Gordon Institute of Business Science
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Factors for PPP project success in developing countries

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Abstract

Over 62 academic articles published between 1992 and 2014 form the knowledge base for the articulation of economic, political, financial, technical, legal and social critical success factors (CSFs) for public private partnership (PPP) projects (Chou, Tserng, Lin, & Yeh, 2012; Hwang, Zhao, & Gay, 2013; Ng, Wong, & Wong, 2012; Xie & Ng, 2013; Zou, Kumaraswamy, Chung, & Wong, 2014). Of the 36 unique CSF factors identified, a third describe institutional factors. This research proposed that for a developing country exhibiting political risk to successfully deliver on their PPP project pipeline so as to ensure the contagion effect on their economy, that the relative importance of factors characterising the institutional environment, be assessed in relation to other CSFs identified by previous academic research. The objective of this research was to determine, through an empirical comparison, if a developing country exhibiting a degree of political risk, would place a similar level of importance on institutional factors when compared to other CSFs for PPP projects identified and rated in literature for other contexts.

Keywords

PPP projects, developing countries, factors

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Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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Acronyms, symbols and abbreviations

Acronym, symbol or abbreviation	Description
CSF	Critical success factors
GNI	Gross net income
FDI	Foreign direct investment
PPP	Public private partnership
r^s	rho
UN	United Nations
US$	United State of America dollar

Chapter 1

The critical and immediate need for research

Kang (2014) and Roehrich et al. (2014) argued for the critical and immediate need to advance the knowledge base in public private partnership (PPP) projects as a subfield of development studies through the building of middle-range theory. A systematic PPP project literature review analysing 1400 scholarly publications between 1990 and 2011 ratifies the upsurge in publications on the topic, witnessing an increase of over 900% in the number of articles published prior to 1994 to those published post 2009, in excess of 180 articles per annum (Roehrich, Lewis, & George, 2014). The same article however, questioned the disproportionate number of articles on PPP projects in developed countries, with 63 per cent of the 1400 articles focussed on the United States of America and the United Kingdom. Developing countries are challenging to their dependent institutional environment as these countries display greater variation than that of their developed counterparts, exhibiting a higher frequency of institutional change (Meyer & Peng, 2016).

The foundational literature on critical success factors (CSF) for PPP projects is growing, with over thirty academic articles published since 1990 identifying, discussing and analysing CSFs for PPP project success (Chou et al., 2012; Hwang et al., 2013; Ng et al., 2012; Xie & Ng, 2013; Zou et al., 2014), proposing that an acceptable factor performance may result in the achievement of a PPP project's goals (Bullen & Rockart, 1981). Chou et al., (2012); Hwang et al., (2013); Ng et al., (2012); Xie & Ng, (2013); Zou et al., (2014) were at the research front of CSFs for PPP projects, with co-word analysis of their findings revealing at least 36 unique factors describing political, legal, economic, social and technical factors. Closer analysis uncovers that a third of these factors are institutional of nature.

Institutional factors highlighted in the research included a stable political environment (Chou et al., 2012; Hwang et al., 2013; Ng et al., 2012; Xie & Ng, 2013), political support and commitment to the PPP project (Chou et al., 2012; Ng et al., 2012; Xie & Ng, 2013; Zou et al., 2014), and a favourable investment environment within the context of the country (Chou et al., 2012; Hwang et al., 2013; Ng et al., 2012; Xie & Ng, 2013). The remaining factors allocated focus to technical, social and other areas of perceived importance, such as the ability to decide appropriate risk allocation (Chou et al., 2012; Hwang et al., 2013; Ng et al., 2012; Xie & Ng, 2013).

The irony is that developing economies are defined by their absence of institutional factors (Ho & Im, 2015; Panayides, Parola, & Lam, 2015; Stal & Cuervo-Cazurra, 2011; United Nations, 2016) where institutional voids may present themselves as questionable power relations, a lack of public trust in the integrity of bureaucracy, and a lack of organisational capacity for public reporting (Ho & Im, 2015). It was argued that within an institutional environment, the promotion of trust, the building of capacity, and the provision of legitimacy, and a favourable environmental for foreign direct investment (FDI) are vital preconditions for PPP delivery success (Matos-Castaño, Mahalingam, & Dewulf, 2014; Panayides et al., 2015). Yet, the negative influence of institutional voids on FDI in a developing country (Stal & Cuervo-Cazurra, 2011) and on the challenges governments' encounter as they work towards becoming more transparent, accountable and cost-efficient (Ho & Im, 2015) infer that a degree of political risk is present in emerging economies (Meyer & Peng, 2016). The very concept of political risk is characterised by the uncertainty associated with the impact on investment by socio-political institutions and governance (Benácek, Lenihan, Andreosso-O'Callaghan, Michalíková, & Kan, 2014; Kudrna & Gabor, 2013).

Meyer & Peng, (2016) further emphasised the significance of integrating context, such as that of developing countries, with theory development, particularly for context-sensitive phenomena such as PPP projects. It thus became evident that further research was essential to assess the relative importance placed on literature-informed institutional CSFs by those undertaking PPP projects (Panayides et al., 2015) in developing countries (Matos-Castaño et al., 2014) exhibiting political risk.

The appetite for PPP projects

Developed and developing countries are using the PPP institutionalisation of cooperation between public and private sector (Panayides et al., 2015) as a mechanism to jointly deliver large infrastructure investments through the efficient allocation of risk to those most suited to manage it, and in the case of PPP projects, this is the private sector agent (Jacobsson, 2014; Martins, Marques, & Cruz, 2011; Zangoueinezhad & Azar, 2014; Zou et al., 2014). As an institutional firm (Panayides et al., 2015), the PPP project is characterised by complex stakeholder requirements (Zou et al., 2014). The PPP project private party actor enters into a relationship with an appropriate governmental institution, where unlike traditional business relationships, the public sector actor is the main contracting party or project owner (Jacobsson, 2014; Zou et al., 2014).

Benefits which may reason why there has been an uptake in PPP projects by countries include their ability to bring greenfield large scale investment projects such as roads, hospitals and power generation to market and their ability to deliver superior returns and performance versus that of fiscal investments (Emek, 2015). Further reasoning as to the uptake of PPP projects in countries may lie in the empirical evidence demonstrating that a positive exponential relationship exists between a country's economic growth rates and the nature and quantity of PPP projects completed by a country (Zangoueinezhad & Azar, 2014).

Year on year PPP project investment in low to middle income countries has experienced an annual growth rate of six per cent (2013:2014), but when compared to global private investment in infrastructure projects since 2009, this was 10.75 per cent of total investment (Kasper, 2014a; Kasper, 2014b). Higher income countries such as United Kingdom (United Nations, 2016; World Bank Group, 2015a), have in comparison invested as much as US$84.75 billion in the period leading up to 2010 and have undertaken in excess of 600 projects prior to 2014 (Roehrich et al., 2014; Xie & Ng, 2013). It raises the question as to why there was a greater investment in PPP projects in developed countries versus that of more developed nations.

The potential economic growth in developing economies does make such economies attractive for international business and differentiates them from developed countries (Meyer & Peng, 2016). The World Bank aligns in their classification of countries by per capital gross national income (GNI) into low, middle and high income countries (World Bank Group, 2015a), with the 2016 World Economic and Situation Prospects report further classifying countries as a reflection of basis economic conditions into developed, in transition, and developing economies (United Nations, 2016).

Despite the institutional voids present in developing markets, PPP projects were being used by developing countries in an attempt to improve their economic disposition through efficient risk allocation and by the capitalisation on private sector's profit-orientation and access to resources (Kasper, 2014a; Siemiatycki, 2011). The increasing trend of developing countries delivering on strong PPP pipelines (Emek, 2015; Kasper, 2014a) included countries within the Latin American and Caribbean region which witnessed a US$69.1 billion investment in infrastructure PPP projects in 2014, with the Middle East and Africa accounting for US$5 billion (Kasper, 2014a). In the period 2008-2013, Turkey was the third largest user of PPP contracts, behind Brazil and India among developing countries (Emek, 2015; Kasper, 2014a).

Brazil achieved financial close on 51 projects in 2014 alone, attracting private investment of US$44.2 billion and accounting for 41per cent of global infrastructure investment; while Turkey closed 17 projects and gained US$12.5 billion in private investment (Kasper, 2014a; World Bank Group, 2015a). In the same year, countries like Ghana, Kenya and Mozambique in sub-Saharan Africa witnessed seven key infrastructure PPP projects close, attracting US$2.6 billion in private investment (Kasper, 2014a).

Countries such as South Africa have placed emphasis on the PPP mechanism with the establishment of institutional structures such as a dedicated PPP Unit or governmental agency, and the development of policies and plans to further their delivery of 20 national and provincial projects in the period 2001-2013 (South African National Treasury PPP Unit, 2013), within the next five years (South African National Treasury PPP Unit, 2015; World Bank Group, 2014). These examples provide evidence that there is indeed appetite for PPP projects in developed countries, albeit less that in more developed nations.

The research objectives

This research has attempted to answer if those working on PPP projects in a developing country place a similar level of importance on factors characterising their institutional environment and the inference that these factors inform the political risk of the country, when compared to that of other CSFs such as social and technical factors for PPP projects. This research builds on the recent work of published authors considered to be at the research front. Authors such as Chou et al., (2012); Hwang et al., (2013); Ng et al., (2012); Xie & Ng, (2013); and Zou et al., (2014) have integrated two and a half decades of research on CSFs for complex projects, having applied this to PPP projects in specific contexts.

Chou et al., (2012) considered the critical factors and risk allocation for PPP policy in Taiwan; Hwang et al., (2013) identified the CSFs, critical risks and preferred risk allocation for PPP projects in Singapore; Ng et al., (2012) assessed the factors influencing the success of PPP at feasibility stage in Hong Kong; Xie & Ng, (2013) developed a Multiobjective Bayesian network model for PPP project decision support through a consideration of Asian PPP projects; and Zou et al., (2014) identified the CSFs for relationship management in PPP projects after considering projects in Hong Kong, China, Singapore, Greece and Australia.

When considering the nature of institutional factors in developing economies (Ho & Im, 2015; Panayides et al., 2015; Stal & Cuervo-Cazurra, 2011), and that a developing country inherently exhibits political risk (Benácek et al., 2014; Kudrna & Gabor, 2013), it was put forward that for developing countries to successfully deliver on their PPP project pipeline to benefit from the contagion effect on economy, that the relative importance of institutional factors should to be assessed in relation to other literature-informed CSFs.

The objective of this research was to determine if a developing country exhibiting political risk would perceive a similar level of importance on factors characterising their institutional environment (political, legal and economic factors) when compared to that of other CSFs such as social and technical factors for PPP projects. This research undertook an empirical comparison of the relative importance of the CSFs to PPP projects delivered in a developing country in relation to the knowledge-based informed-CSFs identified in previous academic research. The intention was to infer if low political risk, as informed by institutional factors, was perceived to be significant for the successful execution of PPP projects in such economies.

South Africa was proposed as a suitable representation of a developing country and an upper-middle income economy (United Nations, 2016; World Bank Group, 2015a) exhibiting political risk (Thomas, 2013; World Bank Group, 2015b) with a desire to increase their execution of PPP projects (South African National Treasury PPP Unit, 2015).

The report structure

Following a comprehensive literature review in Chapter 2, the research questions are presenting in Chapter 3. Chapter 4 entails the research methodology and the results and presented and discussed in Chapters 5 and 6 respectively, with the concluding remarks in Chapter 7.

Chapter 2: Literature review

This research was undertaken to determine the perceived importance of literature informed critical success factors for PPP projects executed in developing countries. The objective was to understand if those working within a developing country (and a country displaying a level of political risk (Kudrna & Gabor, 2013)) would place a similar level of importance on factors characterising their institutional environment (political, legal and economic factors) when compared to that of other CSFs such as social and technical factors for PPP projects. As such, this literature review begins with a discussion on the academic and practical application of CSFs in the achievement of an entity's goals (Bullen & Rockart, 1981) and how these have been applied to PPP projects as a means to deliver infrastructure to countries (Jacobsson, 2014).

It was evident that no research had yet been undertaken to assess if there was a difference in the perceived importance for CSFs for PPP projects in developing countries versus that of developed countries. A signifying characteristic of a developing or emerging economies is that of its institutional environment (Matos-Castaño et al., 2014), and the presence of institutional voids and political risk (Meyer & Peng, 2016). Developing countries are facing the dichotomy of balancing increasing demand on infrastructure with the available public sector resources (Xie & Ng, 2013; Zangoueinezhad & Azar, 2014) and this chapter next seeks to discuss the application of institutional theory in this respect. The relevant theory and practices explored include the interrelated nature of institutional theory (Ho & Im, 2015; Meyer & Peng, 2016), its implications for developing countries (Matos-Castaño et al., 2014) and the inference that such countries exhibit a degree of political risk (Kudrna & Gabor, 2013).

The critical success factors for PPP projects

Conceptualised by Drucker in 1973 (Borman & Janssen, 2014), CSF's are the particular areas in which acceptable performance are said to ensure successful achievement of an entity's goals (Bullen & Rockart, 1981). The definition of CSFs for the purpose of this study are those definitive elements identified and validated by academic literature which will enable the fulfilment of the PPP project's objectives. Acceptable performance in these CSFs will result in successful competitive behaviour for the stakeholders to PPP projects (Xie & Ng, 2013; Zou et al., 2014).

The academic identification, discussion of CSFs for complex, often infrastructure-orientated projects, began as early on as 1997 (Kaming, Olomolaiye, Holt, & Harris, 1997) and the period 1998 to 2008 saw emphasis placed on the identification and validation of CSFs for the evaluation of project implementation and operation phases. Foundational authors include Özdoganm & Birgönül, (2000), who developed a decision making framework for complex projects in developing countries and Zhang, (2005) who applied the CSFs to PPP projects in general infrastructure development. The majority of studies which identified and validated CSFs for PPP projects considered the meso or inter-organisational level of analysis with focus placed on practical application through case studies, with limited theoretical integration or consideration of the macro (country or PPP policy) level of analysis (Roehrich et al., 2014).

However, it was recent authors such as Chou et al., (2012); Hwang et al., (2013); Ng et al., (2012); Xie & Ng, (2013); and Zou et al., (2014) who used empirical analysis as a means to understand the perceived importance placed on these different factors. Content analysis of foundational literature coupled with a grouping regime informed by the risks to PPP and other infrastructure projects has become a popular method to identify, categorise and assess the importance of CSFs (Chou et al., 2012; Chou, Tserng, Lin, & Huang, 2015; Hwang et al., 2013; Ng et al., 2012; D. I. Özdoganm & Birgönül, 2000; Xie & Ng, 2013; Zou et al., 2014).

This analysis has been applied to the development of optimal PPP project decision making models (Ng et al., 2012; Xie & Ng, 2013), in the identification of important factors at different stages within the project (Ng et al., 2012), or for different types of PPP projects: port projects (Panayides et al., 2015) or high speed rail (Chou et al., 2012). Hwang et al., (2013) leveraged from a comprehensive literature content analysis and empirical survey to identify CSFs and PPP risks for PPP projects within Singapore, before classifying them according to the macro (country or policy), meso (inter-organisational) and micro (intra-organisational) levels of application.

Zou et al., (2014) however, has taken the research further, in the identification of CSFs for relationship management within PPP projects, underlining the importance for established relationships between the actors, often institutional, to the PPP project. Roehrich et al., (2014) emphasised that the need for further empirical evidence, however is still paramount with Zou et al., (2014) expressing the explicit requirement to use frameworks such as CSFs to empirically compare PPP projects cross-sector (or project type) and cross-country. However, no research has yet investigated if there is a

difference in the perceived importance of CSFs for PPP projects in developing countries versus that of developed countries.

Bullen & Rockart, (1981), Ng et al., (2012) and Borman & Janssen (2014) are in agreement that CSF's are context dependent and change as their encompassing environment evolves, further emphasising the significance of undertaking this research. As the objective for this research was to determine if a developing country exhibiting political risk would perceive a similar level of importance on factors characterising their institutional environment when compared to that of other CSFs PPP projects, it was evident that a comprehensive literature review on relevant institutional theory, developing countries and political risk would be required.

Institutional theory

Given that PPP projects exist as an institutionalisation of cooperation between public and private sector (Panayides et al., 2015) and can be characterised as context-sensitive phenomena (Meyer & Peng, 2016), it was a precondition that institutional theory and its application to PPP projects in developing countries was explored. To quote Meyer & Peng, (2016, p.3) "… a lack of attention on institutions can easily lead to misinterpretations of data from different locations". This was of particular importance when considering the interaction between a PPP project firm and its success within a developing country (Emek, 2015; Ho & Im, 2015), when the emerging economy would display a far greater variation and frequency of change in institutions than that of developed nations (Meyer & Peng, 2016).

Ho & Im, (2015) further conceptualised the institutional gap or differential between developed and developing economies in three distinct views. 1. The process view which detailed the difference between organisational design and process capacity where developed countries exhibited lesser capacity. 2. The cultural view which described the difference in normative rules and values in government-societal relationships where developed countries would place lesser importance on transparency and customer-orientated thinking and may display a cultural resistance to public reporting. 3. The power view where the difference in the role and structure of power relationships within government and between government and public sector may result in information monopoly and questionable and unstable power relations within government. Although the research of Ho & Im, (2015) considered the implementation of westernised reform institutional measures in developing countries, this could be applied to the implementation of the PPP firm. The theorising was made practical in the emphasis placed by Ho & Im, (2015) on the sensitivity required by institutional

agents to the country's unique institutional constraints, constantly adapting and adjusting to stakeholder alignment and sociocultural settings. In cases of context-sensitive phenomena, Meyer & Peng, (2016) emphasized the significance of integrating context with theory development.

Meyer & Peng, (2016) proposed that the institution-based view was the leading theoretical perspective in emerging economy business research as it had emerged from the three theoretical lines of 1. Institutional economics; 2. The analysis of the business-government bargaining; and 3. Organisational theory. Further, Meyer & Peng, (2016) detailed that the institution-based view was evolving toward a paradigm that explored how firms engage with differing institutions at various institutional levels and locations. In contrast, Matos-Castaño et al., (2014) based their research on sociology and organisational theory further developing the work of North, (1990), and conducted an a comparative analysis to examine the path-dependency of PPP institutional change in the Netherlands (a developed country) and India (a developing nation). Similarly, Panayides et al., (2015) applied an external approach in their application of institutional theory in the determination of the institutional factor effect on PPP port project success, where fifty projects from the period 1995-2011 were analysed. It was proposed however, that when considering the nature of PPP projects and the PPP firm's requirement to navigate governmental and social or end-user relationships (Xie & Ng, 2013; Zou et al., 2014), that the institution-based view is more appropriate for this research (Meyer & Peng, 2016).

The three intellectual contributions to the institutional-based view are discussed.

Institutional economics

Building on the work of (North, 1990) institutional economics have conceptualised the rules of the game, where economic actors seek to maximise their utility within these constraints (Ho & Im, 2015; North, 1990). Not only was it fundamental to note the essential nature of institutions for effective market functioning in all countries; but in the case of emerging economies, where there may be an absence or ambiguity to the rules (Matos-Castaño et al., 2014), the incentives offered to economic actors may change (in this case PPP project investors) (Meyer & Peng, 2016). Voids within institutions and changes to institutional factors may include instability in regulatory or legislative frameworks; increased economic actor uncertainty; decreased market efficiency, increased transaction costs; political and governmental institutional involvement in competitive practices, and changes caused by the vested interests of political institutions (Meyer & Peng, 2016; Moe, 2015).

This lens of institutional economics was pertinent to this research as it outlined the challenges inherent within a developed country. Further, in support of the objective of this research to assess the relative perceived importance placed on institutional factors by those in developing markets in comparison to the ranked literature-informed CSFs in other studies, the changes within institutions and to institutional factors as described by Meyer & Peng, (2016) and Moe, (2015) detail situations which are counter some of the literature-informed CSFs. An example of a unique CSF identified from co-word analysis of Chou et al., (2012); Hwang et al., (2013); and Ng et al., (2012) which was in juxtaposition with the environment described and available within developing countries was that of a favourable legal framework.

Government and business bargaining

As an outcome of the rules of the game (Meyer & Peng, 2016; North, 1990), the bargaining between government and business was a fundamental perspective to apply to institutions within the context of the emerging economy. When applying this perspective to the PPP project, the bargaining between the public sector and private sector actors is a significant engagement required to develop an appropriate PPP agreement (Jacobsson, 2014) or the rules within which the PPP firm operations. The PPP agreement adequately balances risk and return on investment in the delivery of a socially beneficial project for the governmental institutional client (Chou et al., 2012; Hwang et al., 2013; Ng et al., 2012; Xie & Ng, 2013; Zou et al., 2014). An understanding of the complexity of strategies by host and home countries (Benácek et al., 2014; Kudrna & Gabor, 2013) and the required agreements between actors was essential in emerging markets where it may be a norm for governmental actors to involve themselves in business affairs (Meyer & Peng, 2016; Moe, 2015). The involvement of government actors in business affairs is counter the unique CSF that specifies good governance by government and the consortium (Chou et al., 2012; Hwang et al., 2013; Ng et al., 2012).

Institutional theory in organisational and sociology theory

Developing countries exhibit inconsistent and unstable institutional pressures leading to institutional voids such as lack of legal protection to property rights, non-transparent litigation and judicial systems, political instability, government interference and corruption within institutional actors (Stal & Cuervo-Cazurra, 2011). This is even more so when actors are exposed to conflicting stakeholder pressures and vested interests (Meyer & Peng, 2016; Moe, 2015). The PPP private sector actor or investor may make use of FDI funding (Panayides et al., 2015) further multiplying the compounded

institutional pressures faced in a host country. An example of the institutional pressures faced in a host country is that of the requirement by home countries for host countries to display legitimacy. Where legitimacy is displayed to a lesser degree in countries such as developing countries, this is characterised by a greater level of political risk prevalent in that host country (Benácek et al., 2014). This is again counter the CSF for PPP projects identified by Hwang et al., (2013) and Ng et al., (2012) who outlined the requirement for a stable political environment and thus the requirement for a lesser degree or the absence of political risk within a country.

