPs operating in Vietnam in terms of two issues: (1) the unfairness between SOEs and private investors; and, (2) lack of transparency and competition. These issues are attributable to the political climate in Vietnam, a country governed by a single, unopposed party, the Communist Party of Vietnam (CPV), which pursues socialism and maintains a strong system of the state sector. And because the CPV exercises a monopoly control over every single activity of the economy, it has created a healthy environment for corruption. Additionally, the lack of a favourable legal framework has combined with the above to provide opportunities and incentives for state officials to behave in an opportunistic manner, in many cases leading to corruption. Investigation reveals that Vietnam does not feature among the countries with the lowest Corruption Perceptions Index (CPI). The country's key problem is the dominant role of the SOEs, which receive an inordinate amount of support from the CPV. As a result, corruption continues to affect PPP implementation in Vietnam.

Investigation suggests that PPP implementation in Vietnam is paradoxical. The reason for adopting PPPs is to attract private investment, and to use the advantages of the private sector when implementing public projects. Due to social and economic pressures on infrastructure development in Vietnam under government budget shortages, the government has opted in favour of PPPs. However, not only do foreign private investors are nervous about Vietnam's investment environment: domestic private enterprises find it challenging to compete with SOEs because they do not receive the degree of government support enjoyed by the SOEs. Due to "special" favours granted by the government, SOEs participate in many PPP projects. But, their efficiency levels are low due to their lack of capacity. Essentially, SOE's investment capital is still dependent upon the state budget, at least to some extent. SOEs tend not to spend their investment capital; the bulk of capital funding comes variously from the state budget, loans from designated banks, bonds guaranteed by the government, or a combination of all above three capital sources. Even in cases where they invest, state companies still draw upon the state budget. And, because only a small number of SOEs have equitization, when suffering loss, the government still has to guarantee this loss and provide support. The reality is that these projects are public-public

partnerships rather than based upon cooperation between the public and private sectors.

With regard to the second issue, most of the PPP projects in Vietnam have selected investors through direct appointments which lack competition and encourage anomalies (corrupt activities) to become entrenched. For example, in the case of BT projects, "golden" lands at prime locations are usually reserved for investors. BOT projects' rate of success is very low. The problem is that private investors attempt to participate in projects using any means available to them, e.g., by lowering the total investment. However, once projects are officially allocated to them, they are more likely to significantly increase the project cost or report lower project revenue. At the same time, the public sector's responsibility for project evaluation and appraisal is conducted carelessly. In addition, investors (often SOEs) appointed to implement PPP frequently lack the capacity to proceed.

A further contribution of this study is its comparison of perceptions of the important principal factors between countries, sectors, and the two halves of the country, demonstrated in an ideal model of PPPs in Vietnam. First, the study has contributed to the literature by providing a different result regarding the differences in perceptions of the public and private sectors, providing a different perspective to the issue. The thesis literature survey revealed evidence of the differences between the public and private sectors vis-à-vis the criticality of the principal factors in some countries, both developing countries, e.g., China and Malaysia, and developed economies, e.g., Hong Kong, Australia, and the United Kingdom. Perhaps, more importantly, this study shows a further interesting finding, i.e., that there was no difference between the two sectors found in the context of Vietnam, a fledgling country in the sphere of PPP development governed by an unopposed party, the CPV. Justification provided by this study include: both sectors lack of PPP experience; an incomplete legal framework for PPP implementation; and, SOEs receiving biased monetary favours from the government that enable them to participate in many PPP projects, albeit using government finance in the process. For these reasons, the boundaries of difference between the two sectors appear negligible in the reference system of cognitive differences in the importance of factors.

Second, this study contributes to the existing literature on PPPs by focusing on the principal factors for PPP implementation in a developing country, i.e., Vietnam. Although the findings are geographically specific to Vietnam, they can to some extent be replicated in other developing countries in a similar context; for

example, countries governed by a one government party that maintains a strong system of state enterprises. In addition, this study has also offered evidence concerning the differences between the two halves, North and South Vietnam, regarding the importance of these factors in terms of: economic and political aspects; infrastructure and weather conditions; and, cultural and human matters. Similar studies of these factors were not found in the extant literature. Therefore, the findings can be beneficial to countries experiencing similar situations and to some extent replicated therein.

Finally, this study has shown an ideal model of PPPs in Vietnam. It has tabled a range of factors, a likely combination of coherent factors required for the country's development of a functional PPP model. This ideal Vietnamese model, showing factors of greatest importance and including identified factors for the North and the South, provides the basis for comparison of the principal factors for PPP implementation in other countries. In addition, the comparison of Vietnam in the context of the literature and other studies showed common and specific factors for countries as well as specific factors for Vietnam. Factors highlighted as important for all jurisdictions can be adopted easily. Apropos of country specific factors, this survey could be repeated in those countries which have not been included in the analysis.

This study also contributes to the existing literature on PPPs by providing four new success factors for PPP projects that have emerged in the context of Vietnam. Although two of them (**The support of civilians** and **Attention and care of top leaders**) have to some extent close meanings to factors relating to political and social support obtained from the literature, they were generally considered less important in other contexts, especially in the sphere of social support. The remaining two CSFs (**Stable government policies** and **Coordination between relevant governmental ministries and departments**) are believed to be new and practical, especially for countries dealing with problems of unstable government policies and bureaucratic as well as cumbersome administrative procedures on the public side. This research, in effect, makes a theoretical contribution by providing the basis for future research, both in terms of the ideal model of the principal factors for PPP implementation for Vietnam, and of the incomplete model of PPPs operating in Vietnam.

8.3.2 *Methodological contributions*

This study contributes to the field of PPPs by not only showing the effectiveness of mixed methods design, but also by offering an advanced combination of tools

used for data analysis to investigate the principal factors for PPP implementation in Vietnam.

While many previous studies used a single methodology to investigate the principal factors for PPP implementation (e.g., Li 2003, Cheung et al. 2009*b*, Ismail 2014, Li et al. 2005*a*, Chan et al. 2009*a*, Cheung et al. 2010, Tookey et al. 2011, Hwang et al. 2013, Chou et al. 2012, Robert et al. 2014, Ismail 2013*c*, Chan et al. 2009*b*, Ismail and Azzahra Haris 2014, Cheung et al. 2009*a*, Ismail 2013*b*, Li et al. 2005*b*, Cheung, Chan and Kajewski 2012, Cheung, Chan, Lam, Chan and Ke 2012, Ismail 2013*a*, Olusola Babatunde et al. 2012, Alinaitwe and Ayesiga 2013, Chan et al. 2010*a*), this study has applied a mixed methods design. The combination of quantitative and qualitative approaches to data collection and analysis not only facilitated a more complete understanding of the research problem, but also added value to the study results and their interpretations. As well, it provided a broad and deep picture of the principal factors for PPP implementation in Vietnam.

While the quantitative questionnaires shed light on the quantified evidence, provided confirmation of the important principal factors of PPP implementation in Vietnam. As well, elicited the differences in the perceptions of different groups regarding the importance of these factors, the interviews triangulated and explained the results obtained from the questionnaire data analysis. The questionnaire and interviews were also connected through an intermediate phase to select interview participants and develop the interview protocol. Moreover, this study's adoption of a mixed methods design responded to the calls of previous studies (e.g., Li 2003, Cheung 2009, Ismail 2013*b*,*c*, 2014) that emphasised the limitations of a single method or approach that could not enable the best possible outcome. Additionally, it has corroborated the detail provided by those involved in selected case studies, with broader opinion obtained from a questionnaire survey, providing comprehensive knowledge of issues that is not possible to attain using a single method design. This is so especially in cases when the majority of respondents may not have in-depth knowledge of the relative concepts.

Another methodological contribution that this study makes involves its application of tools used for data analysis. Other countries may employ the data analysis methodologies used in this study to demonstrate better PPP practice. The study's use of the CFA technique has addressed the potential drawbacks of the conventional mean value analysis method due to the fact that factors identified from the literature survey may be empirically dependent upon each other. By calculating the loading coefficient of each factor within the construct to assess the

covariance in factors, the use of CFA in this study has remedied the above disadvantage, further confirming the benefits of using CFA to resolve the drawbacks of mean value analysis (see Chou et al.'s (2012) study). In addition, the application of the two-dimensional importance analysis approach in this study has enabled a systematic and visual presentation of the co-variance among factors. The combination of using Kendal's coefficient concordance and Spearman rank correlation analysis together with group difference in CFA is believed to have achieved better results, confirming the suitability of adopting PPPs in Vietnam. In other words, this study responds to previous studies by closing the research gaps.

8.3.3 *Practical contributions*

In terms of practical aspects, the findings of this study significantly contribute to the adoption and identification of PPPs in Vietnam by providing valid and reliable recommendations for the government and the private sector on: how to adopt and identify PPP projects; and, how to attract private sector participation in PPP projects. The results of the attractive and negative factors obtained in this study have also confirmed the suitability of adopting PPPs in Vietnam. The following are the practical contributions of this study:

(1) The findings regarding the important driving forces leading to the adoption of PPPs in Vietnam are believed to be essential for the private sector's establishment of targets and goals when participating in PPP projects; and, for the public sector's adoption of PPPs for suitable public projects. Although the financial driving forces, e.g., government budget deficits or shortages of government funding, are commonly considered of primary importance when adopting PPPs, different countries reflect different preferences and motivations. Some countries consider financial motivations important while for others, focus is more upon motivations related to improved performance of public projects. However, the motivations for adopting PPPs in Vietnam refer more to the importance of constructing public facilities to tackle the country's economic and social pressures. These findings appear not only to support the government's agenda to enhance the practice of PPP implementation in Vietnam, but also attract foreign investors to invest in PPP projects in the local country context. Foreign investment will ultimately contribute to the growth of the Vietnamese economy and, by extension, to the improvement of social issues, e.g., traffic jams and associated accidents. In addition, the differences of motivation reflect the different characteristics of PPP implementation in Vietnam. Therefore, there is a dire need for a different PPP framework and for policies that best suit the environment of the country.

For example, the findings strongly suggest that facilities such as roads, bridges, and other transportation infrastructure located in densely populated regions, important economic zones, or those essential to regional transportation and trading, should be first considered suited to PPP projects.

(2) The findings regarding the important attractive and negative factors for adopting PPPs in Vietnam have significance for both the public and private sectors. When adopting and identifying PPP projects, it is also essential to consider the attractive factors that the projects can provide as well as the possibility that they can overcome any identified constraints in an attempt to ensure that maximum benefit is achieved from PPP projects.

First, the findings show that the adoption of PPPs is deemed attractive due to three factors related to innovative and creative facilitation, cost reduction and time saving. To ensure that the PPPs continue to be attractive and efficiency-focused, this study suggests that the private sector is encouraged to promote innovation and creative construction. This could be achieved by designating the private sector more authority to propose their designing, financing and operating approaches. Also, creative and innovative ideas proposed by employees, design partners, construction partners, suppliers, and donors need to be strongly encouraged. In cases of PPP projects using a portion of public funding, this study calls for a supplement to the existing legal framework for PPP implementation to attach governmental control to problems relating to corruption that cause delays and cost escalation in PPP projects on the public side. The following recommendations could be considered: providing detailed guidelines for PPP implementation; regular reports submitted by public officers participating in PPP projects; effecting periodic officer rotation to minimise corruption; and, rewarding officers who perform well. This study also suggests that monitoring and consultancy need to use government funding to tightly control both capital and quality when considering PPP projects. It is believed that these suggestions will assist the government in the promotion of the innovative and creativity possibility offered by the private sector for PPP projects. Furthermore, recommendations will assist in minimising the possibility of corrupt activities which can lead to lengthy delays and cost escalation of PPP projects.

Second, the findings pertinent to the negative factors included four elements that threaten to hinder the adoption of PPPs in Vietnam: (1) high risk for the private sector; (2) many failed projects; (3) high project costs; and, (4) lengthy time spent on contract transaction. It is believed that the findings will assist governments to better regulate PPP adoption and identification, heighten the private sector's

awareness of difficulties, and prepare suitable strategies for planned participation in PPP projects.

Regarding the first hindrance, two potential risks that private investors could face when contemplating PPP projects in Vietnam include: traffic miscalculation; and, site clearance and compensation. These could easily lead to disputes and litigation, and the increased complexity of project approval and development. When traffic miscalculation occurs, the following two solutions may be considered: (1) asking the government to extend the collection time for capital recovery; and, (2) recalculating the financial plan and seeking financial support from the government. In order to minimise these risks, this study strongly suggests that the government provides "clean" land for private investors; in other words, there is an urgent need for the government to conduct site clearance prior to the commencement of PPP projects. Compensation could be rendered more flexible by using private funding (if necessary). Additionally, in order to avoid extensive and lengthy discussion that could cause delays in processing and incur additional lubrication costs due to the involvement of many ministries, sectors, and localities, the responsibility for the whole process of a particular PPP project should be the province of one leading agency only. This recommendation, it is believed, will be especially beneficial for international investors interested in investing in PPP projects in Vietnam.

With regard to the second hindrance, in order to reduce the number of failed PPP projects, this study suggests that it is crucial to ensure the provision of a complete legal framework and the assurance of stable government policies. Additionally, specialised advisory units for PPP implementation at the central and/or local scales should be established. These will be tasked with providing long-term sustainable policies, anticipating different scenarios, and preparing timely solutions. Additionally, careful evaluation and examination of the feasibility and effectiveness of PPP projects in the very early stage of the PPP process need to be mandated. It is believed that the findings of this study will help policy makers to build comprehensive and justifiable tools for evaluating and appraising PPP adoption and identification. Moreover, political stability needs to be maintained to avoid lengthy delays in implementing PPP projects due to political debate.

With regard to the third and fourth negative factors, the public sector needs to ensure a competitive environment. During procurement, the project costs are likely to be lower if there is competitiveness in the bidding process. In addition, the financial assessment of PPP projects should be carefully undertaken to

avoid profiteering by the private sector. It is also recommended that to reduce the time spent on transaction and contract negotiation, standardised templates of contracts and agreements for PPP projects should be provided as early as possible.

The results of this study enable a comparison of the attractive and negative factors for adopting PPPs in Vietnam. The findings, which confirm that the adoption of PPPs is a suitable means of procuring public projects, will be of considerable use and interest to PPP researchers and practitioners alike. In addition, a clear and common understanding of the attractive and negative factors of adopting PPPs can provide a more informed basis for decision-making made in the early stage of project identification.

(3) The findings concerning attractions for private sector involvement in PPP projects will be of benefit to the public sector because their implementation will attract the participation of private investors in PPP projects. This study suggests that in the cases of PPP projects requiring large investment capital (that are predicted to have low capital recovery capability), lack of government assistance in the forms of financing and/or guarantees will make it hard to attract private sector participation. In addition, strategies for building long-term policies, and for having reasonable and timely adjustments in place that will ensure economic-social development which is fast, sustainable, and robust are also needed for minimising the risks related to policy changes. These are essential for potential investors in PPP projects. This study also suggests that the government is aware of the possibility that the private sector, by its use of what are called "relationships", can abuse government support and/or guarantees if government management is not tight enough.

(4) The findings pertaining to VFM drivers in PPP projects have significance for both the public and private sectors' involvement in project evaluation and preparation. One of the primary conditions that determine if a project is suitable for adopting PPPs is that the project has to provide VFM compared to traditional procurement. This study's findings will be beneficial for the government as they will guide the creation of a VFM assessment tool, which will assist in evaluating and appraising suitable PPP projects. They will also be beneficial for private investors' proposal and preparation of PPP projects. The findings indicate that when project-related disputes, claims and litigations are reduced, and innovation in project financing and the public sector balance sheet treatment are achieved, the VFM project will be more achievable.

