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Public-private partnerships in ICT infrastructure development in South Africa

Fourie, Johannes Jacobus

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Public-private partnerships in ICT infrastructure development in South Africa

Hannes Fourie

A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

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ABSTRACT

ICT infrastructure is seen as one of the key drivers for economic growth. Unfortunately in South Africa many ICT infrastructure development projects fail for different reasons. Public-private partnerships (PPPs) are considered to hold much promise in theory to overcome some of the challenges ascribed to these project failures, but have proven very difficult to implement in practice. This study investigated whether the challenges of implementing ICT infrastructure development projects in South Africa can effectively be addressed by means of PPPs. In-depth, semi-structured interviews were used to obtain the views of ICT industry experts, representatives from regulatory bodies and ICT organisations, and government officials. The main findings were that PPPs could be a viable solution to overcome some of the challenges to successful implementation of ICT infrastructure projects in South Africa on condition that certain success factors that would facilitate ICT infrastructure development PPPs are present. Unfortunately some of these success factors are not currently present, therefore limiting the prospects for successful implementation of the PPP model for these projects.

DECLARATION

I, Johannes Jacobus Fourie, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Johannes Jacobus Fourie

Signed at ……

On the …….. day of …… 2013

DEDICATION

To my wife, Lizé. Without your love and dedication the MBA and this research would never have been possible.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to:

- Prof. Louise Whittaker, my supervisor, for her time and direction.
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1 INTRODUCTION

1.1 Purpose of the study

The purpose of this study is to explore Public Private Partnerships as a viable mechanism to address or overcome the challenges of implementing information and communications technology (ICT) infrastructure development projects in South Africa.

1.2 Context of the study

Sub-Saharan Africa is one of the poorest regions in the world and has the lowest access to information and communication resources (Pigato, 2001). Ample evidence exists that lives and livelihoods are under threat because of the fragile state of infrastructure in Sub-Saharan Africa. The lack of adequate transport, power, communication networks, water, sanitation and other infrastructure severely constrains economic growth and poverty reduction across the region (Jerome, 2011). Due to these constraints, most Sub-Saharan African countries have consistently operated on the lowest rung of the technology ladder, far from the global technology frontier (Fofack, 2008).

The World Bank confirms that the widening income and prosperity gap between Sub-Saharan Africa and the rest of world is largely due to a lack of ICT infrastructure (World Bank, 2006). This conclusion is supported by empirical evidence which suggests that if the levels of technology use in Sub-Saharan African countries were similar to those enjoyed by industrialized countries, income levels in Sub-Saharan Africa would be significantly higher (Fofack, 2008).

Middleton (2008) draws the attention to the importance of the development of ICT infrastructure which, he argues, can lead to improved economic outcomes. The importance of ICT as a driver for future development of the economy also features

in prominent policy documents of the South African government. In the South African National Development Plan for 2030, the National Planning Commission highlights the importance of the underlying ICT ecosystem of networks, services, applications, content and innovation that will support economic growth, development and competitiveness. It further states that this infrastructure will create new employment opportunities, nation-building and social cohesion (Manuel, 2011).

Unfortunately the National Development Plan also admits that the current ICT infrastructure in South Africa is 'abysmal' compared to international standards and that a stronger broadband and telecommunications network at lower prices is needed to spur economic growth (Manuel, 2011).

This sentiment is echoed in a recent report by the World Economic Forum which placed South Africa 72 out of 142 countries in terms of ICT network readiness. The report emphasizes access costs, skills and infrastructure development in particular as areas needing improvement (Dutta & Bilbao, 2012). Accordingly the need for faster and more effective and efficient roll out of ICT infrastructure development projects in South Africa seems indisputable.

The current delivery model of ICT infrastructure development projects in South Africa does, however, not seem to be efficient as many of these projects end in failure. Some of the barriers to effective execution of ICT infrastructure projects include lack of skills and debilitating high levels of bureaucracy (Dutta & Bilbao, 2012; Gichoya, 2005). It seems necessary, therefore, to explore new ways of developing and implementing ICT infrastructure projects, such as public-private partnerships. From an efficiency point of view, recent views increasingly set the private supply and even private sector financing of public infrastructure as benchmark (Calitz & Fourie, 2010).

According to Gates (2008) public-private partnerships (PPP) enable the proliferation of the impact that a single organisation working alone could hope to achieve since it combines public sector knowledge with private sector experience.

Due to the risk being spread over both entities and the private sector bringing skills to the project, PPP is viewed by some as a more efficient and effective model for delivering on infrastructure development projects. The literature reports a widespread acceptance of PPPs in the developing world (Fife & Hosman, 2007). Yet, the PPP model presents its own challenges, and the actual partnership practices and the political and social impacts of PPPs on ICT infrastructure development projects still need to be understood (Kuriyan & Ray, 2007).

By understanding the challenges of implementing ICT infrastructure development projects in South Africa and investigating the possibilities of mitigating these by means of PPPs, proposals to improve on the current delivery model of infrastructure projects could be made.

1.3 Problem statement

The research problem that will be explored is whether the challenges of implementing ICT infrastructure development projects in South Africa can effectively be addressed by means of public-private partnerships. This problem can be broken down into the following sub-problems:

1.3.1 *Sub problem 1*

Identify the main challenges of implementing ICT infrastructure development projects in the South African public sector.

1.3.2 *Sub problem 2*

Assess whether PPPs might mitigate the challenges of implementing ICT infrastructure development projects in the South African public sector.

1.4 Significance of the study

There is currently fairly limited research addressing PPPs in South Africa, particularly as far as ICT infrastructure development is concerned. This is mainly due to the limited number of ICT projects following the PPP model. This research is a good starting point for academics and students who are researching South African Government infrastructure project delivery strategies. The study will further provide guidance to consultants and advisors of public sector institutions on ICT infrastructure development options.

1.5 Delimitations of the study

This study will examine challenges of implementing ICT infrastructure development projects in South Africa. Apart from ICT, all other vertical industries are excluded from this research. The study will only consider the PPP model as possibility for ICT infrastructure development projects and not any other business models. Information obtained for this research was collected from industry experts, representatives from regulatory bodies and ICT organisations, and government officials in South Africa only. The findings of this study may be relevant to similar studies.

1.6 Definition of terms

- Public-private partnership (PPP) - A public-private partnership is a long-term agreement between the public sector and the private sector to deliver a service traditionally provided by the public sector. PPPs can be a way of both increasing access to financing options and delivering efficiency gains while maximising quality of service (DLA Piper, 2009).

- Information and communications technology (ICT/IT) - ICT in this study will be used according to the definition by Pagani: “ICT is an umbrella term that includes any communication device or application, encompassing:

radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as video conferencing and distance learning"(Pagani, 2005, p. 453).

- CAPEX – Capital Expenditure – "A capital expenditure for an item that will have a useful life of several years, such as a piece of hardware. Examples of capital; expenditure would include most hardware, software, Enterprise Resource Planning (ERP) solutions, furniture, physical plant items (e.g. cabling, data center cabinets, etc.) and so on" (Holtsnider & Jaffe, 2012, p. 168).

1.7 Assumptions

In executing the study, the following assumptions were made:

a. In order to gain a balanced perspective on the topic, the sample of respondents will include industry experts and regulatory bodies, ICT organisations and public sector officials in South Africa.

b. The respondents will have the required information, and be willing to share it.

2 LITERATURE REVIEW

2.1 Introduction

This section contains a review of the literature on the key themes relevant to the study. The first theme is ICT infrastructure development in South Africa. The second theme is public-private partnership formation, including its key components and challenges. The section concludes with an overview of the key points.

2.2 Background discussion

Up until 1994, ICT had seldom been in the spotlight as a driver of economic and social development in South Africa. Since 1994 however, the South African government started focusing on the role that ICT can play in transforming society and the economy (Moodley, 2005). This focus has motivated the government to design a number of initiatives to promote ICT infrastructure development that would ultimately build capacity and stimulate the economy of the country.

One of these initiatives, ASGISA (Accelerated and Shared Growth Initiative of South Africa), was formally launched by the then Deputy President, Ms Phumzile Mlambo-Ngcuka, in 2006 and promised to halve poverty and unemployment in South Africa by 2014. In ASGISA, ICT infrastructure investment was a key focus to foster economic growth and alleviate poverty (Gunnarsen, Manus, Nielsen, & Stolten, 2007).

Supporting this approach, Gichoya's research (2005) highlights that governments can greatly enhance their operations and strategic focus with a well-focussed application of ICT which supports improvements in productivity, management effectiveness and the quality of services offered to citizens. Moodley (2005) confirms this when he states that the post-apartheid South African government stressed the importance of ICT investment as a catalyst to alleviate poverty.

While the benefits of ICT investment by governments cannot be disputed, there are several concerns about how great the impact of projects is, since many of them end in failure (Gichoya, 2005). This is substantiated by Heeks (2003) who claims that only 15 percent of all public sector ICT projects is successful.

In his research Heeks (2003) proposes two categories of ICT public sector project failure namely:

Total failure: In this case the initiative or project was never implemented or abandoned after implementation.

Partial failure: In this case, major goals were not attained and/or there were significant unwanted outcomes.

These failures usually come at a high price. The impact of these failures amounts to more than purely immediate financial loss, as it also pertains to potential future financial losses due to lack of efficiency (which could have been an outcome of the project) and opportunity costs by not investing in other/better projects (Heeks, 2003).

In South Africa we have certainly seen our share of failures or partial failures in public sector ICT projects. Some of the more well-known examples include the Blue IQ project, HANIS (Home Affairs National Identification System), Teacher Laptop Initiative and the Who am I Online project. Therefore one needs to ask the question: Why do these projects fail?

2.3 Reasons for ICT Project failure

The reasons for ICT project failure are manifold. The most common factors highlighted in the literature include lack of proper planning, lack of skills, lack of funds, lack of clear project objectives and a lack of management support (Dutta & Bilbao, 2012; Gichoya, 2005; Heeks, 2003).

Gichoya (2005) identifies a broad range of factors that act as barriers to the effective implementation of ICT projects. These factors include infrastructure, finance, poor data systems and lack of compatibility, skilled personnel, leadership styles, culture, bureaucracy and people's attitudes.

The importance of adequate skills to make ICT projects a success seems to be a recurring theme (Dutta & Bilbao, 2012). This is of particular importance as there is an on-going skills shortage in the ICT sector in South Africa (Lotriet, Matthee, & Alexander, 2010), and this could explain some of the failures of ICT projects.

In cases where there is a lack of skills or staffing shortages, Heeks (2003) advocates that governments should make use of external consultants, outsource contracts and train their staff to reduce the possibility of failure of their ICT projects.

Unfortunately, it is apparent from the literature that there is no 'silver bullet' solution for the failure of government ICT projects.

The following research proposition was formulated against the background of the above literature on ICT project failure:

Proposition 1:

ICT infrastructure project failures can mainly be attributed to lack of proper planning, lack of skills, lack of funds, lack of clear project objectives and a lack of management support.

This study investigates one possible way of mitigating these challenges, namely by utilising public-private partnerships to develop ICT infrastructure.

2.4 Defining public-private partnerships

There seems to be no universal definition for public-private partnerships as it is defined differently by academics, international organisations and government

agencies in South Africa (De Bettignies & Ross, 2009). The different views on PPPs are presented below.

2.4.1 *Academic view*

In Osborne's definition he reviews the meaning of the term 'partnership', when he defines PPP. He argues that partnership includes contractual arrangements, alliances, cooperative agreements, and collaborative activities used for policy development, programme support and delivery of government programmes and services (Osborne, 2000).

Reich (2002) puts the emphasis on the roles of the partners. Public private partnerships involve at least one private for-profit organisation and at least one not-for-profit or public organisation. The partners have some shared objectives for the creation of social value and the core partners agree to share both efforts and benefits.

PPPs are also defined as arrangements whereby the private sector participates in or provides support for the provision of infrastructure which results in a contract for the private entity to deliver public based infrastructure services. The implication of PPPs is that there is a cooperative investment of resources and therefore joint risk-taking, sharing of authority, and benefits for all partners (Grimsey & Lewis, 2007). Smith (2012) makes it clear in his definition of PPP that the private sector's finance, management expertise and innovation are used in partnership with the public sector to modernise the public sector services.

Another interpretation is that PPPs is an arrangement where government states its need for capital-intensive, long-lived infrastructure and the desired facility is built using a complex combination of government and (mostly) private financing. The facility is then operated by a private entity under a long-term franchise, lease, or contract and the payments are usually spread between 20 to 99 years and covers construction, operation, maintenance, and capital costs (Savas, 2000).

2.4.2 *International organisational view*

In the view of the World Bank PPP refers to an arrangement between public and private sectors that is typically medium to long term, whereby part of the services/works that fall under the responsibilities of the public sector, are provided by the private sector (World Bank, 2011). There is a clear agreement on shared objectives for delivery of public infrastructure and/ or public services.

Another version is that PPP refers to forms of cooperation between public authorities and private business which aim to ensure the funding, construction, renovation, management or maintenance of an infrastructure or the provision of a service (European Commission, 2004). PPPs are relatively long in duration, and risk gets transferred from the public to the private partner. The precise distribution of risk is determined by the respective parties' ability to control and cope with this risk (European Commission, 2004).