In the application of the perspective of institutional theory in organisational and sociology theory, Meyer & Peng, (2016) defined institutions by shared rules, beliefs and norms that affect legitimacy of behaviours for acceptance by the environment. This was operationalised through the application of formal (regulatory) and informal (normative and cognitive) institutions. Further institutional transitions, such as those evident in emerging economies, are said to lead to variations in the adaption of institutional change (Ho & Im, 2015; Matos-Castaño et al., 2014).

Meyer & Peng, (2016) emphasised that there was pertinent theoretical and practical research lacking on firms operating in environments exhibiting diverging pressures. And, although the concept for PPP institutional change and its path dependency on comparative contexts (developed versus developing) was the subject of the research of Matos-Castaño et al., (2014), no research has considered the relative importance of literature-informed CSFs for PPP project success in emerging economies. The next section explores the relevant intricacies of the emerging economy.

The dichotomy facing developing countries

Grand theories informing development research have the inclination that development is the universal and linear advancement to economic growth (Kang, 2014). PPP projects are mechanisms to deliver development to all countries in the form of large scales complex projects with a contagion exponential impact on economic growth and improved employment (Zangoueinezhad & Azar, 2014). PPP projects have been described as institutionalised forms of public and private cooperation engaged for a common goal (Panayides et al., 2015). The types of development projects executed as PPPs are focused on primary infrastructure and basic services essential for an economy's growth and survival and extend to include healthcare and educational facilities, prisons, waste disposal, transit, power generation and renewable energy (Iossa & Martimort, 2012; Martins et al., 2011; Thomas, 2013; Wang, 2015). It was emphasised, that institutions within their own context, exhibit a mutually influential

relationship with the context-dependent country's institutional environment (Matos-Castaño et al., 2014; Meyer & Peng, 2016). So too, do PPP projects as firms and agents, exist within a mutually influential relationship with the country's institutional environment.

Developing countries experiencing increasing population growth, urbanisation, and financial limitations impact a government's ability, in terms of capacity and quality, to deliver the necessary infrastructure investment and the provision of basic services essential for an economy's economic growth and survival (Matos-Castaño et al., 2014; Zangoueinezhad & Azar, 2014). Adding to the dichotomy of balancing the increasing demand on infrastructure with the available fiscal, labour and technical resources to the public sector (Xie & Ng, 2013; Zangoueinezhad & Azar, 2014), there are country-specific risks posing threat to service delivery and investment (Bardy, Rubens, & Massaro, 2015; Benácek et al., 2014; Jha, 2013; Kudrna & Gabor, 2013; Magure, 2012; Polachek & Sevastianova, 2012), and contextual economic changes impacting operating costs and promoting actor rent seeking behaviour (Hoppe & Schmitz, 2013).

Authors Ho & Im, (2015); Matos-Castaño et al., (2014); Panayides et al., (2015); and Stal & Cuervo-Cazurra, (2011) concur that institutional factors such as the promotion of trust, the building of capacity, the provision of legitimacy, transparency and accountability contribute to a favourable environment for investment in developed and developing countries. In contrast, institutional voids present in developing countries including constrained financial resources, unsustainable pricing policies, low transparency, operational inefficiencies and a lack of agility in execution (Zangoueinezhad & Azar, 2014) indicate that developing country governmental institutions are at a disadvantage in infrastructure delivery (Aon Risk Services, 2015; Stal & Cuervo-Cazurra, 2011; United Nations, 2016; World Bank Group, 2015b). In addition, the institutional voids present are in conflict with the factors recommended for PPP project success (Chou et al., 2012; Chou et al., 2015; Hwang et al., 2013; Ng et al., 2012; Xie & Ng, 2013; Zou et al., 2014). The subsequent section discusses the relationship between institutional voids and political risk.

Political risk

Research proposed that institutional voids in developing countries infer a degree of political risk (Meyer & Peng, 2016), where the concept of political risk was characterised by the uncertainty associated with the impact on investment by socio-political institutions and governance (Benácek et al., 2014; Kudrna & Gabor, 2013). When considering a country's political environment, not only would the institutional

environment guide political and development project processes, but agents with sufficient power may influence the institutional environment within which the project was placed (Matos-Castaño et al., 2014; Moe, 2015).

Kudrna & Gabor, (2013) proposed a novel perspective on political risk. Building on the definition of political risk being the risk associated with political or authoritative changes in a country in which one may be investing which may lead to a negative impact on returns, they articulated the symmetrical nature of political risk. Not only do investors from developed economies face political risk when investing in developing markets, but the developing markets' governments face political risk from changes in political and regulatory developments in the investor's more advanced economy.

As a subset of the greater country risk category, political risk includes government action which could lead to currency exchange uncertainty, breach of contract and sovereign obligations not honoured, changes to regulations and policy, and war, terrorism and civil disturbances (Kudrna & Gabor, 2013; Polachek & Sevastianova, 2012). Crisis and the manner in which those in power, such as government, respond to crisis were described as accelerators for political risk, with the likelihood for political risk occurring in an emerging economy being greater than that within a developed country. Although political risk affects domestic and foreign investors, the risk for foreign investors is further heightened by foreign investors' limited access to political, legal and regulatory recourse in host developing countries (Kudrna & Gabor, 2013). In its application to PPP projects both the private sector investor and the home country government are vulnerable to political risk.

The academic theorising on political risk is borne out to some extent in practical experience. In the period 2007 to 2015, the Aon Global Risk Management survey has placed regulatory and legislative changes in the top ten risks facing private and public sector organisations. Political uncertainty ranked tenth in 2013, dropping to 15th place in 2015, but was forecasted to move to ninth position in the period 2016-2019 (Aon Risk Services, 2015). The same report noted that for government, the greatest risk in 2015 was the damage to reputation, while third for the construction sector was cash flow and liquidity risk. These risks directly influence the institutional environment within which the PPP project exists and its complex stakeholder relationships and requirements. The following section discusses risk management in the procurement of large infrastructure projects.

Risk management

Challenges with the traditional governmental procurement of large or complex infrastructure projects stem from the individual procurement and fiscal funding of the project design, construction, operations and maintenance led by governmental agencies with input from separate teams of consultants, construction contractors and operators (Siemiatycki, 2011). The traditional infrastructure procurement approach provided little to no incentivisation for systems thinking and application, for example where additional investment during design and construction could lead to efficiencies during operation (Hoppe, Kusterer, & Schmitz, 2013). Further Bardy et al., p.22. (2015) argues that "a systemic outlook can enhance … practical implementation of sustainable development in developing countries."

The disaggregated structure and transactional relationship between public sector, private sector and end-user actors allowed for limited collaboration and coordination within the client-contractor focussed relationship (Jacobsson, 2014). Through traditional procurement development project risk was inappropriately allocated to government, where the governmental actor was responsible for activities which were not in their normal course of business, such as design and construction, and with limited mechanisms in place to align stakeholder short and long term interest, mitigate rent seeking behaviour and promote long-term project accountability (Jacobsson, 2014; Siemiatycki, 2011; Zou et al., 2014).

In comparison, the PPP project mechanism allows government to apply a service rather than product logic promoting an integrated relational-based procurement approach, where the purpose of the PPP project is the provision of a benefit for which the government actor is responsible (Jacobsson, 2014). PPP projects involve bundling, whereby the development (funding, design and construction) and delivery (operations and/or maintenance) of a project in a host country are grouped together and delegated to a private party or private sector investor, achieving incentivisation for innovation and improved operation, with investments in PPP projects socially beneficial for all parties (Hoppe et al., 2013; Hoppe & Schmitz, 2013; Jacobsson, 2014; Roehrich et al., 2014; Zangoueinezhad & Azar, 2014). The home country government is responsible for the provision of public services at an agreed price and quality, and the sequential payment to the investor over the term of the contract (Emek, 2015; Zangoueinezhad & Azar, 2014).

The PPP project is unique in that through an appropriate allocation of risk, public sector is provided with the flexibility to strategically allocate their financial and intellectual resources to more pressing socio-economic needs, thereby delivering on their mandate for growth-sustaining infrastructure (Hwang et al., 2013; Jacobsson, 2014; Martins et al., 2011; Roehrich et al., 2014; Zangoueinezhad & Azar, 2014; Zou et al., 2014). Government uses the PPP mechanism to deliver large infrastructure requirements with limited or no public sector expenditure, utilising the profit-orientation perspective and expertise of private sector to induce economic growth (Martins et al., 2011; Xie & Ng, 2013; Zangoueinezhad & Azar, 2014).

PPP projects primarily influence the boundaries between public and private sector actors, with the dominant themes in academic research include PPP institutional policy, regulation, norms and outcomes (Roehrich et al., 2014). Research considering the disadvantages of PPPs include focus on stifled project performance, project affordability for government and private sector, and the hindrance of innovation have also attracted attention (Hoppe & Schmitz, 2013; Roehrich et al., 2014). No research however, has assessed the relative importance of institutional CSFs in a county whose context inherently exhibits political risk.

This optimal allocation of risk is facilitated through the PPP parties' opposing interests: private sector's profit orientation opposes government's requirement for public accountability, which in turn satisfies the end-user's or client's requirement for social consideration (Ng et al., 2012; Xie & Ng, 2013; Zou et al., 2014). PPPs provide for an effective mechanism, through a well-managed approach, to deliver large infrastructure investments with efficient risk allocation to the party most capable to manage it (Jacobsson, 2014; Martins et al., 2011; Zangoueinezhad & Azar, 2014; Zou et al., 2014). The subsequent section discusses the appetite for PPP projects.

The appetite for PPP projects

Despite the institutional voids evident in developing countries, there has been in increasing trend of PPP projects being invested into and delivered in emerging markets (Emek, 2015; Kasper, 2014a). Countries in Latin America, the Caribbean, Africa, eastern Europe and Africa have witnessed an investment in infrastructure PPP projects (Kasper, 2014a), while South Africa, Nigeria, Egypt, Bangladesh, Indonesia, Latvia, Poland, Chile, Mexico and Uruguay have placed emphasis on the PPP mechanism with institutional structures such as a dedicated national and regional PPP Units established, policies and plans in place to deliver on their PPP project pipelines (World Bank Group, 2014).

Benefits which reason why there has been an uptake in PPP projects in developing countries include their ability to bring greenfield large scale investment projects such as roads, hospitals and power generation to market, their ability to transfer operational responsibility of brownfield developments to better suited private parties, and their ability to deliver superior returns and performance on investments (Emek, 2015). Further reasoning as to the uptake of PPP projects in developing countries lies in the empirical evidence demonstrating that a positive exponential relationship exists between a country's economic growth rates (short- and long-run economic growth rates and long-term employment) and that of the nature and quantity of PPP projects completed by a country

Year on year PPP project investment in low to middle income countries has experienced an annual growth rate of six per cent (2013:2014), but when compared to global private investment in infrastructure projects since 2009, this was only 10.75 per cent of total investment (Kasper, 2014a; Kasper, 2014b). Higher income countries such as United Kingdom (United Nations, 2016; World Bank Group, 2015a), have in comparison, seen investment into their country of as much as US$84.75 billion in the period leading up to 2010 and have undertaken in excess of 600 projects prior to 2014 (Roehrich et al., 2014; Xie & Ng, 2013).

The uptake in PPP projects globally is mirrored by a significant increase in published research on the topic, with at least 1,419 papers published between 1990 to 2011 (Chou et al., 2012; Roehrich et al., 2014). Roehrich et al., (2014) undertook a comprehensive literature review of all PPP project research since 1990, considering scholarly publications of a conceptual, qualitative or quantitative empirical nature. Their study provided evidence that there were limited cross-country, cross sector and cross-PPP-type studies informing comparative analysis, with no differentiation for emerging economies (Roehrich et al., 2014).

The same study however, determined that there have been three key themes of PPP project academic literature. 1. The policy of PPP projects: the macro level reflection on subthemes such as risk allocation and financial evaluation, and the appropriateness and goodness of fit of PPP projects as a mechanism to deliver public sector infrastructure. 2. PPP project outcomes: the benefits and disadvantages of PPP projects, often in comparison to traditional procurement. 3. The practice of PPP projects: the micro and meso, or inter-personal and inter-organisational levels of the PPP project, including stakeholder management, incentives and performance, inter-

organisational governmental mechanisms such as contracts, and learning and knowledge management (Roehrich et al., 2014).

This research was founded within the macro level of analysis as it explored a subtheme of the policy of PPP projects: the subtheme of the institutional environment supporting the PPP project and the implications imposed by a developing country. As has been discussed, this research narrows focus on to the perceived importance of institutional CSFs by those undertaking the projects in a developing economy because of the noticeable absence of institutional factors and a presence of political risk within the context. The following section discusses the recent literature detailing the requirement for a supportive institutional environment for PPP project success.

A supportive institutional environment

Policymakers, practitioners and academics are in agreement and aligned to institutional theory recognising the requirement for the involvement of institutional actors and a supportive political context to create a favourable institutional environment for PPP project success, to facilitate PPP cooperation, and to determine the societal rules within which the PPP project operates (Panayides et al., 2015). There is a reliance on government and public sector policymakers to create a suitable institutional environment and implement appropriate policies that allow private sector to become catalysts for economic growth (Zangoueinezhad & Azar, 2014).

PPP projects require the cooperation between the public and private sector for the extended project duration, where projects can extend as long as 20 to 30 years (Panayides et al., 2015; Roehrich et al., 2014). This lengthy contractual tenure requires careful consideration and allocation of the project risk between the public and private parties (Jacobsson, 2014). This was underlined by Hoppe & Schmitz, (2013) and Jha (2013) who described the difficulty facing public and private sector to foresee and contract uncertain future events in the context of the developing economy. In mitigation of the risk inherent in projects of this nature in developing countries, Hoppe & Schmitz, (2013) found it pertinent for government as the procuring institution, to establish a robust incentive structure encouraging a flexible, cost-effective and agile design.

Xie & Ng, (2013) further defined government's responsibilities to include the understanding and balancing of the interests of the three PPP project actors to avoid political and social discontentment. Without an understanding of the financial viability, social acceptance, environmental impact, and political sentiment of the project, government may find it challenging to achieve a mutually beneficial and acceptable agreement between the parties (Xie & Ng, 2013). Through a Multiobjective Bayesian network model developed to inform PPP project decision support, Xie & Ng, (2013) proposed that a viable project was one which addressed the different stakeholder perspectives' economical and noneconomic interests, in particular government's public accountability, the private investor's commercial interests, and social consideration.

For PPP project success in developing countries Zangoueinezhad & Azar, (2014) proposed that governmental policies are required to ensure that legislative frameworks are supportive of efficient transparent decision making and competitive bidding, and that there is the establishment of dedicated PPP offices. Matos-Castaño et al., (2014) underscored that poor PPP project outcomes are symptomatic of voids in the institutional environment. They emphasised the importance for government to understand the PPP project roles and responsibilities and to ensure that sustainable arrangements within institutional structure are created and agreed to. These arrangements and institutional structures have attracted much academic attention, with Chou et al., (2012); Chou et al., (2015); Hwang et al., (2013); Matos-Castaño et al., (2014); Ng et al., (2012); and Xie & Ng, (2013) agreeing that they are to be focused on fostering meaningful societal participation, delivering sustainable development, providing transparency and achieving mutually acceptable risk sharing.

An example of the requirement for institutional actor involvement and a supportive political context was provided by Matos-Castaño et al., (2014) who considered the path-dependent development of institutional frameworks for PPP projects in the Netherlands, a developed economy versus that in India, an emerging economy. Their research determined that an appropriate PPP project enabling environment not only involved institutional creation such as the establishment of a dedicated PPP project governmental agency, but also a change or improvement to existing project procurement institutions. In particular, Matos-Castaño et al., (2014) noted that a long term orientation towards institutional change and a willingness to learn and modify transitional institutions were key factors to the development of a favourable institutional environment for PPP project success. The Netherlands case study provided evidence that these were present in their developed country, but for India, there were noticeable deficiencies.

The need for research

The need for research stemmed from three bodies of research. 1. Authors Roehrich et al., (2014); Xie & Ng, (2013); and Zou et al., (2014) concurred on the pressing requirement for further empirical academic studies leveraging from foundational research on PPP projects; 2. There was the urgency to understand the context dependency of institutions such as PPP projects particularly for developing countries displaying institutional voids and political risk as demonstrated by Matos-Castaño et al., (2014); Meyer & Peng, (2016); and Moe, (2015); and 3. There was evidence that PPP projects could assist governments in addressing the dichotomy facing developing country governments (Xie & Ng, 2013; Zangoueinezhad & Azar, 2014). In response to these imperatives, this research aimed to contribute to the body of empirical research through the consideration of PPP project institutional factors within the context of a developing economy exhibiting political risk and their perceived relative importance to that of previously identified CSFs.

The research problem

In the context of a developing country exhibiting political risk, in which that country has a requirement to successfully deliver on their infrastructure mandate through PPP projects so as to ensure the contagion effect on their economy and economic growth, there was value in assessing and understanding the relative importance of factors characterising the institutional environment relative to other CSFs identified by previous academic research.

The research problem was to determine if low or the absence of political risk, as inferred through the relative ranking of importance of institutional factors, was perceived by those working on PPP projects in a developing country significant for PPP project success. This research assessed the relative perceived importance of institutional CSFs against the level of importance of other CSFs for PPP projects in a developing country, whereby definition a developing country is faced by institutional voids and exhibits political risk.

Chapter 3: Research questions

It was proposed that for a country exhibiting political risk, to successfully deliver a strengthened PPP pipeline and to ensure the contagion effect on the economy, it was essential to assess the CSFs for delivering PPP projects within that context. Further, in the context of a developing country, it was positioned that there was value in empirically comparing the relative perceived importance of the PPP project CSFs, in particular institutional factors informing political risk, versus that of other literature informed PPP project CSFs, so as to infer if the absence of or low political risk was indeed required as a CSF for PPP delivery.

The research had a primary objective: To determine if the PPP project CSFs for a country perceived to exhibit political risk, were similar to that of, or are applied with the same level of emphasis or importance as for that of peer economies as they are documented in other academic studies. In particular, this research placed focus on the relative ranking of institutional factors versus that of other CSFs rated and the CSFs ranked in previous academic studies.

A two part research question was proposed. The research question related to the identification and rating of CSFs for PPP projects in a developing country exhibiting political risk; and compared the ranked PPP project CSFs to that of other contexts as they were documented in recent published academic articles. At the time of this research, it was not evident that there had been any previous research which considered the CSFs' perceived importance for developing countries which exhibit political risk, with particular focus on the ranking of the institutional factors.

Research question

A. How do the perceived rankings of PPP project CSFs informing the institutional environment of a PPP project within a developing country exhibiting political risk compare to that of other literature informed CSFs for PPP project success?
B. How do the perceived rankings of CSFs by those undertaking PPP projects in a developing country compare to other contexts as they have been identified in previous literature?

This research question sought to determine the perceived importance of the CSFs for PPP projects in a developing country as a country exhibiting political risk, where a CSF is that which was deemed necessary for success in terms of a PPP project's execution. The second half of the research question was poised to compare the perceived importance of CSFs of PPP projects in a context exhibiting political risk to those found

to be important in key peer studies. The empirical rated and ranked research was compared to recent academic articles which were used to inform the compiled list of CSFs and had been rated and ranked in the respective studies.

Chapter 4: Research methodology

Research methodology and design

The research approach

The study indicated the need not only to understand the context in which the PPP project is executed, but also the repeatability of a study of this nature. As such, a pragmatic research approach was undertaken where the research objectives and questions were the greatest determinant in the approach applied (Saunders & Lewis, 2012).

As detailed in the literature review, previous academic research by Chou et al., (2012); Hwang et al., (2013); Ng et al., (2012); Xie & Ng, (2013); and Zou et al., (2014) have used empirical analysis as a means to understand the perceived importance placed on CSFs to PPP projects in answer to each authors specific research question. These authors undertook content analysis of foundational literature coupled with a grouping regime informed by the risks to PPP and other infrastructure projects so as to identify and categorise relevant PPP project CSFs (Chou et al., 2012; Chou et al., 2015; Hwang et al., 2013; Ng et al., 2012; D. I. Özdoganm & Birgönül, 2000; Xie & Ng, 2013; Zou et al., 2014). They then undertook empirical analysis through the completion of a questionnaire survey to rate and rank the CSFs elicited. Content validity was ensured in that the self-report questionnaires assessed the degree to which the individual CSFs represented the construct being measured by each respective author.

This approach has evidenced statistical reliability in its use to develop optimal PPP project decision making models (Ng et al., 2012; Xie & Ng, 2013), or in the identification of important factors at different stages within the project (Ng et al., 2012), or for different types of PPP projects (Chou et al., 2012; Panayides et al., 2015). The authors applied this approach to research studies focussed on the perceived importance of CSFs within one country (Hwang et al., 2013) as well as to studies which included respondent participation from multiple countries (Zou et al., 2014). No research had yet to use this approach 1. In the comparison of perceived importance of the institutional CSFs versus that of other literature informed CSFs in a developing country exhibiting political risk; or 2. In the comparison of the perceived importance of CSFs for PPP projects in a developing country versus the perceived importance of factors determined in previous academic literature for other contexts.

A deductive approach was thus followed for this research whereby the literature review and theory informed the research questions focusing on a PPP project's CSFs for developing countries (Saunders & Lewis, 2012). This research was undertaken in two sequential phases.