(5) The findings of this study also highlight the important success factors of PPP projects in the context of Vietnam. They provide both the public and private sectors with an understanding of how projects can be conducted successfully there. Some further recommendations from this study include: (1) in order to improve the environment for private companies investing in PPP projects in Vietnam, corruption should be seriously taken into consideration. Stronger measures should be introduced to fight corruption at all levels. As well, perceptions regarding corruption, as indicated by Transparency International and its CPI, need to be enhanced. In addition, the interests of both the public and private sectors in PPP projects and the fairness between SOEs and private investors as well as between domestic and foreign companies need to be ensured; (2) detailed guidelines and corresponding contract templates for PPP projects need to be issued early to facilitate the implementation of laws and decrees related to PPP adoption and identification; and, (3) in cases in which the private sector invests the total project capital, this study strongly suggests that the government should extend its roles in managing and supervising project contract implementation, e.g., project timing and planning, construction quality, supervision of hygiene, and environmental safety.

(6) The findings pertaining to the differences between North and South Vietnam have highlighted the importance of policy implementation for policy makers. The study strongly suggests that a legal framework, complete with common regulations for PPP implementation, should be provided nationwide. However, in each region (North and South Vietnam), specific guidelines are recommended to be issued separately in order to fit the context and cultural practices of each region.

Furthermore, this study has contributed useful information to the various PPP parties, i.e., policy makers, financiers, and/or private sector companies seeking to become involved in PPP projects in Vietnam. Through the study of the factors affecting PPP adoption and identification, parties who intend to participate in PPP projects can manage and optimise their resources and minimise real risks. These findings will also enable them to obtain further insights into and better likelihoods of the successful implementation of PPP projects. In this way, the performance of infrastructure facilities in Vietnam will improve. In addition, based on these findings, the investigation of international organisations that plan to participate in PPP projects in Vietnam, of practitioners seeking to better understand PPP projects across geographic boundaries, and of international investors seeking to apply investment strategies should be undertaken. Consideration of the similarities and differences in each country may also prove beneficial. It can

be seen by the above findings how this study has contributed to the body of knowledge on PPP adoption and identification in the broader global community.

8.4 SUMMARY

This research study has formed a solid basis for academics and practitioners in Vietnam and other countries to increase their theoretical and conceptual knowledge and, in a practical sense, to improve their PPP implementation. If the latter is achieved, both the public and private sectors will benefit. As a result, Vietnam's public infrastructure system will be improved, and the general public at large will benefit. It is the researcher's hope that not only Vietnam, but other countries will successfully adopt and implement PPP projects, in this way keeping pace with the demands of the globalising world of today.

APPENDIXES

This section includes the Appendix for the research study.

APPENDIX I: RESEARCH TREND AND INTEREST OF PPP PUBLICATIONS

Regarding Figure 2, in the first stage, a powerful search engine was selected to ensure a complete and comprehensive search of the PPP subject. The Scopus (Elsevier) search engine was finally chosen from among many others, for example Google Scholar, Pubmed, and Web of Science for the three following reasons: (1) Scopus is well known, having been the choice of previous studies in this field (Al-Sharif and Kaka 2004, Ke et al. 2009, Tang et al. 2010, Hong, Chan, Chan and Yeung 2011); (2), it has been considered suitably accurate and to provide better coverage compared to other search engines (Falagas, Pitsouni, Malietzis and Pappas 2008); and, (3), as Hong and Chan (2014) claim, it offers different research areas under various publication databases.

A comprehensive search was then conducted using the Scopus search engine. The terms "Article Title/Abstract/Keyword" were inserted into the search field type. Keywords in the search terms text included: "Public private partnership"; "Private finance initiative"; "Build operate transfer"; "Privately financed"; and, "Privatised infrastructure". The search was further refined to include particular subject areas, e.g., "Business"; "Management"; "Accounting"; "Decision Sciences"; "Economics"; "Econometrics"; "Finance"; "Energy"; "Engineering"; "Environmental Science"; and, "Social Sciences" with the document type of "Article or Review. The full search code was as follows:

> TITLE-ABS-KEY("public private partnership" OR "build-operate-transfer" OR "bot" OR "build operate transfer" OR "build/operate/transfer" OR "private finance initiative" OR "public-private" OR "privately financed" OR "private finance" OR "public/private" OR "private infrastructure" OR "privatised infrastructure" OR "pfi" OR "ppp/pfi" OR "pfi/ppp") AND DOCTYPE(ar OR re) AND SUBJAREA(ener OR engi OR envi OR busi OR deci OR manag OR econ OR soci) AND (PUBYEAR > 1997) AND (PUBYEAR < 2014) AND (LIMIT-TO(LANGUAGE,"English")) AND (LIMIT-TO(SRCTYPE,"j"))
> Result: 4634 (Searched 10 August 2014)

Although the search strictly focused on areas relating to PPP topics and excluded unrelated articles, many unexpected papers emerged in the search result possibly due to the occurrence of unmatched keywords or subject areas. To avoid large deviations, the search was limited to a few target journals only, which were chosen based on the four following criteria: (1) journals that had published mostly PPP-related research studies; (2) construction journals in the top six of the ranking list of Chau (1997); (3) journals that were recommended by the previous studies (Ke et al. 2009, Hong et al. 2011, Osei-Kyei and Chan 2015); and, (4) construction journals that were acknowledged as first-tier grade with relatively high impact factors, cited by the Institute for Scientific Information (ISI) Journal Citation Reports, also ranked in Chau's (1997) list. The focus of this study is on construction journals because the results obtained from the Scopus search engine showed that journals featuring the most PPPs with most PPP-related publications (in the top six list) were all in the construction field.

The final list of target journals was then selected, including the following ten: JCEM, CME, IJPM, PMM, *International Journal of Public Sector Management* (IJPSM), JME, ECAM, PICE-CE, *Built Environment Project and Asset Management* (BEPAM), and *Automation in Construction* (AIC). Stage one of the search revealed six journals (ICEM, CME, IJPM, PMM, IJPSM, and JME), four of which (CME, JCEM, JME, and IJPM) were included in the top six of Chau's (1997) rankings. PMM and IJPSM had been selected by previous authors (Ke et al. 2009, Osei-Kyei and Chan 2015). Among the other three journals (ECAM, PICE-CE, and BEPAM) chosen, ECAM and PICE-CE numbered within the top six of Chau's (1997) ranking list while BEPAM, which contained a considerable number of papers addressing PPP issues, had also been selected in previous studies (Hong et al. 2011, Osei-Kyei and Chan 2015). The last journal (AIC) was chosen on the basis of criteria four. This journal, which was included in Chau's (1997) top ten list, was rated the most valuable for peer review by the research community. It had been selected in Hong et al. (2011) and Osei-Kyei and Chan's (2015) studies. The specific and comprehensive process of selecting target journals was undertaken to ensure the quality and reliability of the study.

In stage two, the search code was refined and limited to ten target journals only. The modified search code was as follows:

> TITLE-ABS-KEY("public private partnership" OR "build-operate-transfer" OR "bot" OR "build operate transfer" OR "build/operate/transfer" OR "private finance initiative" OR "public-private" OR "privately financed" OR "private finance" OR "public/private" OR "private infrastructure" OR "privatised infrastructure" OR "pfi" OR "ppp/pfi" OR "pfi/ppp") AND DOCTYPE(ar OR re) AND SUBJAREA(ener OR

engi OR envi OR busi OR deci OR manag OR econ OR soci) AND (PUBYEAR > 1997) AND (PUBYEAR < 2014) AND (LIMIT-TO(LANGUAGE,"English")) AND (LIMIT-TO(SRCTYPE,"j")) AND (LIMIT-TO(EXACTSRCTITLE, "Journal of Management in Engineering") OR LIMIT-TO(EXACTSRCTITLE, "International Journal of Project Management") OR LIMIT-TO(EXACTSRCTITLE, "Built Environment Project and Asset Management") OR LIMIT-TO(EXACTSRCTITLE, "Construction Management and Economics") OR LIMIT-TO(EXACTSRCTITLE, "Public Money and Management") OR LIMIT-TO(EXACTSRCTITLE, "Automation in Construction") OR LIMIT-TO(EXACTSRCTITLE, "Journal of Construction Engineering and Management") OR LIMIT-TO(EXACTSRCTITLE, "International Journal of Public Sector Management") OR LIMIT-TO(EXACTSRCTITLE, "Proceedings of the Institution of Civil Engineers-Civil Engineering") OR LIMIT-TO(EXACTSRCTITLE, "Engineering Construction and Architectural Management")
Result: 315 (Searched 10 August 2014)

The search result obtained from the first stage was refined in the second stage where the focus was on ten selected journals. All of the publications in the selected ten journals belonging to the broad categories, e.g., "Reviews", "Editorial", "Articles in press", "Letter", "Discussion", "Introduction", "Closures", and "Briefing" were excluded from the search result. It was further refined by excluding papers irrelevant to PPP studies using a consistent analysis, which reviewed the title, abstract, and keywords of each paper. A final list of PPP-related papers was subsequently identified for further analysis in stage three.

Table 58: Score distribution of authors' contributions to multi-authored papers.

Number of authors	**Order of a specific author**					
	1	**2**	**3**	**4**	**5**	**6**
1	1					
2	0.6	0.4				
3	0.47	0.32	0.21			
4	0.42	0.28	0.18	0.12		
5	0.38	0.26	0.17	0.11	0.08	
6	0.36	0.25	0.16	0.10	0.07	0.06

In stage three, the papers obtained from the second stage were examined and analysed to identify research trends and research interest in PPP publications during the period 1998 to 2013. Research trends included annual PPP-related publications, origin of research and authors of PPP-related papers published, and active research centres. In the research interest, the published papers were summarised and categorised into topics pertinent to the four phases of the PPP process.

In order to determine authors' origins and their actual contributions, this study adopted a quantitative approach proposed by Howard, Cole and Maxwell (1987). In effect, this method was employed to calculate the contributions of authors to multi-authored papers. It was based on the assumption that the actual contribution of an author depends on the position of said author in the list of authors that appeared in the paper. Accordingly, the contribution will be proportionately decreased respectively with the positions from one to two to three and so on. The level of decrease was constructed according to the formula given: $1.5^{n-1} / \sum_{i=1}^{n} 1.5^{n-i}$ (where n denotes the number of authors of the paper, and i is the order of each author) (Howard et al. 1987). A score distribution for authors is detailed in Table 58. For example, Brewer, Gajendran, Jefferies, and McGeorge (Australia) each published one paper in cooperation with Rowlinson from China and Dainty from the United Kingdom. The scores distributing to each individual author, based on Table 58, were 0.36, 0.25, 0.16, 0.10, 0.07, and 0.06 respectively, with scores of 0.87, 0.07 and 0.06 separately given to Australia, China, and the United Kingdom. The contributions of countries and active authors will be discussed in detail in the following section.

Appendix I-1: Research trend of PPP publications

Using the keywords mentioned in the code, the search engine found a total of 4,634 papers relating to PPPs. It also found an increasing trend whereby the number increased from 99 in 1998 to 317 in 2008. This trend leapt to 613 papers by the end of the period in 2013, approximately double the level in 2008 and more than six times the 1998 level. The entire number of papers issued in the ten selected journals during this period was 289 (approximately 6 per cent of total papers recorded by the search engine). After filtering out papers with fewer relevant titles, abstracts, and keywords, 269 articles were finally retained for further analysis. Table 59 shows the number of PPP works on a yearly basis; and, a full publication list of PPP papers identified in the selected ten journals is presented in Table 63.

As shown in Table 59, the total number of papers published in the selected ten journals showed many changes during the period. It increased during the period 1998 to 2005, with a relatively stable increase post 1999 (just one, two or at most three papers annually). Between 2006 and 2009, research interest in PPP topics experienced considerable fluctuations although overall it was still increasing. The year 2010 saw 32 papers published almost double the number recorded before the global financial crisis peaked in 2007-2008. There was a subsequent slight downturn in number in 2011 and 2012 but still an increasing trend before

Table 59: PPP-related papers published between 1998 and 2013 (year inclusive).

Year	Search Engine	Target Journals	JCEM	CME	IJPM	IJPSM	JME	ECAM	PICE-CE	BEPAM	AIC	PMM
1998	99	3	0	0	0	0	1	0	2	0	0	0
1999	151	9	1	2	2	0	1	0	1	0	0	2
2000	127	9	2	4	2	0	0	0	1	0	0	0
2001	156	9	4	1	1	1	0	0	0	0	0	2
2002	154	11	2	2	1	2	2	0	1	0	0	1
2003	185	12	3	4	0	0	0	0	2	0	0	3
2004	168	11	4	3	1	3	0	0	0	0	0	0
2005	229	14	7	5	1	0	0	1	0	0	0	0
2006	251	24	3	6	11	2	0	2	0	0	0	0
2007	261	18	5	3	5	1	0	1	0	0	1	2
2008	317	23	2	6	3	3	2	1	0	0	0	6
2009	395	19	5	6	4	0	1	1	1	0	0	1
2010	464	32	9	6	4	0	3	2	0	0	1	7
2011	471	19	6	4	2	2	3	1	0	0	0	1
2012	593	18	6	1	2	0	5	0	1	2	0	1
2013	613	38	5	3	5	7	2	1	2	11	1	1
Total	4634	269	64	56	44	21	20	10	11	13	3	27

Notes: Irrelevant papers and reviews excluded
Search Engine: The total number of PPP-related papers identified by the search engine
Selected Search: The total number of papers published in the ten selected journals
JCEM: Journal of Construction Engineering and Management
CME: Construction Management and Economics
IJPM: International Journal of Project Management
IJPSM: International Journal of Public Sector Management
JME: Journal of Management in Engineering
ECAM: Engineering Construction and Architectural Management
PICE-CE: Proceedings of the Institution of Civil Engineers-Civil Engineering
BEPAM: Built Environment Project and Asset Management
AIC: Automation in Construction
PMM: Public Money and Management

reaching a peak of 38 papers at the end of 2013. Justification for these unusual events may be attributed to the global recession that occurred in 2007-2008 and resulted in reports of increasing numbers of PPP-associated problems. During this time, attention to PPPs stalled in tandem with the gloomy world economy, only to bloom again when the economic situation recovered.

During this period, **JCEM** published the highest number of PPP papers (64), followed by **CME** (56), **IJPM** (44), and **PMM** (27). **IJPSM** and **JME** produced relatively equal numbers of publications (21 and 20 papers respectively). The next journals, in descending order, were **BEPAM**, **PICE-CE**, and **ECAM** (13, 11, and 10 papers respectively). It become clear in the numbers that PPPs have continuously been a major concern of main research topics in construction management, evident in the numbers. **AIC** published the lowest number of PPP-related papers (only 3 publications), perhaps due to the fact that issues relating to PPP topics

Table 60: Countries of origin of PPP-related publications.

Country	Publications	Research Centres	Researchers	Score
United Kingdom	60	45	88	49.76
Hong Kong	39	9	38	29.45
United States	35	28	43	23.84
Australia	33	25	38	23.65
China	34	24	30	19.44
Singapore	24	6	20	16.05
India	14	11	17	14.00
Taiwan	12	15	28	11.04
Germany	10	5	13	7.88
Portugal	6	2	5	4.80
Italy	6	5	8	4.75
Denmark	5	4	6	4.60
Canada	5	5	9	4.10
Spain	5	4	7	3.94
Greece	4	3	5	3.60
Netherlands	5	5	10	3.41
Ireland	5	3	4	3.40
Turkey	4	3	7	2.79
Thailand	3	3	5	2.60
Serbia	3	2	3	2.32
Japan	3	4	6	2.28
South Korea	3	5	6	2.11
Malaysia	2	1	1	2.00
Lebanon	2	1	2	2.00
Egypt	2	1	4	1.68
Sweden	2	2	3	1.40
Finland	2	2	3	1.28
Switzerland	2	2	2	1.21
Indonesia	3	1	1	1.08
Brazil	1	2	2	1.00
Iran	1	1	3	1.00
New Zealand	1	1	2	1.00
United Arab Emirates	1	1	2	0.70
Austria	1	1	1	0.60
France	1	1	1	0.60
Saudi Arabia	1	1	1	0.47
Sri Lanka	1	1	1	0.32
Philippines	1	1	1	0.12
Poland	1	1	1	0.06

were not the main focus of this journal. Its target publications converged on construction studies.