2.4.3 *The South African National Treasury definition of PPPs*

Amidst all these different definitions and interpretations, it is important to look at the local (South African) use of the term. According to the South African National Treasury, "public private partnerships are long-term contracts between the public and private sector which aim to ensure the delivery of well maintained, cost-effective public infrastructure or services, by leveraging private sector expertise and transferring risk to the private sector" (Manuel, 2007, p. 4).

2.4.4 *South African legal definition of PPPs*

One also needs to consider the legal perspective in order to get a well-rounded view. South African law defines PPPs as: "A contract between a government institution and private party, where: the private party performs an institutional function and/or uses state property in terms of output specifications, substantial project risk (financial, technical, operational) is transferred to the private party, the

private party benefits through: unitary payments from government budgets and/or user fees" (Manuel, 2007, p. 5).

From the above discussion one can see that PPP is defined differently by different institutions. There are however some clear commonalities between the definitions namely: sharing of responsibilities, risks and rewards, joint decision making power and authority, pursuing shared or compatible objectives and joint investment.

In this study, the South African legal definition, as outlined above, was adopted as the working definition.

2.5 What does not constitute a PPP?

The National Treasury makes it clear that a PPP is not a simple outsourcing of functions. It is a long-term contract that involves a substantial risk transfer from the public sector to the private sector. It is not a donation by the private sector for the public good nor is it the privatisation of state assets and/or liabilities (Manuel, 2007).

2.6 Types of public-private partnerships

Around the world there are a number of different versions of the PPP model which can be classified into seven different categories (Eggers & Startup, 2007; Kwak, Chih, & Ibbs, 2009). These are discussed below:

1. **Design-Build (DB):** In this version, the government contracts with a private partner to design and build a facility in accordance with the requirements set by the government. After completing the facility, the government assumes responsibility for operating and maintaining the facility. This method of procurement is also referred to as Build-Transfer (BT).

2. **Design-Build-Maintain (DBM):** This version is similar to Design-Build except that the private sector also maintains the facility. The public sector retains responsibility for operations.

3. **Design-Build-Operate (DBO):** In this version, the private sector designs and builds a facility. Once the facility is completed, the title for the facility is transferred to the public sector, while the private sector operates the facility for a specific period. This is also referred to as Build-Transfer-Operate (BTO).

4. **Design-Build-Operate-Maintain (DBOM):** This version combines the responsibilities of design-build procurements with the operations and maintenance of a facility for a specific period by a private sector partner. At the end of that period, the operation of the facility is transferred back to the public sector. This method of procurement is also referred to as Build-Operate-Transfer (BOT).

5. **Build-Own-Operate (BOO):** The government grants the right to finance, design, build, operate and maintain a project to a private entity, which retains ownership of the project. The private entity is not required to transfer the facility back to the government.

6. **Build-Own-Operate-Transfer (BOOT):** The government grants a franchise to a private partner to finance, design, build and operate a facility for a specific period of time. Ownership of the facility is transferred back to the public sector at the end of that period.

7. **Design-Build-Finance-Operate/Maintain (DBFO, DBFM or DBFO/M):** In this version of the PPP model, the private sector designs, builds, finances, operates and/or maintains a new facility under a long-term lease. At the

end of the lease term, the facility is transferred to the public sector. In some countries, DBFO/M covers both BOO and BOOT.

In South Africa PPPs are most commonly the design-build-finance-operate (DBFO) version, where the private sector operates the facility under a long term lease post construction. The choice of the PPP version often depends on the sector, the type of project and the market, and the need to ensure value for money.

In addition to new projects PPP's can also be used for existing services and facilities. In these cases the following definitions apply:

- **Service Contract:** The government contracts with a private entity to provide services that the government previously performed. This can also be regarded as outsourcing (Grimsey & Lewis, 2007).
- **Concession:** Concessions are the oldest form of public-private partnership. It is a contract for a fixed term where private sector resources are used to design, construct, finance, renovate, operate and maintain facilities. Ownership of the facility may remain with government or be transferred to them on completion of the construction or at the end of the concession period (Grimsey & Lewis, 2007).

The South African National Treasury identifies two types of PPPs. The first type is where the private party performs a government function; and the second type is where the private party acquires the use of government property for its own business-related purposes. There can also be hybrids of these two versions (Manuel, 2007).

2.7 Roles of participants in PPP

The following section outlines the different roles that the stakeholders in a PPP should play in order to make the project a success.

2.8.1 Public sector

Although many of the tasks of the project in PPPs are transferred to the private sector, the public sector still carriers most of the burden for successful project delivery. The public sector is therefore still responsible for defining the project objectives, finding finance, ensuring quality and safety, and providing support for both the community and the private sector contributors to the project (Savas, 2000).

2.8.2 Private sector

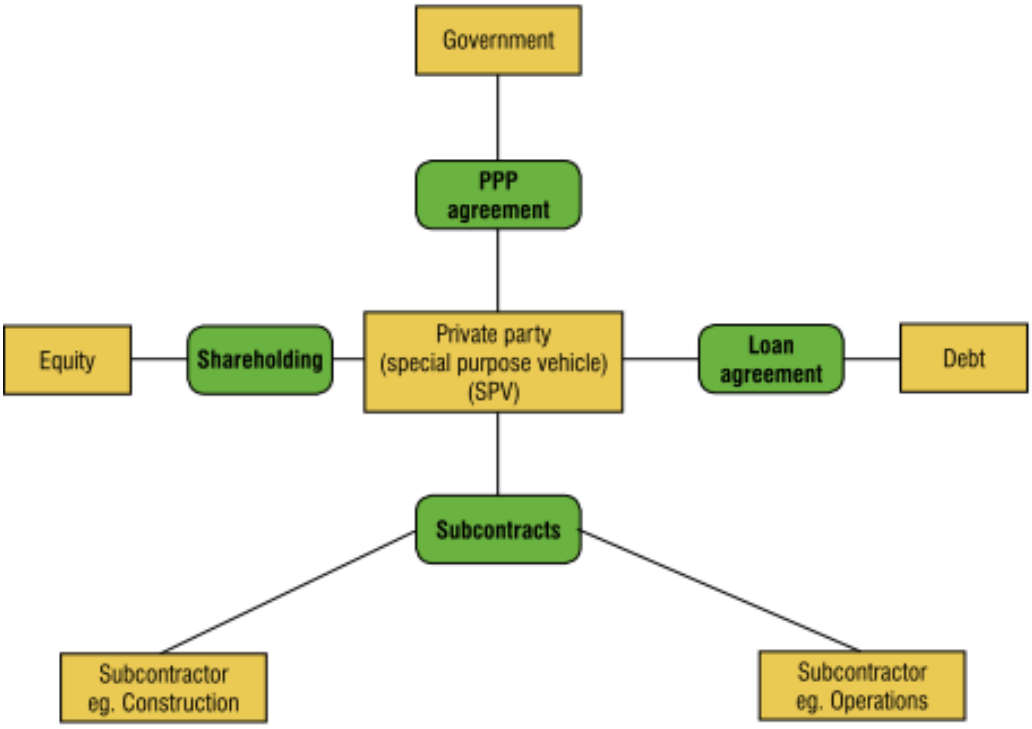
The essential responsibility of the private sector in PPPs is to effectively and efficiently deliver on the business objectives of the project and therefore add value to the public sector and the general population (Savas, 2000).

2.8.3 Special Purpose Vehicle Company

In most PPPs, a dedicated business entity is set up by the private party involved in the project. This is called a special purpose vehicle (SPV) and its sole purpose is to deliver on the project outcomes. This illustrates one of the big differences between a PPP and a normal project. In a typical PPP there are more parties involved in the project, especially since the project is not funded by the public sector, but mostly funded by a third party lender.

In Figure 1 below, the typical structure of an SPV is shown by (Manuel, 2007).

Figure 1: Typical Special Purpose Vehicle structure for PPPs



Source: Introducing public private partnerships in South Africa, 2007

2.8 Benefits, risks and reasons why PPPs fail

Although PPPs seem to be the answer to many of the challenges that public sector projects face, they are not without limitations. The benefits and risks of PPPs are discussed below:

2.8.1 *Benefits of PPPs*

Grimsey and Lewis (2007) organise the benefits of PPPs into three categories namely commercial, social and environmental benefits.

Commercial benefits: Projects get delivered in the shortest possible time from the onset of the PPP contract resulting primarily from the whole-of-life costing principle; the risk of delays/stoppages of construction is limited, because the

private sector may lose for late delivery of completed projects; value for money is achieved through the efficient allocation of risk between the public and private sectors; operational savings arise out of innovative capital building solutions; projects are financed without reliance on public debt; public sector skills are released from financial constraints and utilized to maximize efficiency.

Social benefits: Technology transfer from the foreign investors to the local public sector occurs; projects might promote competition and market-based conduct, skills and innovation; private sector shares expertise with public sector.

Environmental benefits: PPP projects are characterised by conserving energy, water and other resources, minimizing waste, enhancing biodiversity and controlling pollution. Environmental factors are important around the globe but they are especially important in emerging markets where there often are population pressures and a legacy of poor resource use (Savas, 2000).

Apart from all the above-mentioned benefits, the National Treasury points out that the public sector benefits financially from a PPP as they pay incrementally for the project once the services are delivered and PPPs force the public sector to focus on outputs and benefits from the start (Kwak et al., 2009; Manuel, 2007). PPPs further allow the public sector to avoid up-front capital costs and reduce public sector administration costs (Kwak et al., 2009).

2.8.2 *Risks of PPPs*

Although the PPP model seems most appropriate for project execution, there are a number of risks associated with PPPs, mainly associated with the implementation of the project, and these could lead to failure of the project and the PPP.

The most common risks associated with PPP projects as pointed out by Chapman and Ward (2003); Kerzner (2009); Smith and Walter (1990) and Thobani (1998) include:

- **Technical risk** - due to engineering and design failures;
- **Construction risk** - due to faulty construction techniques and delays;
- **Operating risk** - due to high operating and maintenance costs;
- **Revenue risk** – examples include traffic shortfall in the case of a toll road project or failure to extract resources, which lessen revenue and can cause the project to fail to deliver;
- **Financial risk** - inadequate hedging of revenue streams and financing costs;
- **Force majeure risk** - events beyond the partners' control like war or other calamities;
- **Regulatory risk** - changes in the regulation might be unsupportive of the project;
- **Environmental risks** - due to natural disasters.

2.8.3 *Reasons why PPPs fail*

Although PPPs have generally proven to be an effective infrastructure delivery tool, several authors (Eggers & Startup, 2007; Kwak et al., 2009; Middleton, 2008) point out reasons why they generally fail or never get off the ground in the first place:

Lack of skills: Although the public sector gets supported by private sector skills, some functions cannot be outsourced. If the public sector does not have skills to perform these functions, the PPP will not be effective (Eggers & Startup, 2007). Since the PPP model is a fairly new concept in most countries, both public and private sectors still lack appropriate knowledge and skills to implement such long-term projects (Kwak et al., 2009).

Lack of clear project objectives: If the project objectives are not clear from the start, the private sector partner often struggle to deliver the project successfully (Eggers & Startup, 2007).

Inadequate planning: If projects do not respond to the market demand, then too many or too little projects will create a non-competitive environment or bidders will

move on to the next project. In these cases the PPP will not even get off the ground (Eggers & Startup, 2007).

Failure to realise value for money: This failure occurs when the cost associated with the PPP is not sufficiently offset by efficiency gains (Eggers & Startup, 2007). Middleton (2008) emphasises the importance of this factor when he notes that this is one of the key factors why most ICT infrastructure PPP projects fail in the longer term. He explains this by highlighting the example of a wireless network project. In this project the private sector failed to recoup their investment in building the wireless network since they overestimated the uptake for these services from the general public once the project was completed.

Cost of PPPs: PPP projects may be more costly since the private sector cannot borrow capital to finance projects as cheaply as the public sector (Kwak et al., 2009). Further to this, competition in PPP projects are limited due to the high tendering costs, which lessen the cost benefits that the public sector get by multiple companies tendering for a project (Kwak et al., 2009).

Inappropriate risk allocation: A common error is transferring demand risk to the private sector even when the contractor has no control over the amount of use the infrastructure will receive. Partners need to share the risks according to their capabilities (Eggers & Startup, 2007).

Poor operational focus: The government may view PPPs as financing instruments and thereby focus too much on the transaction and too little on the operation itself (Eggers & Startup, 2007).

Lack in accountability: Project accountability may be reduced by the private sector entity because a great deal of information can now be treated as ‘confidential’ which allows the private entity to get away with sharing this information with the public sector entity (Kwak et al., 2009).

Poor communication: A lack of communication between the private and public partners has a significant impact on any PPP project since both parties need to remain up to date with the latest happenings relating to the project to successfully meet the objectives (Eggers & Startup, 2007).

The above literature on PPPs led to the next research proposition:

Proposition 2:

In spite of the potential shortcomings of public-private partnerships, they do offer superior levels of skills and expertise, reduce project risk and improve efficiency for public sector projects.

2.9 The role of PPPs in ICT infrastructure development

Public private partnerships have been used around the world to deliver public sector projects for more than 30 years (Savas, 2000). Fife, Hosman, and Pereira (2008) point out that in recent years 85 percent of funding of developmental projects have come from private corporations and only 15 percent of the funding from the US public sector, called Official Development Assistance. This is the exact opposite to how these projects used to be funded in the 1970s (Runde, 2006).