Phase 1: Compile a comprehensive list of PPP project CSFs

First, a comprehensive list of CSFs for PPP projects was determined which would later inform the quantitative analysis. Bibliometric analysis (Zupic & Cater, 2015) was undertaken of all academic journal article titles and keywords published between 2012 and 2014 containing the words "PPP", "public private participation project", "CSF" and/or "critical success factors". All articles which identified CSFs for PPP project success and assessed the perceived importance of these within their specific context and so as to inform the various respective research questions, were selected. Bibliographic coupling of the CSFs identified in these articles was then undertaken to determine a comprehensive list of CSFs for PPP projects. A grouping regime was applied to the CSFs informed by the risks to the PPP projects, similar to that applied by Chou et al., (2012); Chou et al., (2015); Hwang et al., (2013); Ng et al., (2012); D. I. Özdoganm & Birgönül, (2000); Xie & Ng, (2013); and Zou et al., (2014). The grouping regime further identified the CSFs which described the institutional environment.

Phase 2: Analyse the perceived importance of CSFs in a developing country

The second phase took the form of quantitative analysis. The method applied and instrument used in this study was similar to that undertaken by the articles informing the comprehensive list of CSFs in the first phase, whereby an empirical analysis through a Likert scale rating was used to assess the perceived CSF importance. The instrument was thus deemed to be valid and reliable in the measurement of the perceived importance of CSFs. A questionnaire survey was used to assess the perceived importance of the comprehensive list of CSFs determined in the first phase. The perceived importance of the CSFs were assessed by those undertaking PPP projects within the context of a developing country exhibiting political risk. The rated and ranked perceived importance of the PPP project CSFs describing the institutional environment were then 1. Compared to the other CSFs assessed in the same survey, and also 2. Compared to the rankings determined in the peer academic studies from other contexts informing the initial comprehensive list of CSFs. This approach was found to be suitable as it assessed and compared the relative ranking of the institutional CSFs informed by the quantitative results of this research.

The research strategy

Although the literature review provided evidence that much descriptive research had already been undertaken on PPP projects (Roehrich et al., 2014), an exploratory and explanatory study was undertaken to further develop the academic literature in this field (Saunders & Lewis, 2012). A combination of the following strategies were employed:

- The structured compilation of a comprehensive list of CSFs for PPP projects through bibliometric analysis of recent relevant academic literature.
- The structured collection of data through an empirical research questionnaire informed by the literature informed identified CSFs.
- A quantitative analysis to determine the ranked perceived importance of CSFs in PPP projects in a developing country exhibiting political risk.
- A quantitative analysis to determine if there was similarity of perceived importance between those undertaking PPP projects in a developing country and those identified and rated for PPP projects in other contexts as they were documented in recently published academic articles.

The research strategy combined the comprehensive literature content analysis and the empirical questionnaire to inform a critical analysis used to determine the perceived importance of PPP project CSFs informing the institutional environment in developing countries exhibiting political risk.

Population and sample

For the purpose of this study, three populations were considered. 1. The first population considered all developing countries which have previously undertaken and are currently undertaking PPP projects. 2. The second population informed those respondents who were able to partake in this research study. 3. While, the third population considered the published academic literature on PPP projects, informing the sample of articles used to compile the comprehensive list of PPP project CSFs. The three populations and the respective samples are detailed.

1a. The population of all developing countries who undertake PPP projects

The population included all PPP projects undertaken between the government of a developing country and a private consortium through a long-term PPP contractual agreement. The criterion for the population required that all developing countries, as they were classified by the 2016 World Economic Situation and Prospects report (United Nations, 2016), had a formal PPP institutional framework, such as a national, provincial or municipal PPP Unit as detailed in the Public-Private Partnerships in

Infrastructure Research Centre (World Bank Group, 2014); and that these countries had evidence of delivering PPP projects prior to January 2015 (the start date of this research) with a demonstrated desire to further deliver PPP projects.

The population for all countries who undertake PPP projects was sourced from the Public-Private Partnerships in Infrastructure Research Centre (World Bank Group, 2014). For each of the countries included in Table 1: Population of countries with formal PPP frameworks undertaking PPP projects, there are publically accessible PPP units. The developing countries highlighted under the country classification formed the population of all developing countries undertaking PPP projects.

Legend for Table 1: Population of countries with formal PPP frameworks undertaking PPP projects

	Population of developing countries undertaking PPP projects
	Developed economy or economy in transition. Excluded from population

Table 1: Population of countries with formal PPP frameworks undertaking PPP projects

Region	Country undertaking PPP projects	Country classification (United Nations, 2016)	Region	Country undertaking PPP projects	Country classification (United Nations, 2016)
Sub-Saharan Africa	Ghana	Developing	Middle East and North Africa	Egypt	Developing
	Kenya	Developing		Israel	Developing
	Malawi	Developing		Kuwait	Developing
	Mauritius	Developing	South Asia	Bangladesh	Developing
	Nigeria	Developing		India	Developing
	South Africa	Developing		Pakistan	Developing
	Uganda	Developing		Nepal	Developing
East Asia and the Pacific	Australia	Developed	Latin America and Caribbean	Brazil	Developing
	China	Developing		Chile	Developing
	Indonesia	Developing		Costa Rica	Developing
	Japan	Developed		Honduras	Developing
	Malaysia	Developing		Mexico	Developing
	New Zealand	Developed			
	Papua New Guinea	Developing		Peru	Developing
	Philippines	Developing		Puerto Rico	Developing
	Republic of Korea	Developing		Uruguay	Developing
	Singapore	Developing	North America	Canada	Developed
	Sri Lanka	Developing		United States of America	Developed
Europe and Central Asia	Albania	Economy in transition	Europe and Central Asia	Malta	Developed
	Belgium	Developed		Netherlands	Developed
	Bulgaria	Developed		Poland	Developed
	Croatia	Developed		Portugal	Developed
	Czech Republic	Developed		Republic of Ireland	Developed
	Denmark	Developed		Republic of Macedonia	Economy in transition
	Estonia	Developed		Republic of Moldova	Economy in transition
	France	Developed		Russia	Economy in transition

Region	Country undertaking PPP projects	Country classification (United Nations, 2016)	Region	Country undertaking PPP projects	Country classification (United Nations, 2016)
	Germany	Developed		Serbia	Economy in transition
	Greece	Developed		Slovakia	Developed
	Italy	Developed		Spain	Developed
	Kazakhstan	Economy in transition		Switzerland	Developed
	Kosovo	Economy in transition		Turkey	Developing
	Latvia	Developed		United Kingdom	Developed
	Lithuania	Developed			

1b. South Africa as a sample for developing countries undertaking PPP projects

South Africa was proposed as a relevant sample for developing countries (United Nations, 2016; World Bank Group, 2015a) with a formal national PPP institutional framework in place, evidence of delivering PPP projects prior to January 2015, and with a demonstrated desire to further deliver PPP projects (South African National Treasury PPP Unit, 2015).

Relevancy as a developing country

Consideration was given to the Worldwide Governance Indicators (WGI) which is a six composite measure of 215 countries' ability to exhibit good governance, through aggregate indicators of voice and accountability, political stability, absence of violence and terrorism, government effectiveness, regulatory quality, rule of law and control of corruption. These WGI were used as a measure of a country's political risk (Kaufmann, Kraay, & Mastruzzi, 2010; Panayides et al., 2015; World Bank Group, 2015b). Table 2 provides a summary of the WGIs for developing countries Turkey, South Africa and Brazil, and developed countries the United States of America, United Kingdom and Netherlands.

Table 2: Summary of World Governance Indicators for Brazil, Netherlands, South Africa, Turkey, United Kingdom, the United State of America (World Bank Group, 2015b)

Country	Turkey	South Africa	Brazil	United States of America	United Kingdom	Netherlands
Percentile rank of country out of all countries considered. Zero corresponds to the lowest ranked country. 100 corresponds to the highest ranked country. (World Bank Group, 2015b)						
Voice and accountability	37.9	68.5	60.6	79.8	92.1	98.5
Political stability and absence of violence and terrorism	12.1	43.2	45.1	67.0	60.7	85.9
Government effectiveness	67.3	65.4	47.1	89.9	92.8	97.6
Regulatory quality	66.3	63.9	50.5	88.5	97.1	95.7
Rule of law	59.6	63.9	55.3	89.9	94.2	97.1
Control of corruption	53.8	54.3	44.2	89.4	92.8	95.7

The 2015 WGIs infer a similarity in the institutional environments of developing countries such as Turkey, South Africa and Brazil, building on the interrelated institutional void and political risk theory by Benácek et al., (2014); Kudrna & Gabor, (2013); Matos-Castaño et al., (2014); and Moe, (2015). Turkey, South Africa and Brazil's respective indicators, ranked out of 100, highlight that their institutional environments are less supported than those of the developed countries, the United States of America, United Kingdom and Netherlands (developed countries). Noticeable is that South Africa scored 54.3/100 for control of corruption and 43.2/100 for political stability and absence of violence/terrorism (World Bank Group, 2015b). A recent case study undertaken on a transit PPP project in South Africa supports this finding, and concurred that political instability was prevalent in South Africa, and that it posed a significant risk to PPP projects or infrastructure projects in the country (Thomas, 2013). South Africa was thus considered to be a relevant sample of developing countries.

A formal PPP institutional framework and evidence of previous and future PPP projects

South Africa has a national PPP unit which provides guidelines and regulations for the development and delivery of PPP projects (South African National Treasury PPP Unit, 2004a; South African National Treasury PPP Unit, 2004b). Further, it has achieved financial close on 20 PPP projects in the period 2001-2013 (South African National Treasury PPP Unit, 2013). Although this is significantly less that other developing countries such as China, Brazil and India who cumulatively achieved 975 PPP projects between 2001 and 2008, (accounting for 50% of all PPP projects undertaken globally in this period) (Kasper, 2014b), this provides evidence that South Africa has experience in developing and delivering PPP projects. The criterion only required that PPP projects had been previously undertaken. In the consideration of PPP projects undertaken since 2013, there has been a demonstrated increase. The national PPP Unit indicated a pipeline of 28 PPP projects in 2015 alone (South African National Treasury PPP Unit, 2004a) with more than half in feasibility phase where the scope of the proposed project is under definition and the viability of the project being assessed (South African National Treasury PPP Unit (2004d). South Africa thus met the criterion as a developing country with a history of and demonstrated future pipeline of PPP projects.

2a. The population informing the participation of respondents in the study

This population informed the participation of respondents who were eligible to be part of this research. It considered all individuals who had worked on any of the nationally or provincially led PPP projects in South Africa, either those PPP projects which had already attained financial close, or were currently categorised as active projects by the South African National Treasury PPP Unit. Publically available information indicated to 48 national, provincial or South African public entity led PPP projects (South African National Treasury PPP Unit, 2013; South African National Treasury PPP Unit, 2015). These PPP projects formed the population of PPP projects in South Africa and informed the population for those individuals who were eligible to participate in this research. Table 3 and

Table 4 provide the list of the 48 South African PPP projects which constituted the population of PPP projects.

Table 3: Population of South Africa PPP projects having achieved financial close (South African National Treasury PPP Unit, 2013)

South African PPP projects having achieved financial close 2001 - 2013	
1	Inkosi Albert Luthuli Hospital for the Kwa-Zulu Natal Department of Health
2	Eco-tourism Manyeleti (3 Sites) for the Limpopo Department of Finance, Economic Affairs and Tourism
3	Universitas and Pelonomi Hospitals co-location for the Free State Department of Health
4	Information systems for the Department of Labour
5	Chapman's Peak Drive toll road for the Western Cape Department of Transport
6	State Vaccine Institute for the Department of Health
7	Humansdorp District Hospital for the Eastern Cape Department of Health
8	Fleet management for the Eastern Cape Department of Transport
9	Head office accommodation for the Department of Trade and Industry
10	Cradle of Humankind Interpretation Centre Complex for the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs
11	Gautrain Rapid Rail Link for the Gauteng Department of Public Transport, Roads and Works
12	National fleet management for the Department of Transport
13	Western Cape Rehabilitation Centre & Lentegeur Hospital for the Western Cape Department of Health
14	Polokwane Hospital renal dialysis for the Limpopo Department of Health
15	Serviced head office accommodation for the Department of Education
16	Port Alfred and Settlers Hospital for the Eastern Cap Department of Health
17	Western Cape Nature Conservation Board

South African PPP projects having achieved financial close 2001 - 2013	
18	Fleet services for the Northern Cape Department of Transport, Roads and Public Works
19	Serviced head office accommodation for the Department of International Relations and Cooperation
20	Phalaborwa Hospital for the Limpopo Department of Health

Table 4: Population of active South Africa PPP projects (South African National Treasury PPP Unit, 2015)

Active South African PPP projects as of 23 April 2015	
1	Moloto rail corridor development for the National Department of Transport
2	Pongolapoort Dam development for the Department of Water Affairs
3	Fleet services for the Department of Transport
4	Smart meter system revenue enhancement for the Department of Cooperative Governance and Traditional Affairs
5	Chris Hani Baragwanath Hospital for reconstruction revitalisation and upgrading for the Gauteng Department of Health
6	New built facilities, maintenance, upgrade and sanitation for the Gauteng Department of Education
7	Development of a tourism hub at Roodeplaat for the Gauteng Department of Economic Development
8	Tygerberg Hospital redevelopment for the Department of Health, Western Cape
9	Provincial fleet services for the Limpopo Department of Roads and Transport
10	Academic Hospital for the Limpopo Department of Health and Social Development
11	Nursing College for the Limpopo Department of Health and Social Development
12	George Mukhari Academic Hospital for the Gauteng Provincial Department of Health
13	Harrismith logistics hub for the Free State Provincial Government
14	Waste to energy processing plant for the Free State Provincial Government
15	Nelson Mandela Academic Hospital complex for the Eastern Cape Department of Health
16	Replacement/refurbishment of King Edward VIII Hospital for the KwaZulu Natal Department of Health
17	Cape Town head office accommodation project for the Western Cape Provincial Department of Transport and Public Works
18	School facilities for the KwaZulu Natal Department of Education
19	Office accommodation for the KwaZulu Natal Department of Education
20	Broadband initiative for the Western Cape Provincial Government
21	Tertiary hospital for the Mpumalanga Provincial Government
22	District office complex for the Mpumalanga Department of Public Works, Roads and Transport
23	Renal replacement service for the Northern Cape Department of Health

Active South African PPP projects as of 23 April 2015	
24	Provincial society e-Infrastructure for the Northern Cape Department of Economic Development and Tourism
25	Royal Natal National Park; Thendele,Rugged Glen and Spionkop Dam Resort for Kwazulu-Natal Wildlife
26	Baviaanskloof: Geelboutbos tourism development for Eastern Cape Parks
27	National Metrology Institute of South Africa new accommodation for the National Metrology Institute of South Africa
28	Accommodation for the South African Weather Service

2b. The purposive sample informing the participation in the study

Non-probability sampling of the South African PPP project population was undertaken through heterogeneous purposive sampling based on four criteria (Saunders & Lewis, 2012): 1. The details of the South African PPP project was available on the South African National Treasury publicly accessible PPP database; 2. The South African PPP project had either a national, a provincial department, or a public or state-owned entity as the owner of the PPP project; 3. The South African PPP project had achieved financial close or was yet to reach financial close; and 4. There was the ability to contact stakeholders who were or are involved in the South African PPP project through current industry relationships. The sampling frame included the 20 signed South African PPP projects and the 28 active South African PPP projects detailed in Table 3 and

Table 4.

Direct relationships existed with the independent transaction advisors which were involved in eight of the South African PPP projects in the sample frame. These individuals were sampled through purposive sampling which enabled access to further individuals involved in the PPP projects to be achieved through non-probability snowball sampling and strict application of the selection criteria to mitigate study validity and reliability being questioned (Saunders & Lewis, 2012). Potential respondents were eligible to participate based on two criteria: 1. If the stakeholder was a decision maker or influencer within the PPP industry; and 2. If the stakeholder had experience with one or more of the PPPs in the sample frame (Xie & Ng, 2013; Zou et al., 2014). Individuals targeted to participate in the research included decision makers and influencers as part of the private party, the government, and the technical advisors.

This sampling approach was deemed appropriate for the sample of individuals which were invited to partake in the empirical questionnaire survey. The publically available

information concurred that South Africa has a small population of PPP projects when compared to other developing countries such as Brazil, and that there were limited individuals who have experience in the particular field in the country (South African National Treasury PPP Unit, 2011; South African National Treasury PPP Unit, 2013; South African National Treasury PPP Unit, 2015). For a complete list of the stakeholders involved in South Africa's PPP projects which achieved financial close prior to 2013, refer to Appendix A – Population of South Africa PPP projects achieving financial close. Two academic studies undertook a similar approach to sampling due to the unique nature of a PPP project, and the limited number of appropriate projects undertaken in a country. These included Zou et al., (2014) which attempted to identify the CSFs for relationship management in PPP projects and Ng et al., (2012) which considered CSF and the risk allocation for PPP policy in Taiwan.

3a. The population of academic literature considering PPP projects

The majority of research on PPP projects was undertaken in the period since 1990 (Roehrich et al., 2014). As such, the population of academic literature considering PPP projects included all PPP projects which were documented in academic literature since 1990. This population of published articles was used to inform sample of articles which identified and discussed the CSFs for PPP projects. These articles were assessed in terms of the countries which were analysed or discussed in the respective research articles, and considered countries such as the United Kingdom, China and Portugal (Chan, Lam, Chan, Cheung, & Ke, 2010; Martins et al., 2011). There were no previous academic articles focussing solely the PPP project CSFs for developing countries or for South Africa. There was also no previous academic articles which consider the relative institutional CSFs for developing countries.

3b. The relevant sample of academic literature considering PPP projects developed and delivered in countries

The population of academic literature considering PPP projects was used to inform the purposeful sample which was selected to determine a comprehensive list of CSFs for PPP projects. The sample articles were identified through the application of the following purposive sampling criteria: 1. Articles sourced were from journals accredited in the January 2015 Thomson Reuters/ISI Web of Science and ProQuest International Bibliography of Social Science list of journals; 2. The country or countries considered in the PPP project research were detailed; 3. PPP project CSFs were identified for each country or set of countries; 4. Weightings or rankings were applied to the CSFs based on the perceived importance allocated to each factor; 5. The articles were published between 2010-2014; and 6. The articles built on foundational PPP project literature.

This study undertook purposeful co-word bibliometric analysis (Zupic & Cater, 2015) of all academic journal article titles and keywords published between 2010 and 2015 containing the words “PPP”, “public private participation project” “CSF” and/or “critical success factors” to determine the sample of relevant academic literature.

Unit of analysis

As was discussed in Chapter 2 in the section titled The appetite for PPP projects, this research occurs at the macro level of analysis, having explored a subtheme of the policy of PPP projects (Roehrich et al., 2014). This subtheme considers the institutional environment supporting the PPP project and the implications imposed by a developing country where there is a noticeable absence of institutional factors and a presence of political risk. The research questions were directed at the relative perceived importance of the PPP project CSFs informing the institutional environment of a country as assessed by those undertaking PPP projects in developing countries. The CSFs which describe the institutional environment include, but are not limited to economic, political and legal elements, and which, for the purposes of this research, would be are best assessed through the macro level of analysis (Hwang et al., 2013; Li, Akintoye, Edwards, & Hardcastle, 2005; Roehrich et al., 2014).

Measurement instrument

The measurement instruments were categorised according to researcher or subject completion.

Researcher measurement instrument

The measurement instrument completed by the researcher included the comprehensive literature informed list of PPP project CSFs, grouped by risk allocation. Construct and content validity was tested through triangulation of the literature review, the bibliometric analysis and coupling literature informed CSFs, and the quantitative and qualitative empirical questionnaire survey results. In particular, the qualitative survey results included open ended questions posed to respondents who could identify any additional CSFs not listed in subject measurement instrument (empirical questionnaire survey).

Subject measurement instrument

One subject measurement instrument was completed which included an empirical research questionnaire administered as an online survey. The content validity of the subject measurement instrument and the face validity of the assessment of the perceived importance of the PPP project CSFs were pilot tested so as to ensure the

collection of sufficient data so as to address the research questions. Content validity was ensured in that the self-report questionnaires were used to assess the degree to which the individual CSFs represented the construct being measured. Construct validity of the subject measurement instrument was assumed due to the usage of a similar subject measurement instrument, research approach and method by authors Chou et al., (2012); Hwang et al., (2013); Ng et al., (2012); Xie & Ng, (2013); and Zou et al., (2014).

Data gathering process

A two stage sequential data gathering process, aligned to the research methodology phases was undertaken.

Phase 1: Compile a comprehensive list of PPP project CSFs: Comprehensive literature review

The data gathering for Phase 1 included a comprehensive literature review which informed the compilation of the comprehensive list of PPP project CSFs. As was detailed in Chapter, Sections 3a. The population of academic literature considering PPP projects and 3b. The relevant sample of academic literature considering PPP projects developed and delivered in countries the population of academic literature was sampled through co-word bibliometric analysis of journal titles and keywords published between 2010 and 2015. The words searched were “PPP”, “public private participation project” “CSF” and/or “critical success factors”. Only journals accredited in the January 2015 Thomson Reuters/ISI Web of Science and ProQuest International Bibliography of Social Science list of journals were considered.

Phase 2: Analyse the perceived importance of CSFs in a developing country: Empirical research questionnaire survey

An empirical research questionnaire survey, informed by the list of PPP project CSFs, was distributed following a pilot study, via an online survey to assess the perceived importance of these PPP project CSFs in developing countries. The pilot study was conducted to assess the suitability and comprehensiveness of the questionnaire survey (Saunders & Lewis, 2012). The Survey Monkey software package was used and responses to the online research questionnaire was made anonymously.

The empirical research questionnaire comprised a predefined set of questions. The majority of the questionnaire was rating type which utilised a seven-point Likert scale assessing the respondent’s perception of importance of the validated CSFs for PPP projects in South Africa. The remaining question types included categorical, filter, open

and elective questions to gather information of the respondent's experience and to gather insight into which other CSFs were considered important in the context of South Africa and peer countries (Ng et al., 2012; Saunders & Lewis, 2012; Xie & Ng, 2013). The questionnaire was sent to a diverse range of public and private sector PPP stakeholders in South Africa. The empirical research questionnaire is included in Appendix B - Empirical research questionnaire.