The research origins of PPP-related publications shown in Table 60 are presented along with the number of papers published, research centres and researchers,

and ranked in descending order based on the score for each research origin. The United Kingdom, Hong Kong, and the United States scored top ranking having published the highest number of PPP-related publications in the ten selected journals during the period under scrutiny. Somewhat unsurprisingly, the United Kingdom ranked first with a score of 49.76, with 88 researchers from 45 research centres publishing a total of 60 papers. The top score by far exceeded the second and third scores, i.e., Hong Kong and the United States with scores of 29.45 and 23.84 respectively. This finding is understandable given that the United Kingdom has always been regarded as the leading country when one considers the number of projects being implemented and market maturity. Ranked behind the United Kingdom were Australia (23.65), China (19.44), and Singapore (16.05). Taken together this top-six group of countries were the most active contributors to PPP studies, having produced most of the papers published during the period, more than 83 per cent (225 out of 269).

It is worth noting that although the contributions from researchers from developed countries remained the majority, the appearance of some developing jurisdictions as country originators of PPP-related publications sent a good signal vis-à-vis the maturity of the PPP market in these areas. Among them, China emerged as the most noticeable, being one of the six countries with high coverage of the number of publications. In addition to China, India and Taiwan were also among countries that made considerable contributions to PPP studies, with scores of 14 and 11.04 respectively. This, however, is understandable when one considers the rapid development that marks many aspects of China and India in recent years, especially in the research field. Researchers from other developing countries, e.g., Thailand, Malaysia, Indonesia and the Philippines started emerging as contributors to PPP knowledge, even though few publications were recorded during the period under scrutiny. The reasons for the inactive participation of developing countries in PPP publications included: national economic development; limited construction knowledge; infant awareness of PPPs; and, the generally inferior level of English fluency. It is important to note here that no publications were recorded by researchers from Vietnam, even when the search was expanded beyond the selected ten journals. This is not difficult to understand given that PPP study is a new topic in Vietnam. Also, reasons could lie in the weak level of research in science and the social fields, and the low English literacy rate in the country. To date, PPP studies in Vietnam have not (or have rarely) been discussed in international journal publications.

Information relating to 25 researchers who contributed at least four papers each, and 24 research centres which were involved in at least four papers, is presen-

Table 61: Active authors involved in at least four publications.

Author's Name	Affiliation	Country	Publications	Score
Zhang, X.	Hong Kong University of Science and Technology	Hong Kong	7	7.00
Tiong, R.L.K.	Nanyang Technological University	Singapore	12	4.06
Wibowo, A.	Bauhaus University of Weimar	Germany	6	3.76
Chan, D.W.M.	Hong Kong Polytechnic University	Hong Kong	4	3.27
Jin, X.H.	Deakin University	Australia	4	3.20
Chan, A.P.C.	Hong Kong Polytechnic University	Hong Kong	12	3.15
Kumaraswamy, M.M.	University of Hong Kong	Hong Kong	7	2.91
Chen, C.	University of Melbourne	Australia	4	2.62
Ye, S.	Nanyang Technological University	Singapore	4	2.40
Shaoul, J.	University of Manchester	United Kingdom	4	2.26
Kalidindi, S.N.	Indian Institute of Technology, Madras	India	6	2.24
Marques, R.C.	Technical University of Lisbon	Portugal	5	2.20
Ng, S.T.	University of Hong Kong	Hong Kong	4	2.14
Lam, P.T.I.	Hong Kong Polytechnic University	Hong Kong	6	2.11
Wang, S.Q.	Tsinghua University	China	6	2.04
Zhang, X.Q.	University of Hong Kong	Hong Kong	4	2.02
Ke, Y.	Tsinghua University	China	8	1.64
Cheung, E.	Hong Kong Polytechnic University	Hong Kong	7	1.64
Akintoye, A.	Glasgow Caledonian University	United Kingdom	4	1.54
Love, P.E.D.	Curtin University of Technology	Australia	4	1.50
Xie, J.	University of Hong Kong	Hong Kong	4	1.48
Yeung, J.F.Y.	Hong Kong Polytechnic University	Hong Kong	4	1.37
Stafford, A.	University of Manchester	United Kingdom	4	1.17
Shen, Q.	Hong Kong Polytechnic University	Hong Kong	4	1.07
Skibniewski, M.J.	University of Maryland	United States	5	1.02

ted in Tables 61 and 62 respectively. Active researchers of PPP studies from each country listed include: (1) Zhang, X. (Hong Kong University of Science and Technology), Chan, D.W.M., Chan, A.P.C., Lam, P.T.I., Cheung, E., Yeung, J.F.Y. (Hong Kong Polytechnic University), and Kumaraswamy, M.M., Ng, S.T., Zhang, X.Q., Xie, J. (University of Hong Kong) in Hong Kong; (2) Tiong, R.L.K., and Ye, S. (Nanyang Technological University) in Singapore; (3) Wibowo, A. (Bauhaus University of Weimar) in Germany; (4) Jin, X.H. (Deakin University), Chen, C. (University of Melbourne), and Love, P.E.D. (Curtin University of Technology) in Australia; (5) Shaoul, J., Stafford, A. (University of Manchester), and Akintoye, A. (Glasgow Caledonian University) in the United Kingdom; (6) Kalidindi, S.N. (Indian Institute of Technology Madras) in India; (7) Marques, R.C. (Technical University of Lisbon) in Portugal; (8) Wang, S.Q. (Tsinghua University) in China; and, (9) Skibniewski, M.J. (University of Maryland) in the United States. Clearly, Hong Kong can claim the majority of active researchers, along with Singapore, Australia, and the United Kingdom. The remainder were from Germany, Portugal, China, India, and the United States, with one active contributor from each country.

Table 62: Research centres claiming at least four publications.

Affiliation	Country	Authors	Publications	Score
Hong Kong Polytechnic University	Hong Kong	17	23	14.84
The University of Hong Kong	Hong Kong	13	16	12.99
Nanyang Technological University	Singapore	11	17	11.20
Ministry of Water Resources of China	China	1	8	8.00
University College London	United Kingdom	6	7	7.00
Indian Institute of Technology, Madras	India	9	8	6.33
University of Melbourne	Australia	8	8	6.32
Instituto Superior Tecnico	Portugal	4	6	4.80
Bauhaus-Universitat Weimar	Germany	9	6	4.78
National University of Singapore	Singapore	11	9	4.40
University of Manchester	United Kingdom	6	4	4.00
Glasgow Caledonian University	United Kingdom	7	4	3.31
National Taiwan University	Taiwan	9	5	3.29
University of Reading	United Kingdom	7	4	3.20
Manchester Business School	United Kingdom	3	4	3.06
Technische Universitat Berlin	Germany	2	4	2.86
Queen's University Belfast	United Kingdom	5	4	2.67
Tsinghua University	China	4	9	2.58
Southeast University	China	6	7	2.58
Loughborough University	United Kingdom	8	5	2.53
University of Maryland	United States	5	5	2.50
Virginia Polytechnic Institute and State University	United States	3	4	2.49
University of Newcastle	Australia	5	4	2.41
University of Edinburgh	United Kingdom	2	4	2.02

Among the most active researchers, Zhang, X. from Yellow River Conservation Commission under The Ministry of Water Resources of China, who graduated from both the Hong Kong University of Science and Technology and the University of Hong Kong, personally published 7 papers and scored highest with a calculated value of 7.00. Tiong, R.L.K. from Nanyang Technological University, Singapore published 12 papers. But, while he was ranked second, he scored only 4.06, far less than Zhang, X.'s score. This was mainly because Tiong, R.L.K co-authored many papers with other researchers from his affiliation, Ye, S. for example. In third position was Wibowo, A. from Bauhaus University of Weimar in Germany, who published 6 papers and scored 3.76.

Regarding research centres claiming at least four publications (see Table 62), Hong Kong Polytechnic University, the University of Hong Kong, Hong Kong, and Nanyang Technological University, Singapore, obtained the top-three rankings with 17, 13 and 11 authors involving 23, 16 and 17 publications respectively. Due to the great contribution of Zhang, X., the Ministry of Water Resources of China ranked fourth, in line with Zhang's eight publications. Although the United Kingdom, the United States, and Australia came in the top six of the most

active countries for PPP studies, the rankings for active authors and research centres from these countries seemed relatively lower than expected. Two reasons for this finding include: (1) those countries have multiple research centres, e.g., 45, 28 and 25 in the United Kingdom, the United States, and Australia respectively, rendering the contributions of each considerably less; and, (2) researchers in those countries published papers that were usually co-authored. For this reason, each author received lower points for his/her contribution. Notwithstanding, the results indicate that research interest in PPPs was widespread in both the developed and developing countries.

Appendix I-2: Research interests of PPP publications

In order to provide a more updated, detailed and easily understandable map of research interests of PPP publications during the period 1998 to 2013, this study reviewed and categorised PPP papers according to the stages in the PPP process (see Section 2.3.6 presented in Figure 39). It is important to note here that identification of a main topic for a paper, e.g., in this case to determine which research topic illustrates the focused content of each paper and which PPP stage it belongs to, is difficult. Hence, classification can be inexact and subjective (Themistocleous and Wearne 2000). However, classification was determined by the same set of selected journals and based on the general functionality of the stages in the PPP process. This could eliminate variations in views. In addition, for review and comparison purposes, this approach was deemed appropriate.

Therefore, each paper was linked to one main research topic that the best-fit one was chosen from, and placed in the most considerably suitable stages. Also, the number of times that a topic was mentioned was also recorded in a bid to determine the topic that the researchers were interested in focusing upon. Also, due to the differences in PPP processes applied in countries, while some countries, e.g., Australia and Canada conduct financial and economic analyses for VFM testing through the tendering process, others, Japan for example, employ certain pre-evaluations before bids are invited (Grimsey and Lewis 2005). Hence, in order to ensure the consistency of findings, topics belonging to stages two and three of the PPP process were grouped into one (see Figure 39).

From Figure 39, it may be seen that research papers focused more on issues pertaining to the first stage (80 out of 269), while seeming to distribute relative similarity in the three remaining stages, with approximately 60 papers each. In the first stage, research topics that the researchers focused on included best practical experience of PPP case studies or reviews of research trends, principal factors for PPP implementation (e.g., critical success or failure factors of PPP

projects, attractive and negative factors for adopting PPPs, VFM drivers in PPP projects, and reasons for adopting PPPs), and the determination of project delivery options, with 19, 28, and 13 papers respectively. New PPP types, for example, joint ventures, alliances and leasing, were also main concentrations of researchers in the first stage, with a total of 7 papers. In stages two and three, the topics of most interest were related to risk (risk assessment, risk mitigation, risk allocation, and risk analysis) with a total of 41 papers. Next was project evaluation, including project finance (11), project visibility (11), project costing (5), and project valuation (4), making a total of 31 papers in this category. Issues relating to concession period and contract procurement were also main topics in these stages for researchers, with 9 and 6 studies respectively. In the final stage of the PPP process, focus was mainly upon risk management (12), project management (8), performance management (8), and project governance (7). Relationship management (6 papers) and contract renegotiation (4 papers) were also main topics for researchers in this stage.

It is noted here that among the topics, studies about risk associated with PPPs accounted for the highest proportion (41/269), followed by those on principal factors for PPP implementation (28/269). Although these topics are not new, they still attracted the attention of many researchers from different countries during the period. This further confirmed the statements made by many researchers, e.g., Ke et al. (2009), Tang et al. (2010), and Galilea and Medda (2010), that the experience of PPP implementation cannot be simply copied from country to country. It is necessary to assess these factors according to the political-economic contexts of the countries in which the PPP programs are being implemented. In addition, although research interest in PPPs has increased particularly after the global financial crisis of 2008, in the main focus has concentrated on finding solutions to and overcoming emerging problems peculiar to PPP projects rather than on analysing the effects of the crisis on PPP implementation. Only a few papers have pursued this research direction.

A gradual increase in research interests between 1998 and 2003 was predicted by Al-Sharif and Kaka (2004). According to Ke et al. (2009), research interest in PPPs continued to develop from 2003 to 2008. The period 2008 to 2013 also saw an increase in PPP research topics. New topics included: Performance management using Key Performance Indicators (Yuan, Zeng, Skibniewski and Li 2009); Quantitative Strength Weak Opportunity Threat (SWOT) analysis (Yuan, Guang, Wang, Li and Skibniewski 2012); Project briefings (Tang and Shen 2013, Tang, Shen, Skitmore and Cheng 2013); Assessment of competencies (Devkar and Kalidindi 2013); Contract renegotiation (Cruz and Marques 2013, Nikolaidis and Roum-

boutsos 2013); Facility management (Brewer, Gajendran, Jefferies, McGeorge, Rowlinson and Dainty 2013); and, Design development (Raisbeck and Tang 2013). Additionally, in their attempts to solve the problem of PPP projects related risk factors, e.g., risk assessment, risk mitigation, risk analysis, and risk allocation, researchers have increasingly employed sophisticated methods including: Real option for risk mitigation (Pellegrino, Vajdic and Carbonara 2013, Iyer and Sagheer 2011); Fuzzy, Neuro-Fuzzy, and Artificial Neuro network techniques for risk allocation (Jin 2011, Jin and Zhang 2011); Fuzzy-AHP and Fuzzy-synthetic methods for risk assessment (Li and Zou 2011, Xu, Yeung, Chan, Chan, Wang and Ke 2010); and, Stochastic critical path-envelop method for risk analysis (Kokkaew and Chiara 2010). Greater attention was also found on new methods applied to solve other PPP problems (decision support, PPP structural analysis, and concession pricing), for example: network theory used for structural analysis of PPPs (Chowdhury, Chen and Tiong 2011); multi-objective Bayesian network used to help PPP decision support (Xie and Thomas Ng 2013); and, system dynamic for modelling concession pricing (Xu, Sun, Skibniewski, Chan, Yeung and Cheng 2012). Also, after the global financial crisis, researchers seemed to focus more on the performance of PPP projects by proposing frameworks to control, monitor and evaluate service delivery, their aim being to ensure PPP outcomes.

The above review has provided a complete picture of research studies conducted on PPPs between 1998 to 2013 (year inclusive) with the diversity of topics summarised in Figure 39. Clearly, no single research study can cover all of these topics; and, this thesis is no exception. The aim of this study has been to focus on the early stage of the PPP process by specifically identifying principal factors for PPP implementation and their importance in the context of Vietnam. The next section will review the extant literature in accordance with these factors.