In line with this growing private sector investment, public-private partnerships have become the norm in managing ICT development projects (Fife et al., 2008). This sentiment is echoed by the World Bank (2006) who advocates that the governments of developing countries should work across departments and partner with private enterprise to extend the use of ICT.

This finds resonance in the South African context especially since the 2009/10 public sector budget indicated a noteworthy shift in government policy regarding the financing of infrastructure. The 2009 Budget Review noted that the long-term infrastructure programme of the public sector requires considerable capital to be

raised through debt. More importantly, expenditure on infrastructure by non-financial public enterprises (notably Eskom and Telkom) exceeded infrastructure expenditure by general government for the first time in 2009/10, which shows the importance all sectors of government place on infrastructure spending (Calitz & Fourie, 2010).

On the other hand, Kanungo (2004) reports that it has not been proved that the participation of the private sector in public sector ICT development projects improved the results or outcome of the projects. Other critics argue that many of the recent PPPs initiated by the private sector are for self-gain and ultimately the private firms only participate in these PPP for profit or use them as a marketing tool (Fife & Hosman, 2007).

This said however, most authors agree that private sector participation does improve the outcome of public sector ICT projects since PPPs offer access to infrastructure, hardware, software, finance and expertise from world leaders in technology, and possibilities for bridging the digital divide, increasing efficiency and economic growth (Calitz & Fourie, 2010; Fife & Hosman, 2007; Savas, 2000).

Examples of successful PPPs for ICT development projects around the world include the Lao Cai – WiMax (Worldwide Interoperability for Microwave Access) - Project which was a partnership between Intel, Vietnam Data Communications and Vietnam Ministry of Post and Telecom. This project aimed at bringing telecom connectivity to rural parts of Vietnam. The project was such a success that all three partners decided to invest further in a second project, very similar to the first but the connectivity was provided by satellite technology (Fife & Hosman, 2007).

Another example is the Australian government that allocated AUD 4.7 billion to build a national broadband network based on joint public-private funding. The private partner provided access to its existing IT network, funding and technical and management capacity to expand the network coverage to rural areas. The initiative is intended to allow rural schools, farmers, and other regional

communities to participate in global knowledge sharing by having access to the Internet (Pillay & Hearn, 2011).

2.9.1 *PPP infrastructure projects critical success factors*

Several authors point out the importance of a number of critical success factors for infrastructure projects using the PPP model (Adetola, Goulding, & Liyanage, 2011; Chan, Lam, Chan, Cheung, & Ke, 2010; Chua, Kog, & Loh, 1999; Merna & Dubey, 1998; Tiong, 1996; Zhang, 2005). Below is a summary of these factors:

Some authors explain that private sector investors and lenders are hesitant to pursue projects in an environment where local authorities are viewed as having poor credit quality and contracts are not easily enforceable. These authors therefore suggest that there has to be a **favourable political, legal, economic, and commercial environment** for private sector participation (Zhang, 2005).

These authors also draw attention to the importance of identification and **allocation of the right level of risks** to the right parties which will dictate the type of contractual arrangement (Zhang, 2005). Other important issues they highlight include a clear statement of the objectives of the contract and the obligations and rights of the contracting parties, adequacy and clarity of plans and technical specifications, a formal dispute resolution process, and motivation and incentives to the contracting parties (Chua et al., 1999).

Further to the above, the importance of the project's **economic viability** is highlighted. Especially for a PPP infrastructure project, economic viability is dependent on a number of factors which include long-term demand for the products/services offered by the project; limited competition from other projects; sufficient profitability of the project to attract investors; long-term cash flow that is attractive to the lender; and long-term availability of suppliers needed for the normal operation of the project (Zhang, 2005).

Selection of the **right concessionaire** is critical to the success of the project since the concessionaire undertakes far more commitments and assumes much broader and deeper risks than a mere contractor (Zhang, 2005). It is therefore of utmost importance that the concessionaire has sound technical and financial expertise and skills to manage the project (Tiong, 1996).

Another factor that is highlighted by the authors is a **sound financial package**. PPP infrastructure projects are often financed on a non-recourse or limited recourse basis. It is of utmost importance that the project has a sound revenue stream, since this forms the basis of project finance as lenders only have recourse to these funds and assets of the project (Merna & Dubey, 1998).

A **transparent and efficient procurement process** is essential for lowering the transaction costs, shortening the negotiation time and completing the deal (Chan et al., 2010). A clear project brief which encompasses the client requirements should help to achieve these in the bidding process. Chan et al. (2010) warn that in most cases competitive bidding based solely on price may not help to secure a strong private consortium and obtain value for money for the public. They therefore suggest that the public sector entity should take a long-term view in seeking the right partner.

Adetola et al. (2011) agree with the above factors and add the following:

Project communication is crucial to the success of PPP infrastructure projects as it enables the parties involved to pass thoughts, ideas, information and instructions quickly and effectively between people with different technical skills and interest (Adetola et al., 2011). It further enables speedy and effective resolution of problems, and deciding upon courses of action. The application of **technology** goes hand-in-hand with project communication, as it can speed up communication and allows for better knowledge sharing which ultimately makes for a more efficient project team (Adetola et al., 2011).

These authors further highlight the importance of a **good relationship** and **trust** between the public sector and the private parties involved in the project (Adetola et al., 2011). They warn if there is not a good relationship between these parties, built on open communication channels, it can cause the project to spiral out of control and end in failure.

After consulting the available literature on the use of PPPs for infrastructure development, one can conclude that there is limited published research on whether PPPs might be an effective tool for overcoming some of the challenges to public sector ICT infrastructure project failures. For this reason the following research proposition was formulated:

Proposition 3:

Public private partnerships might be an effective mechanism for reducing ICT project failure in the South African public sector.

2.10 PPPs in South Africa

Although South Africa, compared to developed countries, has been fairly slow to adopt PPPs for infrastructure development projects, it has well developed legislation governing PPPs.

2.10.1 *Legislation governing PPPs in South Africa*

The Public Finance Management Act (1999) (PFMA) and Treasury Regulation 16 are the main legislation governing PPPs at the national and provincial levels in South Africa. Municipal PPPs are governed under the Municipal Finance Management Act (2003) (MFMA), the Municipal PPP Regulations, and the Municipal Systems Act (2003) (MSA). Both acts focus on delivering outputs through value-for-money solutions (Manuel, 2007).

2.10.2 *PPPs in South Africa*

There are a number of PPP projects currently in operation in South Africa that are of importance namely Inkosi Albert Luthuli Hospital, Free State social grants, IT for the Department of Labour, the DTI Campus and SanPark concessions (National Treasury, 2011).

Past successful PPP projects that have been completed include: Gautrain Rapid Rail Link, Fleet management – deal to manage the fleet of 7 national departments, Western Cape Rehabilitation Centre and Lentegeur Hospital, Polokwane Hospital renal dialysis service, Port Alfred and Settlers hospital (National Treasury, 2011).

This shows that PPPs have been adopted effectively in South Africa and the public sector has gained tremendously from the experience.

According to the South African National Treasury, 22 PPP projects were successfully closed across the country up to November 2011 (National Treasury, 2011). Only one IT related project made it to this list. This document further states that there are currently four ICT infrastructure related PPP projects registered to be delivered in the future.

So the question should be asked, why are there not more ICT related PPP projects in South Africa?

2.11 Conclusions from literature review

The literature review revealed that several international examples exist of PPPs that have been very successful. Although PPPs are not the only solution for reducing public sector project failures, they have contributed considerably to improving public services in recent years. In South Africa a lack of skills in the public sector has been identified as one of the key causes why projects fail, which

is why the private sector should provide the much needed skills to improve the success rate of these projects.

Unfortunately the role of PPPs in ICT development in South Africa remains unclear. Whether PPPs are a successful solution for curbing public sector ICT infrastructure project failure in South Africa, has not been conclusively resolved. This is further investigated by attempting to prove the following three research propositions:

2.11.1 *Research Proposition 1:*

ICT infrastructure project failures can mainly be attributed to lack of proper planning, lack of skills, lack of funds, lack of clear project objectives and a lack of management support.

2.11.2 *Research Proposition 2:*

Public-private partnerships offer superior levels of skills and expertise, reduce project risk and improve efficiency for public sector projects.

2.11.1 *Research Proposition 3:*

Public-private partnerships might be an effective mechanism for reducing ICT project failure in the South African public sector.

3 RESEARCH METHODOLOGY

This section outlines the methodology used to conduct the research. Firstly, literature on qualitative research will be discussed, followed by a review of the research design and research instrument that were used. Issues around data collection and analysis in relation to this study will be addressed, after which the validity and reliability of this study will be discussed.

3.1 Research methodology

This study used a qualitative methodology in order to gather the most appropriate data to address the research propositions. According to Leedy and Ormrod (2005) qualitative research is less rigidly structured as it formulates and builds new theories. Creswell (2009) describes qualitative research as an unfolding model that occurs in a natural setting, which enables the researcher to develop a high level of detail due to his/her involvement in the actual experiences. Williams (2007) adds to this by stating that qualitative research involves discovery through a holistic approach which involves describing, explaining and interpreting the collected data.

Due to limited research on ICT infrastructure PPP projects having been done in South Africa, qualitative research was considered the most appropriate approach for gathering the data. This approach allows for semi-structured questionnaire to be used and mostly open-ended questions to be asked. This meant that the respondents could base their answers on their own experiences and express their own viewpoints; it also allowed for more freedom of expression which provided for better in-depth analysis (Creswell, 2009).

The data was collected in a series of in-depth face-to-face interviews with each respondent, lasting approximately 60 minutes per interview. In-depth interviews enables the respondent to relate experiences and attitudes to the researcher in

their own words and permits the researcher to fully explore participants' perceptions, opinions and beliefs (Ritchie & Lewis, 2003).

Although an open-ended questioning style was used, the in-depth interviews was semi-structured to ensure that all the necessary themes were covered and the relevant data collected (Creswell, 2009).

One of the single biggest disadvantages of in-depth interviews is the interpretation of the answers by the researcher. The researcher can interpret the answer in a different light than what the respondent actually meant. It is therefore advisable to record the interview to improve the quality of transcripts (Ritchie & Lewis, 2003).

This study assumed honesty and openness from the respondents.

3.2 Research Design

Given the limited existing research on PPPs for ICT infrastructure development in South Africa, this research study explored a new area of focus and could therefore be classified as exploratory research.

Babbie and Mouton (2001) state that a large percentage of social research is conducted to explore a topic, or to provide a basic familiarity with that topic. This approach, they say, is typical when a researcher examines a new interest or when the subject of study itself is relatively new. They further state that exploratory studies usually lead to insight and comprehension rather than the collection of detailed, accurate, and replicable data. Exploratory studies frequently involve the use of in-depth interviews, the analysis of case studies, and the use of informants.

The chief shortcoming of exploratory studies, Babbie and Mouton (2001) argue, is that they rarely provide conclusive answers to research questions. These studies might however hint at the answers and can give insights into the research methods that could provide clear answers. It was therefore foreseen that this

study would at least hint at possible ways of utilising PPPs to foster ICT infrastructure development in South Africa.

3.3 Population and sample

3.3.1 *Population*

The population included ICT industry experts, representatives from regulatory bodies and ICT organisations, and government officials in South Africa. Specific attention was given to interviewing the correct level of people in each of these sectors, i.e. those who have responsibility for infrastructure project design and execution and could provide insight into the research.

3.3.2 *Sample and sampling method*

Senior team members were selected from each company or institution for their knowledge and experience of public private partnerships. Interviews were requested via telephone and email to the respondents selected. If selected individuals were unavailable in the interview period, a suitably experienced alternate respondent was requested. It was anticipated that the required number of respondents would be found in each company/governing body/institution due to the limited time required of them.

Table 1: Respondents interviewed

Company Name	Industry
1. Intel	Technology
2. Microsoft	Technology
3. Dell	Technology
4. Hewlett Packard	Technology
5. Dimension Data	Technology

Company Name	Industry
6. Gijima	Technology
7. IBM	Technology
8. Vodacom	Technology
9. MTN	Technology
10. Dark Fibre Africa	Technology
11. Business Connexion	Technology
12. Internet Solutions	Technology
13. IDC	Market research
14. Frost & Sullivan	Market research
15. Deloitte	Management Consultancy
16. Africa Analysis	Market research
17. BMI-TechKnowledge	Market research
18. Ernst & Young	Management Consultancy
19. Accenture	Management Consultancy
20. McKinsey	Management Consultancy
21. Independent consultant	Management Consultancy
22. Independent PPP legal expert	Management Consultancy
23. National Treasury	Government
24. Department of Labour	Government
25. State Information Technology Agency	Government

In addition to the above respondents, the researcher also attended a two day PPP workshop sponsored by the National Treasury. During this workshop the researcher posed a number of questions to a project advisor from the PPP unit at National Treasury. The knowledge gained at the workshop was also incorporated into the findings of the research.

3.4 The research instrument

The semi-structured interviews were conducted according to the interview schedule provided in Appendix A. The questions were derived from the conclusion and findings of the literature review. Face-to-face interviews provided the best opportunity for respondents to share information in their natural setting, which enabled the researcher to build trust and therefore get more insightful feedback (Creswell, 2009). Mitchell and Jolley (2009) explain that the major advantage of a semi-structured interview is that it allows the researcher to gain more insight from the respondent since no party is restricted to specific questions. The major disadvantage however is that this makes it harder to interpret the results afterwards since different questions might be asked to each respondent.