Analysis approach

Two phases of analysis were undertaken sequentially for this research, aligned to the research methodology phases; Phase 1: Compile a comprehensive list of PPP project CSFs, and Phase 2: Analyse the perceived importance of CSFs in a developing country. Qualitative bibliometric analysis and coupling was undertaken in Phase 1 to determine the CSFs which would be assessed in terms of perceived level of importance in Phase 2. Quantitative analysis through the application of a comparative non-parametric statistical technique was undertaken in Phase 2. The analysis in this phase answered the two part research question:

a. How do the perceived rankings of PPP project CSFs informing the institutional environment of a PPP project within a developing country exhibiting political risk compare to that of other literature informed CSFs for PPP project success?
b. How do the perceived rankings of the institutional factors by those undertaking PPP projects in a developing country compare to other contexts as they have been identified in previous literature?

Phase 1: Compile a comprehensive list of PPP project CSFs: Qualitative analysis

An initial list from the sample authors CSFs for PPP projects was compiled. Co-word analysis was undertaken to eliminate redundancies and where CSFs were not relevant to the scope of this research, they were excluded. Bibliographic coupling, as a means of science mapping (Zupic & Cater, 2015) the CSFs revealed and validated the unique CSFs as a requirement for PPP project success.

A grouping regime was next applied to the CSFs informed by the risks to the PPP projects and identified the CSFs which described the institutional environment. A further classification was applied which considered the literature discussed in Chapter 2: Literature review which described the institutional factors of an environment. For each of the CSFs, the question was posed if that factor either described or directly related to the institutional environment within which the PPP project was placed. In

particular, reference was made to the literature by authors Ho & Im, (2015); Matos-Castaño et al., (2014); Meyer & Peng, (2016); Panayides et al., (2015); or Stal & Cuervo-Cazurra, (2011) which was discussed in the literature review. Where literature confirmed that the CSFs related to the institutional environment, these were noted.

Phase 2: Analyse the perceived importance of CSFs in a developing country: Quantitative analysis

The quantitative analysis followed a similar approach undertaken by Ng et al., (2012). The Spearman's rank correlation coefficient non-parametric statistical technique was used for the quantitative analysis for the data collected from empirical questionnaire survey. Descriptive statistics were first undertaken to determine the perceived level of importance assessed as the time of the study by the respondents. The respondents included the sample of individuals who had experience in developing and delivering PPP projects in South Africa, where South Africa was relevant as a developing country exhibiting political risk. The seven-point Likert scale was used to assess the perceived level of importance of each literature informed CSF, as is detailed in Table 5. A rating of 1 indicated that the CSF was perceived to be not important, while a rating of 7 indicated that the CSF was perceived to be the most important.

Table 5: Seven-point Likert scale used to assess the perceived importance of the PPP project CSFs

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

The seven-point Likert scale was used to determine the descriptive statistics of the measurement results, including the arithmetic mean, standard deviation and range of the ratings. The means of the CSF perceived importance assessed at the time of the survey completion informed the determination of the relative rankings. IMB SPSS Statistics was used to undertake all statistical analysis.

The ranking of the CSFs' perceived level of importance enabled two levels of comparison. The first was the comparison of the relative rankings of the CSFs describing the institutional environment against the non-institutional factors within the developing country sample. The second, was that these relative rankings enabled to cross-comparison of the relative factor rankings for CSFs identified in the articles by authors Chou et al., (2012); Hwang et al., (2013); Ng et al., (2012); Xie & Ng, (2013); and Zou et al., (2014). The use of rankings as a means for comparison is a statistical

technique which was deemed appropriate as it minimised the effect of extreme scores and eliminated any effect imposed by the number of points on the Likert scales used by comparative authors. The Spearman's rank correlation coefficient test was used as a non-parametric test which appropriately ranked and assessed the correlation between the CSFs rated in this research versus that rated in previous research.

The Spearman's rank correlation coefficient rho "r_s" measured the level of agreement of the relative rankings of the CSFs between the surveyed sample relevant for a developing country exhibiting political risk, and each of the author's previously ranked CSFs. The range which the rho coefficient can take on is limited to -1 and +1. A negative linear correlation is denoted by -1, while +1 denotes a positive linear correlation. A rho coefficient value of 0 indicates that no linear relationship exists between the surveyed sample and that of another author's research. The null hypothesis for the Spearman's rank correlation coefficient is that no significant correlation exists between the groups of ranked CSFs being compared. If the rs coefficient is found to be significant, the null hypothesis can be rejected (Ng et al., 2012).

The Spearman's rank correlation coefficient is included in Equation 1.

Equation 1: Spearman's rank correlation coefficient

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

Limitations

A limitation of the sampling method was that subject selection and sampling bias resultant of the heterogeneous purposive sampling method could have led to the questioning of external validity. This was mitigated through the sampling of questionnaire survey respondents from at least three of the significant parties to a PPP project; the government, the private party and the transaction advisor.

It was estimated that a sample size of 50 individuals would be representative of the PPP project population when considering the niche nature of PPP projects in South Africa, however because purposive sampling was undertaken, the representation can be questioned. Zou et al., (2014) undertook a questionnaire survey to assess the CSFs to relationship management in PPP projects in Hong Kong, and achieved a sample size of 51 respondents to the online survey, but with only 16 respondents with sufficient experience, thus meeting the selection criteria, were able to complete the online questionnaire survey in full. This research may have been limited in terms of

response bias. In a questionnaire survey assessing the relationship between CSFs and preferred risk allocation in PPP projects in Singapore in 2013 a sample size of 48 responses to a questionnaire was achieved, with a response rate of 40 per cent (Hwang et al., 2013). Chou et al., (2012) achieved a response rate of 56.6 per cent, and a sample size of 64 respondents to their study on CSFs and risk allocation for PPP policy in Taiwan.

A further limitation to the sampling method applied was that snowball sampling method may lead to the validity and reliability of the study being questioned (Saunders & Lewis, 2012). To mitigate this limitation, strict application of the respondent sampling criteria was applied.

The significant limitations to this research which cannot easily be mitigated through appropriate construction of the study, involved predominantly subject and researcher bias (Saunders & Lewis, 2012). As such, the validity and reliability of the study could be questioned. Subject bias existed where the respondents were concerned about the implications of truthful answers, however, this was mitigated as far as possible through the anonymity of responses. The political bias of respondents due to the political nature of a PPP (Matos-Castaño et al., 2014), especially in emerging economies was noted and mitigation was attempted through carefully constructed questions in the questionnaire. The personal bias of the researcher as native to South Africa was also noted as a potential influence the interpretation of the results. To mitigate this, quantitative interpretation as far as reasonably possible was undertaken.

In addition, the literature reviewed as part of the comprehensive literature review considered mainly literature in recent years and literature from journals with high journal rankings; as a result the analysis or weighting of the CSFs may have excluded analysis from literature not included in the comprehensive literature review. Similarly, timing constraints posed limitations to the access to, and the number of respondents to the questionnaire resulting in sampling bias.

Chapter 5: Results

The results of the analysis is presented aligned to the two phases employed.

Phase 1: Compile a comprehensive list of PPP project CSFs

Description of sample

The purposeful co-word bibliometric analysis of all academic journal article titles and keywords published between 2010 and 2015 containing the words “PPP”, “public private participation project” “CSF” and/or “critical success factors” to determine the sample of relevant academic literature revealed five articles which met the sampling criteria. The articles by authors Chou et al., (2012); Hwang et al., (2013); Ng et al., (2012); Xie & Ng, (2013); and Zou et al., (2014) were considered to be the research front. The articles by Chou et al., (2012); Hwang et al., (2013); Ng et al., (2012); Xie & Ng, (2013); and Zou et al., (2014) are detailed in Table 6: Sample of appropriate academic articles on PPP projects.

Results on validity and reliability of data

In the development of authors’ Chou et al., (2012); Hwang et al., (2013); Ng et al., (2012); Xie & Ng, (2013); and Zou et al., (2014) lists of PPP project CSFs, their articles cumulatively considered the academic works and industry publications of 62 authors which published in the research field of major infrastructure projects, PPP projects, and/or CSFs in the period 1990-2010. The details of the foundation authors in relation to the five key articles are included in Table 7: Research front academic articles and cited authors informing the compilation of CSFs for PPP projects.

An initial list compiling the sample authors CSFs for PPP projects revealed 116 factors, each with references to the supporting foundational research. This initial list served as a test for validity; where this was confirmation that CSFs could be elicited through the research method employed. Co-word analysis eliminated redundancies and bibliographic coupling validated 36 unique CSFs as a requirement for PPP project success. There was only one CSF which was not previously informed by foundational literature, but was identified by Hwang et al., (2013) was the requirement for the clarification of contractual documents. Taking into consideration the complexity of the agreements and relationships between the PPP project stakeholders and the lengthy nature of a PPP project contract (Jacobsson, 2014; Roehrich et al., 2014), it was deemed prudent to include this CSFs in the list of unique factors. The reliability of the research method imposed was deemed suitable in that the process is repeatable, and can be used to produce reliable results.

The risk informed grouping regime grouped 36 CSFs into 1. Technical factors (T); 2. Financial and economic factors (TE); 3. Political and legal factors (PL); 4. Social factors (S); and 5. Other factors (O). The further classification identified fourteen CSFs which described the institutional environment. The final CSF list which was used in Phase 2 of this research is detailed in Table 8: Comprehensive list of validated literature informed PPP project CSFs.

Table 6: Sample of appropriate academic articles on PPP projects

Article name	Critical factors and risk allocation for PPP policy: Comparison between HSR and general infrastructure projects.	Public private partnership projects in Singapore: Factors, critical risks and preferred risk allocation from the perspective of contractors.	Factors influencing the success of PPP at feasibility stage – A tripartite comparison study in Hong Kong.	Multiobjective Bayesian network model for public-private partnership decision support.	Identifying the critical success factors for relationship management in PPP projects.
Authors	Chou, J., Tserng, H. P., Lin, C., & Yeh, C.	Hwang, B., Zhao, X., & Gay, M. J.	Ng, S. T., Wong, Y. M., & Wong, J. M.	Xie, J., & Ng, S. T.	Zou, W., Kumaraswamy, M., Chung, J., & Wong, J.
1. Accredited journal	Transport Policy	International Journal of Project Management	Habitat International	Journal of Construction Engineering & Management	International Journal of Project Management
2. Country or countries of analysis	Taiwan	Singapore	China	No country specific, however authors were working for the University of Hong Kong at the time of publishing (China).	Australia, China, Greece, Hong Kong, and Singapore.

Article name	Critical factors and risk allocation for PPP policy: Comparison between HSR and general infrastructure projects.	Public private partnership projects in Singapore: Factors, critical risks and preferred risk allocation from the perspective of contractors.	Factors influencing the success of PPP at feasibility stage – A tripartite comparison study in Hong Kong.	Multiobjective Bayesian network model for public-private partnership decision support.	Identifying the critical success factors for relationship management in PPP projects.
3. Were CSFs identified? How many?	Yes, eighteen CSFs were identified.	Yes, eight CSFs were identified.	Yes, 36 CSFs were identified grouped into technical and financial and economic factor categories.	Yes, 24 CSFs were identified grouped into technical, financial, political and other criteria categories. Twelve CSFs achieved arithmetic means greater than 5, however no ranking was undertaken. These results are thus excluded from the quantitative comparison.	Yes, eight CSFs were identified.
4. Were CSFs ranked on importance?	Yes, a five-point Likert scale was used assessing not significant to most significant.	Yes, a five-point Likert scale was used assess least important to most important.	Yes, a seven-point Likert scale was used assessing agreement on the importance of factors for feasibility stage.	Yes, a seven-point Likert scale was used assessing the degree of importance in relation to the success of a PPP project.	Yes, a five-point Likert scale was used assessing extremely unimportant to extremely important.
5. Year published	2012	2013	2012	2013	2014

Article name	Critical factors and risk allocation for PPP policy: Comparison between HSR and general infrastructure projects.	Public private partnership projects in Singapore: Factors, critical risks and preferred risk allocation from the perspective of contractors.	Factors influencing the success of PPP at feasibility stage – A tripartite comparison study in Hong Kong.	Multiobjective Bayesian network model for public-private partnership decision support.	Identifying the critical success factors for relationship management in PPP projects.
6. Building on PPP project literature?	Yes, authors Li, Akintoye, Edwards, and Hardcastle, (2005) informed the CSFs in the article.	Yes, four key authors informed the CSFs in the article, these included Chan, Lam, Chan, Cheung, & Ke, (2010); Li, Akintoye, Edwards, & Hardcastle, (2005); Qiao, Wang, Tiong, & Chan, (2001); and X. Zhang, (2005).	Yes, the literature of 42 authors informed the list of CSFs used in the article, however only 24 of these were published academic articles. Authors of significance included Ashley, Bauman, Carroll, Diekmann, & Finlayson, (1998); Aziz & Ahmed, (2007); and D. I. Özdoganm & Birgönül, (2000).	Yes, the literature of twelve authors informed the list of CSFs cited, however only nine were published academic articles. Authors of significance included Akintoye, Beck, & Hardcastle, (2003); Grasman, Faulin, & Lera-Lopez, (2008); Sobhiyah, Bemanian, & Kashtiban, (2009); and X. Zhang, (2006).	Yes, the literature of twelve authors informed the list of CSFs used in the article. Authors of significance included Anvuur, Kumaraswamy, & Mahesh, (2011); Gupta & Narasimham, (1998); and Kumaraswamy, Ling, Anvuur, & Rahman, (2007).

Table 7: Research front academic articles and cited authors informing the compilation of CSFs for PPP projects

Legend

■	Published academic article
■	Other source such as book, conference proceeding, or report.

Research front academic articles	1 (Aziz & Ahmed, 2007)	2 (Akinsola & Potts, 1997)	3 (Akintoye, Beck, & Hardcastle, 2003)	4 (Anvuur, Kumaraswamy, & Mahesh, 2011)	5 (Ashley, Bauman, Carroll, Diekmann, & Finlayson, 1998)	6 (Asian Business, 1996)	7 (Birgönül & Özdoganm, 1998)	8 (Birnie, 1999)	9 (Boyfield, 1992)	10 (Brodie, 1995)	11 (Chan et al., 2004)	12 (Chan et al., 2010)	13 (Injazz & Popovich, 2003)	14 (Chua & Kog, 1999)	15 (Dailarni & Klein, 1997)	16 (Duffield, 2005)
(Hwang et al., 2013)												■				
(Xie & Ng, 2013)	■		■		■						■					
(Ng et al., 2012)	■	■			■			■	■	■	■			■		
(Chou et al., 2012)																
(Zou et al., 2014)				■									■			

Research front academic articles	17 (Efficiency Unit, 2008)	18 (FIDIC, 2001)	19 (Finnerty, 1996)	20 (Grant, 1996)	21 (Grasman, Faulin, & Lera-Lopez, 2008)	22 (Grilo et al., 2005)	23 (Gronroos, 1997)	24 (Gupta & Narasimham, 1998)	25 (Hambros, 1999)	26 (Hardcastle, Edwards, Akintoye, & Li, 2005)	27 (Heinke & Wei, 2000)	28 (HM Treasury, 2004)	29 (Industry Canada, 2003)	30 (Jaselskis & Ashley, 1991)	31 (Jefferies, Gameson, & Rowlinson, 2002)
(Hwang et al., 2013)															
(Xie & Ng, 2013)															
(Ng et al., 2012)															
(Chou et al., 2012)															
(Zou et al., 2014)															

Research front academic articles	32 (Johnston, 2004)	33 (Jones, Zamani, & Reehal, 1996)	34 (Kanter, 1999)	35 (Kaming et al., 1997)	36 (Kumaraswamy, Ling, Anvuur, & Rahman, 2007)	37 (Kumaraswamy & Anvuur, 2008)	38 (Lam, 2005)	39 (Li et al., 2005)	40 (Mentzer et al., 2001)	41 (NAO, 2001)	42 (NCPPPs, 2002)	43 (I. Özdoganm, 1996)	44 (D. I. Özdoganm & Birgönül, 2000)	45 (Parvatiyar & Sheth, 2001)	46 (Pearson, 2005)	47 (Qiao, Wang, Tiong, & Chan, 2001)
(Hwang et al., 2013)																
(Xie & Ng, 2013)																
(Ng et al., 2012)																
(Chou et al., 2012)																
(Zou et al., 2014)																

Research front academic articles	48 (Sanvido, Grobler, Parfitt, Guvenis, & Coyle, 1992)	49 (Samii, Van Wassenhove, & Bhattacharya, 2002)	50 (Sobhiyah, Bemanian, & Kashtiban, 2009)	51 (Songer & Molenaar, 1997)	52 (Fawcett, Ogden, Magnan, & Cooper, 2006)	53 (Stein, 1995)	54 (Stonehouse & Hudson, 1996)	55 (Tailby, Richardson, Stewart, Danford, & Upchurch, 2004)	56 (Tiong, 1996)	57 (Walker & Vines, 2000)	58 (Yener, 1998)	59 (Zantke & Mangels, 1999)	60 (X. Zhang, 2005)	61 (X. Zhang, 2006)	62 (W. R. Zhang, Wang, Tiong, Ting, & Ashley, 1998)
(Hwang et al., 2013)													■		
(Xie & Ng, 2013)			■										■	■	
(Ng et al., 2012)	■			■		■	■		■	■		■	■		■
(Chou et al., 2012)															
(Zou et al., 2014)		■			■			■					■		

A comprehensive list of literature informed PPP project CSFs

Table 8: Comprehensive list of validated literature informed PPP project CSFs

Legend

CSF identified by research front academic article

The CSF describes the institutional environment

PPP project CSF factor		(Hwang et al., 2013)	(Xie & Ng, 2013)	(Ng et al., 2012)	(Chou et al., 2012)	(Zou et al., 2014)	Count of references to foundational research
Grouping regime: Technical							
T1	Appropriate project identification.						1
T2	A long project life span.						3
T3	Government experience in packaging similar PPP projects.						8
T4	A well organised public agency.						1
T5	An experienced, technically strong, and reliable private sector consortium.						17
T6	A project size which is technically manageable by a single consortium.						9
T7	Effective communication channels exist between the main PPP parties: the client (government), the private party and the technical advisor.						7
T8	Service quality which is easily defined and objectively measured.						10
T9	The technical feasibility of a project.						1
T10	Transparent and efficient procurement						7

PPP project CSF factor		(Hwang et al., 2013)	(Xie & Ng, 2013)	(Ng et al., 2012)	(Chou et al., 2012)	(Zou et al., 2014)	Count of references to foundational research
	processes.						
T11	A modular and repeatable project design or construction.						2
T12	Early project completion and product/service delivery.						5
T13	Private sector resources, skills, expertise, and technologies providing opportunities for innovation.						19
Grouping regime: Financial and economic							
FE1	A stable and favourable economic environment. (3)						22
FE2	A favourable investment environment.						18
FE3	A project which is of financial interest to the private sector. (5)						20
FE4	Support from government is available in the form of guarantees or loans.						14
FE5	Good financial viability or value for money for government. (2)						24
FE6	An acceptable level of the unitary payment, tariff or toll.						15
FE7	The long-term demand for the product/service which will be delivered through a PPP project.						6

PPP project CSF factor		(Hwang et al., 2013)	(Xie & Ng, 2013)	(Ng et al., 2012)	(Chou et al., 2012)	(Zou et al., 2014)	Count of references to foundational research
Grouping regime: Social							
S1	The acceptability of a project by an interest group and general public.						16
S2	An environmentally sustainable project.						16
S3	The fairness of new working conditions for governmental employees as a result of a PPP project.						6
S4	Resolution plans for redundancies.						3
S5	A PPP project can create more jobs.						5
Grouping regime: Political and legal							
PL1	A stable political environment. (4)						21
PL2	A favourable legal framework. Favourable can mean mature, reasonable or predicable.						19
PL3	A sound government economic policy.						5
PL4	Political support and commitment to a project.						19
PL5	Clarification of contract documents.						0
PL6	Contract flexibility to allow for multiple changes in output specifications.						5

PPP project CSF factor		(Hwang et al., 2013)	(Xie & Ng, 2013)	(Ng et al., 2012)	(Chou et al., 2012)	(Zou et al., 2014)	Count of references to foundational research
Grouping regime: Other							
O1	Understanding and matching government's strategic and long-term objectives.						9
O2	Flexibility to decide appropriate risk allocation. (1)						30
O3	Good governance by government and a consortium.						6
O4	Shared authority between public and private sector.						5
O5	Supportiveness and commitment of staff to a project.						10
Count of citations by research front		15	16	28	14	2	

Note: (1), (2), (3), (4), (5) after the description of the PPP project CSF denote the ranking of the number of references to foundational research supporting the relevant CSF for PPP project success.

Phase 2: The perceived importance of CSFs in a developing country

Description of sample

The online empirical questionnaire survey was distributed to the sample directly through email and social media: LinkedIn and Facebook. The response rate and sample profiles are included in Table 9: Response rate of questionnaire survey, Table 10: Respondent's primary role with PPP projects, Table 11: Years of experience on PPP projects, Table 12: Number of PPP projects undertaken in South Africa and Table 13: Proportion of respondents who have worked on PPP projects outside of South Africa.