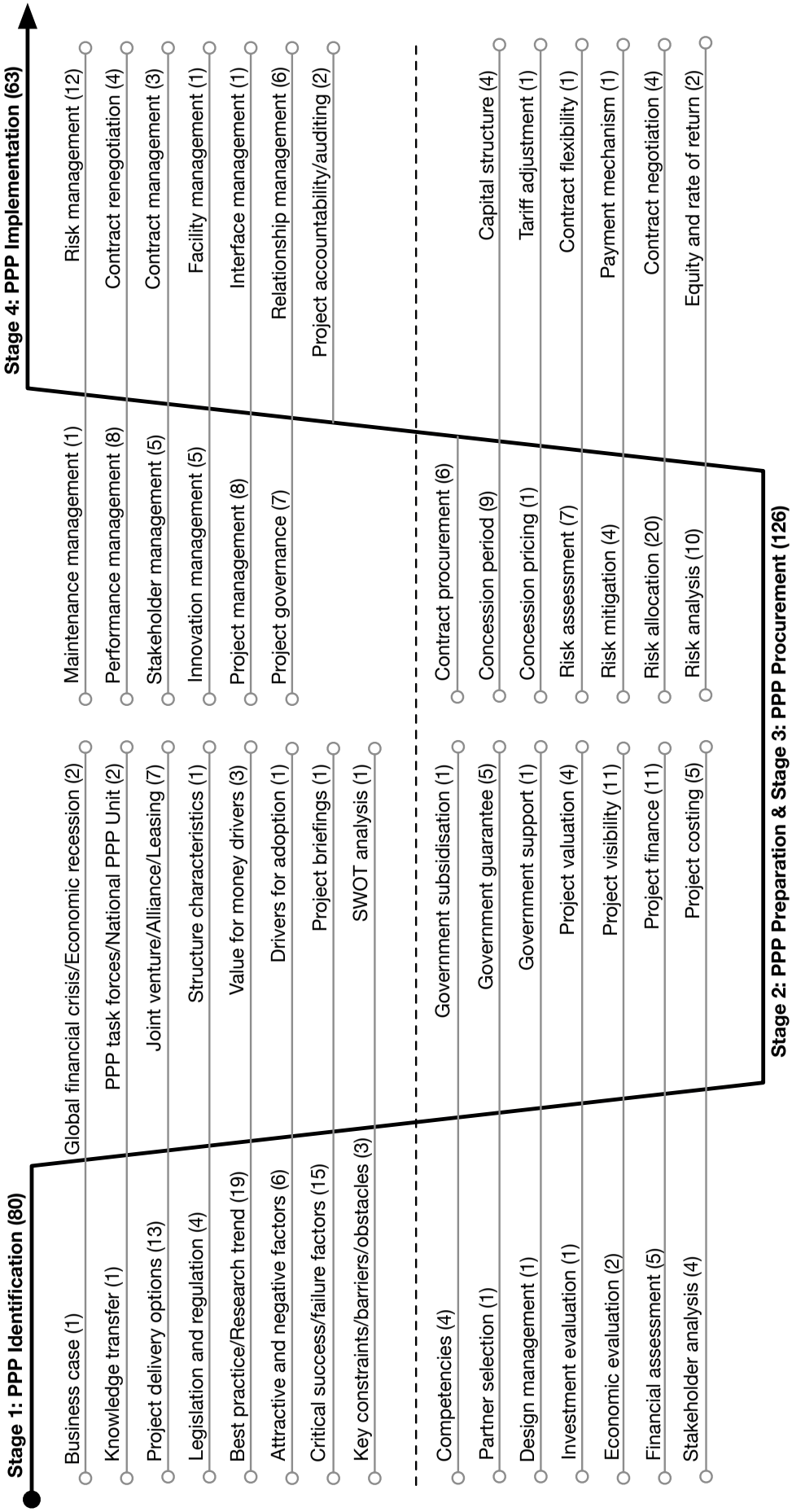


Figure 39: Topics of PPP publications between 1998 and 2013.

Table 63: PPP papers identified in the selected ten journals between 1998 and 2014.

No	Journal	Year	Authors	Topic	Stage
1	AIC	2013	Yu, C.Y., and Lam, K.C.	Concession period	23
2	AIC	2010	Xu, Y., Yeung, J.F.Y., Chan, A.P.C., Chan, D.W.M., et al.	Risk assessment	23
3	AIC	2007	Ng, S., Xie, J., Skitmore, M., and Cheung, Y.K.	Concession period	23
4	BEPAM	2013	Sfakianakis, E., and Van de Laar, M.	Risk analysis	23
5	BEPAM	2013	Asao, K., Miyamoto, T., Kato, H., and Diaz, C.E.D.	Government guarantee	23
6	BEPAM	2013	Liu, T., and Wilkinson, S.	Project visibility	23
7	BEPAM	2013	Leviäkangas, P., Wigan, M., and Haapasalo, H.	Project visibility	23
8	BEPAM	2013	Pellegrino, R., Vajdic, N., and Carbonara, N.	Risk mitigation	23
9	BEPAM	2013	Nikolaidis, N., and Roumboutsos, A.	Contract renegotiation	4
10	BEPAM	2013	Roumboutsos, A., and Macário, R.M.R.	Best practice	1
11	BEPAM	2013	Eadie, R., Millar, P., and Grant, R.	Project delivery options	1
12	BEPAM	2013	Devkar, G.A., and Kalidindi, S.N.	Competencies	23
13	BEPAM	2013	Brewer, G., Gajendran, T., Jefferies, M., et al.	Facility management	4
14	BEPAM	2013	Devkar, G.A., and Kalidindi, S.N.	Competencies	23
15	BEPAM	2012	Delhi, V.S.K., Mahalingam, A., and Palukuri, S.	Project governance	4
16	BEPAM	2012	De Marco, A., Mangano, G., and Zou, X.Y.	Capital structure	23
17	CME	2013	Chang, C.Y.	Project governance	4
18	CME	2013	Chang, C.Y.	Risk allocation	23
19	CME	2013	Raisbeck, P., and Tang, L.C.M.	Design management	23
20	CME	2012	Abdul-Aziz, A.R.	Project governance	4
21	CME	2011	Iyer, K.C., and Sagheer, M.	Risk mitigation	23
22	CME	2011	Liou, F.M., Yang, C.H., Chen, B., and Chen, W.	Contract negotiation	23
23	CME	2011	Chowdhury, A.N., Chen, P.H., and Tiong, R.L.K.	Stakeholder management	4
24	CME	2011	Gannon, M.J., and Smith, N.J.	Business case	1
25	CME	2010	Kokkaew, N., and Chiara, N.	Risk analysis	23
26	CME	2010	Shan, L., Garvin, M.J., and Kumar, R.	Risk analysis	23
27	CME	2010	Hartmann, A., Davies, A., and Frederiksen, L.	Competencies	23
28	CME	2010	Lind, H., and Borg, L.	Project delivery options	1
29	CME	2010	Dulaimi, M.F., Alhashemi, M., Ling, F.Y.Y., et al.	Critical success/failure factors	1
30	CME	2010	Raisbeck, P., Duffield, C., and Xu, M.	Project delivery options	1
31	CME	2009	Huang, Y.L., and Pi, C.C.	Project valuation	23
32	CME	2009	Laishram, B.S., and Kalidindi, S.	Project finance	23
33	CME	2009	Robinson, H.S., and Scott, J.	Performance management	4
34	CME	2009	Liu, J., and Cheah, C.Y.J.	Contract negotiation	23
35	CME	2009	Leiringer, R., Green, S.D., and Raja, J.Z.	Project valuation	23
36	CME	2009	Yuan, J., Zeng, A.Y., Skibniewski, M.J., and Li, Q.	Performance management	4
37	CME	2008	Raisbeck, P.	Risk management	4
38	CME	2008	Brandao, L.E.T., and Saraiva, E.	Government guarantee	23
39	CME	2008	Chiara, N., and Garvin, M.	Risk analysis	23
40	CME	2008	Jin, X.H., and Doloi, H.	Risk allocation	23
41	CME	2008	Roumboutsos, A., and Anagnostopoulos, K.P.	Risk allocation	23
42	CME	2008	Smyth, H.	Stakeholder management	4
43	CME	2007	Ng, S.T., and Wong, Y.M.W.	Project auditing	4
44	CME	2007	Gruneberg, S., Hughes, W., and Ancell, D.	Risk management	4
45	CME	2007	Abdel Aziz, A.M.	Payment mechanism	23
46	CME	2006	Carrillo, P.M., Robinson, H.S., Anumba, C.J., et al.	Knowledge transfer	1
47	CME	2006	Cheah, C.Y.J., and Liu, J.	Government support	23
48	CME	2006	Thomas, A.V., Kalidindi, S.N., and Ganesh, L.S.	Risk assessment	23
49	CME	2006	Huang, Y.L., and Chou, S.P.	Government guarantee	23

(The Table continues on the following page...)

Table 63: PPP papers identified in the selected ten journals between 1998 and 2014.

No	Journal	Year	Authors	Topic	Stage
50	CME	2006	El-Diraby, T.A., and Gill, S.M.	Project finance	23
51	CME	2006	Leiringer, R.	Innovation management	4
52	CME	2005	Chen, C., and Messner, J.I.	Best practice	1
53	CME	2005	Wibowo, A.	Project visibility	23
54	CME	2005	Li, B., Akintoye, A., Edwards, P.J., and Hardcastle, C.	Critical success/failure factors	1
55	CME	2005	Xenidis, Y., and Angelides, D.	Risk analysis	23
56	CME	2005	Cheng, L., and Tiong, R.L.K.	Risk allocation	23
57	CME	2004	Ahadzi, M., and Bowles, G.	Contract negotiation	23
58	CME	2004	Vazquez, F., and Allen, S.	Critical success/failure factors	1
59	CME	2004	Garvin, M.J., and Cheah, C.Y.J.	Project viability	23
60	CME	2003	Akintoye, A., Hardcastle, C., Beck, M., et al.	Attractive and negative factors	1
61	CME	2003	Ye, S., and Tiong, R.L.K.	Concession period	23
62	CME	2003	Ye, S., and Tiong, R.L.K.	Tariff adjustment	23
63	CME	2003	Thomas, A.V., Kalidindi, S.N., et al.	Risk allocation	23
64	CME	2002	Bossink, B.A.G.	Innovation management	4
65	CME	2002	Ho, S.P., and Liu, L.Y.	Project viability	23
66	CME	2001	Tse, R.Y.C., and Love, P.E.D.	Joint ventures	1
67	CME	2000	Wang, S.Q., Tiong, R.L.K., Ting, S.K., and Ashley, D.	Risk management	4
68	CME	2000	Wang, S.Q., Tiong, R.L.K., Ting, S.K., and Ashley, D.	Risk management	4
69	CME	2000	Özdoganm, I.D., and Talat Birgönül, M.	Project viability	23
70	CME	2000	Kwok-Chun, W., and Walker, A.	Joint ventures	1
71	CME	1999	Miller, J.B., and Evje, R.H.	Project delivery options	1
72	CME	1999	Ranasinghe, M.	Project viability	23
73	ECAM	2013	Wibowo, A., and Alfen, H.W.	Risk assessment	23
74	ECAM	2011	Ke, Y., Wang, S., Chan, A.P.C., and Cheung, E.	Risk assessment	23
75	ECAM	2010	Ng, S.T., Xie, J., and Kumaraswamy, M.M.	Equity and rate of return	23
76	ECAM	2010	Cheung, E., Chan, A.P.C., and Kajewski, S.	Attractive and negative factors	1
77	ECAM	2009	Jefferies, M., and McGeorge, W.D.	Project costing	23
78	ECAM	2008	Swaffield, L.M., and McDonald, A.M.	Project costing	23
79	ECAM	2007	Kumaraswamy, M.M., Ling, F.Y.Y., et al.	Relationship management	4
80	ECAM	2006	Jefferies, M.	Critical success/failure factors	1
81	ECAM	2006	Ng, S.T., and Wong, Y.M.W.	Project delivery options	1
82	ECAM	2005	Akintoye, A., and Chinyio, E.	Risk assessment	23
83	IJPM	2013	Tang, L., and Shen, Q.	Stakeholder analysis	23
84	IJPM	2013	Nisar, T.M.	Critical success/failure factors	1
85	IJPM	2013	Chang, C.Y.	Contract renegotiation	4
86	IJPM	2013	Cruz, C.O., and Marques, R.C.	Contract flexibility	23
87	IJPM	2013	Hwang, B., Zhao, X., and Gay, M.J.S.	Risk allocation	23
88	IJPM	2012	Hanaoka, S., and Palapus, H.P.	Concession period	23
89	IJPM	2012	Xu, Y., Sun, C., Skibniewski, M.J., Chan, A.P.C., et al.	Concession pricing	23
90	IJPM	2011	Lee, C.H., and Yu, Y.H.	Project delivery options	1
91	IJPM	2011	Jin, X.H., and Zhang, G.	Risk allocation	23
92	IJPM	2010	Yang, J.B., Yang, C.C., and Kao, C.K.	Performance management	4
93	IJPM	2010	Choi, J.H., Chung, J., and Lee, D.J.	Risk mitigation	23
94	IJPM	2010	Wibowo, A., and Mohamed, S.	Risk allocation	23
95	IJPM	2010	Ke, Y., Wang, S., Chan, A.P.C., and Lam, P.T.I.	Risk allocation	23
96	IJPM	2009	Chen, C.	Project finance	23
97	IJPM	2009	Sobhiyah, M.H., Bemanian, M.R., and Kashtiban, Y.Kh	VFM drivers	1
98	IJPM	2009	Ruuska, I., and Teigland, R.	Competencies	23

(The Table continues on the following page...)

Table 63: PPP papers identified in the selected ten journals between 1998 and 2014.

No	Journal	Year	Authors	Topic	Stage
99	IJPM	2009	Chowdhury, A.N., and Charoenngam, C.	Project finance	23
100	IJPM	2008	Van Marrewijk, A., Clegg, S.R., Pitsis, T.S., et al.	Project management	4
101	IJPM	2008	Daube, D., Vollrath, S., and Alfen, H.W.	Project finance	23
102	IJPM	2008	Chen, C., and Doloi, H.	Attractive and negative factors	1
103	IJPM	2007	Ng, S.T., Xie, J., Cheung, Y.K., and Jefferies, M.	Concession period	23
104	IJPM	2007	Zhang, H.	Risk analysis	23
105	IJPM	2007	Medda, F.	Risk allocation	23
106	IJPM	2007	Smyth, H., Edkins, A.	Relationship management	4
107	IJPM	2007	Ng, A., and Loosemore, M.	Risk allocation	23
108	IJPM	2006	Kleiss, T., and Imura, H.	Legislation and Regulation	1
109	IJPM	2006	Boeing Singh, L., and Kalidindi, S.N.	Risk management	4
110	IJPM	2006	Abednego, M.P., and Ogunlana, S.O.	Risk allocation	23
111	IJPM	2006	El-Gohary, N.M., Osman, H., and El-Diraby, T.E.	Stakeholder management	4
112	IJPM	2006	Devapriya, K.A.K.	Project governance	4
113	IJPM	2006	Holmes, J., Capper, G., and Hudson, G.	Performance management	4
114	IJPM	2006	Fischer, K., Jungbecker, A., and Alfen, H.W.	PPP Task Forces	1
115	IJPM	2006	Koch, C., and Buser, M.	Project governance	4
116	IJPM	2006	Clifton, C., and Duffield, C.F.	Project governance	4
117	IJPM	2006	Shen, L.Y., Platten, A., and Deng, X.P.	Risk management	4
118	IJPM	2006	Chen, M.S., Lu, H.F., and Lin, H.W.	Relationship management	4
119	IJPM	2005	Bing, L., Akintoye, A., Edwards, P.J., and Hardcastle, C.	Risk allocation	23
120	IJPM	2004	Smith, N., Zhang, H., and Zhu, Y.	Attractive and negative factors	1
121	IJPM	2002	Grimsey, D., and Lewis, M.K.	Risk analysis	23
122	IJPM	2001	Kumaraswamy, M.M., and Zhang, X.Q.	Critical success/failure factors	1
123	IJPM	2000	Yeo, K.T., and Tiong, R.L.K.	Risk mitigation	23
124	IJPM	2000	Wang, S.Q., and Tiong, L.K.	Best practice	1
125	IJPM	1999	Tam, C.M.	Critical success/failure factors	1
126	IJPM	1999	Lam, P.T.I.	Risk management	4
127	IJPSM	2013	Gerstlberger, W.D., and Schneider, K.	Best practice	1
128	IJPSM	2013	Sun, M.T.W., Shih, M.C., Hsu, K.M., and Chen, J.	Innovation management	4
129	IJPSM	2013	Planojević, N.	Project delivery options	1
130	IJPSM	2013	Stankovic, E.	Stakeholder analysis	23
131	IJPSM	2013	Sharma, S., and Nayak, S.	Stakeholder analysis	23
132	IJPSM	2013	Bruce, R.R.	Stakeholder management	4
133	IJPSM	2013	Erakovich, R., and Anderson, T.	Project management	4
134	IJPSM	2011	Connolly, C., and Wall, T.	Global financial crisis	1
135	IJPSM	2011	Ball, R.	Project delivery options	1
136	IJPSM	2008	Love, P.E.D., Davis, P.R., Edwards, D.J., et al.	Contract procurement	23
137	IJPSM	2008	Jacobson, C., and Ok, S.O.	Critical success/failure factors	1
138	IJPSM	2008	Schmidt, E.K.	Relationship management	4
139	IJPSM	2007	Nisar, T.M.	VFM drivers	1
140	IJPSM	2006	Trafford, S., and Proctor, T.	Joint ventures	1
141	IJPSM	2006	Adams, J., Young, A., and Zhihong, W.	Key constraints	1
142	IJPSM	2004	Jamali, D.	Critical success/failure factors	1
143	IJPSM	2004	Hurst, C., and Reeves, E.	Performance management	4
144	IJPSM	2004	Henderson, J., and McGloin, E.	Project management	4
145	IJPSM	2002	Pongsiri, N.	Legislation and Regulation	1
146	IJPSM	2002	Hagen, R.	Project governance	4
147	IJPSM	2001	Bagchi, P.K., and Paik, S.K.	Joint ventures	1

(The Table continues on the following page...)