3.5 Procedure for data collection

The interviews were pre-arranged with the selected senior respondents in each organisation or institution. Interviews took place at their respective offices which assisted in preserving the comfortable natural setting, thereby increasing trust and openness (Creswell, 2009). Most interviews were recorded and hand written notes were taken in cases where respondents were not comfortable being recorded, or to supplement the recordings. Field notes were also compiled after each interview.

3.6 Data analysis and interpretation

A deductive content analysis method, as outlined in Elo and Kyngäs (2008), was applied in this study to analyse the interview data. Deductive content analysis is often used in cases where the researcher wishes to retest existing data in a new context and it may involve testing categories, concepts, models or hypotheses (Marshall & Rossman, 1995; Woods & Catanzaro, 1988). In the case of this study, the researcher took the international experience of ICT infrastructure

development projects and PPPs as described in the literature as the existing data and attempted to retest it in the current South African context.

Deductive content analysis starts by the researcher developing a categorisation matrix and coding the data according to the categories. A structured or unconstrained matrix of analysis can be used, depending on the aim of the study and this is usually based on earlier work such as theories, models, mind maps and literature reviews (Kyngäs & Vanhanen, 1999). After a categorisation matrix has been developed, all the data are reviewed for content and coded for correspondence with the identified categories (Beck & Polit, 2004).

For the content analysis the researcher used Atlas.Ti (qualitative data analysis software program). Before the interviews commenced a code book was developed based on the literature review. Any additional codes that arose from the data transcripts were added to the code book, and previously coded interviews were analysed again for possible addition of new codes.

Once every interview was conducted, it was transcribed, and immediately coded according to the code book. This means that subsequent interviews benefited from insights that the researcher had gained from previous interviews. This process continued until data saturation was achieved.

Codes were subsequently organised into categories and themes. These categories and themes constituted the basis for the conclusions that the researcher arrived at.

Triangulation was carried out between the three sources of interview data namely; ICT organisations' responses, public sector institutions' responses and industry experts' responses in order to verify the key findings of the study (Miles & Huberman, 1994).

3.7 Limitations of the study

The study was reliant upon the availability of a small sample of individuals. The researcher did reach the number of planned interviews as well as the level of designations which he set out to do. The lack of quantitative findings is a limitation to those who wish to assess this topic in a numeric framework.

3.8 Validity and reliability

3.8.1 *External validity*

White and Marsh (2006) describe external validity as a judgment about the applicability of findings from one context to another, whereas Kalof, Dan, and Dietz (2008) see external validity as the ability to generalise from a study to a larger population.

One way of strengthening external validity, particularly in qualitative studies, is by adopting a triangulation strategy. Triangulation is typically a strategy for improving the validity and reliability of research or evaluation of findings (Golafshani, 2003), and is defined by Creswell and Miller (2000, p. 126) to be “a validity procedure where researchers search for convergence among multiple and different sources of information to form themes or categories in a study”. In this study triangulation was effected by including respondents from three different sectors, and comparing their responses.

3.8.2 *Internal validity*

Internal validity is the identification of all important factors in the research question and accurately and completely describing the ways in which these factors are evident in the data gathered (White & Marsh, 2006). Kalof et al. (2008) state that a study has internal validity if it can draw appropriate conclusions from the data at hand.

There are two approaches to improving validity in qualitative studies as described by Burnard (1991) which include a multiple coders approach and respondent approach.

The multiple coders approach engages a second coder and requires him/her to read the first three transcripts, to verify the coding and identify categories. This is then compared to the primary researcher's codes and categories that were developed on the same transcripts. When results are similar, strong internal validity is illustrated.

The respondent approach for checking validity requires the researcher to return to three of the people interviewed and asking them to read through the transcripts of their interviews and to write down what they see as the main points that emerged from the interview. This produces a list of headings which can then be compared to the categories identified by the researcher and the two lists can be discussed with the respondents. From these discussions, minor adjustments may be made to the categories.

For purposes of this research, the first (multiple coders) approach was followed to ensure internal validity. The second coder was identified as Professor M. Fourie-Malherbe, Professor of Higher Education Studies at Stellenbosch University. Prof. Fourie-Malherbe has more than twenty years' experience at different universities and extensive experience in qualitative research studies. Her involvement brought valuable insight and knowledge to the study, which ensured higher levels of validity. The second (respondent) approach was not viable due to the demanding schedules of the respondents.

3.8.3 *Reliability*

White and Marsh (2006) define reliability as the ease of replicating the study. If findings can easily be replicated after discounting conscious and unpredictable changes, then the reliability is high. Beck and Polit (2004) say it is necessary to

demonstrate a link between the results and the data in order to increase the reliability of the study. Elo and Kyngäs (2008) stress that the researcher should aim to fully describe the analysing process in as much detail as possible when reporting the results in order to improve reliability.

In order to ensure reliability in this research, the research instrument was tested on a trial respondent before the interviews commenced. This enabled the researcher to refine and clarify the research instrument to ensure dependable data from respondents. Over and above recording of the interviews and taking handwritten notes during the interview, extensive additional field notes were taken after each interview to capture the mood of the respondent and of the interview. All of these measures enhanced the reliability of the research.

This chapter outlined the methodology used to conduct the research. Due to the exploratory nature of the topic, a qualitative research method was used my means of in-depth semi-structured interviews as it allowed the researcher the best opportunity to get a holistic view on the topic. The next chapter explores the key findings of the key research.

4 DISCUSSION OF RESEARCH FINDINGS

4.1 Introduction

This chapter summarises the key findings of the research, derived from the in-depth semi-structured interviews. All quotes taken from the transcripts have been presented verbatim, notwithstanding possible grammatical errors.

The chapter begins by exploring the perspectives of respondents with regard to the factors that might limit ICT infrastructure projects from being successful. This is followed by a discussion of their responses on whether public-private partnerships offer additional benefits to ICT projects compared to normal procurement methods. The chapter concludes by reviewing whether, according to the respondents, public-private partnerships might be an effective mechanism for reducing ICT project failure in the South African public sector.

4.2 Factors that limit the success of ICT projects

The following were identified by the respondents as factors that hinder the effective implementation of ICT projects.

4.2.1 *Lack of skills*

"Skills: in all probability around 50% of the skill in public sector is not up to scratch".

The majority of respondents confirmed that there is a clear lack of skills in the public sector when it comes to ICT infrastructure projects. Lack of skills is the single biggest inhibitor to ICT infrastructure projects and the biggest reason why ICT infrastructure projects fail. Although the majority of respondents mentioned the fact that there is a general lack of skills, some respondents were more specific on the type and level of the skills that are lacking.

i. Types of skills that are lacking

"Lack of understanding of the scope and what the public sector or instigator wants to achieve."

The respondents identified three major areas where skills shortages exist: technology specific skills, project management skills and project execution skills.

"...public sector does not have the capacity to effectively design....IT projects."

The lack of technology specific skills and expertise in the public sector was regarded by the respondents as a major cause of ICT project failures. These skills are crucial for any ICT project since they are a prerequisite for the public sector to formulate the project based on their needs. More specifically, these skills are required for the appropriate design, scope and monitoring of the projects. Respondents mentioned that even in cases where projects do get delivered, they do not address the needs of the department, since the initial project scope and design was done incorrectly, or was misunderstood and therefore the solution does not address the needs of the department.

"Management...is very important otherwise the project can spiral out of control..."

Secondly, there is also a lack of project management skills in the public sector, which limits the effective supervision and administering of the project. This leads to projects being cancelled half way through due to insufficient funds or due to the project scope changing so much that the project becomes unviable.

"Too much talk from the public sector and not enough execution."

Lastly, a lack of project execution skills was identified. Some respondents argue that even when a project is put together effectively in the public sector, no execution skills exist which therefore causes the project to fail.

ii. **Reasons for a lack of skills in public sector**

"In most cases the decision makers within the public sector are political appointees rather than chosen on grounds of expertise."

Political appointments, instead of appointments made on the basis of merit, expertise and experience, are highlighted by respondents as a major problem. The result of political appointments is that under-qualified people have to take on tasks which they cannot perform. This has a significant impact on all decisions that are made in the public sector as it actually leads to a lack of decision-making. Unqualified staff is scared to take decisions as it might boomerang if they made the wrong choice. This ultimately causes projects to fail at tender stage as no-one wants to approve the project.

"Another factor that limits technology specific skills in the public sector is market competition."

One respondent argues that even if the public sector could train and develop specific technology skills, they would not be able to retain those skills as technology skills are in demand in the private sector as well. The private sector however can afford to pay higher wages for those skills, compared to the public sector.

4.2.2 *Limited term of political decision makers*

"Strategies change every time when the electorate changes".

In the current South African political landscape most decision makers get appointed in a position for a limited term, usually five years. Respondents argue that this limits the effectiveness of decision makers since five years is not enough to make a real impact. The reasons are as follows: when a new decision maker gets appointed to a position, they have just enough time to finish the previous incumbent's projects or start a new project. This usually leads to projects getting

started but never finished since the person that takes over from the project initiator, might feel that he/she was not involved in the initial planning of the project and therefore is not willing to take the risk to continue with the project. This obviously impacts very negatively on ICT infrastructure projects which typically are long-term projects.

4.2.3 *Procurement process*

"The controls, compliance and process take very long."

Respondents indicated that the public sector procurement process is a very long and tedious process. One respondent mentioned that it can take up to a year, if not more, for a tender to be awarded if it gets awarded at all. The impact of this process is that in some cases projects gets cancelled since the department's needs have substantially changed or the technology that was proposed for the project is outdated by the time it gets implemented.

"SITA becomes a stumbling block to deliver affordable services."

A large number of the respondents argue that the State Information Technology Agency (SITA) is a big stumbling block to rolling out ICT projects. Although SITA has good internal processes, respondents argue that effective links between SITA and other public sector departments are absent. This makes it very hard for any department to invest in new technology as all procurement has to be approved by SITA which leads to SITA getting involved in the project. This adds a layer of complexity to the procurement process.

"SITA is the middle man adding a mark-up from the vendor and then deliver the service at a higher price to the public sector."

These respondents further argue that SITA inhibits value-for-money technology roll-out in the public sector since they procure a solution from the private sector, then adds a mark-up on top of the price and then provides the solution for the

higher price to the public sector entity. The initial intention was that SITA should be able to assist the departments that do not have ICT skills in their procurement of technology. In reality, it causes the private sector to sell solutions at cost to the public sector or bypass SITA altogether, since by bypassing them, they can sell the solution to the departments at market related prices.

4.2.4 *Lack of clear project objectives*

"Most of the ICT projects in the public sector are run in isolation, they should however rather be planned together in order to maximise the impact of the projects. There has to be one coherent strategy in order to make a real impact."

Although the respondents acknowledge that the public sector has set a target of providing broadband to all South Africans by the year 2020, they believe that this is not achievable due to a lack of proper strategy. Currently all the departments are going after the same target of broadband connectivity by 2020, but because these individual projects are not centrally regulated or managed, there is no way of avoiding replication of projects or tasks. The lack of a coherent strategy or approach to reach the goal in 2020 is highlighted by respondents as a serious inhibitor.

4.2.5 *Lack of co-operation between departments*

"There is a big lack of co-operation between all the various parties in order to reach the common goal..."

The lack of co-operation among the departments in the public sector makes it very hard for ICT infrastructure projects to be rolled out, especially if the projects involve more than one department. A good example of this would be a broadband project, because as the fibre-optic cables are laid next to the roads, approval from both the Department of Communications and the Department of Transport are needed before the project can commence. There is a lack of co-operation

between these departments which makes it very hard to keep projects like these on schedule.

4.2.6 *Lack of funds*

"People spend the funds on other projects rather than on the ICT project that the funds were allocated to."

One respondent argued that the public sector claim that they do not have sufficient funds to do the necessary projects such as broadband rollout in the country, however when looking more closely at how they spend their budget, they actually do have sufficient funds. Instead of spending it on the broadband project, they spend it on bureaucratic systems (such as internal decision making and processes) and people, not on what is needed.

Another respondent argues that the funds are being spent on projects, just not on the ICT project that they were allocated to. The limited nature of the public sector infrastructure budget has severe implications for ICT infrastructure since there are no other funds for ICT infrastructure projects, and this will have a negative effect on the economic development and growth of the country.

In both of the examples above respondents indicated that corruption is the underlying driver for mismanagement of the funds.

One respondent suggested that corruption will always be there but if there is more transparency in the procurement process, ICT projects will be more successful as then everyone will know what they are getting out of the deal.

4.2.7 *Lack of management support*

"There is no central authority that can take charge in ICT projects; therefore every department tries to do their own thing".

In South Africa there are currently a number of ICT decision-makers for the public sector which include the Department of Communications, Department of Science and Technology, Department of Public Service and Administration, Sentech, Infraco etc. All of these decision-makers are ultimately going after the same goal, which will never be achieved unless the approach is consolidated. Respondents argue that one way to overcome this challenge is to create a central ICT ministry that trumps all the other departments, as currently one cannot assign accountability to any particular department.