Table 9: Response rate of questionnaire survey

Collector	Date online empirical questionnaire was distributed	Date of closure of data collection	Number of recipients	Number of responses	Number of eligible responses	Response rate	Eligible response rate
Web link distributed via LinkedIn	1 Sep 2015	18 Sep 2015	Not applicable	10	3	3%	100%
Email invitation	1 Sep 2015	18 Sep 2015	65	22	18	33.8%	81.8%
Facebook post	2 Sep 2015	18 Sep 2015	Not applicable	0	0	0%	0%
Email invitation	5 Sep 2015	18 Sep 2015	6	5	4	83.3%	80%
Email invitation	11 Sep 2015	18 Sep 2015	50	14	10	28%	71.4%
Total responses				51	34		66.7%

Table 10: Respondent's primary role with PPP projects

Respondent description options	Frequency	Valid percent
1. Government	9	26.5
2. Government advisory body (such as PPP unit)	6	17.7
3. Private party	6	17.6
4. Public entity	5	14.7
5. Transaction advisor	8	23.5
Total	34	100

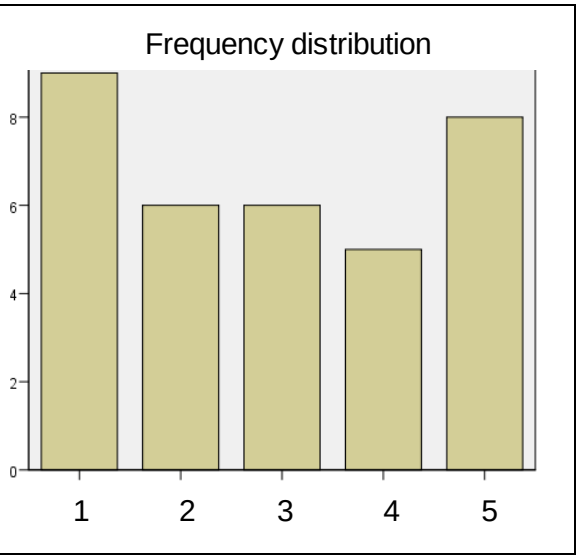


Table 11: Years of experience on PPP projects

Years of experience	Frequency	Valid percent
Less than 3 years	7	20.6
3-5 years	4	11.8
6-10 years	11	32.4
11-15 years	6	17.6
16-20 years	4	11.8
More than 20 years	2	5.9
Total	34	100

Table 12: Number of PPP projects undertaken in South Africa

Number of PPP projects undertaken in South Africa	Frequency	Valid percent
a. 1 project	6	17.6
b. 2 projects	6	17.6
c. 3 projects	2	5.9
d. 4-6 projects	7	20.6
e. 7-9 projects	2	5.9
f. 10-12 projects	1	2.9
g. 13-15 projects	5	14.7
h. 16-20 projects	3	8.8
i. More than 20 projects	2	5.9
Total	34	100

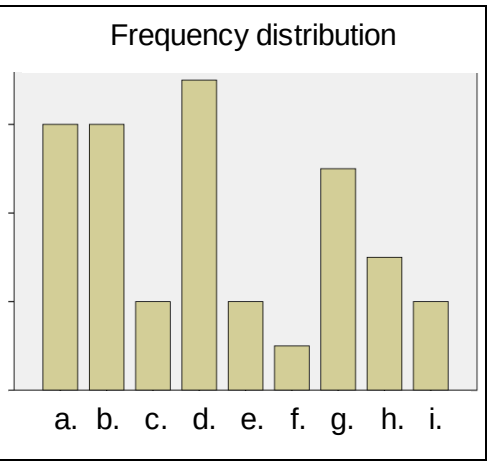
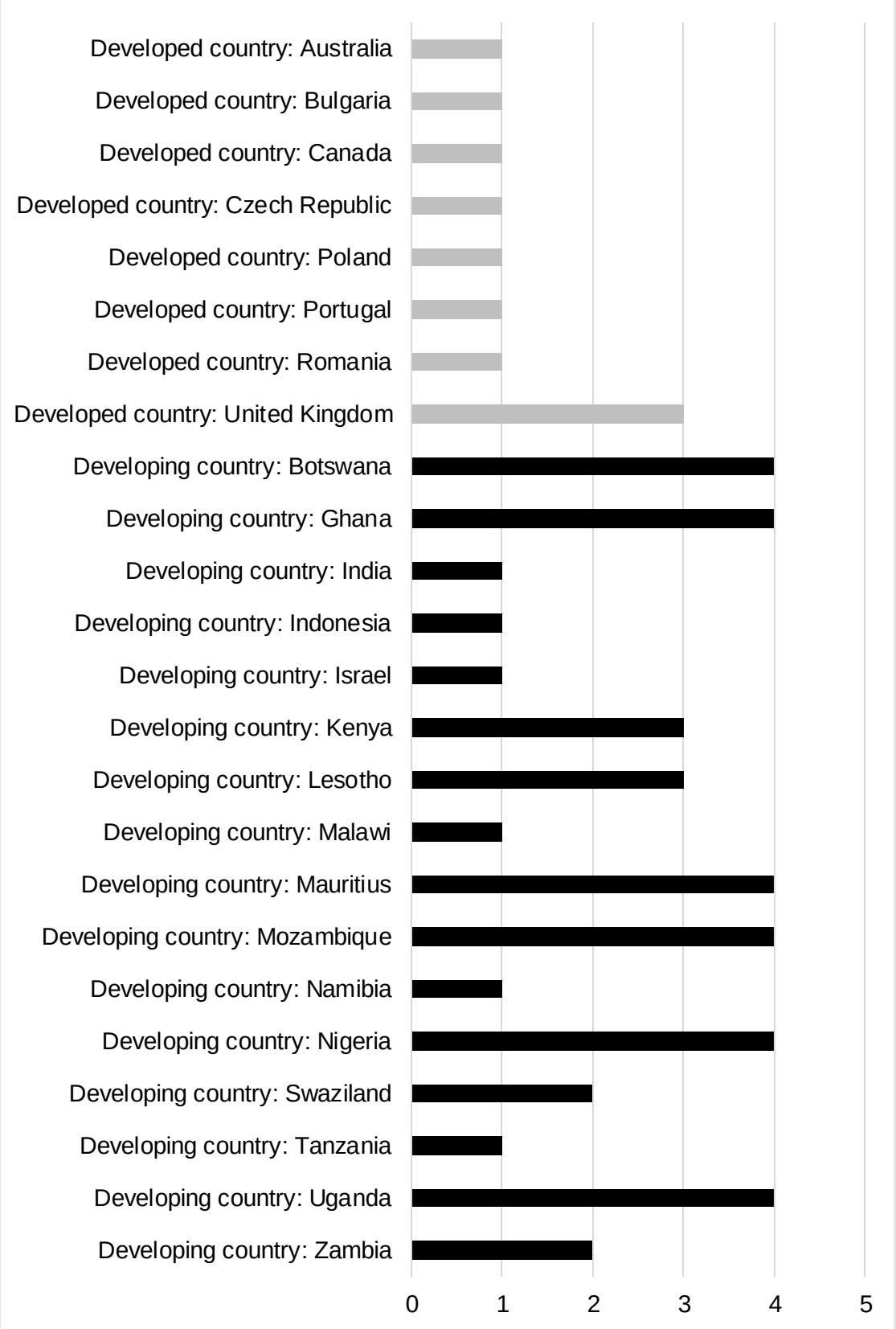


Table 13: Proportion of respondents who have worked on PPP projects outside of South Africa

Number of respondents who have worked on PPP projects	Frequency	Valid percent
Only in South Africa	16	47.1
In South Africa and outside of South Africa	18	52.9
Total	34	100

Figure 1: Count of countries outside of South Africa in which respondents have PPP project experience



Results on reliability and validity of data

The strict sampling criteria resulted in a sample size of 34 participants. The sample profile demonstrated that actors from government and the private sector were included, with 64 percent of the sample posessing six or more years of experience on PPP projects and 58 percent of the sample having undertaken four or more PPP projects in South Africa. Further more than 50 percent of the sample had experience of PPP projects outside of South Africa, with experience demonstrated in forty different developing countries and ten different developed countries across Africa, Asia and the Pacific region, Europe and the Americas. This provides confidence that those sampled were in a position to reliably assess the perceived importance placed on CSFs for PPP projects within South Africa.

Two of the total 36 CSFs (PL2 and PL5) were only assessed by 33 of the 34 respondents, while all other CSFs were assessed by all 34 respondents. The descriptive statistics included in Table 15: The ranked descriptive statistics of the perceived importance of PPP project CSFs in South Africa informed the validity of the data. The validity of the data collected in the empirical survey questionnaire, where the questionnaire measured what it was intended to measure, was supported by mean statistics which were generated for each of the CSFs queried in the survey. In order to answer the two part research question listed in Table 14, the intention was to generate mean statistics for each CSFs which would then be ranked and used in a statistical comparison against the sample of appropriate academic articles (refer to Table 6: Sample of appropriate academic articles on PPP projects).

Table 14: Two part research question

a.	How do the perceived rankings of PPP project CSFs informing the institutional environment of a PPP project within a developing country exhibiting political risk compare to that of other literature informed CSFs for PPP project success?
b.	How do the perceived rankings of the institutional factors by those undertaking PPP projects in a developing country compare to other contexts as they have been identified in previous literature?

Statistical results: The ranked perceived importance of literature-informed CSFs for PPP projects in South Africa as a relevant developing country exhibiting political risk

Table 15: The ranked descriptive statistics of the perceived importance of PPP project CSFs in South Africa

Legend

	The CSF describes the institutional environment

Ranked perceived importance of PPP project CSFs in South Africa		Number of responses	Mean	Std. Dev	Range	Min	Max	Skewness Statistic	Std. Error	Kurtosis Statistic	Std. Error
Valid N (listwise) = 33											
PL4	Political support and commitment to a project.	34	6.41	.988	4	3	7	-1.941	.403	3.719	.788
T10	Transparent and efficient procurement processes.	34	6.29	.938	4	3	7	-1.578	.403	3.097	.788
T4	A well organised public agency.	34	6.26	.898	4	3	7	-1.634	.403	3.891	.788
O3	Good governance by government and a consortium.	34	6.21	1.008	4	3	7	-1.382	.403	1.862	.788
T9	The technical feasibility of a project.	34	6.03	.904	4	3	7	-1.367	.403	2.941	.788
T7	Effective communication channels exist between the main PPP parties: the client (government), the private party and the technical advisor.	34	6.00	.985	4	3	7	-1.012	.403	1.191	.788
T5	An experienced, technically strong, and reliable private sector consortium.	34	6.00	.985	4	3	7	-1.012	.403	1.191	.788
PL2	A favourable legal framework. Favourable can mean mature, reasonable or predicable.	33	6.00	1.11803	4	3	7	-1.000	.409	.268	.798
FE5	Good financial viability or value for money for government. (2)	34	5.94	1.229	4	3	7	-1.129	.403	.296	.788

Ranked perceived importance of PPP project CSFs in South Africa		Number of responses	Mean	Std. Dev	Range	Min	Max	Skewness Statistic	Std. Error	Kurtosis Statistic	Std. Error
PL1	A stable political environment. (4)	34	5.91	1.215	4	3	7	-.791	.403	-.574	.788
FE6	An acceptable level of the unitary payment, tariff or toll.	34	5.91	1.138	4	3	7	-1.129	.403	.842	.788
FE7	The long-term demand for the product/service which will be delivered through a PPP project.	34	5.82	1.058	4	3	7	-1.094	.403	1.309	.788
FE2	A favourable investment environment.	34	5.79	1.008	4	3	7	-.690	.403	.373	.788
PL5	Clarification of contract documents.	33	5.7576	1.14647	4	3	7	-.683	.409	-.443	.798
FE3	A project which is of financial interest to the private sector. (5)	34	5.71	1.426	6	1	7	-1.778	.403	3.492	.788
O1	Understanding and matching government's strategic and long-term objectives.	34	5.71	1.219	4	3	7	-.992	.403	.203	.788
FE1	A stable and favourable economic environment. (3)	34	5.65	1.300	4	3	7	-.872	.403	-.164	.788
PL3	A sound government economic policy.	34	5.62	1.326	4	3	7	-.477	.403	-1.100	.788
T8	Service quality which is easily defined and objectively measured.	34	5.59	1.104	4	3	7	-.381	.403	-.607	.788
T1	Appropriate project identification.	34	5.59	1.258	4	3	7	-.503	.403	-.846	.788
FE4	Support from government is available in the form of guarantees or loans.	34	5.59	1.234	4	3	7	-.473	.403	-.744	.788
T3	Government experience in packaging similar PPP projects.	34	5.47	1.482	5	2	7	-.889	.403	.017	.788
T13	Private sector resources, skills, expertise, and technologies providing opportunities for innovation.	34	5.44	1.397	6	1	7	-1.148	.403	1.729	.788

Ranked perceived importance of PPP project CSFs in South Africa		Number of responses	Mean	Std. Dev	Range	Min	Max	Skewness Statistic	Std. Error	Kurtosis Statistic	Std. Error
O2	Flexibility to decide appropriate risk allocation. (1)	34	5.41	1.305	5	2	7	-.837	.403	.350	.788
O5	Supportiveness and commitment of staff to a project.	34	5.38	1.349	4	3	7	-.207	.403	-1.187	.788
S2	An environmentally sustainable project.	34	5.29	1.315	4	3	7	-.329	.403	-.990	.788
S5	A PPP project can create more jobs.	34	5.06	1.301	4	3	7	-.027	.403	-.919	.788
O4	Shared authority between public and private sector.	34	5.00	1.477	5	2	7	-.240	.403	-.728	.788
S1	The acceptability of a project by an interest group and general public.	34	5.00	1.576	5	2	7	-.247	.403	-1.044	.788
T6	A project size which is technically manageable by a single consortium.	34	5.00	1.371	5	2	7	-.300	.403	-.925	.788
T12	Early project completion and product/service delivery.	34	4.91	1.583	5	2	7	-.236	.403	-.952	.788
PL6	Contract flexibility to allow for multiple changes in output specifications.	34	4.79	1.250	5	2	7	-.476	.403	-.016	.788
S3	The fairness of new working conditions for governmental employees as a result of a PPP project.	34	4.71	1.292	5	2	7	-.038	.403	-.915	.788
T2	A long project life span.	34	4.38	1.557	6	1	7	-.023	.403	-.733	.788
S4	Resolution plans for redundancies.	34	4.38	1.498	5	2	7	.098	.403	-1.229	.788
T11	A modular and repeatable project design or construction.	34	4.15	1.579	6	1	7	-.011	.403	-.830	.788

Data transformations

In order to compare the relative ranking of the perceived importance of the PPP project CSFs in South Africa to the rankings of the CSFs identified in the sample of appropriate academic articles, data transformation was required. The ranked CSFs for this research were compiled, with the inclusion of the relevant, corresponding CSFs from the academic articles (refer to Table 6Table 6: Sample of appropriate academic articles on PPP projects). The compiled data in included in Table 16. Attention is to be drawn to factors T1, T2, T11, and T12 in the table. These were only informed by the academic article by Xie & Ng, (2013), and as the authors did not make available the means and or the relative rankings in their research, these CSFs were excluded from the quantitative comparison.

Table 16: Compilation of CSF statistical data for this research and corresponding CSF data from sample of academic articles

Legend

The CSF describes the institutional environment

Excluded from the statistical comparison

Description of CSFs		Current research	(Hwang et al., 2013)	(Ng et al., 2012)	(Chou et al., 2012)	(Zou et al., 2014)
PL4	Political support and commitment to a project.	6.41		5.18	4.33	
T10	Transparent and efficient procurement processes.	6.29	3.31	5.09		
T4	A well organised public agency.	6.26	4.08		3.98	
O3	Good governance by government and a consortium.	6.21		5.56	4.13	
T9	The technical feasibility of a project.	6.03			4.06	
T7	Effective communication channels exist between the main PPP parties: the client (government), the private party and the technical advisor.	6.00				3.33
T5	An experienced, technically strong, and reliable private sector consortium.	6.00	3.44	5.72	4.66	

Description of CSFs		Current research	(Hwang et al., 2013)	(Ng et al., 2012)	(Chou et al., 2012)	(Zou et al., 2014)
PL2	A favourable legal framework. Favourable can mean mature, reasonable or predicable.	6.00	2.98	5.34	4.17	
FE5	Good financial viability or value for money for government. (2)	5.94		5.66	4.33	
PL1	A stable political environment. (4)	5.91		5.10		
FE6	An acceptable level of the unitary payment, tariff or toll.	5.91		5.78		
FE7	The long-term demand for the product/service which will be delivered through a PPP project.	5.82		5.72		
FE2	A favourable investment environment.	5.79		5.47	4.16	
PL5	Clarification of contract documents.	5.7576	3.06			
FE3	A project which is of financial interest to the private sector. (5)	5.71		5.67		
O1	Understanding and matching government's strategic and long-term objectives.	5.71		5.71		3.25
FE1	A stable and favourable economic environment. (3)	5.65		5.14	3.92	
PL3	A sound government economic policy.	5.62		5.30	3.83	
T8	Service quality which is easily defined and objectively measured.	5.59		5.27		
T1	Appropriate project identification.	5.59				
FE4	Support from government is available in the form of guarantees or loans.	5.59		5.06	3.56	
T3	Government experience in packaging similar PPP projects.	5.47		5.13		
T13	Private sector resources, skills, expertise, and technologies providing opportunities for innovation.	5.44		5.30		
O2	Flexibility to decide appropriate risk allocation. (1)	5.41	4.02	5.31	4.42	
O5	Supportiveness and commitment of staff to a project.	5.38		5.10		

Description of CSFs		Current research	(Hwang et al., 2013)	(Ng et al., 2012)	(Chou et al., 2012)	(Zou et al., 2014)
S2	An environmentally sustainable project.	5.29		5.13		
S5	A PPP project can create more jobs.	5.06		4.95		
O4	Shared authority between public and private sector.	5.00	2.35	5.10	3.91	
S1	The acceptability of a project by an interest group and general public.	5.00		5.62	4.03	
T6	A project size which is technically manageable by a single consortium.	5.00		5.00		
T12	Early project completion and product/service delivery.	4.91				
PL6	Contract flexibility to allow for multiple changes in output specifications.	4.79		5.06		
S3	The fairness of new working conditions for governmental employees as a result of a PPP project.	4.71		4.98		
T2	A long project life span.	4.38				
S4	Resolution plans for redundancies.	4.38		4.81		
T11	A modular and repeatable project design or construction.	4.15				

Statistical results: The comparison of the perceived rankings of the institutional CSFs between those undertaking PPP projects in South Africa versus that of other contexts

Table 17: The non-parametric Spearman's correlation between the perceived rankings of the CSFs by those undertaking PPP projects in South Africa versus those rated by the sample of academic articles for other contexts

Spearman's rho		Current research	(Hwang et al., 2013)	(Ng et al., 2012)	(Chou et al., 2012)	(Zou et al., 2014
Current research	Correlation coefficient	1.000	0.464	0.583**	0.383	1.000
	Sig. (2-tailed)		0.294	0.001	0.176	
	N	36	7	28	14	2
(Hwang et al., 2013	Correlation coefficient	0.464	1.000	0.300	0.300	
	Sig. (2-tailed)	0.294		0.624	0.624	
	N	7	7	5	5	0
(Ng et al., 2012)	Correlation coefficient	0.583**	0.300	1.000	0.634*	
	Sig. (2-tailed)	0.001	0.624		0.027	
	N	28	5	28	12	1
(Chou et al., 2012)	Correlation coefficient	0.383	0.300	0.634*	1.000	
	Sig. (2-tailed)	0.176	0.624	0.027	.	
	N	14	5	12	14	0
(Zou et al., 2014	Correlation coefficient	1.000				1.000
	Sig. (2-tailed)					
	N	2	0	1	0	2

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Chapter 6: Discussion of Results

Research question, part A.

How do the perceived rankings of PPP project CSFs informing the institutional environment of a PPP project within a developing country exhibiting political risk compare to that of other literature informed CSFs for PPP project success?

The results of the ranked CSFs for PPP projects in South Africa

This research has built on the works of Chou et al., (2012); Hwang et al., (2013); Ng et al., (2012); Xie & Ng, (2013); and Zou et al., (2014), who have used CSFs as a means to assess areas of importance in which acceptable performance are said to ensure successful achievement of a PPP project's goals (Bullen & Rockart, 1981). Considering that South Africa was a relevant sample for a developing country (United Nations, 2016; World Bank Group, 2015a) exhibiting political risk, it was relevant to note the juxtaposition between what was perceived as important in this research for a PPP project in South Africa, versus the current institutional environment within this developing country (Meyer & Peng, 2016; Moe, 2015; Stal & Cuervo-Cazurra, 2011). The ranked descriptive statistics of the respondent responses on the perceived importance placed on literature informed CSFs for PPP projects in South Africa indicated that political support and commitment to the project (P4) was the most important CSF in this context.

The subsequent three ranked CSFs included transparent and efficient procurement processes (T10), a well organised public agency (T4) and good governance by government and consortium (O3). Similarly to the requirement for political support and commitment to the project, these factors describe the institutional environment in which the PPP project is situated (Ho & Im, 2015; Matos-Castaño, Mahalingam, & Dewulf, 2014; Meyer & Peng, 2016; Moe, 2015; Panayides, Parola, & Lam, 2015; Stal & Cuervo-Cazurra, 2011). The standard deviations of the first four factors P4, T10, T4 and O3 ranged between 0.938 and 1.008 indicating that the spread of points do not extend further than one unit measurement from the mean statistics ranging between 6.41 (P4) and 6.21 (O3). The numbers arithmetic means are used in the ranking of the CSFs, but when compared to the seven-point Likert-scale used in the empirical quantitative survey, a value of six indicated "Very Important", while seven was the maximum level of importance which could be attributed to a CSF, indicated "Most important".

Interestingly, the skewness and kurtosis statistics of these ranked CSFs portrayed a leptokurtic or peaked distribution clustered at the lower end of the distribution (Carmichael, 2013). As seven is the maximum value achievable in the distribution, these statistics demonstrated confirmation that the CSFs P4, T10, T4 and O3 were significantly represented by the mean statistics, and that the ranking was appropriate.

Further review of the 36 CSFs assessed, provided evidence that the CSFs which were classified as institutional factors, (highlighted in the black cells in Table 15: The ranked descriptive statistics of the perceived importance of PPP project CSFs in South Africa), were given more weighting in terms of importance than the non-institutional factors assessed by the respondents. For the purpose of illustrating the significance of this ranking, refer to Figure 2: An illustration of the ranked perceived importance placed on PPP project CSFs in South Africa, where South Africa is a relevant sample for developing countries.