Table 63: PPP papers identified in the selected ten journals between 1998 and 2014.

No	Journal	Year	Authors	Topic	Stage
148	JCEM	2013	Cruz, C.O., and Marques, R.C.	Contract renegotiation	4
149	JCEM	2013	Xie, J., and Thomas Ng, S.	Project delivery options	1
150	JCEM	2013	De Marco, A., and Mangano, G.	Risk management	4
151	JCEM	2013	Doan, P., and Menyah, K.	Project viability	23
152	JCEM	2013	Meduri, S.S., and Annamalai, T.R.	Performance management	4
153	JCEM	2012	Cruz, N.F.D., and Marques, R.C.	Contract management	4
154	JCEM	2012	Wibowo, A., Permana, A., Kochendörfer, B., et al.	Government guarantee	23
155	JCEM	2012	De Marco, A., Mangano, G., Cagliano, A.C., et al.	Risk management	4
156	JCEM	2012	Ashuri, B.a , Kashani, H.a , Molenaar, K.R.b , et al.	Risk management	4
157	JCEM	2012	Wu, M.a , Wing Chau, K.b , Shen, Q.b , and Yin Shen, L.	Concession period	23
158	JCEM	2012	Tserng, H.P., Russell, J.S., Hsu, C.W., and Lin, C.	National PPP Unit	1
159	JCEM	2011	Li, J., and Zou, P.X.W.	Risk assessment	23
160	JCEM	2011	Jin, X.H.	Risk allocation	23
161	JCEM	2011	Marques, R.C., and Berg, S.	Risk allocation	23
162	JCEM	2011	Wibowo, A., and Kochendoerfer, B.	Government guarantee	23
163	JCEM	2011	Boudet, H.S., Jayasundera, D.C., and Davis, J.	Relationship management	4
164	JCEM	2011	Regan, M., Smith, J., and Love, P.E.D.	Project viability	23
165	JCEM	2010	Love, P.E.D., Mistry, D., and Davis, P.R.	Alliance	1
166	JCEM	2010	Xu, Y., Chan, A.P.C., and Yeung, J.F.Y.	Risk allocation	23
167	JCEM	2010	Zheng, S., Tiong, R.L.K.	Best practice	1
168	JCEM	2010	Chiang, Y.H., Cheng, E.W.L., and Lam, P.T.I.	Project finance	23
169	JCEM	2010	Chan, A.P.C., Lam, P.T.I., Chan, D.W.M., et al.	Critical success/failure factors	1
170	JCEM	2010	Mahalingam, A.	Key barriers	1
171	JCEM	2010	Garvin, M.J.	Best practice	1
172	JCEM	2010	Jin, X.H.	Risk allocation	23
173	JCEM	2010	Iyer, K.C., and Sagheer, M.	Risk management	4
174	JCEM	2009	Chan, A.P.C., Lam, P.T.I., Chan, D.W.M., et al.	Drivers for adoption	1
175	JCEM	2009	Ke, Y., Wang, S., Chan, A.P.C., and Cheung, E.	Research trend	1
176	JCEM	2009	Chiang, Y.H., and Cheng, E.W.L.	Project finance	23
177	JCEM	2009	Girmscheid, G.	Economic evaluation	23
178	JCEM	2009	Zhang, X.	Concession period	23
179	JCEM	2008	Liou, F.M., and Huang, C.P.	Contract negotiation	23
180	JCEM	2008	Lu, M., and Lam, H.C.	Project management	4
181	JCEM	2007	Abdel Aziz, A.M.	Critical success/failure factors	1
182	JCEM	2007	Algarni, A.M., Arditi, D., and Polat, G.	Project delivery options	1
183	JCEM	2007	Shen, L.Y., Bao, H.J., Wu, Y.Z., and Lu, W.S.	Concession period	23
184	JCEM	2007	Subprasom, K., and Chen, A.	Legislation and Regulation	1
185	JCEM	2007	Salman, A.F.M., Skibniewski, M.J., and Basha, I.	Project viability	23
186	JCEM	2006	Zhang, X.	Critical success/failure factors	1
187	JCEM	2006	Ho, S.P.	Contract renegotiation	4
188	JCEM	2006	Zhang, X.	Critical success/failure factors	1
189	JCEM	2005	Zhang, X.	Financial assessment	23
190	JCEM	2005	Wibowo, A., and Kochendörfer, B.	Risk analysis	23
191	JCEM	2005	Zhang, X.	Partner selection	23
192	JCEM	2005	Chan, W.T., Chen, C., Messner, J.I., and Chua, D.K.H.	Interface management	4
193	JCEM	2005	Zhang, X.	Financial assessment	23
194	JCEM	2005	Zhang, X.	Best practice	1
195	JCEM	2005	Zhang, X.	Critical success/failure factors	1
196	JCEM	2004	Zhang, X.	Contract procurement	23

(The Table continues on the following page...)

Table 63: PPP papers identified in the selected ten journals between 1998 and 2014.

No	Journal	Year	Authors	Topic	Stage
197	JCEM	2004	Şentürk, H., Yazici, G., and Kaplanoglu, S.B.	Research trend	1
198	JCEM	2004	Pietroforte, R., and Stefani, T.P.	Project management	4
199	JCEM	2004	Zhang, X.	Contract procurement	23
200	JCEM	2003	Ye, S., and Tiong, R.L.K.	Risk management	4
201	JCEM	2003	Schaufelberger, J.E., and Wipadapisut, I.	Financial assessment	23
202	JCEM	2003	Bakatjan, S., Arikan, M., and Tiong, R.L.K.	Capital structure	23
203	JCEM	2002	Shen, L.Y., Li, H., and Li, Q.M.	Concession period	23
204	JCEM	2002	Zhang, X.Q., Kumaraswamy, M.M., Zheng, W., et al.	Contract procurement	23
205	JCEM	2001	Abdul-Aziz, A.R.	Equity and Rate of return	23
206	JCEM	2001	Zhang, X.Q., and Kumaraswamy, M.M.	Project delivery options	1
207	JCEM	2001	Chang, L.M., and Chen, P.H.	Project finance	23
208	JCEM	2001	Zhang, X.Q., and Kumaraswamy, M.M.	Project management	4
209	JCEM	2000	Palaneeswaran, E., and Kumaraswamy, M.M.	Contract procurement	23
210	JCEM	2000	Ye, S., and Tiong, R.L.K.	Investment evaluation	23
211	JCEM	1999	Wang, S.Q., Tiong, R.L.K., Ting, S.K., and Ashley, D.	Risk analysis	23
212	JME	2013	Cruz, C.O., and Marques, R.C.	Best practice	1
213	JME	2013	Tang, L., Shen, Q., Skitmore, M., and Cheng, E.W.L.	Project briefings	1
214	JME	2012	Vassallo, J.M., Ortega, A., Baeza, M.D.L.Á.	Economic recession	1
215	JME	2012	Yuan, J., Guang, M., Wang, X., Li, Q., et al.	SWOT analysis	1
216	JME	2012	Rebeiz, K.S.	Risk analysis	23
217	JME	2012	Ahmadjian, C.J., and Collura, J.	Stakeholder analysis	23
218	JME	2012	Iyer, K.C., and Sagheer, M.	Capital structure	23
219	JME	2011	Meng, X., Zhao, Q., and Shen, Q.	Critical success/failure factors	1
220	JME	2011	Chan, A.P.C., and Yeung, J.F.Y.	Risk allocation	23
221	JME	2011	Cheung, E., and Chan, A.P.C.	Attractive and negative factors	1
222	JME	2010	Lu, I.F., Guo, S., and Pan, Y.J.	Project management	4
223	JME	2010	Yuan, J., Skibniewski, M.J., Li, Q., and Zheng, L.	Performance management	4
224	JME	2010	Chan, A.P.C., Lam, P.T.I., Chan, D.W.M., Cheung, E., et al.	Key obstacles	1
225	JME	2009	Soliño, A.S., and Vassallo, J.M.	Project delivery options	1
226	JME	2008	Carrillo, P., Robinson, H., Foale, P., Anumba, C., et al.	Best practice	1
227	JME	2008	Tawiah, P.A., and Russell, A.D.	Innovation management	4
228	JME	2008	Askar, M.M., and Gab-Allah, A.A.	Project management	4
229	JME	2002	Zayed, T.M., and Chang, L.M.	Risk assessment	23
230	JME	1999	Malini, E.	Project viability	23
231	JME	1998	Henk, Gregory G.	Project delivery options	1
232	PICE-CE	2013	Lee, I.K., and Shin, J.H.	Best practice	1
233	PICE-CE	2013	Gilbert, A.	Best practice	1
234	PICE-CE	2012	Sunderland, J., and O'Day, P.	Maintenance management	4
235	PICE-CE	2009	Sibley, K.	Joint ventures	1
236	PICE-CE	2003	Bayley, M.	Project finance	23
237	PICE-CE	2003	Cathcart, A.	Contract management	4
238	PICE-CE	2002	Hadjihambi, M., and Deriziotis, A.	Best practice	1
239	PICE-CE	2000	Gellatly, G.M., Burtwistle, P., and Baldwin, A.N.	Stakeholder management	4
240	PICE-CE	1999	Merna, T., and Smith, N.J.	Project finance	23
241	PICE-CE	1998	Robertson, J.G.	Best practice	1
242	PICE-CE	1998	Grubb, S.R.T.	Best practice	1
243	PMM	2013	Vecchi, V., and Hellowell, M	Leasing	1
244	PMM	2012	Acerete, B., Stafford, A., and Stapleton, P.	Risk allocation	23
245	PMM	2011	Shaoul, J., Stafford, A., and Stapleton, P.	Financial assessment	23

(The Table continues on the following page...)

Table 63: PPP papers identified in the selected ten journals between 1998 and 2014.

No	Journal	Year	Authors	Topic	Stage
246	PMM	2010	Cuthbert, M., and Cuthbert, J.	Best practice	1
247	PMM	2010	Petersen, O.H.	Legislation and Regulation	1
248	PMM	2010	Vecchi, V., Hellowell, M., and Longo, F.	Capital structure	23
249	PMM	2010	McQuaid, R.W., and Scherrer, W.	Economic evaluation	23
250	PMM	2010	Norris, M., and Coates, D.	Best practice	1
251	PMM	2010	Rangel, T., and Galende, J.	Innovation management	4
252	PMM	2010	Demirag, I., and Khadaroo, I.	VFM drivers	1
253	PMM	2009	Acerete, B., Shaoul, J., and Stafford, A.	Project costing	23
254	PMM	2008	Weihe, G.	Project valuation	23
255	PMM	2008	Pollock, A.M., and Price, D.	Risk allocation	23
256	PMM	2008	Van Gestel, N., Koppenjan, J., Schrijver, I., et al.	Project valuation	23
257	PMM	2008	Barretta, A., Busco, C., Ruggiero, P.	Project finance	23
258	PMM	2008	Shaoul, J., Stafford, A., and Stapleton, P.	Project costing	23
259	PMM	2008	Jones, R., and Noble, G.	Contract management	4
260	PMM	2007	Reeves, E., and Ryan, J.	Contract procurement	23
261	PMM	2007	Hellowell, M., and Pollock, A.M.	Project costing	23
262	PMM	2003	Fischbacher, M., and Beaumont, P.B.	Structural characteristics	1
263	PMM	2003	Reeves, E.	Best practice	1
264	PMM	2003	Grubnic, S., and Hodges, R.	Relationship management	4
265	PMM	2002	Shaoul, J.	Financial assessment	23
266	PMM	2001	Wakeford, J., and Valentine, J.	Attractive and negative factors	1
267	PMM	2001	Kirk, R.J., and Wall, A.P.	Project accountability	4
268	PMM	1999	Glaister, S.	Performance management	4
269	PMM	1999	Gaffney, D., and Pollock, A.M.	Government subsidisation	23

APPENDIX II: PAPERS RELATING TO THE PRINCIPAL FACTORS FOR PPPS

Table 64: Papers relating to the principal factors for PPP implementation published between 1998 and 2014.

No	Authors	Title of paper	Year
1	Li, B.	Risk management of construction PPP projects	2003
2	Cheung, E., Chan, A.P.C., and Kajewski, S.	Reasons for implementing PPPs: Perspectives from Hong Kong, Australian and British practitioners	2009
3	Ismail, S.	Driving forces for implementation of PPP in Malaysia and a comparison with the United Kingdom	2014
4	Li, B., Akintoye, A., Edwards, P.J., and Hardcastle, C.	Perceptions of positive and negative factors influencing the attractiveness of PPP/PFI procurement for construction projects in the UK: Findings from a questionnaire survey	2005
5	Chan, A.P.C., Lam, P., Chan, D., Cheung, E., and Ke, Y.	Drivers for adopting Public-Private Partnerships: Empirical comparison between China and Hong Kong special administrative region	2009
6	Cheung, E., Chan, A.P.C., and Kajewski, S.	Suitability of procuring large public works by PPP in Hong Kong	2010
7	Tookey, J., Liu, T., and Wikinson, S.	Adopting innovative procurement techniques: Obstacles and drivers for adopting public private partnerships in New Zealand	2011
8	Hwang, B.G., Zhao, X., and Gay, M.J.S	PPP projects in Singapore: Factors, critical risks and preferred risk allocation from the perspective of contractors	2013
9	Chou, J.S., Ping, T.H., Lin, C., and Yeh, C.P.	Critical factors and risk allocation for PPP policy: Comparison between HSR and general infrastructure projects	2012
10	Robert, O.K., Dansoh, A., and Kuragu, I.K.	Reasons for adopting PPP for construction projects in Ghana	2014
11	Ismail, S.	Factors attracting the use of PPP in Malaysia	2013
12	Chou, JS., and Pramudawardhani, D.	Cross-country comparisons of key drivers, critical success and risk allocation for public-private partnership projects	2015
13	Chan, A.P.C., Lam, P., Chan, D., Cheung, E., and Ke, Y.	Potential obstacles to successful implementation of PPPs in Beijing and the Hong Kong special administrative region	2009
14	Ismail, S. and Azzahra, H. F.	Constraints in implementing PPP in Malaysia	2014
15	Cheung, E., Chan, A.P.C., and Kajewski, S.	Enhancing value for money in PPP projects: Findings from a survey conducted in Hong Kong and Australia compared to findings from previous research in the UK	2009
16	Ismail, S.	Drivers of value for money PPP projects in Malaysia	2013
17	Li, B., Akintoye, A., Edward, P.J., and Hardcastle, C.	Critical success factors for PPP/PFI projects in the UK construction industry	2005
18	Cheung, E., Chan, A.P.C. and Kajewski, S.	Factors contributing to successful PPP projects: Comparing Hong Kong with Australia and the United Kingdom	2012
19	Cheung, E., Chan, A.P.C, Lam, P., Chan, D., and Ke, Y.	A comparative study of critical success factors for PPP between Mainland China and the Hong Kong Special Administrative Region	2012
20	Ismail, S.	Critical success factors of PPP implementation in Malaysia	2013
21	Olusola, B.S., Opawole, A., and Emmanuel, A.O.	Critical success factors in PPP on infrastructure delivery in Nigeria	2012
22	Alinaitwe, H., and Ayesiga, R.	Success Factors for the Implementation of PPPs in the construction industry in Uganda	2013
23	Kahwajian, A., Baba, S., Amudi, O., and Wanos, M.	Identification of Critical Success Factors (CSFs) for PPP construction projects in Syria	2014
24	Chan, A.P.C., Lam, P., Chan, D., Cheung, E., and Ke, Y.	Privileges and attractions for private sector involvement in PPP projects	2010

APPENDIX III: QUESTIONNAIRE SURVEY AND QUANTITATIVE RESULTS

Appendix III-1: Questionnaire Survey Cover Letter

UNIVERSITY OF TECHNOLOGY SYDNEY

QUESTIONNAIRE SURVEY COVER LETTER
Principal factors for Public-Private Partnerships (PPPs) in Vietnam

Dear Sir/Madam,

My name is Anh Tuan La and I am a PhD student at the University of Technology, Sydney (UTS) (My supervisor is Associate Professor Judy Johnston).