4.2.8 *Hampering legislation*

"*Legislation is having a negative impact on the private sector bidders of public sector ICT tenders.*"

Respondents highlight that the Public Finance Management Act (PFMA) of 1999 and the Municipal Finance Management Act (MFMA) of 2003, are both well intended but being abused by the public sector for their own benefit. These acts state that it is up to the private sector to verify that the engagements that they are having with the public sector follow the guidelines set by the public sector internally. If this is not the case, then the public sector can cancel the project and wash their hands of any debt; this causes the private sector to carry all the risk. One respondent explained what might happen when a new decision-maker is appointed, e.g. a new Director-General or Minister. He/she may doubt whether the right procedures and guidelines were followed by his/her predecessor, and may therefore cancel the project and all funds can disappear. Due to this reason, some private sector entities are discouraged to tender for potential projects.

4.2.9 *Lack of accountability*

Respondents argue that there is currently no real consequence for public sector officials if public sector projects fail. This factor inhibits the success of these projects since no official has to take accountability for the project. Respondents

argue further that once a minister or decision-maker is being held responsible for project failures and did not do enough to try to save the project; they should be held personally liable. This will ensure that public sector decision-makers think twice before they let a project slip out of their control.

4.2.10 *No client for the infrastructure project*

"There is not a guaranteed client for public sector infrastructure projects."

Respondents highlight that many ICT infrastructure projects such as broadband infrastructure in the rural areas are based on a lot of demand side risk. The public sector needs to take this risk since the private sector will not take the risk of investing in a project that has no guaranteed user or buyer. The challenge is that the public sector has to spend massive amounts of capital on the roll-out of infrastructure and only once the infrastructure is in place, can services be sold and a return on investment be generated. This discourages both public and private parties from investing in these types of projects.

4.3 Comparison between public-private partnerships and normal procurement models

This section explores whether public-private partnerships offer additional benefits to ICT projects compared to normal procurement methods.

4.3.1 Utilise private sector skills

"Public private partnership's major advantage over any other funding model is that the private sector can bring their skills to the project. Multiple private party skills (which can bring experts in each field together) can be acquired in a PPP if structured properly which provides the project the best chance of success."

According to the majority of respondents, the single biggest benefit for using PPPs as a project vehicle is that it allows the public sector to utilise private sector skills. These respondents also stated that in normal circumstances when the private sector runs a project, they are a lot more cost-efficient than the public sector. This ensures that the project runs more smoothly and according to the set budget. One respondent highlighted that the private sector can further assist the public sector in ensuring that they are in line with their strategy when approaching new projects. Respondents enumerated different types of private sector skills that the public sector utilises in a PPP:

i. Project management skills

"PPPs allow a project to be managed by the private sector that has the right skills for the project...."

Respondents pointed out that PPPs have a better chance for success and less chance for failure due to the private sector managing the project. The private sector has qualified project managers who in most cases had previously managed similar projects.

The private sector also tries to deliver the project on time and within the budget in order to avoid any penalties which the public sector may impose if they find anything wrong with the project. This penalty clause allows the public sector to impose penalties for mismanagement of the project or not achieving the project objectives. This should however be in line with the original contract and in accordance to the processes set out in the PPP legislation of the National Treasury.

ii. Specific technology skills

"The private sector can provide the public sector with the best solutions for the project; these will not be 'off the shelf' solutions but rather custom built solutions that can address the public sector needs."

Respondents maintained that PPPs lead to specialised technical skills becoming available for a project since the private sector has the responsibility for designing the solution. For this reason the private sector's technical expertise and experience serve as an immense benefit to the public sector in the project design and scope. One respondent believed that the public sector does not have these levels of technology specific skills since it is a not-for-profit entity and does not have to be profitable. For this reason, the public sector cannot afford to retain technology specific skills since the private sector pays higher wages, and would therefore attract people with these skills. Another respondent argued that PPPs allow the public sector to utilise the private sector's manpower, bandwidth and expertise which provides world-class skills to the public sector, so it is a win-win solution.

Another advantage one respondent mentioned is the advantage of joint decision-making. This, he says, makes a PPP much more viable since it's not left to the public sector to make all the decisions.

iii. Project execution skills

"The private sector can bring their proven project execution processes to the project and share that with government."

Respondents pointed out that the private sector also brings their expertise in project execution to a PPP project. One respondent mentioned that the public sector benefits immensely from the private sector managing the project as they would manage it as a private sector, for-profit, project. This ensures that the project gets delivered on time and within the budget. The public sector benefits from this since they are ensured that the project will be delivered, and can impose penalties if it's not delivered on time and within budget.

4.3.2 *Improved efficiency*

"Normally when you bring the private sector into a project they are a lot more cost efficient, therefore the project will be run a lot smoother and according to the set budget."

Apart from PPPs providing the public sector with private sector skills, respondents also highlighted that the private sector will run the project more cost efficiently. These respondents indicated that the public sector gets the best deal since the private sector can be penalised if they run over budget for no apparent reason. One respondent mentioned that the public sector saves time and money due to SITA being excluded from these types of projects. This allows the public sector to be quoted a price which excludes the SITA mark-up. Another respondent mentioned that there is less posturing in the private sector and therefore they can get the job done more efficiently than the public sector as they are motivated by profit rather than by looking good.

4.3.3 *Positive effect of the penalty clause in a PPP*

"PPPs are managed closely and therefore they have a lesser chance to end in failure due to the penalty clause."

The private sector also tries to deliver the project on time and in budget in order to avoid any penalties which the public sector may impose if they find anything wrong with the project. This penalty clause allows the public sector to impose penalties for mismanagement of the project or not achieving the project objectives. This should however be in line with the original contract and in accordance to the processes set out in the PPP legislation from the National Treasury.

4.3.4 *PPPs allow for proper risk transfer*

"The advantage of PPPs is that they spread the risk."

Another important benefit of PPPs is that there is proper risk transfer which contributes to curbing the inefficiencies in the public sector and further helps fill the skills gap. This allows for better designing of and planning of projects since the private sector carries all the risk. Respondents mentioned that PPPs allow for most of the project risk to be transferred from the public sector to the private sector. In most cases all the project design and scoping risk gets transferred to the private sector. This ensures that the private sector does thorough research in order to produce the best possible designs and plans.

4.3.5 *PPPs allow for better project planning*

"PPPs allow for proper feasibility studies to be done, which allows for less mistakes and/or changes in the project at later stages since most of the knowledge has been accumulated upfront."

Respondents mentioned that the PPP model assigns great importance to conducting proper feasibility studies for the potential project. This allows the public sector to get enormous amounts of information and expertise on whether the project will be a success and whether a PPP model is best suited for the project. This is not the case in normal public sector procurement and for that reason; respondents believe that PPPs is a better project vehicle.

Respondents further stated that proper feasibility studies ensure that the project will be able to produce a return on investment, which is one of the big concerns for ICT infrastructure projects and one of the key deciding factors for a PPP.

4.3.6 *Utilisation of private sector funds*

"...the public sector is under severe strain in terms of budget allocated for national infrastructure projects."

Some respondents highlighted the fact that the public sector does not have enough funds to invest in all needed infrastructure projects. One area where funds

are lacking is in ICT infrastructure. The respondents further emphasized that ICT infrastructure is crucial for economic growth. Due to the public sector's limited budget, respondents argue that a large percentage of the funding needs to come from the private sector. This, they say, can only be done through PPPs since no private sector entity would be willing to take all the risk in funding something if there is not a clear return on investment on the table.

One respondent mentioned that a PPP has great cost advantages for the public sector since the private sector can fund the project and the public sector can then pay it off incrementally. This saves the public sector from putting up all the CAPEX for the project and therefore it can invest in more projects simultaneously.

4.3.7 *PPPs can achieve value for money*

"PPPs...ensure an attractive return on investment or payback..."

A few respondents mentioned that PPPs ensures that the project achieves value for money. If this fact cannot be determined through the feasibility study, then the project will not pass through National Treasury and will not be registered as a PPP. The private party can in some projects run or manage the services after the project is completed in order to make the projects profitable – since the private sector runs the project as a business for profit compared to the public sector purely providing a service to the wider public.

4.3.8 *PPPs overcome some legislative challenges*

"PPPs can overcome some of the challenges that normal procurement is experiencing through the PFMA and MFMA."

One respondent mentioned that the challenge experienced through normal procurement is that projects can be cancelled if the private sector party cannot

prove that all the right processes and procedures were followed in the project's design. This respondent argued that compliance with the legislation can be more easily achieved in a PPP since the National Treasury can confirm the compliance with the PFMA. This will then reduce the private party's risk of the contract being cancelled.

4.3.9 *Greater transparency in the PPP process*

"The PPP process is a lot more transparent than other procurement models."

One respondent stated that the PPP process is more transparent than normal procurement since there is extensive research done to qualify potential bidders. This can reduce corruption as unqualified bidders are excluded from tendering for the project.

4.4 Determining whether PPPs is an effective mechanism for overcoming ICT project failures

This section of the chapter explores whether public-private partnerships are an effective mechanism to overcome ICT project failures in South Africa. It begins by discussing the conditions necessary for the successful formation of PPPs for ICT infrastructure projects. This is followed by determining whether these conditions are currently present in South Africa. This section ends by examining the inhibitors of ICT PPPs and possible solutions to overcome these inhibitors.

4.4.1 *Conditions necessary for the formation of ICT PPPs*

The section below outlines the factors that respondents deemed necessary for formation of ICT PPPs and also indicates at what levels each factor is currently present in the country. Table 4 below represents a summary of the results:

Table 2: Conditions for formation of ICT PPPs

Conditions necessary for the formation of ICT PPPs	Conditions present
Clear understanding of expectations	Mostly negative
Skills to deliver	Mostly negative
Political buy-in from government	Neutral
Co-operation between public and private parties	Positive
Clear and proper risk allocation	Very positive
Clear project scope	Very positive
Project should be bankable and there should be market interest	Mostly positive
All parties should benefit from the project	Mostly positive
Public sector should be willing to underwrite the projects	Neutral
Clear regulations and processes to facilitate PPPs	Positive
PPP concept proven for ICT projects	Mostly negative
Political stability	Mostly negative

a. ***Clear understanding of expectations***

"Parties need to understand what their rights and roles are in the project."

The majority of respondents revealed that it is crucial in a PPP that all the parties know what their roles are in the project. If this is not clear, there can easily be situations where parties point fingers at each other and blame each other when something goes wrong. This goes hand-in-hand with proper risk allocation that needs to be addressed upfront, during the first stages of the project, in order to ensure everyone is on board and moving towards a common goal.

b. ***Skills to deliver***

"Public sector needs to have the basic skills in order to run PPP projects."

"You have to have a competent project team or project officer..."

Some respondents highlighted that the public sector has to employ a competent project team or project officer that can run the project. Another respondent

suggested that a knowledgeable transactional advisor is crucial to make PPPs successful.

"The skills needed for the project need to be provided by the private sector."

Another view from the respondents is that all the skills for the project need to be provided by the private sector, especially since they take all the design risk.

"All parties need to have PPP expertise."

Respondents pointed out that there should be sufficient knowledge and skills regarding PPPs amongst all parties. If any one of the parties involved lack the level of skills needed for the project, it will definitely delay the project or end in failure.

Some respondents argued that transparency in the project is crucial as without transparency, the parties will not be able to fully understand their roles and this might negatively impact the project.

c. ***Political buy-in from government***

"There has to be a need from the public sector for the project"

A few respondents mentioned that there has to be a need from the public sector for the project or service before they will consider investigating the project.

"Political buy-in is needed to ensure the sustainability of the project."

Respondents argue that PPPs needs political will from the highest level in order for the project to get off the ground and ensure that the project runs full term. Due to the length of a PPP project, (most projects exceed five years), there needs to be sufficient political buy-in to ensure the project continues even if the political decision-makers change due to electoral changes, which happen every five years. Further to that, there also needs to be changes in the attitudes of government.

"Government mindset needs to change as currently when government hears the word private, they cringe as they do not like to hand over a project to the private sector."

Respondents believe that there is still a negative perception about PPPs in the public sector and that it is seen as the privatisation of public sector assets and tasks. This needs to be overcome before the public sector will consider a PPP.

There is a perception amongst respondents that the private sector has to continually step in and do what the public sector is supposed to do. PPPs are the glue that can overcome this challenge as the public sector realise that they do not have the expertise to do the project and therefore need to partner with the private sector for these kinds of projects.

One respondent mentioned that interest from the highest level of political or decision-making authority is required, and ideally, this person should also be the project champion. If not, the project manager should be in a position of some power to make decisions or needs to have the buy-in of some senior official that makes the decisions, otherwise the project will get delayed due to trying to get high ranking positions to sign off the project.

Another respondent suggested that the Director-General needs to get a brief overview of the project performance, once a month or at least once a quarter. This will ensure that if there are any issues, the Director-General has input into the project and can resolve some of these issues quickly.

d. *Co-operation between public and private parties*

"Private sector sharing knowledge with public sector is an important factor for PPP project success."

Respondents revealed that there has to be clear communication between all the partners in order to facilitate successful PPPs. They further stated that knowledge sharing between the private and public sectors is crucial for success of the

project. The public and private sector has to come together in order to effectively plan and execute the projects. Respondents once again emphasised transparency as this ensures that the parties can work as one team towards a common goal. There should therefore be open conversations between the public sector and the private sector to overcome stumbling blocks.

e. ***Clear and proper risk allocation***

"All parties need to...have clear understanding of what is expected and what risk they are given."

Respondents highlighted the importance of proper risk allocation. One of the key success factors for PPPs is that the public sector moves a significant portion of the project risk to the private sector. In order for the PPP to be successful, the private party has to agree to this transfer of risk. It's an unwritten rule that the risk gets assigned to the party that is most equipped to handle that particular risk. In most cases the risk of project design and execution is assigned to the private party. The public sector will underwrite the project, which therefore assigns all the financial risk to them.