The illustration included in Figure 2 demonstrates the finding that more weighting or perceived importance is placed on CSFs describing the institutional environment than those factors describing non-institutional areas relevant to a PPP project. The individual CSFs assessed in this research are represented by blocks, coloured black for institutional CSFs or coloured white for non-institutional factors. The perceived importance of the assessed CSFs is indicated with the arrows to the top of the series of blocks. The range of perceived importance for the CSFs, as informed by the arithmetic means and related back to the seven-point Likert scale, demonstrated that all CSFs were deemed important, but that CSFs describing the institutional environment were perceived to be more important.

To further emphasise the ranking of institutional factors in comparison to other non-institutional factors, the series of blocks representing the CSFs assessed have been divided into three equal segments, where each segment represents twelve CSFs. Eight of the first twelve ranked CSFs are institutional factors, where only five of the following twelve are institutional related, only one of the last set of CSFs are institutional orientated.

Figure 2: An illustration of the ranked perceived importance placed on PPP project CSFs in South Africa, where South Africa is a relevant sample for developing countries*

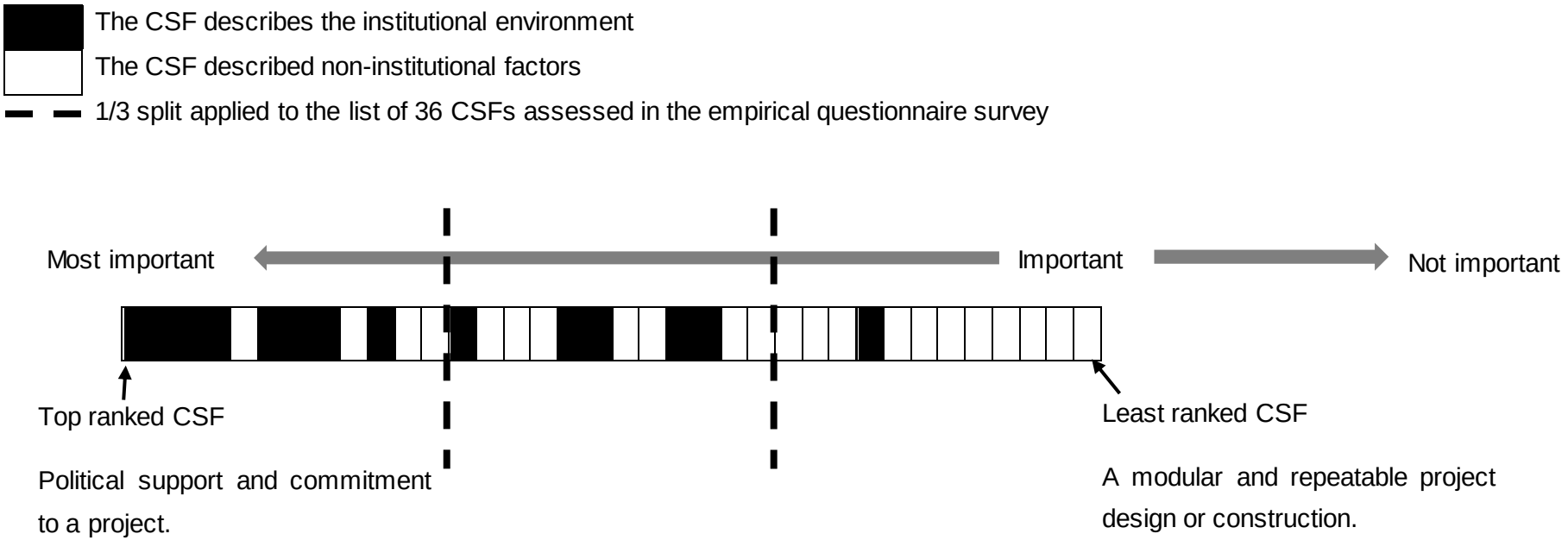


*Illustration is not to scale

The comparison to non-institutional factors rated in the empirical questionnaire survey

Part of the purpose of this research was to determine if the levels of importance placed on institutional factors by respondents to the empirical questionnaire survey were similar to that of, or are applied with the same level of emphasis or importance as for the non-institutional factors. In order to highlight which CSFs (institutional and non-institutional) achieved the most agreement by respondents in their ratings, two criteria informed this discussion. Only those ranked CSFs which fell in the first series of twelve factors were considered, and only those CSFs which demonstrated a prominent leptokurtic distribution (>1) clustered at the lower end of the distribution were compared. The seven CSFs listed in Table 18 were deemed relevant.

Table 18: The comparison of factors: institutional versus non-institutional

Rank	CSF description		Mean statistic	Standard deviation	Skewness	Kurtosis
1st	PL4	Political support and commitment to a project.	6.41	.988	-1.941	3.719
2nd	T10	Transparent and efficient procurement processes.	6.29	.938	-1.578	3.097
3rd	T4	A well organised public agency.	6.26	.898	-1.634	3.891
4th	O3	Good governance by government and a consortium.	6.21	1.008	-1.382	1.862
5th	T9	The technical feasibility of a project.	6.03	.904	-1.367	2.941
6th	T7	Effective communication channels exist between the main PPP parties: the client (government), the private party and the technical advisor.	6.00	.985	-1.012	1.191
7th	T5	An experienced, technically strong, and reliable private sector consortium.	6.00	.985	-1.012	1.191

The only CSF which did not describe the institutional environment to a PPP project, but which was perceived by respondents to be very important (Likert scale point = six), was the technically feasibility of the PPP project (T9). Ng et al., (2012) presented research which assessed the factors influencing the success of PPP project feasibility in Hong Kong. They did not however, articulate a CSFs for technical feasibility, but rather placed emphasis on the importance of the feasibility stage to PPP projects. The specific CSF included in this research (T9) was informed by Chou et al., (2012) who

considered the critical factors and risk allocation for PPP policy in Taiwan. Chou et al., (2012) ranked the technical feasibility of a PPP project ninth out of the fourteen unique CSFs informed by Chou et al., (2012) considered in Table 16: Compilation of CSF statistical data for this research and corresponding CSF data from sample of academic articles. As the research undertaken in this study has used South Africa as a relevant sample for developing countries, it has not explicitly mitigated country specific bias within the developing country population. As a result, it is unsure as to if technical feasibility for PPP projects were perceived to be important for all developing countries or only within the context of South Africa.

In comparison to bibliographic coupling: the emphasis of foundational research

Bibliographic coupling of the CSFs identified in the sample academic articles (Table 6) revealed that the CSFs with the greatest number of bibliographic references from previous foundational academic research included (in descending order): 1. The flexibility to decide appropriate risk allocation (thirty references to foundational research); 2. A good financial viability or value for money for government (24 references); 3. A stable and favourable economic environment (22 references); 4. A stable political environment (21 references); and 5. A project which is of financial interest to the private sector (20 references to foundational research), (Chou et al., 2012; Hwang et al., 2013; Ng et al., 2012; Xie & Ng, 2013; Zou et al., 2014).

Although bibliographic coupling was not used to determine the importance placed by previous literature on CSFs for PPP projects, it was used as a comparator to illustrate where foundational and recent literature has focused their research. Only two of these factors described the institutional environment: 3. A stable and favourable economic environment; and 4. A stable political environment. A reason as to why the bibliographic coupling perhaps did not highlight a similar list of CSFs to that detailed in Table 18, may be because of the disproportionate number of research articles published since 1990 which focussed on PPP projects in developed countries (Roehrich, Lewis, & George, 2014).

More recent authors such as Meyer & Peng, (2016), Panayides et al., (2015) and Zangoueinezhad & Azar, (2014) however, have noted the reliance on government and public sector policymakers to create a suitable institutional environment and to implement appropriate policies to address the greater institutional variation depicted in developing countries. In particular, Panayides et al., (2015) have emphasised the agreement by policymakers, practitioners and academics on the requirement for a

supportive political context, the involvement of institutional actors, and the determination of the societal rules within which the PPP project operates.

These findings of Panayides et al., (2015) were in alignment with the resultant rankings of the CSFs in this research included in Table 18. PL4, ranked first, was aligned to the requirements for a supportive political context. The requirement for the involvement of institutional actors was related to O3: Good governance by government and consortium and T7: Effective communication channels exist between the main PPP parties related. Lastly, the emphasis by Panayides et al., (2015) on the requirement for the determination of the rules within which the PPP project operates could not only be related to O3, but also T10: Transparent and efficient procurement processes: and T4: A well organised public agency.

The institutional factors informing political risk

This research placed emphasis on the assessment of the perceived importance placed on those CSFs which described the institutional environment, especially in the context of a country which exhibited political risk. The argument for this perspective was that by definition, a developing country inherently possessed institutional voids (Meyer & Peng, 2016; Moe, 2015) and that these voids inferred a degree of political risk (Meyer & Peng, 2016). Authors Matos-Castaño et al., (2014) and Moe, (2015) went further to note that in the consideration of a country's political environment, not only would the institutional environment guide political and PPP project processes, but agents with sufficient power may influence the institutional environment within which the PPP project was placed.

Political risk was defined to include government action which could lead to currency exchange uncertainty, breach of contract and sovereign obligations not honoured, political or authoritative changes to regulations and policy, and war, terrorism and civil disturbances which could impact the returns on a PPP project (Kudrna & Gabor, 2013; Polachek & Sevastianova, 2012). The political risk faced by investors in PPP projects was further said to be heightened by limited access to political, legal and regulatory recourse in host developing countries (Kudrna & Gabor, 2013).

Of the seven CSFs which were included in Table 18: The comparison of factors: institutional versus non-institutional, the following five CSFs were considered to inform the degree of political risk exhibited by a country. P4: Political support and commitment to the project; T10: Transparent and efficient procurement processes; T4: A well organised public agency; O3: Good governance by government and a consortium; and T7: Effective communication channels exist between the main PPP

parties: the client (government), the private party and the technical advisor. These factors were perceived to be in the top seventeen per cent and the first six of the ranked CSFs assessed in this research.

P4: Political support and commitment to the project

This CSF was perceived to be the most important factor for PPP project success in South Africa, where South Africa is a relevant sample of developing countries. Ng et al., (2012) and Chou et al., (2012) included political support and commitment to the PPP project in their CSFs which they assessed in their respective works, however neither identified this CSF to be perceived to be the most important CSF. However, Moe, (2015), Panayides et al., (2015), Matos-Castaño et al., (2014), Zangoueinezhad & Azar, (2014) and Stal & Cuervo-Cazurra, (2011) align to the finding that political support and commitment to the PPP project is essential for PPP project success. In particular they note the requirement for political stability, the development and implementation of appropriate supporting policies, appropriate government involvement, the appropriate use of power to positively influence the institutional environment so as to create a favourable institutional environment for PPP project success.

T10: Transparent and efficient procurement processes

In essence, the PPP project mechanism allows government to apply a service rather than product logic promoting an integrated relational-based procurement approach, where the purpose of the PPP project is the provision of a benefit for which the government actor is responsible (Jacobsson, 2014). Through this transparent service logic, the government is responsible for the provision of public services at an agreed price and quality, and the sequential payment to the investor over the term of the contract (Emek, 2015; Zangoueinezhad & Azar, 2014).

The respondents ranked the transparent and efficient procurement processes of PPP projects as the second most important CSF for within the context of South Africa. Authors Jacobsson, (2014), Jha, (2013), Hoppe & Schmitz, (2013), Meyer & Peng, (2016), Panayides et al., (2015), Roehrich et al., (2014) and Zangoueinezhad & Azar, (2014).were in alignment with the requirement for appropriate procurement PPP project processes because of the difficulty facing public and private sector to foresee and contract uncertain future events in the context of the developing economy coupled with the extended durations of the PPP project. These authors underscored the requirement for legislative frameworks to be supportive of efficient transparent decision making and competitive bidding, the careful consideration and allocation of the project

risk, the establishment of a robust incentive structure encouraging a flexible, cost-effective and agile design, and the development of suitable performance incentives.

T4: A well organised public agency

Hwang et al., (2013) concurred with respondents in the high level of importance placed on a well organised public agency. While Hwang et al., (2013) rated this CSF as the most important CSF in their research, the respondents ranked this CSF third, after political support and transparent procurement processes. A well organised arrangement and institutional structure have attracted much academic attention by Chou et al., (2012); Chou et al., (2015); Hwang et al., (2013); Matos-Castaño et al., (2014); Ng et al., (2012); and Xie & Ng, (2013) agreeing on that they are to be focused on fostering meaningful societal participation, delivering sustainable development, providing transparency and achieving mutually acceptable risk sharing.

For PPP project success in developing countries Zangoueinezhad & Azar, (2014) proposed that governmental policies are required to ensure that there is the establishment of dedicated PPP offices. Matos-Castaño et al., (2014) further underscored the importance for government to understand the PPP project roles and responsibilities and to ensure that sustainable arrangements within institutional structure were created and agreed to. These responsibilities were further defined by Xie & Ng, (2013) to include the balancing of the different stakeholders' economical and noneconomic interests.

O3: Good governance by government and a consortium

Good governance by government and the PPP project consortium was ranked as the 4th most important factor by respondents. Institutional voids present within a developing country may occur as questionable power relations and a lack of public trust in the integrity of bureaucracy (Ho & Im, 2015). These voids are as a result of inconsistent, unstable institutional and conflicting stakeholder pressures (Stal & Cuervo-Cazurra, 2011). These pressures are heightened even more so when actors are exposed to vested interests (Meyer & Peng, 2016; Moe, 2015).

There was concurrence between the respondents and authors Benácek et al., (2014) and Kudrna & Gabor, (2013) who highlighted the need to understand the complex party strategies. In developing countries it may be a norm for governmental actors to involve themselves in business affairs (Meyer & Peng, 2016; Moe, 2015) and as a result, the bargaining between the public and private sector actors as good governance is a significant engagement required to develop an appropriate PPP agreement (Jacobsson, 2014).

T7: Effective communications channels exist between the main PPP parties: government, the private party and the technical advisor

This CSF as informed by the recent research of Zou et al., (2014) who identified CSFs for relationship management within PPP projects, underlining the importance for established relationships between the actors to the PPP project. Respondents ranked this CSF as sixth in importance for PPP project success in South Africa. In the application to the mitigation of political risk, emphasis was placed on transparent, legitimate and supportive relationships between the parties to the PPP project (Jacobsson, 2014). The requirement for public accountability, public reporting and the promotion of trust to be vital preconditions for PPP project success (Matos-Castaño, Mahalingam, & Dewulf, 2014; Panayides et al., 2015). Zou et al., (2014) further highlights that effective communication channels are a factor which provides for such a relationship and appropriate institutional environment.

Furthering the discussion on the dichotomy facing developing countries

The dichotomy described by Xie & Ng, (2013) and Zangoueinezhad & Azar, (2014) talks to the requirement for developing countries' governments to balance the increasing demand on infrastructure with the available fiscal, labour and technical resources to the public sector. This is further complicated by the country-specific risks posing threat to service delivery and investment (Bardy, Rubens, & Massaro, 2015; Benácek et al., 2014; Jha, 2013; Kudrna & Gabor, 2013; Magure, 2012; Polachek & Sevastianova, 2012), and contextual economic changes impacting operating costs and promoting actor rent seeking behaviour (Hoppe & Schmitz, 2013).

An additional perspective to this dichotomy, not discussed in previous literature, has been highlighted in this research. Developing countries such as South Africa, Brazil, Turkey and China have a mandate to deliver infrastructure through the PPP mechanism (Emek, 2015; Kasper, 2014a). Yet, the institutional CSFs which are perceived and ranked as important for PPP project success in this research, are by definition absent in developing countries (Ho & Im, 2015; Panayides, Parola, & Lam, 2015; Stal & Cuervo-Cazurra, 2011; United Nations, 2016).

In response to the research question, part A

This research has provided evidence that literature informed CSFs describing the institutional environment are considered to be more important than that of non-institutional factors for a PPP project within a developing country.

Research question, part B.

How do the perceived rankings of CSFs by those undertaking PPP projects in a developing country compare to other contexts as they have been identified in previous literature?

The results of the comparison between the perceived ranking of CSFs for PPP projects in South Africa versus those identified in the sample of academic articles

Meyer & Peng, (2016) emphasised the significance of integrating context with theory development particularly for context-sensitive phenomena such as PPP projects. It thus became evident that further research was essential to assess the relative importance placed on literature-informed institutional CSFs by those undertaking PPP projects (Panayides et al., 2015) in developing countries (Matos-Castaño et al., 2014) exhibiting political risk.

Part B of the research question was poised to compare the perceived importance of CSFs of PPP projects in a developing country exhibiting political risk, such as South Africa, to those to be important in key peer studies. In order to compare the CSFs rated by those undertaking PPP projects in a developing country context to that of a other contexts, the empirical rated and ranked CSFs determined in this research was compared to the recent academic articles detailed in Table 6: Sample of appropriate academic articles on PPP projects. These same academic articles were used to inform the comprehensive list of CSFs used in this research.

A two-tailed bivariate Spearman's rank correlation was undertaken to determine if there was any similarly in the ranking of the CSFs for PPP projects in different contexts. The results of the Spearman's rank correlation are captured in Table 17: The non-parametric Spearman's correlation between the perceived rankings of the CSFs by those undertaking PPP projects in South Africa versus those rated by the sample of academic articles for other contexts. Upon review, it was evident that a statistically significant correlation between the responses in terms of the perceived importance allocated to the CSFs in South Africa and that of the sample of academic articles, only exists for Ng et al., (2012). The correlation between this research and that of Hwang et al., (2013), Chou et al., (2012) and Zou et al., (2014), is indicated to exist, however not at a the statistically significant level of 0.005 or 0.001. The Spearman's rank correlation's null hypothesis for the correlation between the ranked CSFs determined in this research and that identified and ranked in Hwang et al., (2013), Chou et al., (2012) and Zou et al., (2014) is thus accepted; no significant correlation exists.

Ng et al., (2012) undertook research to determine the factors influencing the success of PPP projects at the feasibility stage for PPP projects developed in Hong Kong, China. The authors identified 36 CSFs and leveraged from 24 foundational academic articles as detailed in Table 6: Sample of appropriate academic articles on PPP projects and Table 7: Research front academic articles and cited authors informing the compilation of CSFs for PPP projects. 28 CSFs from the research undertaken by Ng et al., (2012) were used to inform the comprehensive list of CSFs compiled in this research.

The Spearman's rank correlation coefficient rho for Ng et al., (2012) was 0.583, and the correlation was significant at the 0.01 level at a sample size of 28. The sample size was 28 as this denoted the number of CSFs which were common for both this research and that of Ng et al., (2012). The rho denotes a positive linear correlation between the rankings of CSFs for this research and that of Ng et al., (2012). The null hypothesis for the Spearman's rank correlation between the results of this research and Ng et al., (2012) is thus rejected, as a significant correlation does exist between the ranked CSFs being compared.

In response to the research question, part B

Although Ng et al., (2012) only considered one stage of the PPP project (feasibility stage), relevance is indicated by the positive statistically significant Spearman's correlation coefficient of 0.583. Further, Ng et al undertook their study in China, a relevant sample developing country noted in Table 1: Population of countries with formal PPP frameworks undertaking PPP projects. The finding, that there was a statistically significant positive correlation between the CSFs for PPP projects in South Africa and for that in China, two developing countries, confirmed that there was value in the assessment of the CSFs for PPP projects in developing countries.

Achievement of the research objective

The research had a primary objective, to determine if the PPP project CSFs for a country perceived to exhibit political risk, were similar to that of, or are applied with the same level of emphasis or importance as for that of peer economies as they are documented in other academic studies. In particular, this research placed focus on the relative ranking of institutional factors versus that of other non-institutional CSFs rated in this research, and compared the rankings from this research to CSFs ranked in previous academic studies.

This research has determined that respondents rated CSFs which described the institutional environment as more important than that of non-institutional factors for PPP project success in South Africa, where South Africa was a relevant developing country. Further this research has found that institutional factors which inform the degree of political risk exhibited in a country are also perceived by respondents to be more important than other factors for PPP project success. Thus it can be inferred that mitigated political risk is important for PPP projects in developing countries.

The comparison between the rankings of CSFs determined in this research versus that of peer economies as they were documented in the academic article sample in Table 6: Sample of appropriate academic articles on PPP projects, identified a statistically significant correlation between the research by Ng et al., (2012) for their research in China.

Concerns as a result of the sample

South Africa as a sample for developing countries undertaking PPP projects

The sampling of South Africa as a relevant developing country, exhibiting a degree of political risk, with a formal PPP project framework and a demonstrated historical and future mandate to deliver PPP projects was appropriate. The limitation was however, that country-specific bias was not mitigated and it was not possible to determine the extent to which country-specific bias influenced the perceived importance placed on the CSFs for PPP projects by respondents. The positive statistically significant correlation between the findings of Ng et al., (2012) and this research suggest that country-specific bias may be low, but this requires future research.

The purposive sample informing the participation in the study

The sample of respondents within South Africa was deemed relevant with the purposeful sampling collection method being appropriate. The potential for subject selection and sampling bias was mitigated with the primary roles of the respondents appropriately distributed between government, the transaction advisor, a government advisory body, the private parties and other public entities. The distribution between roles was deemed relevant as it provided relevancy for all parties to a PPP project.

Of the 121 potential respondents who were directly contacted via email, 51 attempted to respond, with 34 meeting the eligibility requirements. The estimated sample size of 50 individual respondents was not achieved, but in comparison to Zou et al., (2014) who achieved only 16 respondents with adequate experience, it was deemed that the 34 sample size was representative. Further an eligible response rate of 66.67 per cent

was achieved when comparing those who attempted to respond versus those who met the selection criteria. The study was considered valid and reliable as a result of the strict sampling criteria. All responses were anonymous mitigating subject bias, and mitigation through a carefully constructed questionnaire was applied as far as possible, to reduce political bias.