The purpose of this research is to find out about the principal factors for PPPs in Vietnam. These factors are reasons for adopting PPPs, attractive and negative factors of adopting PPP, success factors for PPP projects, value for money measures in PPP projects and attractions for the private sector's involvement in PPP projects, which have a strong influence on the PPP project participants who are in the early stage of PPP decision-making in sponsoring or promoting a PPP project.

Your assistance in spending your time to share your valuable knowledge and experience by completing the attached questionnaire would be highly appreciated. The questionnaire may seem long; they have been designed such that it will not take you a long time to complete, may need up to 30 minutes to answer. We are sorry for the inconvenience imposed on you. Please be assured that any information given would be treated as strictly confidential. You may be contacted again for a further interview, and if you desire to have the summary of our report at the end of the study, we shall be delighted to send you the summary of survey result, please indicate your contact at the first section of the attached questionnaire.

You can change your mind at any time and stop completing the survey without consequences.

If you agree to be part of the research and to research data gathered from this survey to be published in a form that does not identify you, please continue with answering the survey questions.

If you have concerns about the research that you think I or my supervisor can help you with, please feel free to contact me (us) or local independence person (Mrs Van Huong Nguyen, an official at the PPP office under the Public Procurement Agency - the Ministry of Planning and Investment, Phone number: +84 904 072 728, Email: nguyenvanhuong@mpi.gov.vn)

Yours sincerely,

(Signed)

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NOTE:
If you would like to talk to someone who is not connected with the research, you may contact the Research Ethics Officer on 02 9514 9772 or Research.ethics@uts.edu.au and quote this number (2014000534).

Appendix III-2: Questionnaire Survey Template

UNIVERSITY OF TECHNOLOGY SYDNEY

QUESTIONNAIRE SURVEY TEMPLATE
Principal factors for Public-Private Partnerships (PPPs) in Vietnam

First of all, thank you so much for participating in our survey. We assure that any information that you provide would be kept strictly confidential. The survey includes the following four parts:

PART 1: GENERAL INFORMATION ON RESPONDENT AND ORGANISATION

Q1. (Optional) Your Name: _____ **Email**: _____

Q2. Please indicate your age

☐21 - 30 ☐31 - 40 ☐41 - 50 ☐51 - 60 ☐Above 60

Q3. How many years of industrial experience do you have?

☐ 5 or below ☐ 6 - 10 ☐ 11 - 15 ☐ 16 - 20 ☐ 20 or above

Q4. Please indicate your academic qualification

☐Diploma ☐Bachelor's ☐Master's ☐PhD ☐Post-Doctoral

Q5. Which one of the following best describes your position within the organisation?

☐Hourly Employee ☐Salaried Employee ☐Manager ☐Director ☐Executive

Q6. Please select your prime organisation role:

Public sector	Private sector	Other
☐Central government	☐Financier	☐Researchers
☐Local government	☐Design & Build contractor	☐Other (specify):
☐State-owner enterprises	☐Designer only	
	☐Contractor only	
	☐Consultant / Advisor	
	☐Operator (Facility manager)	
	☐Supplier	
	☐Subcontractor	
	☐Equitized State-Owner Enterprises	

Q7. In which area was the project that you knew or participated in:

☐Northern Vietnam ☐Southern Vietnam

Northern Vietnam includes: Ha Noi, Ha Tay, Vinh Phuc, Bac Ninh, Hung Yen, Ha Nam, Hai Duong, Hai Phong, Thai Binh, Nam Dinh, Ninh Binh, Lai Chau, Lao Cai, Dien Bien, Yen Bai, Son La, Hoa Binh, Ha Giang, Cao Bang, Tuyen Quang, Bac Kan, Lang Son, Thai Nguyen, Bac Giang, Quang Ninh, Phu Tho, Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, Thua Thien Hue.

Southern Vietnam includes: Da Nang, Quang Nam, Quang Ngai, Binh Dinh, Phu Yen, Khanh Hoa, Ninh Thuan, Binh Thuan, Gia Lai, Kontum, Dac Lac, Lam Dong, Dac Nong, Tp. Ho Chi Minh, Binh Duong, Binh Phuoc, Tay Ninh, Dong Nai, Ba Ria Vung Tau, Long An, Dong Thap, Tien Giang, Ben Tre, An Giang, Can Tho, Vinh Long, Tra Vinh, Kien Giang, Hau Giang, Soc Trang, Bac Lieu, Ca Mau.

Q8. Which type of the following PPP projects have you been involved with (you may tick more than one option)?

☐ Roads, road tunnels/bridges, ferry landings ☐Railways, railway bridges/tunnels
☐Urban transport ☐Airports, seaports and river ports
☐Clean water supply systems ☐Power plants
☐Healthcare (hospitals) ☐Environment (waste treatment, plants)
☐Telecommunications ☐Others (specify):_____

Q9. How many PPP projects have you been involved in?

☐None (please move on to Part 2) ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 - 10 ☐Above 10

Please give details of one typical project that your organisation has been involved in by stating:

- Name of project? _____
- Location? _____
- Type of project (BOT, BTO, BT or PPP)? _____
- Your organisation's role in this project (question 6 as example)?_____

PART 2: PRINCIPAL FACTORS FOR PPP PROJECTS

Please rate the following factors based on a Likert scale from 1 to 5, where **1** represents **"Not Important"; 2** represents **"Fairly Important"; 3** represents **"Important"; 4** represents **"Very Important"; 5** represents **"Extremely Important".**

I. Please rate the driving forces leading to the adoption of PPPs	**1**	**2**	**3**	**4**	**5**
1. Economic development pressure of demanding more facilities	☐	☐	☐	☐	☐
2. Political pressure	☐	☐	☐	☐	☐
3. Social pressure of poor public facilities	☐	☐	☐	☐	☐
4. Private incentive	☐	☐	☐	☐	☐
5. Shortage of government funding	☐	☐	☐	☐	☐
6. Inefficiency because of public monopoly and lack of competition	☐	☐	☐	☐	☐
7. High quality of service required	☐	☐	☐	☐	☐
8. Avoid public investment restriction	☐	☐	☐	☐	☐
9. Lack of business and profit generating skill in the public sector	☐	☐	☐	☐	☐
10. Others (specify):					

II. Please rate the attractive factors for adopting PPPs	**1**	**2**	**3**	**4**	**5**
1. Solve the problem of public sector budget restraint	☐	☐	☐	☐	☐
2. Provide an integrated solution (for public infrastructure/services)	☐	☐	☐	☐	☐
3. Reduce public money tied up in capital investment	☐	☐	☐	☐	☐
4. Cap the final service costs	☐	☐	☐	☐	☐
5. Facilitate creative and innovative approaches	☐	☐	☐	☐	☐
6. Reduce the total project cost	☐	☐	☐	☐	☐
7. Save time in delivering the project	☐	☐	☐	☐	☐
8. Transfer risk to the private partner	☐	☐	☐	☐	☐
9. Reduce public sector administration costs	☐	☐	☐	☐	☐
10. Benefit local economic development	☐	☐	☐	☐	☐
11. Improve buildability	☐	☐	☐	☐	☐
12. Improve maintainability	☐	☐	☐	☐	☐
13. Technology transfer to local enterprise	☐	☐	☐	☐	☐
14. Non-recourse or limited recourse to public funding	☐	☐	☐	☐	☐
15. Accelerate project development	☐	☐	☐	☐	☐
16. Others (specify):					

III. Please rate the negative factors for adopting PPPs	**1**	**2**	**3**	**4**	**5**
1. Reduce the project accountability	☐	☐	☐	☐	☐
2. High risk relying on private sector	☐	☐	☐	☐	☐
3. Few schemes have actually reached the contract stage	☐	☐	☐	☐	☐
4. Lengthy delays because of political debate	☐	☐	☐	☐	☐
5. Higher charge to direct users	☐	☐	☐	☐	☐
6. Less employment positions	☐	☐	☐	☐	☐
7. High participation costs	☐	☐	☐	☐	☐
8. High project costs	☐	☐	☐	☐	☐
9. A great deal of management time spent in contract transaction	☐	☐	☐	☐	☐
10. Lack of experience and appropriate skills	☐	☐	☐	☐	☐
11. Confusion over government objectives and evaluation criteria	☐	☐	☐	☐	☐
12. Excessive restrictions on participation	☐	☐	☐	☐	☐
13. Lengthy delays in negotiation	☐	☐	☐	☐	☐
14. Lack of government guidelines and procedures on PPP	☐	☐	☐	☐	☐
15. Others (specify):					

IV. Please rate attractions for private sector involvement in PPP projects	**1**	**2**	**3**	**4**	**5**
1. Government sponsorship	☐	☐	☐	☐	☐
2. Government assistance in financing	☐	☐	☐	☐	☐
3. Government guarantee	☐	☐	☐	☐	☐
4. Tax exemption or reduction	☐	☐	☐	☐	☐
5. Incentive of new market penetration	☐	☐	☐	☐	☐
6. Provide transparent information of PPP projects	☐	☐	☐	☐	☐
7. Others (specify):					

V. Please rate the value for money drivers in PPP projects	1	2	3	4	5
1. Competitive tender	☐	☐	☐	☐	☐
2. Efficient risk allocation	☐	☐	☐	☐	☐
3. Risk transfer	☐	☐	☐	☐	☐
4. Output based specification	☐	☐	☐	☐	☐
5. Long-term nature of contracts	☐	☐	☐	☐	☐
6. Improved and additional facilities to the public sector	☐	☐	☐	☐	☐
7. Private management skill	☐	☐	☐	☐	☐
8. Private sector technical innovation	☐	☐	☐	☐	☐
9. Optimal use of asset/facility and project efficiency	☐	☐	☐	☐	☐
10. Early project service delivery	☐	☐	☐	☐	☐
11. Low project life cycle cost	☐	☐	☐	☐	☐
12. Low shadow tariffs/tolls	☐	☐	☐	☐	☐
13. Environmental consideration	☐	☐	☐	☐	☐
14. Profitability to the private sector	☐	☐	☐	☐	☐
15. “Off the public sector balance sheet” treatment	☐	☐	☐	☐	☐
16. Reduction in disputes, claims and litigation	☐	☐	☐	☐	☐
17. Nature of financial innovation	☐	☐	☐	☐	☐
18. Government support	☐	☐	☐	☐	☐
19. Performance-based payment mechanism	☐	☐	☐	☐	☐
20. Bidding cost	☐	☐	☐	☐	☐
21. Others (specify):					

VI. Please rate the success factors for PPP projects	1	2	3	4	5
1. Stable macro-economic conditions	☐	☐	☐	☐	☐
2. Sound business climate	☐	☐	☐	☐	☐
3. Available financial market	☐	☐	☐	☐	☐
4. Favorable legal framework	☐	☐	☐	☐	☐
5. Commitment and responsibility of public and private sectors	☐	☐	☐	☐	☐
6. Strong and good private consortium	☐	☐	☐	☐	☐
7. Good governance	☐	☐	☐	☐	☐
8. Shared authority between public and private sectors	☐	☐	☐	☐	☐
9. Well organized and committed public agency	☐	☐	☐	☐	☐
10. Multi-benefit objectives	☐	☐	☐	☐	☐
11. Appropriate risk allocation and risk sharing	☐	☐	☐	☐	☐
12. Project technical feasibility	☐	☐	☐	☐	☐
13. Political support	☐	☐	☐	☐	☐
14. Social support	☐	☐	☐	☐	☐
15. Competitive procurement process	☐	☐	☐	☐	☐
16. Transparency procurement	☐	☐	☐	☐	☐
17. Government involvement by providing guarantee	☐	☐	☐	☐	☐
18. Thorough and realistic assessment of the cost and benefits	☐	☐	☐	☐	☐
19. Clear defined responsibility and roles	☐	☐	☐	☐	☐
20. Clarification of contract documents	☐	☐	☐	☐	☐
21. Others (specify):					

PART 3: OTHER SUGGESTIONS AND COMMENTS

_____
_____
_____
_____
_____

RETURN QUESTIONNAIRE

Kindly return the completed questionnaire by the following four options: (1) Hand directly to the conference admin at the national conferences and/or workshops; or (2) Conduct online at the link https://www.surveymonkey.com/s/mpi2014.

Appendix III-3: Email Reminder

SURVEY REMINDER

Dear [Name],

Last week you received a request to complete a doctoral research survey. This survey aimed to find out about the principal factors for PPPs in Vietnam. These factors are reasons for adopting PPPs, attractive and negative factors of adopting PPP, success factors for PPP projects, value for money measures in PPP projects and attractions for the private sector's involvement in PPP projects, which have a strong influence on the PPP project participants who are in the early stage of PPP decision-making in sponsoring or promoting a PPP project.

If you have not had a chance to complete the survey, please choose to do so today. Your input is very important and might help improve the implementation of PPP projects in Vietnam. The survey can be accessed through the following URL:

https://www.surveymonkey.com/s/mpi2014

You will have to use a password to access the survey. The password is used to ensure that no one outside of the sample has access to the survey. Your responses are completely confidential.

Your password is: [XXXXXXXX]

If you have questions about this letter and the study details, please feel free to contact me (us) or local independence person (Mrs Van Huong Nguyen, an official at the PPP office under the Public Procurement Agency - the Ministry of Planning and Investment, Phone number: +84 904 072 728, Email: nguyenvanhuong@mpi.gov.vn)

Thank you.

(Signed)

Anh Tuan La
PhD Student
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A. Prof Judy Johnston
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NOTE:
If you would like to talk to someone who is not connected with the research, you may contact the Research Ethics Officer on 02 9514 9772 or Research.ethics@uts.edu.au and quote this number (2014000534).

Appendix III-4: Another and Final Email Reminder

ANOTHER AND FINAL SURVEY REMINDER

Dear [Name],

During last two weeks you received a request to complete a doctoral research survey. This survey aims to find out about the principal factors for PPPs in Vietnam. These factors are reasons for adopting PPPs, attractive and negative factors of adopting PPP, success factors for PPP projects, value for money measures in PPP projects and attractions for the private sector's involvement in PPP projects, which have a strong influence on the PPP project participants who are in the early stage of PPP decision-making in sponsoring or promoting a PPP project.

If you have not had a chance to complete the survey, please choose to do so today. Your input is very important and might help improve the implementation of PPP projects in Vietnam. The survey can be accessed through the following URL:

https://www.surveymonkey.com/s/mpi2014

You will have to use a password to access the survey. The password is used to ensure that no one outside of the sample has access to the survey. Your responses are completely confidential.

Your password is: [XXXXXXXX]

Please press the complele survey button at the end of the questionnaire survey when you finish input of the information. We have found that some questionnaires lacked information as the participant had not clicked on the button at the end of the online survey.

If you have questions about this letter and the study details, please feel free to contact me (us) or local independence person (Mrs Van Huong Nguyen, an official at the PPP office under the Public Procurement Agency - the Ministry of Planning and Investment, Phone number: +84 904 072 728, Email: nguyenvanhuong@mpi.gov.vn)

Thank you.