Another respondent mentioned that private parties will not get into a project where they have to take demand side risk. This is where the public sector might take some additional risk.

f. ***Clear project scope***

"There needs to be a clear project scope and clear project conditions."

Some respondents pointed out that there has to be a clear understanding of what the need, scope and purpose of the project is and also a valid motivation for a PPP model to be used.

Further to this, they pointed out that there needs to be one coherent strategy in order for all the various parties to work towards a common goal. The parties need

to understand exactly what the project entails and need to be informed if the project scope changes.

A proper financial model that spells out at what point the public sector gets their return and at what point the private sector gets their return on the project, is essential. There has to be a proper hand-over plan in place for when the project finishes so that the public sector can manage the asset going forward.

"There needs to be a penalty system that works in place."

Some respondents mentioned that there has to be an effective penalty system in place, for the public sector to financially penalise the private sector if they deviate from the project scope or contract. The only way this can be implemented is if the public sector is constantly involved in every step of the project.

g. ***Projects should be bankable and there should be market interest***

"A PPP project needs to be bankable and the funders have to be willing to take the risk to fund the project."

Respondents are in agreement that the project has to show some sort of return on investment in order for the financial providers to justify their investment in the project. Respondents also mentioned that there has to be sufficient market interest in the project and that the interested parties should be willing to risk their resources to tender for the project. If no-one is willing to tender for the project, it's not viable. Also, if no bank is willing to fund the project, then it is not a viable project, or at least not viable for the PPP model. In this case the project can still continue if the public sector funds the project themselves.

One respondent mentioned that a PPP's value should exceed R500million in today's market in order to be financially viable for lenders. The PPP model is therefore only a viable option for large projects. This respondent further stated that most PPP projects are long-term projects with terms in the order of 20 to 25

year. This allows the lender to make profit on the investment from the interest generated over the years. In most cases they only start to realise profit after year 12.

h. ***All parties should benefit from the project***

"Public and private sector need to meet on mutual ground where both parties benefit financially from the project."

Respondents are in agreement that all parties need to benefit from the project in order for a PPP to commence. The rewards must also be tied to the risks that the parties take. If a party takes most of the risk, they should in practice get most of the reward. There must be two partners that have a mutual interest in order to make the project successful.

i. ***Public sector should be willing to underwrite the projects***

"Public sector should fit the bill for projects that is not viable for the private sector to do them."

One respondent mentioned that the public sector usually underwrites the project since no bank will loan the money, if the public sector does not guarantee success of the project. This puts all the financial risk on the public sector and reduces the risk for the lender.

Another respondent pointed out that the public sector should have the funds in their budget to pay the unitary payments; otherwise the banks will not fund the project. In some instances the public sector might provide a percentage of the initial CAPEX for the project.

j. ***Clear regulations and processes to facilitate PPPs***

"...a central decision making authority will reduce the complexity and lengthy approval process of each department involved in the project."

Most respondents agree that the PPP process is usually very long and complex. They suggest that a central decision-making authority can reduce this complexity and ensure a more streamlined procurement process.

Respondents also mentioned that regulations should be clear and to the point in order to reduce the complexity of PPPs.

Lastly, respondents said there needs to be alignment internally in the public sector. This will allow the national, provincial and local level to work as one entity which will ensure that everybody knows what the money will be spent on.

k. ***PPP concept needs to be proven for ICT projects***

"There has to be confidence in the PPP model for ICT projects."

Respondents argued that there are currently not enough examples of successful PPP projects in the ICT industry. Therefore they suggested that pilot projects be implemented first in order to make all the parties more comfortable with the PPP model. These pilot projects need to be used as benchmark for similar future projects.

l. ***Political stability***

"There needs to be political stability."

Some respondents mentioned political stability to have a great impact on PPPs. A stable political environment allows private sector partners to be comfortable to invest in the long-term project. If there is no stable political environment, then private parties will not take the risk for investing in longer-term projects, especially if they are funded by them.

4.4.2 *Determining whether the conditions necessary for the formation of ICT PPPs are currently present in South Africa*

The next section in this chapter discusses whether the above conditions, necessary for the formation on PPPs in ICT projects, are currently present in South Africa.

a. *Clear understanding of expectations and possessing the skills to deliver*

"There is still a lack of sufficient knowledge and awareness of PPPs in the country...there is currently not enough PPP skills in order to make this model successful."

Most respondents argued that there are not enough skills in the country to form PPPs for ICT projects. The majority of these respondents agreed that the lack of skills in the public sector is the biggest inhibitor.

Some respondents mentioned that the private sector also has a shortage of PPP specific skills and that there are only a few qualified people that have proper PPP skills in the private sector.

"...there are some PPP workshops funded by the public sector i.e. National Treasury and some private parties also fund training sessions."

A few respondents, from the private sector, mentioned that their organisations are currently investing in training some of their staff in the PPP project model. This is due to them recently being confronted more often with PPPs than before. These respondents believe that PPPs will play a much bigger role in the future and they are capacitating themselves in order to get involved in future PPP projects.

One respondent mentioned that without the relevant PPP skills, all parties involved in a PPP project will find the process very cumbersome as it is much more complex than normal procurement methods. This, the respondent argued, is

one of the benefits of a PPP because if it's done correctly all parties should know exactly what is expected of them.

"The public sector does not always have control over projects, especially if they are understaffed and lack in specific skills to manage the project."

This is exactly what happened in the recently concluded Department of Labour PPP, according to one respondent. This project was a 10 year outsourcing project in which all ICT related infrastructure, systems and services were managed by the private entity. One of the key reasons why this project failed was a general lack of skills in the Department of Labour.

b. ***Political buy-in from government***

"There is currently not enough confidence in the approach to, controls of, and sustainability of the model for ICT infrastructure projects..."

Most respondents agreed that there is not enough political buy-in from the public sector to make ICT PPPs a reality. These respondents attributed the lack of buy-in to lack of confidence in the PPP model, an absence of central decision- making and corruption.

"Currently the government have the wrong mindset when it comes to infrastructure projects. They want to do most of the work themselves, rather to let the private sector do the work."

The main reason why the public sector wants to control their own projects is that *"they want to control the purse"* as one respondent puts it. In other words, corruption seems to be the major driver against PPP from the public sector side. What the respondents further believe is that there is still the stigma that a PPP enables the private sector to privatise a public sector asset or service.

"In some projects the Director General is involved..."

Other respondents believe that there are some levels of political buy-in into the PPP model and that some project champions are key decision-makers and do have a positive influence on the projects. One example of this would be the South African Revenue Service (SARS) turnaround a couple of years ago. But for the most part, they believe that there are not enough decision-makers with the right level of skills to drive ICT projects.

Another respondent argued that the reason for the lack of confidence in the PPP model from the public sector side is because they do not have knowledge or skills on PPPs and therefore find it too complex.

c. *Co-operation between public and private parties*

"There is more co-operation between the public sector and private sector as of late."

A few respondents argued that there is better co-operation between the public and private sector, mainly due to the public sector realising that they need assistance from the private sector. Departments such as the Department of Communication and ICASA currently engage a lot more with the private sector than they did previously.

These respondents go further by mentioning how many more public sector planned conferences there are today compared to five years ago. This, however, can be troublesome. As one respondent puts it: "*We know that government is excellent at defining policies but very weak at execution. So although the government is trying to engage the private sector only time will tell if projects will actually be executed in a timely manner."*

d. *Clear and proper risk allocation*

"The National Treasury facilitates the whole PPP process especially the risk allocation."

Respondents do believe that there is clear and proper risk allocation in most instances, especially on the private party side. These parties spend a fortune on transactional advisor fees in order to ensure that they are assigned the correct risks.

e. ***Clear project scope***

Respondents agree that in most cases the project scope is clear to every party involved in the project since it was discussed and agreed upon in more than one setting. The feasibility study assists in setting a clear and proper project scope.

One respondent however referred to the Department of Labour (DOL) PPP as an example of a project where the scope was not clear to all. "*The project was scoped and specked before 2000 but in 2005 the DOL said they had to stop the project and don't develop any more programmes until a new feasibility study was conducted which would give the DOL the necessary information to make a decision on what to do next."* This delayed the project for almost two years after which a decision was taken to continue with the project upon reviewing the new feasibility study.

The penalty system was ineffective due to a lack of proper understanding of the project scope and a lack of human capacity at the DOL. The penalty system should be able to test projects post implementation in order to impose penalties if it does not adhere to the initial scope.

f. ***Project should be bankable and there should be market interest***

"ICT projects are usually short term in nature, compared to PPPs which is usually longer term. There is therefore a mismatch."

A respondent mentioned that there is a fundamental flaw in trying to deliver an ICT project via the PPP model. The main reason is that PPPs are usually long term projects that can take up to 25 years in the case of a road concession. Due

to constant change and development in technology, ICT projects are usually of shorter term in order to deliver the solution while it's still relevant. The respondent argues that this is the fundamental flaw in using PPPs as a delivery model for ICT projects.

"PPP projects can be 5 to 10 years, if they are of high value and if the lenders are convinced that the project is bankable."

Another respondent argues that PPPs can be used for ICT projects if the overall cost of the project is more than R500 million. This should ensure that there is plenty of margin for the lender to get a return on investment, even if the project is of a shorter nature.

The same respondent also mentioned that many PPP projects which make it through the feasibility stage do not realise as PPPs as the feasibility study found that the project is not feasible or that the PPP model is not the correct vehicle for the project.

Another respondent argued that there is more interest in the PPP model today due to great successes experienced in other countries.

g. *All parties should benefit from the project*

Most respondents agreed that if the PPP project is structured correctly all parties will in theory benefit from the project. One respondent however, referred to the Department of Labour PPP project, and said that the only party that benefited from the project was the private party. The reasons why the public sector did not benefit from this project was due to them not having any significant inputs into the planning, decision-making and proper scoping of the project. All of this can be attributed to a lack of proper skills on the public sector side.

h. ***Public sector should be willing to underwrite the projects***

"Government have funds to spend on projects..."

Some respondents argued that the public sector currently have funds to underwrite ICT PPP projects. The problem is that the lack of skills, knowledge and expertise regarding PPPs needs to be overcome first before it can serve as a delivery model.

i. ***Clear regulations and processes to facilitate PPPs***

"The policies and procedures around PPPs need to be made clear to the private sector."

Some respondents believe that the policies and procedures for PPPs are not 100% clear. Other respondents however do believe the policies and procedures are very clear as per the National Treasury PPP framework.

j. ***PPP concept proven for ICT projects***

"There are not enough case studies to effectively motivate PPPs as a solution to infrastructure projects. There is not enough proof to interest parties in the model."

Most of the respondents agree that there are few if any examples in South Africa where an ICT project was structured as a PPP. The only recent one that the respondents could re-collect is the Department of Labour PPP. These respondents believe that this lack of successful ICT PPP benchmarks is one of the biggest inhibitors to trying to pitch an ICT project via the PPP model.

k. ***Political stability***

"Political stability...is not currently in place."

A few respondents mentioned that currently there is not sufficient political stability in South Africa especially when viewed from foreign investors' side. Almost daily there are violent strikes for either higher wages or improved service delivery. This lack of political stability will deter potential lenders to invest in long-term high risk projects, such as ICT PPP, as the volatile social conditions make it too risky.

4.4.3 *Inhibitors to PPP for ICT infrastructure projects*

The next section explores the inhibitors to ICT PPPs in South Africa.

a. *Perception that it takes long*

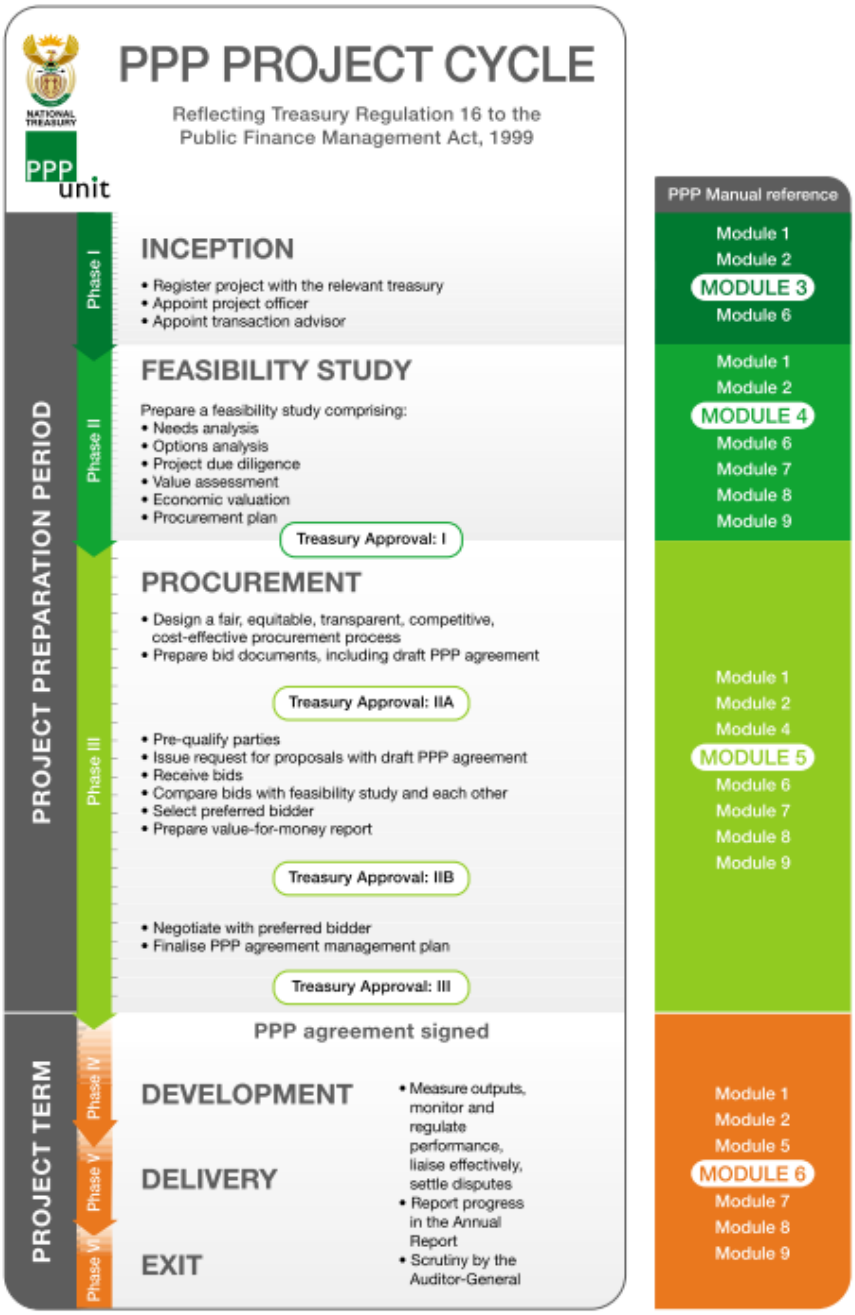
"There is a perception that PPP takes longer than normal procurement models."