The relevant sample of academic literature considering PPP projects developed and delivered in countries

The sample of academic literature was appropriate to inform the comprehensive list of CSFs identified for PPP projects. There were two limitations noted. 1. CSFs identified in foundational research, but excluded in the academic article sample, were excluded from the analysis. This was mitigated as far as practical in that 62 foundational published authors were referenced in by the academic article sample. The 62 referenced authors were deemed appropriate. 2. There was a limitation in the development of the comprehensive list of CSFs, in that any additional non-literature, but experienced-informed CSFs were excluded. In future research, there would be value in including expert interviews to validate the CSF list and to identify any further factors requiring consideration.

Chapter 7: Conclusion

Principal findings

Over 62 academic articles published between 1992 and 2014 form the knowledge base for the articulation of economic, political, financial, technical, legal and social critical success factors (CSFs) for public private partnership (PPP) projects (Chou et al., 2012; Hwang et al., 2013; Ng et al., 2012; Xie & Ng, 2013; Zou et al., 2014). This research proposed that for a developing country exhibiting political risk to successfully deliver on their PPP project pipeline so as to ensure the contagion effect on their economy, that the relative importance of factors characterising the institutional environment, be assessed in relation to other CSFs identified by previous academic research. Three principal findings are noted.

Greater perceived importance is placed in institutional factors

Of the 36 unique CSF factors identified, a third describe institutional factors. In South Africa as a relevant developing country, institutional CSFs were perceived by those undertaking PPP projects in this country to be more important than that of other non-institutional CSFs when developing and delivering PPP projects. In particular, the institutional factors informing the degree of political risk inherent in a country, occupy five of the seven top ranked CSFs for PPP projects in South Africa, and these factors are also perceived to be more important than other factors.

The dichotomy: delivering PPP projects in an environment in which the required CSFs are absent

A dichotomy absent from literature was highlighted in this research. Developing countries such as South Africa have a mandate to deliver infrastructure through the PPP mechanism, yet the institutional CSFs which are perceived and ranked as important for PPP project success in this research, are by definition absent in these developing countries.

A positive statistically significant correlation between CSFs for PPP projects in South Africa and in China

The comparison between the rankings of CSFs determined in this research versus that of the peer economy China identified a statistically significant correlation. The finding, that there was a statistically significant positive correlation between the CSFs for PPP projects in South Africa and for that in China, two developing countries, confirmed that there was value in the assessment of the CSFs for PPP projects in developing countries.

Implications for management

When developing and delivering PPP projects in developing countries, there is the requirement for management to understand the nuances, in particular in relation to the institutional environment. This research has provided evidence that those involved in PPP projects within developing countries perceive a greater level of importance on institutional CSFs versus that of non-institutional factors. Further, the political risk within the developing country may have a direct impact on the ability to successfully develop and deliver a PPP project, as political risk implies the absence of institutional factors which may be critical for the success of the project. It is critical that management identifies structures and measures to address the relevant PPP project-relevant voids present in developing countries, in particular where those voids amplify political risk. It is perhaps most important to understand how to mitigate the political risk inherent in developing countries, as by doing so, management will be able to facilitate better performance of the top ranked CSFs factors identified for PPP project success.

Limitations of the research

Two limitations were present in this research.

Country specific bias from respondents to empirical questionnaire survey

Country-specific bias may have been present. It was not possible to determine the extent to which country-specific bias influenced the perceived importance placed on the CSFs for PPP projects by respondents. The positive statistically significant correlation between the findings of Ng et al., (2012) and this research suggest that country-specific bias may be low, but this requires future research.

Exclusion of CSFs not identified in the sample of academic articles

There was a limitation in the development of the comprehensive list of CSFs, in that any additional non-literature, but experienced-informed CSFs were excluded.

Suggestions for future research

There are two pertinent requirements for future research. This research confirms the sentiment by Meyer & Peng, (2016) that there theoretical and practical research is lacking on firms operating in environments exhibiting diverging pressures. In particular, there is limited research, theoretical or practical, which considers the development and delivery of PPP projects in a developing country.

Theoretical research

There is value in determining if there are any differences in perceived importance placed on CSFs for PPP projects between developing countries. Particularly, the identification of country-specific CSFs which are not included in the literature-informed CSFs would be beneficial. In undertaking analysis on multiple countries and in the identification of further country-specific CSFs, so would one be able to reduce bias.

As only one of the academic articles from the sample detailing CSFs for other contexts produced a statistically significant correlation, there is opportunity for future research into further analysing the similarities and differences between various developing and developed countries. Also, one can compare the relative rankings of institutional factors and those factors informing political risk in developed and developing countries. As developed countries have less political risk, it would be beneficial to understand as to how this influences the ranking or array of CSFs for PPP projects in this context.

Practical research

All developing countries included in the population considered for this research have a history of developing and delivering PPP projects. It would be valuable to understand what structures, if any, developing countries have put in place to overcome the absence of institutional CSFs for PPP project success.

References

Akinsola, A. O., & Potts, K. F. (1997). Identification and evaluation of factors influencing variations on building projects. International Journal of Project Management, 15(4), 263.

Akintoye, A., Beck, M., & Hardcastle, C. (2003). Public-private partnerships: Managing risks and opportunities. Oxford: Blackwell Science.

Anvuur, A. M., Kumaraswamy, M. M., & Mahesh, G. (2011). Building "relationally integrated value networks" (RIVANS). Engineering Construction & Architectural Management (09699988), 18(1), 102-120. doi:10.1108/09699981111098711

Aon Risk Services. (2015). Global risk management survey 2015. (Annual). New York: Aon plc.

Ashley, D., Bauman, R., Carroll, J., Diekmann, J., & Finlayson, F. (1998). Evaluating viability of privatized transportation projects. Journal of Infrastructure Systems, 4(3), 102.

Asian Business. (1996). Special report on Asia's infrastructure boom. (No. March).Asian Business.

Aziz, A., & Ahmed, M. (2007). Successful delivery of public-private partnerships for infrastructure development. Journal of Construction Engineering & Management, 133(12), 918-931. doi:10.1061/ (ASCE) 0733-9364(2007)133:12(918)

Bardy, R., Rubens, A., & Massaro, M. (2015). The systemic dimension of sustainable development in developing countries. Journal of Organisational Transformation & Social Change, 12(1), 22-41. doi:10.1179/1477963314Z.00000000033

Benácek, V., Lenihan, H., Andreosso-O'Callaghan, B., Michalíková, E., & Kan, D. (2014). Political risk, institutions and foreign direct investment: How do they relate in various European countries? World Economy, 37(5), 625-653. doi:10.1111/twec.12112

Birgönül, M. T., & Özdoganm, I. (1998). A proposed framework for governmental organizations in the implementation of BOT model. 14th ARCOM Annual Conference, September 9-11, University of Reading, United Kingdom. , 2 517.

Birnie, I. (1999). Private finance initiative (PFI) - UK construction industry response. Journal of Construction Procurement, 5(1), 5.

Borman, M., & Janssen, M. (2014). Similarities and differences in critical success factors across context and time: An examination in the setting of shared services. E-Service Journal, 9(1), 85-105.

Boyfield, K. (1992). Private sector funding of public sector infrastructure. Public Money & Management, 12(2), 41.

Brodie, M. J. (1995). Public / private joint ventures: The government as partner bane or benefit? Real Estate Issues, 20(2), 33.

Bullen, C. V., & Rockart, J., F. (1981). A primer on critical success factors. Center for Information Systems Research Sloan School of Management Massachusetts Institute of Technology, 2-64.

Chan, A. P., Chan, D. W., Chiang, Y. H., Tang, B. S., Chan, E. H., & Ho, K. S. (2004). Exploring critical success factors for partnering in construction projects. Journal of Construction Engineering & Management, 130(2), 188-198. doi:10.1061/ (ASCE) 0733-9364(2004)130:2(188)

Chan, A. P., Lam, P. T., Chan, D. W., Cheung, E., & Ke, Y. (2010). Critical success factors for PPPs in infrastructure developments: Chinese perspective. Journal of Construction Engineering & Management, 136(5), 484-494. doi:10.1061/ (ASCE) CO.1943-7862.0000152

Chou, J., Tserng, H. P., Lin, C., & Huang, W. (2015). Strategic governance for modelling institutional framework of public–private partnerships. Cities, 42, Part B, 204-211. doi:10.1016/j.cities.2014.07.003

Chou, J., Tserng, H. P., Lin, C., & Yeh, C. (2012). Critical factors and risk allocation for PPP policy: Comparison between HSR and general infrastructure projects. Transport Policy, 22, 36-48.

Chua, D. K., & Kog, Y. C. (1999). Critical success factors for different project objectives. Journal of Construction Engineering & Management, 125(3), 142.

Dailarni, M., & Klein, M. (1997). Government support to private infrastructure projects in emerging markets. In T. Irwin, M. Klein, E. P. Guillermo & M. Thobani (Eds.), World Bank Latin American and Caribbean studies viewpoints: Dealing with public risk in private infrastructure (pp. 21). Washington D.C.: The World Bank.

Duffield, C. F. (2005). PPPs in Australia. Public Private Partnerships - Opportunities and Challenges, February 22, Hong Kong Convention and Exhibition Centre, Hong Kong. 5.

Efficiency Unit. (2008). Serving the community by using the private sector: An introductory guide to public private partnerships (PPPs). (). Hong Kong: Government of HKSAR.

Emek, U. (2015). Turkish experience with public private partnerships in infrastructure: Opportunities and challenges. Utilities Policy, 37, 120-129. doi:10.1016/j.jup.2015.06.005

Fawcett, S. E., Ogden, J. A., Magnan, G. M., & Cooper, M. B. (2006). Organizational commitment and governance for supply chain success. International Journal of Physical Distribution & Logistics Management, 36(1), 22-35. doi:10.1108/0960130610642913

FIDIC. (2001). Project financing sustainable solutions e adding value through innovation re-assessing the priorities. (). Geneva: Federation Internationale des Ingenieurs Conseils.

Finnerty, J. D. (1996). Project financing: Asset-based financial engineering. New York: John Wiley& Sons.

Grant, T. (1996). Keys to successful public-private partnerships. Canadian Business Review, 23(3), 27.

Grasman, S. E., Faulin, J., & Lera-Lopez, F. (2008). Public-private partnerships for technology growth in the public sector. 2008 IEEE International Engineering Management Conference, 1-4. doi:10.1109/IEMCE.2008.4617989

Grilo, L., Hardcastle, C., Akintoye, A., Silva, S., Melhado, S., & Edwards, P. (2005). Challenges and opportunities for the Brazilian public private partnerships program. Public Private Partnerships - Opportunities and Challenges, February 22, Hong Kong Convention and Exhibition Centre, Hong Kong. 19.

Gronroos, C. (1997). From marketing mix to relationship marketing--towards a paradigm shift in marketing. Management Decision, 35(3), 322.

Gupta, M. C., & Narasimham, S. V. (1998). Discussion of 'CSFs in competitive tendering and negotiation model for BOT projects' by R.L.K. Tiong. Journal of Construction Engineering and Management, ASCE, 124(5), 430.

Hambros, S. G. (1999). Public-private partnerships for highways: Experience, structure, financing, applicability and comparative assessment. Ottawa: The Council.

Hardcastle, C., Edwards, P. J., Akintoye, A., & Li, B. (2005). Critical success factors for PPP / PFI projects in the UK construction industry: A factory analysis approach. Public Private Partnerships E Opportunities and Challenges, February 22, Hong Kong Convention and Exhibition Centre, Hong Kong. 75.

Heinke, G. W., & Wei, J. K. (2000). Innovative approaches to financing of initiatives such as sustainable infrastructure and building, planning, design, construction and operation. (No. Final Report). Hong Kong: Consultancy for Asia Pacific Economic Cooperation (APEC).

HM Treasury. (2004). Value for money assessment guidance. (). London: Her Majesty Treasury.

Ho, A. T., & Im, T. (2015). Challenges in building effective and competitive government in developing countries: An institutional logics perspective. American Review of Public Administration, 45(3), 263-280. doi:10.1177/0275074013501856

Hoppe, E., I., Kusterer, D., J., & Schmitz, P., W. (2013). Public–private partnerships versus traditional procurement: An experimental investigation. Journal of Economic Behavior & Organization, 89(0), 145-166. doi:10.1016/j.jebo.2011.05.001

Hoppe, E., I., & Schmitz, P., W. (2013). Public-private partnerships versus traditional procurement: Innovation incentives and information gathering. RAND Journal of Economics (Wiley-Blackwell), 44(1), 56-74. doi:10.1111/1756-2171.12010

Hwang, B., Zhao, X., & Gay, M. J. (2013). Public private partnership projects in Singapore: Factors, critical risks and preferred risk allocation from the perspective of contractors. International Journal of Project Management, 31(3), 424-433. doi:10.1016/j.ijproman.2012.08.003

Industry Canada. (2003). the public sector comparator e A Canadian best practices guide. (). Canada: Services Industry Branch: Industry Canada.

Injazz, J. C., & Popovich, K. (2003). Understanding customer relationship management (CRM): People, process and technology. Business Process Management Journal, 9(5), 672-688.

Iossa, E., & Martimort, D. (2012). Risk allocation and the costs and benefits of public--private partnerships. The Rand Journal of Economics, 43(3), 442-474. doi:10.1111/j.1756-2171.2012.00181.x

Jacobsson, D. W. (2014). A rationale for alliancing within a public-private partnership. Engineering, Construction and Architectural Management, 21(6), 648-673. doi:10.1108/ECAM-09-2013-0087

Jaselskis, E., & Ashley, D. (1991). Optimal allocation of project management resources for achieving success. Journal of Construction Engineering and Management, 117(2)

Jefferies, M., Gameson, R., & Rowlinson, S. (2002). Critical success factors of the BOOT procurement system: Reflections from the stadium Australia case study. Engineering Construction & Architectural Management (Wiley-Blackwell), 9(4), 352.

Jha, S. (2013). Analyzing political risks in developing countries: A practical framework for project managers. Business & Politics, 15(1), 117-136. doi:10.1515/bap-2012-0025

Johnston, F. A. (2004). Innovations in procuring highways management and maintenance. Safer Highways, Proven and Innovation Technologies, June 12, Joint Professional Centre, The Institution of Highways and Transportation - Hong Kong Branch, HKSAR.

Jones, I., Zamani, H., & Reehal, R. (1996). Financing models for new transport infrastructure. Luxembourg: OPEC.

Kaming, P. F., Olomolaiye, P. O., Holt, G. D., & Harris, F. C. (1997). Factors influencing construction time and cost overruns on high-rise projects in Indonesia. Construction Management & Economics, 15(1), 83-94. doi:10.1080/014461997373132

Kang, N. (2014). Towards middle-range theory building in development research: Comparative (historical) institutional analysis of institutional transplantation. Progress in Development Studies, 14(3), 221-235. doi:10.1177/1464993414521338

Kanter, R. M. (1999). From spare change to real change: The social sector as beta site for business innovation. Harvard Business Review, (May-June)

Kasper, H. (2014a). 2014 global PPI update, Public-Private Partnership Group of the World Bank and Private Participation in Infrastructure Database.

Kasper, H. (2014b). PPI in IDA countries, 2009 to 2014 Public-Private Partnership Group of the World Bank and Private Participation in Infrastructure Database.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). Response to 'What do the worldwide governance indicators measure?'. European Journal of Development Research, 22(1), 55-58. doi:10.1057/ejdr.2009.49

Kudrna, Z., & Gabor, D. (2013). The return of political risk: Foreign-owned banks in emerging Europe. Europe-Asia Studies, 65(3), 548-566. doi:10.1080/09668136.2013.779458

Kumaraswamy, M. M., & Anvuur, A. M. (2008). Selecting sustainable teams for PPP projects. Building and Environment, 43(6), 999-1009. doi:10.1016/j.buildenv.2007.02.001

Kumaraswamy, M. M., Ling, F. Y., Anvuur, A. M., & Rahman, M. M. (2007). Targeting relationally integrated teams for sustainable PPPS. Engineering Construction & Architectural Management (09699988), 14(6), 581-596. doi:10.1108/09699980710829030

Lam, C. L. (2005). PPP - opportunities for the private sector. Public Private Partnerships - Opportunities and Challenges, February 22, Hong Kong Convention and Exhibition Centre, Hong Kong. 32.

Li, B., Akintoye, A., Edwards, P. J., & Hardcastle, C. (2005). Critical success factors for PPP/PFI projects in the UK construction industry. Construction Management & Economics, 23(5), 459-471. doi:10.1080/01446190500041537

Magure, B. (2012). Foreign investment, black economic empowerment and militarised patronage politics in Zimbabwe. Journal of Contemporary African Studies, 30(1), 67-82. doi:10.1080/02589001.2011.638154

Martins, A. C., Marques, R. C., & Cruz, C. O. (2011). Public–private partnerships for wind power generation: The Portuguese case. Energy Policy, 39(1), 94-104. doi:10.1016/j.enpol.2010.09.017

Matos-Castaño, J., Mahalingam, A., & Dewulf, G. (2014). Unpacking the path-dependent process of institutional change for PPPs. Australian Journal of Public Administration, 73(1), 47-66. doi:10.1111/1467-8500.12062

Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. Journal of Business Logistics, 22(2), 1-25.

Meyer, K. E., & Peng, M. W. (2016). Theoretical foundations of emerging economy business research. Journal of International Business Studies, 47(1), 3-22.

Moe, T. M. (2015). Vested interests and political institutions. Political Science Quarterly (Wiley-Blackwell), 130(2), 277-318. doi:10.1002/polq.12321

NAO. (2001). Managing the relationship to secure a successful partnership in PFI projects. (No. HC375). London: National Audit Office.

NCPPPs. (2002). For the good of the people: Using public-private partnerships to meet America's essential needs. (). Washington D.C.: National Council for Public- Private Partnerships.

Ng, S. T., Wong, Y. M., & Wong, J. M. (2012). Factors influencing the success of PPP at feasibility stage – A tripartite comparison study in Hong Kong. Habitat International, 36(4), 423-432. doi:10.1016/j.habitatint.2012.02.002

North, D. C. (1990). Institutions, institutional change and economic performance. Cambridge University Press,

Özdoganm, D. I., & Birgönül, M. T. (2000). A decision support framework for project sponsors in the planning stage of... Construction Management & Economics, 18(3), 343.

Özdoganm, I. (1996). Risk management of BOT projects in developing countries. (Unpublished M.Sc.). Middle East Technical University, Turkey.

Panayides, P. M., Parola, F., & Lam, J. S. (2015). The effect of institutional factors on public–private partnership success in ports. Transportation Research Part A: Policy and Practice, 71, 110-127. doi:10.1016/j.tra.2014.11.006

Parvatiyar, A., & Sheth, J. N. (2001). Customer relationship management: Emerging practice, process, and discipline. Journal of Economic & Social Research, 3(2), 1.

Pearson, M. (2005). Opportunities and obstacles for wider adoption of PPP models in Hong Kong. Public Private Partnerships - Opportunities and Challenges, February 22, Hong Kong Convention and Exhibition Centre, Hong Kong.

Polachek, S. W., & Sevastianova, D. (2012). Does conflict disrupt growth? Evidence of the relationship between political instability and national economic performance. Journal of International Trade & Economic Development, 21(3), 361-388. doi:10.1080/09638191003749783

Qiao, L., Wang, S. Q., Tiong, R. L., & Chan, T. (2001). Framework for critical success factors of BOT projects in china. Journal of Project Finance, 7(1), 53.

Roehrich, J. K., Lewis, M. A., & George, G. (2014). Are public–private partnerships a healthy option? A systematic literature review. Social Science & Medicine, 113(0), 110-119. doi:10.1016/j.socscimed.2014.03.037

Samii, R., Van Wassenhove, L. N., & Bhattacharya, S. (2002). An innovative public-private partnership: New approach to development. World Development, 30(6), 991.

Sanvido, V., Grobler, F., Parfitt, K., Guvenis, M., & Coyle, M. (1992). Critical success factors for construction projects. Journal of Construction Engineering and Management, 118(1), 94.

Saunders, M., & Lewis, P. (2012). Doing research in business and management (First Ed.). England: Pearson Education Limited.

Siemiatycki, M. (2011). Public-private partnership networks: Exploring business-government relationships in United Kingdom transportation projects. Economic Geography, 87(3), 309-334. doi:10.1111/j.1944-8287.2011.01115.x

Sobhiyah, M. H., Bemanian, M. R., & Kashtiban, Y. K. (2009). Increasing VFM in PPP power station projects – case study: Rudeshur gas turbine power station. International Journal of Project Management, 27(5), 512-521. doi:10.1016/j.ijproman.2008.07.002

Songer, A., & Molenaar, K. (1997). Project characteristics for successful public-sector design-build. Journal of Construction Engineering and Management, 123(1), 34.

South African National Treasury PPP Unit. (2004a). National treasury PPP manual module 1: South African regulations for PPPs. (Manual No. National Treasury PPP Practice Note Number 02 of 2004). South Africa: National Treasury.

South African National Treasury PPP Unit. (2004b). Public private partnership manual national treasury PPP practice notes issued in terms of the public finance management act. (Manual No. National Treasury PPP Practice Note Number 03 of 2004). South Africa: National Treasury.

South African National Treasury PPP Unit. (2011). Closed projects: PPP projects signed in terms of treasury regulation 16 AS AT November 2011. Unpublished manuscript.

South African National Treasury PPP Unit. (2013). Signed PPP projects: PPP projects signed in terms of regulation 16, AS AT February 2013. Unpublished manuscript.

South African National Treasury PPP Unit. (2015). Project list: Projects in preparation, registered in terms of treasury regulation 16 and municipal projects registered under the MFMA and MSA. Unpublished manuscript.