(Signed)

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NOTE:
If you would like to talk to someone who is not connected with the research, you may contact the Research Ethics Officer on 02 9514 9772 or Research.ethics@uts.edu.au and quote this number (2014000534).

Appendix III-5: Quantitative Results

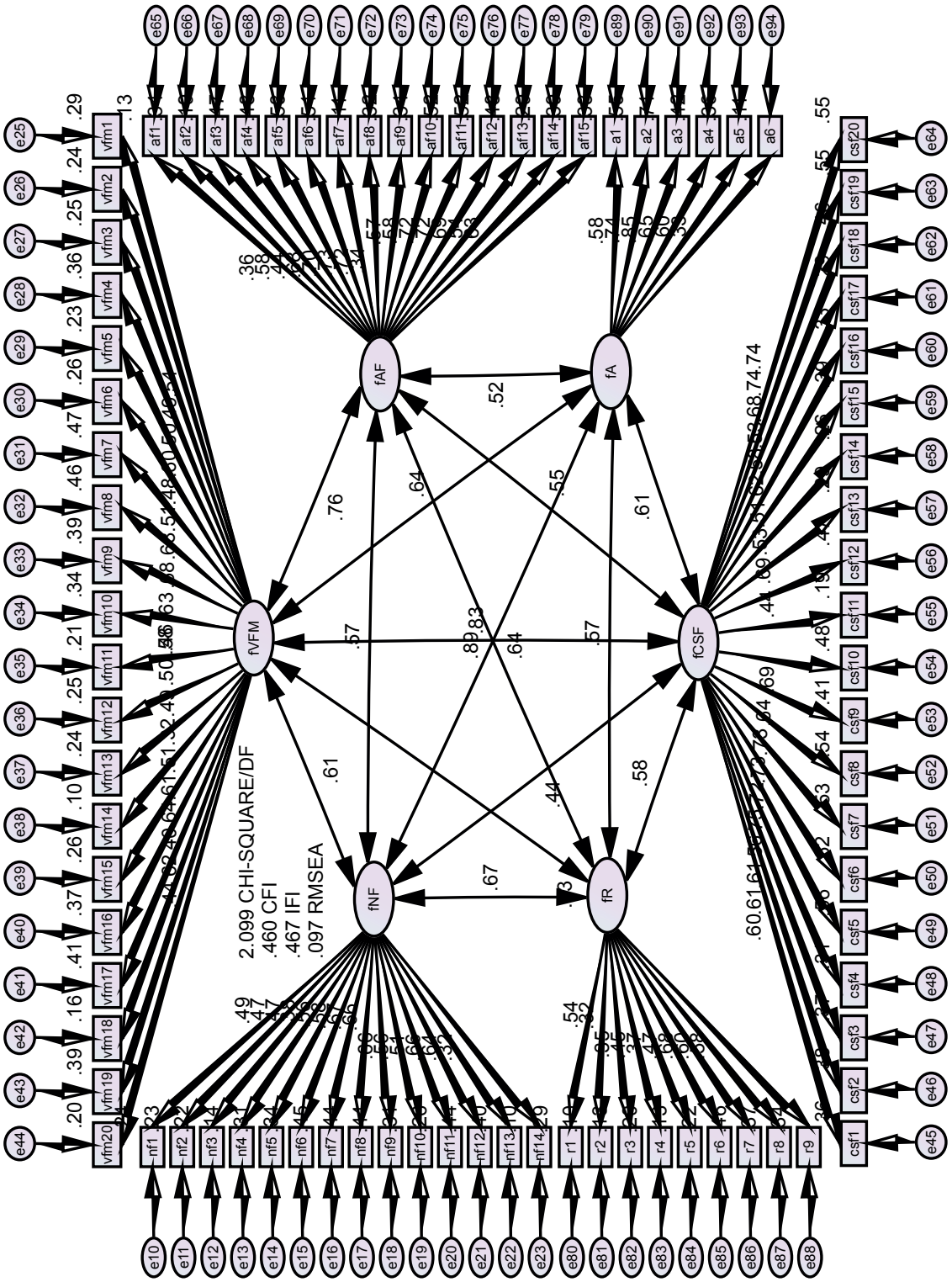

Figure 40: The CFA's results for the Original Measurement Model

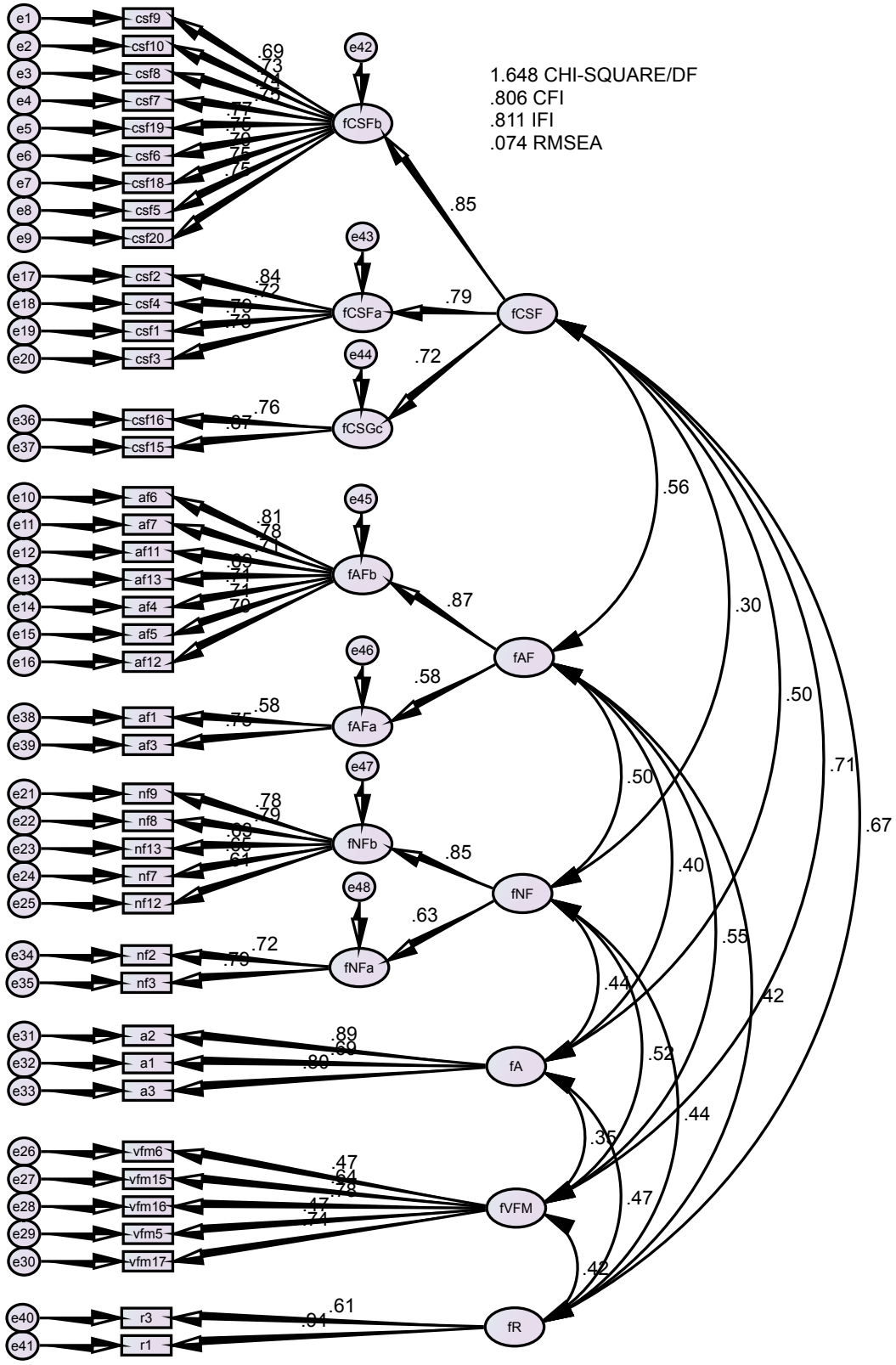

Figure 41: The CFA's results for the Revised Measurement Model

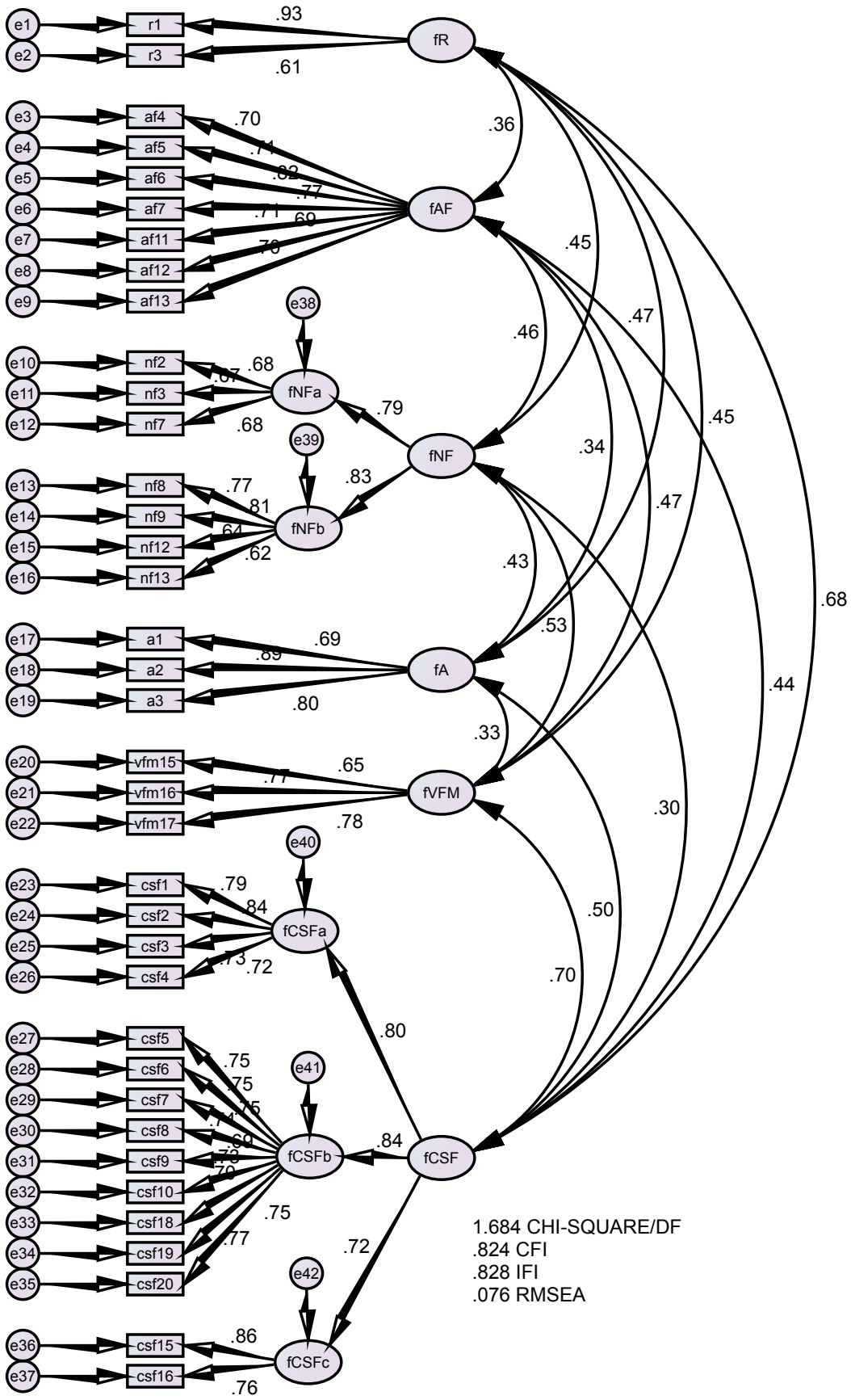

Figure 42: The CFA's results for the Final Measurement Model

Table 65: Mean scores and rankings of the principal factors for PPP implementation rated by respondents from North and South Vietnam.

ID	Factors	North		South	
		Mean	Rank	Mean	Rank
1	r1	3.67	5	3.36	19
2	r3	3.61	8	3.53	10.5
3	af4	3.14	25	3.06	33.5
4	af5	3.33	18	3.23	23.5
5	af6	3.25	23	3.21	25
6	af7	3.24	24	3.15	28
7	af11	3.10	27	3.09	31.5
8	af12	2.96	31	3.09	31.5
9	af13	2.86	34	2.98	35.5
10	nf2	2.92	32	3.15	28
11	nf3	3.03	28.5	3.15	28
12	nf7	2.78	36	3.06	33.5
13	nf8	2.86	34	2.98	35.5
14	nf9	3.00	30	3.19	26
15	nf12	2.76	37	3.30	22
16	nf13	2.86	34	3.13	30
17	a1	3.03	28.5	3.36	19
18	a2	3.33	18	3.47	13.5
19	a3	3.47	14	3.49	12
20	vfm15	3.33	18	3.40	16
21	vfm16	3.11	26	2.96	37
22	vfm17	3.29	20.5	3.23	23.5
23	csf1	3.63	7	3.45	15
24	csf2	3.83	2	3.57	7
25	csf3	3.57	12	3.55	8.5
26	csf4	4.21	1	4.09	1
27	csf5	3.65	6	3.72	4
28	csf6	3.58	11	3.74	2.5
29	csf7	3.60	9.5	3.47	13.5
30	csf8	3.43	16	3.36	19
31	csf9	3.29	20.5	3.38	17
32	csf10	3.28	22	3.32	21
33	csf15	3.56	13	3.64	5.5
34	csf16	3.75	3	3.74	2.5
35	csf18	3.44	15	3.53	10.5
36	csf19	3.60	9.5	3.55	8.5
37	csf20	3.72	4	3.64	5.5

Table 66: Mean scores and rankings of the principal factors for PPP implementation rated by respondents from the public and private sectors.

ID	Factors	The public sector		The private sector	
		Mean	Rank	Mean	Rank
1	r1	3.48	15	3.60	4.5
2	r3	3.53	12	3.58	6
3	af4	3.16	27	3.04	28
4	af5	3.30	21.5	3.25	17
5	af6	3.25	25	3.19	24.5
6	af7	3.17	26	3.23	18.5
7	af11	3.05	30.5	3.09	27
8	af12	2.97	34	3.02	29
9	af13	2.94	36	2.83	35
10	nf2	2.84	37	3.21	21.5
11	nf3	3.02	33	3.21	21.5
12	nf7	2.95	35	2.79	36
13	nf8	3.08	29	2.68	37
14	nf9	3.27	23.5	2.87	34
15	nf12	3.05	30.5	2.91	32
16	nf13	3.03	32	2.89	33
17	a1	3.27	23.5	3.00	30
18	a2	3.47	17	3.28	16
19	a3	3.48	15	3.43	13
20	vfm15	3.48	15	3.19	24.5
21	vfm16	3.13	28	2.98	31
22	vfm17	3.30	21.5	3.21	21.5
23	csf1	3.52	13	3.55	9
24	csf2	3.63	8	3.81	2
25	csf3	3.56	11	3.51	10.5
26	csf4	4.11	1	4.19	1
27	csf5	3.75	4	3.57	7.5
28	csf6	3.73	5.5	3.51	10.5
29	csf7	3.61	9	3.42	14
30	csf8	3.33	20	3.47	12
31	csf9	3.41	18	3.23	18.5
32	csf10	3.39	19	3.17	26
33	csf15	3.59	10	3.57	7.5
34	csf16	3.83	2	3.64	3
35	csf18	3.70	7	3.21	21.5
36	csf19	3.73	5.5	3.40	15
37	csf20	3.77	3	3.60	4.5

APPENDIX IV: QUALITATIVE INTERVIEW AND ANALYSIS

Appendix IV-1: Interview Invitation Letter

UNIVERSITY OF TECHNOLOGY SYDNEY

INTERVIEW INVITATION LETTER
Principal factors for Public-Private Partnerships (PPPs) in Vietnam

Dear [Name]

My name is Anh Tuan La and I am a PhD student at the University of Technology, Sydney (UTS).