The majority of the respondents argued that PPPs take much longer to put together than normal procurement models due to their complexity and feasibility studies which might take 18 months in some instances.

A few respondents however argued that most people measure a PPP from inception which is not a valid comparison to other procurement methods as they are being measured from when the project is put on tender. These respondents argue that in a normal procurement model the planning and scoping of the project, which might take 18 months, is not counted as part of the overall length of the project.

Below is a graphical illustration of the various phases of a PPP project cycle. The argument refers to the difference between a PPP (Phase I and Phase II) and a normal procurement model of scoping and planning a project, which is excluded from the overall length of the project.

Figure 2: PPP Project Cycle



Source: National Treasury PPP Manual, 2004

Another argument that respondents had is that a PPP is not valid for ICT projects due to the intense feasibility study that takes 18 months, at which time technology has changed due to the fast pace of innovation in the technology sector. This fast

pace of innovation and change does not allow for years of proper planning as the results will be short lived once the project is completed.

One respondent however said that PPPs can be used as a vehicle to deliver ICT projects if the feasibility study is done according to strict deadlines and controls and the other phases in the PPP process are done in a timely manner.

Finally, some respondents argued that due to the long-windedness of the PPP process, no public sector decision-maker will buy into the model as the chances of the project being completed while they are in their current position are slim, taking into account that decision-makers on average only occupy their positions for a 5 year term.

b. ***Public sector not willing to hand over control***

"The state still has the inability to form partnerships between the public sector and the private sector."

Some respondents mentioned that one of the big inhibitors to ICT PPPs is the inability of the public sector to partner with the private sector. This has mainly to do with the public sector not willing to hand over control to the private sector as they see this as privatisation.

"There seems to be an attitude in public sector that they can do many projects without getting the private sector involved."

There is also a real concern from the respondents that the public sector thinks they can deliver these types of projects themselves. This, however, is not possible due to a lack of specialised skills. According to respondents this is the main reason why the public sector "goes for turnkey types of projects and not PPPs."

c. ***Lack of knowledge of PPPs***

"There are not enough skills for ICT PPPs in RSA both in the public and private sectors."

Respondents stated that the general lack of understanding of PPPs and the lack of experience in ICT PPPs are some of the key inhibitors to using PPPs for ICT infrastructure development.

"People do not know what the rules are for a PPP."

Respondents mentioned that the lack of skills is apparent in both the public and private sectors.

d. ***Legislation and complexity of PPP***

Respondents stated that the legislation for national PPPs namely the PFMA and the legislation for municipal and district PPPs namely the MFMA are not aligned. This makes it extremely difficult for the private sector to structure projects as a PPP. And in most cases they will stay away due to this factor. The respondents further mentioned that in a national PPP, the National Treasury plays a big role to ensure the project runs successfully, however on municipal level their involvement is much less. This inhibits municipal PPPs from being as successful.

Further to this the respondents also mentioned that the complexity of a PPP is a big inhibitor to these projects. For most private sector firms it's not financially viable to get involved in a PPP as the costs involved to comply with the regulations are astronomical.

e. ***Private sector needs quick returns***

"They need a return within one year, at least the CAPEX portion."

Another factor that inhibits the private sector to get involved in a PPP is the fact that they want to get a return on the project within a year as they are pressured from their shareholders to do so.

This factor, respondents argue, can be overcome if the project is sizeable and will offer a good return on investment in the long run. Unfortunately most PPPs are

longer term projects and the return usually only comes towards the later stages in the project. Most respondents therefore said that they would not get involved.

f. ***Lack of skills in public sector***

"Lack of capacity skills in the public sector limits the PPP process."

The general lack of confidence in the competencies and accountability of the public sector is another big inhibitor for PPPs.

g. ***Private sector not willing to take as much risk***

"Many private sector entities are not happy to take all the risk; they would like to share the risk with the public sector."

In most PPPs the project design and execution risk are taken by the private sector. The financial risk is taken by the public sector, but if the private sector does not deliver according to the contract, then they can be penalised by not being paid. Most respondents agreed that these risks are too much for the private sector to accept. The design and execution risks get further emphasized by the complexity of technology.

One respondent mentioned that a big financial risk that private parties take is to tender for the project, which in some instances can run into the millions of Rands to do, without a guarantee of winning the tender. This severely inhibits the ability of some private parties to tender for PPP projects, especially if they are smaller firms that do not have unlimited funds and resources to spend on the tender process.

h. ***Lack of successful examples***

"There are not enough case studies in order to convince the public sector about the benefits of PPPs and that it offers a viable alternative or solution."

Respondents agreed that a big inhibitor for ICT PPPs are a lack of evidence that the model works and can be replicated.

One respondent also stated that *"there have been some recent massive failures in ICT PPP projects*" alluding to the Department of Labour PPP.

i. ***Corruption***

"RFP's are awarded to preferred companies."

Respondents argued that the scale of corruption in the public sector is inhibiting PPPs as the PPP model is a lot stricter on short listing of bidders. Therefore there is less scope for the public sector to assign projects to their own preferred bidders in order to get compensation for doing so.

The National Treasury gets involved in qualifying the preferred bidders, which is therefore out of the control of the department which have initiated the project.

j. ***Expensive legal fees for risk allocation***

"...50% of all advisory fees to PPP projects are legal fees; this is so high in order to iron out the risk factors for each party."

There is a perception from the respondents that PPPs have very high legal fees in order to properly assign risk to each party. Respondents see this as a big investment in a project without any guarantees that they will win the tender.

k. ***Lack of proper strategy in public sector***

"Private sector does not always know what the public sector needs or what their strategy is."

According to the respondents the lack of clear strategy in the public sector is an inhibitor to PPPs.

4.4.4 *Solutions to overcome the inhibitors of PPPs for ICT infrastructure projects*

The following section looks at what the respondents propose can be done in order to overcome the above-mentioned inhibitors to ICT PPPs.

a. *Simplification of the PPP process*

The majority of respondents agreed that if the PPP process is simplified it should reduce the length on the project.

One respondent said the PPP process can be shortened if all parties work together.

"...National Treasury must look at the PPP process and try to simplify it in order to save time and money on these projects."

Most respondents recommended a redesign of the approach to ICT PPPs as the current legislation is too complex and tedious which makes these projects very long. Some respondents suggested that a template or framework needs to be created for ICT PPP projects which can reduce the time it takes to scope and plan the project.

Another respondent recommended that successful projects need to be used as benchmarks, blueprints or playbooks for possible replication of projects. This should enable all parties to understand the project better.

A few respondents suggested that a "central ministry of ICT" is required to reduce duplication of tasks and reduce the complexity of multiple departments that need to give approval for the project. With one central decision-maker, the complexity and time for approval will be reduced.

b. ***Education and accountability***

"Both the public and private sector needs to be educated on the benefits of PPPs and the process of achieving these benefits in order to make PPPs more successful."

Respondents agreed that there needs to be more investment in acquiring or training of people to increase the PPP skills in the country.

"Some level of education is needed to convince the left wing thinkers that PPPs is not a new form of privatization."

Most respondents agreed that there needs to be some education of the public sector done in order to convince them of the benefits of the PPP model.

A few other respondents argued that if decision makers are held accountable for their actions, they should hand over a lot more control to the private sector, as they will realise they are out of their depth in terms of skills and expertise to make these types of decisions.

"Need to get more relevant skills in order for PPPs to be managed correctly."

One respondent suggests that PPPs will have a better chance at success if the public sector increases their skills to properly manage these types of projects.

Another respondent goes further by proposing that PPPs will only work in state agencies who have the skills and full IT departments that can support the projects.

c. ***Private sector needs quick returns***

None of the respondents had a solution for how to overcome the challenge of the private sector's need for quick returns.

d. ***Risk sharing***

"*Risk needs to be distributed more equally in order for PPPs to be successful."*

Respondents suggest that risk needs to be shared between public and private sector more equally. This will ensure that the private sector feel more comfortable with PPP as project model, since they do not take all the risk for design and implementation.

One respondent however mentioned that the National Treasury is already implementing solutions to address some of the complaints that the private sector has in terms of risk. One solution that the National Treasury has implemented in some of the recent PPPs is to limit the number of shortlisted bidders to three parties. This limits the number of potential bidders that have to take the risk to tender for the project without having a guarantee of winning the project. The National Treasury further looks at compensating the losing bidders for some of the bid costs. This is usually collected from the successful bidder.

e. **Lack of successful examples**

"...investigate developing or developed markets that had PPP projects done in the past and evaluate these projects."

Some respondents suggest that international examples of successful PPPs need to be studied and used as benchmarks in order to use this as a tool to convince parties of the potential success of PPP projects.

Respondents further suggest archiving all documentation about current PPPs and also writing case studies as it might be utilised for similar future projects.

f. ***Corruption***

"There should be a stringent selection process for potential bidders."

Most respondents agree that increased transparency in the public sector will ensure less corruption as people will be held responsible for their actions.

Some respondents believe corruption can be reduced if there are more stringent selection terms.

g. *Expensive legal fees for risk allocation*

Some respondents suggested that the legal fees can be reduced if the parties to the contract increase their own capacity or skills in order to do some of the legal work internally.

One respondent argued that the high legal fees are due to a lack of understanding of the PPP process. This respondent believes that improved PPP experience should reduce the excessive costs of a legal team, especially for modest queries.

h. *Lack of proper strategy in public sector*

Respondents suggested that the public sector can improve their strategy if they partner with the private sector since they have the necessary knowledge and skills to create a proper strategy.

This chapter provided insight into the factors which might limit ICT infrastructure projects from being successful, a discussion on whether public private partnerships offer additional benefits to ICT projects and concluded by reviewing whether PPPs might be an effective mechanism for reducing ICT project failure in the South African public sector. The conclusions linked to the evaluation and discussion of results and the testing of the three research propositions are discussed in Chapter 5.

5 SYNTHESIS OF RESEARCH RESULTS AND RECOMMENDATIONS

5.1 Introduction

In this final chapter, the research results are tested against the three broad propositions formulated on commencement of the research. More specifically, these three propositions are tested against the findings of the empirical research reported in Chapter 4. This is followed by a number of recommendations. Recommendations are drawn from insights gained from the evaluation and discussion of the results. This chapter closes by proposing areas for further research.

5.2 Strength of support for research proposition 1

The first research proposition of this study is that ICT infrastructure project failures can mainly be attributed to lack of proper planning, lack of skills, lack of funds, lack of clear project objectives and a lack of management support.

From the results presented in Chapter 4 (discussion of research results) it was clear that the following factors mainly contributed on a macro level to ICT infrastructure project failures: a lack of skills, limited term of political decision makers, procurement process, lack of clear project objectives, lack of co-operation between departments, lack of funds, lack of management support, hampering legislation, lack of accountability and no client for infrastructure projects.

Therefore the first research proposition is supported. This was furthermore confirmed by literature (Dutta & Bilbao, 2012; Gichoya, 2005; Heeks, 2003; Krauth, 1999; Moodley, 2005).

It is however important to note that respondents did not all feel equally strong about all the factors mentioned above. The findings also brought to light additional factors that were not evident in the literature review. These are discussed below:

5.2.1 *Factors that were not supported by the literature*

A factor that was strongly proposed by the respondents, but not present in the literature review, dealt with the limited term of decision makers. Due to the short time that decision-makers occupy a position, ICT projects do not come to fruition as they are much longer than the ‘lifespan' of political decision-makers.

A further factor, noted by the respondents, but not raised in the literature review, is that the nature of the procurement process in the public sector inhibits the success of ICT infrastructure projects.