Stal, E., & Cuervo-Cazurra, A. (2011). The investment development path and FDI from developing countries: The role of pro-market reforms and institutional voids. Latin American Business Review, 12(3), 209-231. doi:10.1080/10978526.2011.614174

Stein, S. W. (1995). Construction financing and BOT projects. International bar association. International Business Lawyer,

Stonehouse, J. H., & Hudson, A. R. (1996). Private-public partnerships: The Toronto hospital experience. Canadian Business Review, 23(2), 17.

Tailby, S., Richardson, M., Stewart, P., Danford, A., & Upchurch, M. (2004). Partnership at work and worker participation: An NHS case study. Industrial Relations Journal, 35(5), 403-418. doi:10.1111/j.1468-2338.2004.00323.x

Thomas, D. P. (2013). The Gautrain project in South Africa: A cautionary tale. Journal of Contemporary African Studies, 31(1), 77-94. doi:10.1080/02589001.2013.747292

Tiong, R. L. (1996). CSFs in competitive tendering and negotiation model for BOT projects. Journal of Construction Engineering & Management, 122(3), 205.

United Nations. (2016). World economic situation and prospects 2016. (). New York: United Nations.

Walker, D. H., & Vines, M. W. (2000). Australian multi-unit residential project construction time performance factors. Engineering Construction & Architectural Management (Wiley-Blackwell), 7(3), 278.

Wang, Y. (2015). Evolution of public–private partnership models in American toll road development: Learning based on public institutions' risk management. International Journal of Project Management, 33(3), 684-696. doi:10.1016/j.ijproman.2014.10.006

World Bank Group. (2014). Public-private partnership in infrastructure resource center: PPP units around the world. Retrieved from http://ppp.worldbank.org/public-private-partnership/overview/international-ppp-units

World Bank Group. (2015a). Country and lending groups. Retrieved from http://data.worldbank.org/about/country-and-lending-groups#Upper_middle_income

World Bank Group. (2015b). Worldwide governance indicators. Retrieved from http://info.worldbank.org/governance/wgi/index.aspx#doc

Xie, J., & Ng, S. T. (2013). Multiobjective Bayesian network model for public-private partnership decision support. Journal of Construction Engineering & Management, (September), 1069-1081. doi:10.1061/ (ASCE) CO.1943-7862.0000695.

Yener, A. P. (1998). Risk perception and trends of Turkish construction companies. (Unpublished M.Sc.). Middle East Technical University, Turkey.

Zangoueinezhad, A., & Azar, A. (2014). How public-private partnership projects impact infrastructure industry for economic growth. International Journal of Social Economics, 41(10), 994-1010. doi:10.1108/IJSE-04-2013-0083

Zantke, G., & Mangels, B. (1999). Public sector client–private sector project: Transferring the state construction administration into private hands. Engineering Construction & Architectural Management (Wiley-Blackwell), 6(1), 78-87. doi:10.1046/j.1365-232X.1999.00103.x

Zhang, W. R., Wang, S. Q., Tiong, R. L., Ting, S. K., & Ashley, D. (1998). Risk management of Shanghai's privately financed yan'an donglu tunnels. Engineering Construction & Architectural Management (Wiley-Blackwell), 5(4), 399.

Zhang, X. (2005). Critical success factors for Public–Private partnerships in infrastructure development. Journal of Construction Engineering & Management, 131(1), 3-14. doi:10.1061/ (ASCE) 0733-9364(2005)131:1(3)

Zhang, X. (2006). Factor analysis of public clients' best-value objective in Public–Privately partnered infrastructure projects. Journal of Construction Engineering & Management, 132(9), 956-965. doi:10.1061/ (ASCE) 0733-9364(2006)132:9(956)

Zou, W., Kumaraswamy, M., Chung, J., & Wong, J. (2014). Identifying the critical success factors for relationship management in PPP projects. International Journal of Project Management, 32(2), 265-274. doi:10.1016/j.ijproman.2013.05.004

Zupic, I., & Cater, T. (2015). Bibliometric methods in management and organization. Organizational Research Methods, 18(3), 429-472. doi:10.1177/1094428114562629

Appendix A – Population of South Africa PPP projects achieving financial close

Table 19: South African PPP projects achieving financial close

(South African National Treasury PPP Unit, 2013)

Project name	National or Provincial	Financial close	Private partner	Financial arrangers	Transaction advisors to government
Inkosi Albert Luthuli Hospital for the Kwa-Zulu Natal Department of Health	Kwa-Zulu Natal	December 2001	Impilo Consortium (Pty) Ltd comprising: Mbekane Health & Wellbeing, AME International, Vulindlela Holdings, Siemens, Drake & Skull, Omame	Rand Merchant Bank	PwC; White&Case; EC Harris; Aloecap; Hiltron
Eco-tourism Manyeleti (3 Sites) for the Limpopo Department of Finance, Economic Affairs and Tourism	Limpopo	December 2001	Koko Moya Wilderness Trail (Pty) Ltd; Tinswala Lodges (Pty) Ltd; Pungwe Game Reserve (Pty) Ltd		DBSA; White & Case
Universitas and Pelonomi Hospitals Co-Location for the Free State Department of Health	Free State	November 2002	Community Health Management/ Netcare consortium		Ignis; Naude's Attorneys

Project name	National or Provincial	Financial close	Private partner	Financial arrangers	Transaction advisors to government
Information Systems for the Department of Labour	National	December 2002	Siemens Business Solutions Consortium		KPMG
Chapman's Peak Drive Toll Road for the Western Cape Department of Transport	Western Cape	May 2003	Capstone 252 (Pty) Ltd comprising: Concor, Thebe Investments, Marib Holdings, Haw & Ingles	Rand Merchant Bank	Ignis; Jeffares & Green; Hofmeyr Herbstein & Gihwala; Intertoll; Decathlon
State Vaccine Institute for the Department of Health	National	January 2004 Extension to December 2009	Biovac Consortium		PwC; Deneys Reitz
Humansdorp District Hospital for the Eastern Cape Department of Health	Eastern Cape	June 2003	Metro-Star Hospital (Pty) Ltd comprising: Metropal Hospital and Season Star Trading 123		Ignis; PH Inc

Project name	National or Provincial	Financial close	Private partner	Financial arrangers	Transaction advisors to government
Fleet Management for the Eastern Cape Department of Transport	Eastern Cape	August 2003	Fleet Africa Eastern Cape (Pty) Ltd	Rand Merchant Bank	Deloitte & Touche
Head Office Accommodation for the Department of Trade and Industry	National	August 2003	Rainprop Consortium comprising: WBHO, Atterbury Property Holdings, Parkdev S.A., Rebserve Facility Management, Propnet, Zwelinzima Holdings, Prop 5 Corp, Rainbow Construction, WDB Investment Holdings, PDSA	Standard Corporate & Merchant Bank	Ignis, Utho Capital, Ledwaba Mazwai/Mason sB.I. Assoc.
Cradle of Humankind Interpretation Centre Complex for the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs	Gauteng	October 2003	Furneaux Stewart Gapp consortium comprising: Stocks, Fikile, Thebe		PwC; White & Case
Gautrain Rapid Rail Link for the Gauteng Department of Public Transport, Roads and Works	Gauteng	September 2006	Bombela Consortium, made up of Bombardier Transportation, Boygues TP, Murray & Roberts,		Khuthele; Arcus Gibb; Kagiso

Project name	National or Provincial	Financial close	Private partner	Financial arrangers	Transaction advisors to government
			Strategic Partners Group and RATP Development		Financial Services; Ledwaba Mazwai; Masons
National Fleet Management for the Department of Transport	National	September 2006	Phavis World Fleet Solutions		Deloitte & Touche; Madhlopa Attorneys
Western Cape Rehabilitation Centre & Lentegeur Hospital for the Western Cape Department of Health	Western Cape	November 2006	Mpilisweni Consortium		KPMG; Africon; Deneys Reitz
Polokwane Hospital Renal Dialysis for the Limpopo Department of Health	Limpopo	December 2006	Clinix/Frensus Emang Thabang		Ignis, Munyai malaka; SPP; Phatsoane Henney, Inc, Vela VKE;

Project name	National or Provincial	Financial close	Private partner	Financial arrangers	Transaction advisors to government
					Resolve Workplace Solutions
Serviced Head Office Accommodation for the Department of Education	Gauteng	April 2007	Sethekgo Private Party (Pty) Ltd	Standard Corporate & Merchant Bank	KPMG, Deneys Reitz, Turner & Townsend
Port Alfred & Settlers Hospital for the Eastern Cap Department of Health	Eastern Cape	May 2007	Netcare Consortium		Ignis; PH Harris; Annette vd Merwe; HBS Consulting Inc
Western Cape Nature Conservation Board	Western Cape	Not provided	Madikwe Investments		Vela VKE
Fleet Services for the Northern Cape Department of Transport, Roads & Public Works	Northern Cape	Not provided	Nyumbane Fleet Services		Dean Zimu & Associates

Project name	National or Provincial	Financial close	Private partner	Financial arrangers	Transaction advisors to government
Serviced Head Office Accomodation for the Department of International Relations & Cooperation	Gauteng	Not provided	Imbumba Aganang Consortium		
Phalaborwa Hospital for the Limpopo Department of Health	Limpopo	Not provided	Clinix Phalaborwa Private Hospital (Pty) Ltd		Ignis

Appendix B - Empirical research questionnaire

Table 20: Empirical research survey questionnaire

Title	The critical success factors to South Africa's PPP projects
Introduction	This survey is part of the research currently underway investigating the critical success factors to public private partnership ("PPP") projects in South Africa, an emerging economy, versus that of developed economies. The survey should not take longer than 20 minutes to complete, and will help us to understand the variances in executing PPPs in South Africa, versus that of developed countries. In addition, the information gathered will help us uncover what is important when undertaking PPP projects in developing countries. For the purposes of this survey however, the focus is on assessing the importance of factors influencing South Africa's PPP projects. Your participation is voluntary and you can withdraw at any time without penalty. All data will be kept confidential. If you have any concerns, please contact my supervisor or I. Researcher: Suzelle Gemmell Email: suzgemmell@gmail.com Phone: +27 83 363 2654 Research Supervisor: Kerry Chipp Email: chippk@gibs.co.za Phone: +27 11 771 4000
Purpose	The purpose of this survey is to assess which factors are perceived to be important when undertaking public private partnership (PPP) projects in South Africa.
Instructions	Please read these instructions carefully before starting the study:

Title	The critical success factors to South Africa's PPP projects
	1. Make sure that you are in a quiet space where you can spend uninterrupted time on this study. 2. Take your time to answer the questions. 4. There is no right answer, we are only interested in your perception through your experience with PPP projects. 3. The answers you provide are valuable to our research.
Agreement Category question is used to indicate understanding and agreement to complete the survey.	The following is your agreement in terms of this survey. • I willingly agree to participate in this survey researching the critical success factors to South Africa's PPP projects. • I understand that my participation is voluntary and that I can withdraw at any time without penalty. • I understand that all data collected will remain anonymous and confidential. • I understand that should I have any queries, that these can be addressed to either the Researcher, Suzelle de Wet, or Research Supervisor, Adrian Saville. Please indicate your agreement to the survey conditions. • I agree • I do not agree
Category question: role An open question is made available when the respondent selects the "If other" category.	What role do you fulfil within a PPP project? • Transaction advisor • Government or institution (normally the client in PPP arrangements) • Private party • Academic • If other, please specify_____

Title	The critical success factors to South Africa's PPP projects
Category question: years of experience	How many years of work experience have you acquired? • No work experience • Less than 3 years • 3-5 years • 6-10 years • 11-15 years • 16-20 years • More than 20 years
Category question: years of PPP experience	How many years of PPP project experience have you acquired? • No PPP project experience • Less than 3 years • 3-5 years • 6-10 years • 11-15 years • 16-20 years • More than 20 years
Category question: number of South African PPP projects in which respondent has experience	How many South African PPP projects have you worked on? • None • 1 project • 2 projects • 3 projects • 4-6 projects • 7-9 projects • 10-12 projects • 13-15 projects • 16-20 projects • More than 20 projects
Category question: total number of PPP projects in which	What is the total number of PPP projects which you have worked on? • None • 1 project • 2 projects • 3 projects • 4-6 projects

Title	The critical success factors to South Africa's PPP projects
respondent has experience	• 7-9 projects • 10-12 projects • 13-15 projects • 16-20 projects • More than 20 projects
List question: type of PPP projects in which the respondent has experience An open question is made available when the respondent selects the "If other" category.	What type of PPP projects have you worked on in South Africa and/or abroad? • No PPP project experience. • Accommodation • Budget support • Business development • Contract management • Education • Energy • Health • Information and communications technology (ICT) • International relations • Project development facility • Transport • Rail • Fleet • Housing • Independent power producer (IPP) • Tourism • Waste • Water • If other, please specify_____
List question: South African PPPs on which respondent has worked	Please specify the South African PPP projects on which you have worked. • No South African PPP project experience • Inkosi Albert Luthuli Hospital for the Kwa-Zulu Natal Department of Health • Eco-tourism Manyeleti (3 Sites) for the Limpopo Department of Finance, Economic Affairs and Tourism

Title	The critical success factors to South Africa's PPP projects
An open question is made available when the respondent selects the "If other" category.	• Universitas and Pelonomi Hospitals Co-Location for the Free State Department of Health • Information Systems for the Department of Labour • Chapman's Peak Drive Toll Road for the Western Cape Department of Transport • State Vaccine Institute for the Department of Health • Humansdorp District Hospital for the Eastern Cape Department of Health • Fleet Management for the Eastern Cape Department of Transport • Head Office Accommodation for the Department of Trade and Industry • Cradle of Humankind Interpretation Centre Complex for the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs • Gautrain Rapid Rail Link for the Gauteng Department of Public Transport, Roads and Works • National Fleet Management for the Department of Transport • Western Cape Rehabilitation Centre & Lentegeur Hospital for the Western Cape Department of Health • Polokwane Hospital Renal Dialysis for the Limpopo Department of Health • Serviced Head Office Accommodation for the Department of Education • Port Alfred & Settlers Hospital for the Eastern Cap Department of Health • Western Cape Nature Conservation Board • Fleet Services for the Northern Cape Department of Transport, Roads & Public Works • Serviced Head Office Accommodation for the Department of International Relations & Cooperation • Phalaborwa Hospital for the Limpopo Department of Health • If other, please specify_____

<table>
<tr><td>Title</td><td>The critical success factors to South Africa's PPP projects</td></tr>
<tr><td>Open question: countries, other than South Africa, in which the respondent has worked on PPP projects</td><td>Should you have worked on PPP projects outside the borders of South Africa, please provide a brief list of the countries in which you worked.</td></tr>
<tr><td>Rating question: rating the perceived importance of 36 factors on PPP projects in South Africa</td><td>In light of your most recent South African PPP project experience, please assess the degree of importance which you perceive is currently placed on factors influencing PPP projects in South Africa.

36 factors have been identified from recent literature and these are grouped into the following categories:
technical factors;
financial and economic factors;
social factors;
political and legal factors; and
other factors.
Please rate your perceived importance of each factor on a scale of 1 to 7. A rating of 1 signifies that a factor is not perceived to be important. A rating of 7 indicates that a factor is perceived to be one of the most important factors. The degree of importance increases from 1 to 7.

<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>Not important</td><td>Less important</td><td>Some importance</td><td>Important</td><td>Quite important</td><td>Very important</td><td>Most important</td></tr></table></td></tr>
</table>

<table>
<tr><td>Title</td><td>The critical success factors to South Africa's PPP projects</td></tr>
<tr><td></td><td>We are interested in your perception of what is currently important for PPP projects in South Africa. You are not required to spend time analysing the intricacies of each factor. Please select the rating with which you believe is most representative of PPP projects in South Africa.</td></tr>
<tr><td>Rating question: technical factors

A seven-point Likert scale is used to rate the perceived importance of factors in PPP projects in South Africa.</td><td>What do you perceive is the importance of the following 13 technical factors when considering PPP projects in South Africa?

T1. Appropriate project identification.
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Not important</td><td>Less important</td><td>Some importance</td><td>Important</td><td>Quite important</td><td>Very important</td><td>Most important</td></tr>
</table>
T2. A long project life span.
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Not important</td><td>Less important</td><td>Some importance</td><td>Important</td><td>Quite important</td><td>Very important</td><td>Most important</td></tr>
</table>
T3. Government experience in packaging similar PPP projects.
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Not important</td><td>Less important</td><td>Some importance</td><td>Important</td><td>Quite important</td><td>Very important</td><td>Most important</td></tr>
</table>
T4. A well organised public agency.
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Not important</td><td>Less important</td><td>Some importance</td><td>Important</td><td>Quite important</td><td>Very important</td><td>Most important</td></tr>
</table>
</td></tr>
</table>

Title	The critical success factors to South Africa's PPP projects

T5. An experienced, technically strong, and reliable private sector consortium.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

T6. A project size which is technically manageable by a single consortium.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

T7. Effective communication channels exist between the main PPP parties: the client (government), the private party and the technical advisor.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

T8. Service quality which is easily defined and objectively measured.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

T9. The technical feasibility of a project.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

<table>
<tr><td>Title</td><td>The critical success factors to South Africa's PPP projects</td></tr>
<tr><td></td><td>
T10. Transparent and efficient procurement processes.
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Not important</td><td>Less important</td><td>Some importance</td><td>Important</td><td>Quite important</td><td>Very important</td><td>Most important</td></tr>
</table>
T11. A modular and repeatable project design or construction.
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Not important</td><td>Less important</td><td>Some importance</td><td>Important</td><td>Quite important</td><td>Very important</td><td>Most important</td></tr>
</table>
T12. Early project completion and product/service delivery.
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Not important</td><td>Less important</td><td>Some importance</td><td>Important</td><td>Quite important</td><td>Very important</td><td>Most important</td></tr>
</table>
T13. Private sector resources, skills, expertise, and technologies providing opportunities for innovation.
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Not important</td><td>Less important</td><td>Some importance</td><td>Important</td><td>Quite important</td><td>Very important</td><td>Most important</td></tr>
</table>
</td></tr>
<tr><td>Rating question: financial and economic factors

A seven-point Likert scale is used to rate</td><td>
What do you perceive is the importance of the following seven financial and economic factors when considering PPP projects in South Africa?

FE1. A stable and favourable economic environment.
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Not important</td><td>Less important</td><td>Some importance</td><td>Important</td><td>Quite important</td><td>Very important</td><td>Most important</td></tr>
</table>
</td></tr>
</table>

Title	The critical success factors to South Africa's PPP projects
the perceived importance of factors in PPP projects in South Africa.	

FE2. A favourable investment environment.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

FE3. A project which is of financial interest to the private sector.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

FE4. Support from government is available in the form of guarantees or loans.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

FE5. Good financial viability or value for money for government.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

FE6. An acceptable level of the unitary payment, tariff or toll.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

Title	The critical success factors to South Africa's PPP projects

FE7. The long-term demand for the product/service which will be delivered through a PPP project.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

Rating question: social factors

A seven-point Likert scale is used to rate the perceived importance of factors in PPP projects in South Africa.

What do you perceive is the importance of the following five social factors when considering PPP projects in South Africa?

S1. The acceptability of a project by an interest group and general public.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

S2. An environmentally sustainable project.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

S3. The fairness of new working conditions for governmental employees as a result of a PPP project.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

S4. Resolution plans for redundancies.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

Title	The critical success factors to South Africa's PPP projects

S5. A PPP project can create more jobs.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

Rating question: political and legal factors

A seven-point Likert scale is used to rate the perceived importance of factors in PPP projects in South Africa.

What do you perceive is the importance of the following six political and legal factors when considering PPP projects in South Africa?

PL1. A stable political environment.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

PL2. A favourable legal framework. Favourable can mean mature, reasonable or predicable.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

PL3. A sound government economic policy.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

PL4. Political support and commitment to a project.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

Title	The critical success factors to South Africa's PPP projects

PL5. Clarification of contract documents.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

PL6. Contract flexibility to allow for multiple changes in output specifications.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

Rating question: other factors

A seven-point Likert scale is used to rate the perceived importance of factors in PPP projects in South Africa.

What do you perceive is the importance of the following five factors when considering PPP projects in South Africa?

O1. Understanding and matching government's strategic and long-term objectives.

1	2	3	4	5	6
Not important	Less important	Some importance	Important	Quite important	Very important

O2. Flexibility to decide appropriate risk allocation.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

O3. Good governance by government and a consortium.

1	2	3	4	5	6	7
Not important	Less important	Some importance	Important	Quite important	Very important	Most important

<table>
<tr><td>Title</td><td>The critical success factors to South Africa's PPP projects</td></tr>
<tr><td></td><td>O4. Shared authority between public and private sector.
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Not important</td><td>Less important</td><td>Some importance</td><td>Important</td><td>Quite important</td><td>Very important</td><td>Most important</td></tr>
</table>
O5. Supportiveness and commitment of staff to a project.
<table>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Not important</td><td>Less important</td><td>Some importance</td><td>Important</td><td>Quite important</td><td>Very important</td><td>Most important</td></tr>
</table></td></tr>
<tr><td>Category question: additional factors</td><td>Your opinion is important to this research. Are there any other factors which you perceive to be important to PPP project's in South Africa which have not been included?
Yes
No</td></tr>
<tr><td>Open question: additional factors</td><td>If yes, from your experience please would you include a few sentences highlighting any additional factors?</td></tr>
<tr><td>Category question: gender</td><td>Please indicate your gender.
Male
Female
Other
Do not wish to disclose</td></tr>
<tr><td>Closing</td><td>Should you be interested in the findings from this research, please contact Suzelle de Wet at suzgemmell@gmail.com. Upon completion of this study, Suzelle will share the research report with you electronically.

Thank you for your participation in this survey.</td></tr>
</table>

Appendix C – Ethical clearance

Dear Miss Suzelle Gemmell

Protocol Number: **Temp2016-01694**

Title: **PPP projects and political risk**

Please be advised that your application for Ethical Clearance has been APPROVED.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards,

Adele Bekker

Appendix D – Turnitin report