I am conducting research into the principal factors for PPPs in Vietnam and would welcome your assistance. These factors are reasons for adopting PPPs, attractive and negative factors of adopting PPPs, success factors for PPP projects, value for money measures in PPP projects and attractions for the private sector's involvement in PPP projects, which have a strong influence on the PPP project participants who are in the early stage of PPP decision-making in sponsoring or promoting a PPP project. The research will involve an interview and should take up to 60 minutes of your time. I have asked you to participate because you have great experience and knowledge of the development of PPP in Vietnam.

This research has been funded by a VIED-UTS scholarship.

If you are interested in participating, I would be glad if you would contact me or my principal supervisor, or a local independence person (Mrs Van Huong Nguyen, an official at the PPP office under the Public Procurement Agency - the Ministry of Planning and Investment, Phone number: +84 904 072 728, Email: nguyenvanhuong@mpi.gov.vn).

You are under no obligation to participate in this research but we would welcome and hope to have your participation.

Yours sincerely,

(Signed)

Anh Tuan La
PhD Student
University of Technology, Sydney
PO Box 123, Broadway, NSW, 2007
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(in Vietnam): +
Email: Anh.T.La@student.uts.edu.au

A. Prof Judy Johnston
Research Main Investigator
University of Technology, Sydney
PO Box 123, Broadway, NSW, 2007
Phone number: +61 2 9514 4166
Email: Judith.Johnston@uts.edu.au

NOTE:
This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research, which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer (ph: +61 2 9514 9772 Research.Ethics@uts.edu.au) and quote 2014000534. Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Appendix IV-2: Information sheet for interviewees

UNIVERSITY OF TECHNOLOGY SYDNEY

INFORMATION SHEET FOR INTERVIEW PARTICIPANTS
Principal factors for Public-Private Partnerships (PPPs) in Vietnam

WHO IS DOING THE RESEARCH?
My name is Anh Tuan La and I am a PhD student at UTS. (My supervisor is Associate Professor Judy Johnston).

WHAT IS THIS RESEARCH ABOUT?
This research aims to find out about principal factors for Public-Private Partnerships (PPPs) in Vietnam. These factors are reasons for adopting PPPs, attractive and negative factors of adopting PPPs, success factors for PPP projects, value for money measures in PPP projects and attractions for the private sector involvement in PPP projects.

IF I SAY YES, WHAT WILL IT INVOLVE?
I would like to ask you to participate in a semi-structural interview lasting up to 60 minutes during which questions related to your experience and your knowledge of how to adopt and prepare a PPP project that you have participated in. The interview will be recorded and transcribed. This data will be stored securely for a period of five years.

ARE THERE ANY RISKS?
There are very few if any risks because the research has been carefully designed. However, it is possible that you may feel self-conscious after talking about issues. Information that could identify you will be removed from any submissions made for publication and the data you provide will be kept confidential. The information in the interview could be used for publication in academic journals.

WHY HAVE I BEEN ASKED?
You are able to give me the deep information that I need about principal factors for Public-Private Partnerships (PPPs) in Vietnam.

DO I HAVE TO SAY YES?
You do not have to say yes. Participation is voluntary and you can withdraw at any time during the data collection stage of the qualitative phase.

WHAT WILL HAPPEN IF I SAY NO?
Nothing. I will thank you for your time so far and won't contact you about this research again.

IF I SAY YES, CAN I CHANGE MY MIND LATER?
You can change your mind at any time and you do not have to say why. I will thank you for your time and won't contact you about this research again. You will also be given an option of being identified or not.

WHAT IF I HAVE CONCERNS OR A COMPLAINT?
If you have concerns about the research, please feel free to contact me (Anh Tuan La, PhD student, University of Technology, Sydney, PO Box 123 Broadway NSW, 2007. Mobile: + in Vietnam, or + in Australia. Email: Anh.T.La@student.uts.edu.au), or my supervisor (A.Prof Judy Johnston, University of Technology, Sydney, PO Box 123 Broadway NSW, 2007. Mobile phone: +61 2 9514 4166. Email: Judith.Johnston@uts.edu.au), or a local independence person (Mrs Van Huong Nguyen, an official at the PPP office under the Public Procurement Agency, the Ministry of Planning and Investment, Phone number: +84 904 072 728, Email: nguyenvanhuong@mpi.gov.vn).

If you would like to talk to someone who is not connected with the research, you may contact the Research Ethics Officer on +61 2 9514 9772, and quote 2014000534.

Appendix IV-3: Consent form for interview participants

UNIVERSITY OF TECHNOLOGY SYDNEY

CONSENT FORM FOR INTERVIEW PARTICIPANTS
Principal factors for Public-Private Partnerships (PPPs) in Vietnam

I, [NAME] agree to participate in the research project "*Principal factors for Public-Private Partnerships (PPPs) in Vietnam"* with UTS HREC approval reference number of 2014000534, being conducted by Anh Tuan La (PhD student, University of Technology, Sydney. PO Box 123 Broadway, NSW, 2007. Mobile phone in Vietnam: +, in Australia: +. Email: Anh.T.La@student.uts.edu.au) of the University of Technology, Sydney for his degree of Doctor of Philosophy. Funding for this research has been provided by a VIED-UTS scholarship.

I understand that the purpose of this study is to investigate and develop principal factors for Public-Private Partnerships (PPPs) in Vietnam. These are reasons for adopting PPPs, attractive and negative factors of adopting PPPs, success factors for PPP projects, value for money measures in PPP projects and attractions for the private sector's involvement in PPP projects, which have a strong influence on the PPP project participants who are in the early stage of PPP decision-making regarding the sponsoring or promoting a PPP project.

I understand that I have been asked to participate in this research because I have relevant expertise in the development of PPP in Vietnam, and that my participation in this research will involve one semi-structured interview, during which I will be asked to talk about my experience and knowledge for up to 60 minutes on how to adopt and prepare a PPP project that I have participated in. The interview will be transcribed.

I also understand that the data may be used for future research studies and that the interview will be audio recorded.

I am aware that I can contact Anh Tuan La or his supervisor Associate Prof. Judy Johnston (Address: CB05D.02.59 CMOS Business School UTS, Broadway, NSW, 2007; Email: Judith.Johnston@uts.edu.au; Phone number: +61 2 9514 4166) or local independence person (Mrs Van Huong Nguyen, an official at the PPP office under the Public Procurement Agency - the Ministry of Planning and Investment, Phone number: +84 904 072 728, Email: nguyenvanhuong@mpi.gov.vn) if you have any concerns about the research. I also understand that I am free to withdraw my participation from this research project at any time I wish, without consequences, and without giving a reason.

I agree that Anh Tuan La has answered all of my questions fully and clearly.

I agree that the research data gathered from this project may be published in a form that does not identify me in any way.

Date:

Signature (participant)

Date: 11/7/2014

Signature (researcher or delegate)

NOTE:
This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research, which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer (ph: +61 2 9514 9772 Research.Ethics@uts.edu.au) and quote 2014000534. Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Appendix IV-4: Interview protocol template

INTERVIEW PROTOCOL

Principal factors for Public-Private Partnerships (PPPs) in Vietnam: A mixed method study

Interview #:
Interviewee:
Date:
Time:
Length of Interview:

1. Please tell me about yourself.
   - What is your full name and age?
   - What is your education level and current position in your organisation?
   - Tell me about your experience in infrastructure projects generally and in PPP projects particularly?

2. Please tell me about the most typical PPP project that you have been involved in.
   - What is your most typical PPP project that you have participated in and want to talk about?
   - In what sector was the project?
   - Was the project conducted in the North or in the South of Vietnam?
   - What was your role in the project?
   - What were the initial estimated costs and the final costs of the project?
   - Was the project actually completed on schedule?
   - How did the project procurement process?
   - How was the project proposed? How was the project proposal appraised and approved?
   - How was the feasibility analysis for the project conducted?
   - Did you/your organization check the suitability of the project with PPPs?

3. Reasons for adopting the PPP approach
   - What were the reasons for adopting PPP for the project?
   - How did the following reasons affect the decision of adopting the PPP approach for the project particularly and/or PPP projects generally?
     - Economic development pressure of demanding more facilities
     - Social pressure of poor public facilities

4. Attractive factors of adopting the PPP approach
   - What were the attractive factors of adopting PPP for the project?
   - How did the following attractive factors support the project particularly and/or PPP projects generally?
     - Facilities creative and innovative approaches
     - Reduce the total project cost
     - Save time in delivering the project

5. Negative factors of adopting the PPP approach
   - What were the negative factors of adopting PPP for the project?
   - How did the following negative factors impede the project particularly and/or PPP projects generally?
     - High risk relying on private sector
     - Few schemes have actually reached the contract stage (aborted before contract)
     - High project costs
     - A great deal of management time spent on contract transaction

6. Attractions for private sector participation
   - What were the attractions for private sector involvement in the project?
   - How did the following attractions impact on the project particularly and/or on PPP projects generally?
     - Government assistance in financing
     - Government guarantee

7. Value for money drivers
   - What were the measures taken to achieve value for money for the project?

- How did the following drivers contribute to the project's value for money particularly and/or in PPP projects' generally?
    - "Off the public sector balance sheet" treatment
    - Reduction in disputes, claims and litigation
    - Nature of financial innovation

8. Success factors
    - What were the success factors of the project?
    - How did the following factors contribute to the project's success particularly and/or PPP projects' success generally?
        - Stable macro-economic conditions
        - Sound business climate
        - Favorable legal framework
        - Commitment and responsibility of public and private sectors
        - Strong and good private consortium
        - Competitive procurement process (enough potential bidders in the process)
        - Transparency procurement process (process is made open and public)
        - Clear defined responsibility and roles
        - Clarification of contract documents

9. Differences between the North and the South
    - Earlier research has indicated that the South has better macro economic conditions that contribute to the success of PPP projects than the North. What do you think of the findings?
    - How does the North differ from the South in PPP implementation?

Appendix IV-5: Pilot Interview analysis

Hoang, who was aged between 41 and 50, lived on the South side of Vietnam. He had a Master's degree, and from 6 to 10 years work experience. He had worked full-time as a Deputy Manager in the investment section at the Investment and Industrial Development Corporation (BECAMEX). BECAMEX, a state-owned-enterprise (SOE), established in 1976. One hundred per cent state funded, it operated in the form of a state-owned one-member limited liability company.

While with BECAMEX, Hoang participated in a BOT project of investing, constructing, operating and managing national highway No.13, which extends from Ho Chi Minh city to Binh Phuoc and passes through industrial parks on the North side of Binh Duong province. This BOT project commenced in 2000 and is expected to last for 37 years. The total length of the highway was 140.5 km. It was divided into smaller parts in which BECAMEX invested and constructed two sections from Ho Chi Minh city to Binh Duong province (62 km) and from the So Giao intersection of Binh Duong province to the adjacent point in Binh Phuoc province (25.7 km with 20.16 km of overpass highway). The first part was designed to have six lanes (total width of 28-36 m) with total investment capital of VND$683 billion (approximately US$34 million). The second part was designed to have four lanes of overpass highway (total width of 18 m), in total costing USD$616 million. This main and important highway connecting the North side of Binh Duong to Ho Chi Minh city and adjacent provinces was expected to play a key role in the sustainable social-economic development of the province.

This was the first time that toll fee collection was introduced to recover upfront investment capital. But, it met with difficulties during the process of developing and implementing the project. Hoang said:

> "The project was first proposed and managed by the Ministry of Transport. And, BECAMEX was selected to conduct the project's feasibility analysis, and then construct the facility. At the construction stage of the first 10 km, conflicts of interest led to many arguments between the Ministry and the local government. The underlying reason was because this form of recovering private investment through toll fees never existed in the past. As a result, legal framework regulating for its implementation was still vague, while both the Ministry and the local government wanted to grab the right to manage the project on their side" (Hoang).

However, due to the pressure of rapid urbanisation, a transport infrastructure that was seriously depleted and outdated, and to the Ministry managing many projects at the same time, the project was finally transferred to and managed by the local government. As a result, BECAMEX was charged with implementing the project.

> "After the role of project management was transferred to the local government, following the provincial policy and being accepted and supported by local governors, BECAMEX prepared the necessary documents and signed the contract with the local government. Everything was then done quite quickly and convenient" (Hoang).

The Ministry of Transport proposed and conducted pre-feasibility analysis of the project. BECAMEX then carried out the subsequent tasks. After analysing the practical conditions of social-economic development in Binh Duong and Binh Phuoc provinces, and following the government policy on socialisation of investment in economic infrastructure, the Ministry decided to pilot this project employing the BOT model. Its main aims were to utilise investment capital from the private sector, and to set a long-term route for this sector to recover all project costs.

> "The government lacked of funds for infrastructure development. The rapid social-economic development of local provinces required to have arterial roads. The government policy of infrastructure socialisation was approved. A method for the private sector to recover investment capital was a must. All led to the determination for adopting the BOT model" (Hoang).

The three attractive factors of adopting a BOT model for this project included: innovative improvement on production of construction materials; flexible procurement; and, cost reduction and time saving. Hoang said:

> "The first attractive factor of adopting a BOT model for this project is the facilitation of innovation. At the beginning, BECAMEX had to buy pricey concrete slabs for construction. To save costs, the company then established a factory that specialised on manufacturing concrete slabs. As a result, BECAMEX could control the construction progress and reduce the total costs. The second attractive factor is that due to new regulations on public procurement, BECAMEX could play two roles, as a procuring entity and a bidder in the same project. This innovation on public procurement led to the fact that the selection of bidders became not only more convenient and flexible, but also more efficient as we could find more qualified and skilled contractors than us with reasonable prices. The last attractive factor includes reduction of total project costs and time savings" (Hoang).

However, Hoang added, these advancements in terms of cost reduction and time saving could be achieved only through supportive and synchronised coordination with the public sector. Innovative public procurement had brought efficiency to bidder selection. Hoang explained further that some investors, who were construction companies, would do some of the construction jobs associated with the project. But, apropos of other work, they conducted open, competitive biddings and participated as one of the potential bidders to their bidding. If any

bid was found to be more attractive than theirs, that company would be selected to conduct the work on the project. Otherwise, they would do it themselves.

In contrast to the attractive factors, no major negative factors were discovered in this project. Hoang said:

> "BECAMEX is a SOE which seems that the company did not have to incur big risks in this project. Although the process of investor selection was not open and competitive, with the advantage of having supports from the local government the project was appointed to and approved easily and conveniently for BECAMEX" (Hoang).

Hoang added: "It is possible that many PPP-type projects were aborted before reaching the contract stage. But, it did not happen with this company". He further added: "Once a policy had been in effect together with the selection of a final investor was approved, the contract stage would be processed very quickly". He did not think that the project cost would escalate due to the complexity of applying the PPP approach.

However, Hoang revealed some of the difficulties that had been encountered when implementing PPP projects in general, albeit they had not happened with this project. The first problem was uncertainty:

> "The process of implementing PPP projects normally contained many unpredictable things. In circumstances when these things happen, suitable mechanisms and policies to handle these problems could not be issued in time. Even the social-economic analysis of local areas that was done before could not be completely accurate. All would create barriers for the implementation of the PPP projects" (Hoang).

The second problem was inconsistency in the process of calculating investment efficiency. Hoang said: "The government needed to issue more detailed guidelines on calculating it in order to achieve consistency in the calculation". The last problem was associated with property rights and compensation for expropriation, both of which affected the success of many PPP projects. Hoang said: "The slow construction was due to the fact that the local government delayed compensation for expropriation". He added: "Some government policies were issued late, affecting the success of PPP projects". When asked about the differences between the North and South regions vis-à-vis the issue of compensation for expropriation, he answered: "It was probably easier to conduct in the South than in the North because the Southern people seemed to be more easy-going".

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