To a lesser degree, respondents proposed that a lack of co-operation between public sector departments is a cause for ICT project failures. This finding was also absent from the literature.

Other factors proposed by respondents but not evident from the literature review, was that legislation prevents ICT infrastructure projects from being successful, a lack of accountability and that ICT infrastructure projects fail due to there being no client for the project.

It is clear from the above that PPPs for ICT infrastructure development in South Africa have to contend with challenges similar to those in other countries. However, locally an even wider range of factors that inhibit the successful implementation of PPPs in ICT infrastructure development exist.

5.3 Strength of support for research proposition 2

The second research proposition is that Public Private Partnerships offer various benefits such as superior levels of skills and expertise, reduced project risk and improved efficiency for public sector projects.

Across the board the research findings from both the inputs of respondents and literature (Fife & Hosman, 2007; Fife et al., 2008; Grimsey & Lewis, 2007; Manuel, 2007), support this proposition.

However, respondents did not mention the environmental benefits for PPP projects of conserving energy, water and other resources, minimizing waste, enhancing biodiversity and controlling pollution as found in the writings of Grimsey and Lewis (2007).

Here too it is important to note that the strength of support varied across the three factors. Furthermore, the findings brought to light additional benefits of PPPs not highlighted in the literature review. These are discussed below:

5.3.1 *Benefits of PPPs not supported by the literature*

Respondents believed that PPPs overcome some legislative challenges. Particular reference was made to the fact that there is a slimmer chance of PPP projects being cancelled due to not complying with legislation as the National Treasury can confirm the compliance with the PFMA. This factor therefore reduces the private party's risk of the contract being cancelled.

Interestingly, in one instance a respondent suggested that the PPP process is more transparent than normal procurement. According to the respondent the reason for this greater transparency lies in the nature of the bidding process. This factor was not supported by the literature reviewed for the research.

5.4 Strength of support for research proposition 3

Research proposition 3 relates to whether PPPs might be an effective mechanism for reducing ICT project failure in the South African public sector.

The findings show that respondents do support PPPs as a mechanism for reducing ICT project failures in the South African public sector to some extent. Thus, the third proposition is supported with provisos. These are discussed below:

There are a number of conditions that respondents deem should be fulfilled in order for ICT infrastructure PPPs to be successful which is in agreement with the critical success factors highlighted in the literature by various authors (Adetola et al., 2011; Chan et al., 2010; Chua et al., 1999; Merna & Dubey, 1998; Tiong, 1996; Zhang, 2005). There are however a number of these success factors that are not currently present in the local market as highlighted in Chapter 4. These are discussed below:

Respondents agreed that there is not sufficient understanding of what is expected from the each party that is involved in the PPP project. This is mainly due to a lack of PPP skills in the country.

Respondents deemed political buy-in to be a crucial factor in order to get ICT PPPs off the ground, but there were mixed views from the respondents in terms of the current level of political buy-in. Some respondents argued that there is some buy-in while others argued that there is no buy-in at the moment. Respondents who had a more positive view argued that there are a number of successful PPP projects in the country and that these projects demonstrate buy-in of government.

Most respondents agreed that the PPP concept is not properly proven for ICT projects. One respondent went so far as to say that ICT PPP projects currently have a very bad reputation, which is due to the catastrophic failure of the recent Department of Labour PPP. Other respondents argued that the renewable energy

projects have salvaged the bad reputation of ICT PPPs in the country as they kept many people in employment.

Lastly, there should be political stability in the country in order to assure investors or lenders that their investment is safe. According to the respondents, there is currently not sufficient political stability, which has a negative impact on potential PPP projects to get funding.

5.5 Conclusion

This chapter set out to test the research results from Chapter 4 against the three broad propositions formulated on commencement of the research.

Although the first two research propositions were fully supported by both the literature and the research findings, additional findings from the research were not supported by the literature.

The third research proposition was only partially supported by the literature and research findings. This was due to a number of success factors that respondents deemed necessary to facilitate ICT infrastructure PPPs not currently being present in the country.

5.6 Recommendations

5.6.1 *General recommendations*

In theory public-private partnerships are considered to be a great project vehicle. In practice, however, it seems as if little enthusiasm exists for the PPP model, possibly due to a lack of sufficient knowledge of the model and of skills to execute the model. Accordingly, public and private sector entities need to give careful consideration to the factors which may prevent PPPs from being an effective

project delivery vehicle. In general, if these factors are negotiated correctly, PPPs can be an effective model for ICT infrastructure projects.

The biggest stumbling block for using the PPP model for ICT infrastructure projects is a lack of skills. Although this seems to be a bigger problem in the public sector, private sector entities also suffer from not having sufficient skills to tackle a PPP project. In order to improve the skills levels in the country, the researcher proposes that both public and private sector invest in education and training for their employees. In order to maximise the efforts training courses should be centralised through the National Treasury which is already conducting an introductory two day training course on PPPs every month at the DBSA.

5.6.2 *Recommendations to the public sector*

In order to get more buy-in from the public sector for using the PPP model, there should be greater efforts towards marketing successful PPP projects. This will ensure more exposure for the model and stimulate more interest in the model. Further to gaining exposure, it might also ameliorate perceptions of complexity as more people will have some level of understanding or knowledge of the PPP model.

Further to the above, proper research needs to be done on PPPs as a delivery model for ICT projects as there is very little evidence of this model being successfully implemented in South Africa. One way of doing this is by assessing international projects and replicating them in a local environment.

Another important finding from the research is that the National Treasury plays a more hands on role in national PPP projects than in district or municipal projects. But when one looks at the significant amount of funds allocated to the budget at municipal level versus that of national budget, then it does not make sense that the National Treasury has a hands-off approach and almost leaves such a large opportunity to chance. The researcher therefore recommends that National

Treasury assists the parties on municipal and district level to the same extent as they do national PPP projects in order to ensure that these projects get delivered to the highest standards.

The South African government has a goal to provide broadband to every citizen by the year 2020. In order to reach that goal, the researcher proposes that the public sector partners with the private sector via a PPP model. In order to make this process more affordable and efficient, the researcher further proposes that the National Treasury creates a 'blueprint' or 'playbook' for this type of projects in order to avoid replication of work on similar projects. A good approach will be to examine existing broadband projects and use them as a benchmark for future similar projects.

Another big inhibitor to achieving their goals is the inability of the public sector to make decisions and the lack of a common goal or strategy. It is clear from the findings of the research that the current structure in ICT decision-making needs to change as there are too many players including the Department of Communications, Department of Science and Technology, Department of Public Service and Administration, Sentech, Infraco etc, which are all trying to achieve the same goal but on their own, and in silo's. One way to overcome this challenge is to create a central ICT ministry that trumps all the other departments, as currently one cannot assign accountability to any particular department.

There seems to be a mentality that no-one in the public sector takes accountability for their actions when it comes to ICT infrastructure projects failing. The researcher therefore recommends that the public sector implements stricter measures of performance measurement and hold employees accountable for their actions. This will ensure that decisions are thought through properly before they are taken and corrupt officials are removed from civil service.

5.6.3 *Recommendations to the private sector*

The private sector on the other hand should promote in-house training, especially those organisations that do work on public sector infrastructure projects. By increasing their investment in PPP skills and capacity, the private sector can reduce their costs, such as high legal fees for risk allocation, as some of these tasks can be done in-house.

PPPs are not a viable model for all ICT projects and as such parties should choose their projects carefully based on industry knowledge and research. According to the market, lenders will only invest in a PPP if the value exceeds R500 million and the project has a substantial timeframe, usually five years or longer. Parties involved in the process of scoping potential ICT infrastructure PPP projects should be aware of these limiting factors and try to combine a number of smaller projects in order to reach the larger budget or timeframe threshold.

Further to the above, these parties should also consider the lifespan of the technology or solution that is proposed for the PPP project. IT hardware such as PC, server and storage or software such as operating systems or office suite has a very short replacement cycle, usually three to five years. The researcher does however believe that the PPP model can be used for other technology areas such as broadband infrastructure. Broadband infrastructure such as fibre and networking equipment has a much longer lifespan, (more than 10 years) compared to PC, server or operating system software and is therefore better suited for PPPs.

5.7 Areas for further research

5.7.1 *Identify areas of technology infrastructure that have proved successful using the PPP delivery model*

There is still some uncertainty as to what specific technology areas the PPP model will be best suited for. Research into this field will assess which technology infrastructure solutions are more feasible for the PPP model and which technology infrastructure should be excluded. The outcome of the research will assist in building future strategies for ICT infrastructure roll-out in the country.

5.7.2 *An evaluation of ICT PPPs against the critical success factors for ICT PPPs*

Since there are currently a limited number of completed ICT PPP projects in the country, follow-up research can evaluate completed ICT PPP projects against the critical success factors identified in this research. Such research will have to wait until more ICT projects based on the PPP model are completed. This would constitute an extension of this explorative research and would provide an understanding of how well ICT PPPs are positioned within South Africa. The quantitative nature of the research would enable ICT PPPs to be benchmarked against the critical success factors of ICT PPPs. The outcome of the research could be used to identify areas of improvement and inform future strategy.

5.7.3 *Public sector's perception of ICT PPPs*

During the research it became apparent that the public sector's perceptions of ICT PPPs are undetermined. Given the importance of the role that public sector plays in ICT infrastructure development, further investigation into this area would provide valuable input into an ICT PPP strategy. The research would highlight the public sector's understanding of ICT PPPs and would also play a role in

determining whether the public sector would respond positively to the value proposition.

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APPENDIX A

Letter to Respondents

Dear Respondent,

I am completing an MBA at The University of Witwatersrand, Johannesburg (Wits). My MBA thesis is on identifying the challenges of implementing Public Private Partnerships (PPP) in ICT infrastructure development in South Africa. In order to gather data on this subject, I would be grateful if I could arrange a 1 hour interview with you to understand the process of PPP formation in ICT development from your perspective.

I understand you are extremely busy your agreement to contribute to my research is greatly appreciated.

Confidentiality will be observed throughout the thesis process and the final report will be for academic purposes only.

I will be available to meet with you at a location and time of your convenience.

Thank you for your kind assistance.

Yours sincerely,

Hannes Fourie

Mobile: +27 83 793 4188

Email: hannesfourie.za@gmail.com

APPENDIX B

Research Instrument

Question 1:

What in your view are the major challenges with regard to effective ICT infrastructure development in the South African public sector? (Prompt respondents if necessary - lack of proper planning, lack of skills, lack of funds, lack of clear project objectives, lack of management support etc.)

Question 2:

Given the challenges you mentioned (in question 1), to what extent can PPPs be utilised to ameliorate or overcome these challenges? (Please elaborate)

Question 3:

What are the conditions necessary to facilitate the formation of PPPs in ICT development in South Africa? (Please elaborate)

Question 4:

To what extent are these conditions (mentioned in question 3) currently present in the South African context?

Question 5:

What are the major inhibitors to PPPs in ICT development in South Africa? (Prompt respondents if necessary – lack of public sector skills, lack of project objectives inadequate planning, lack of funding, inappropriate risk allocation etc.)

Question 6:

How do you think these inhibitors (mentioned in question 5) can be overcome?

APPENDIX C

Consistency matrix

Table 3: Consistency matrix

Research problem: Identify the challenges of Information Communications Technology infrastructure development projects in South Africa and investigate if these can be addressed by means of Public Private Partnerships.					
Sub-problem	**Literature Review**	**Research Proposition**	**Source of data**	**Type of data**	**Analysis**
Identify the main challenges of implementing ICT infrastructure development projects in the South African public sector.	(Dutta & Bilbao, 2012; Gichoya, 2005; Heeks, 2003; Krauth, 1999; Moodley, 2005)	ICT infrastructure project failures can mainly be attributed to lack of proper planning, lack of skills, lack of funds, lack of clear project objectives and a lack of management support.	Respondents in semi-structured interviews	Qualitative data Question 1	Create categorisation matrix or code book from the literature Identify themes and categories from codes which serves as basis for conclusions (Elo & Kyngäs, 2008)

Research problem: Identify the challenges of Information Communications Technology infrastructure development projects in South Africa and investigate if these can be addressed by means of Public Private Partnerships.					
Sub-problem	**Literature Review**	**Research Proposition**	**Source of data**	**Type of data**	**Analysis**
Assess whether PPPs might mitigate the challenges of implementing ICT infrastructure development projects in the South African public sector.	(Fife & Hosman, 2007; Fife et al., 2008; Grimsey & Lewis, 2007; Manuel, 2007)	Public private partnerships offer superior levels of skills and expertise, reduce project risk and improve efficiency for public sector projects.	Respondents in semi-structured interviews	Qualitative data Question 3 and 4.	Create categorisation matrix or code book from the literature Identify themes and categories from codes which serves as basis for conclusions (Elo & Kyngäs, 2008)
	(Adetola et al., 2011; Chan et al., 2010; Chua et al., 1999; Fife & Hosman, 2007; Fife et al., 2008; Grimsey & Lewis, 2007; Manuel, 2007; Merna & Dubey, 1998; Tiong, 1996; Zhang, 2005)	Public private partnerships might be an effective mechanism for reducing ICT project failure in the South African public sector.	Respondents in semi-structured interviews	Qualitative data Question 3, 4 and 5.	Create categorisation matrix or code book from the literature Identify themes and categories from codes which serves as basis for conclusions (Elo & Kyngäs, 2008)