

# **SOUTH AFRICAN PUBLIC PRIVATE PARTNERSHIP (PPP) PROJECTS: A SYSTEMIC MODEL FOR PLANNING AND IMPLEMENTATION**

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## **ABSTRACT**

**Background** – The problem of lack of infrastructure and service delivery in some parts of South Africa is a serious concern to the populace. Public Private Partnerships (PPPs) have been identified as one of the options for facilitating infrastructure development and service delivery.

**Purpose of this paper** - The purpose of this paper is to disseminate partial output emanating from a PhD research project. The aim of the research is to: contribute to the PPP body of knowledge; further understanding of the performance of PPP projects in South Africa, and develop a systemic model for a sustainable PPP system within the country and beyond.

**Methodology / Scope** - A multi-case study approach was adopted to examine various performance aspects of operational South African PPP projects. The subject scope of the paper includes all operational PPP projects registered in accordance with Treasury Regulations as at December 2005 and other projects that reached financial closure before the Public Finance Management Act of 1999 came into effect.

**Findings** - Empirical evidence from the research indicates South Africa: has developed a robust policy and regulatory framework for PPPs; has an inadequate level of PPP awareness and training, and lacks project management capacity to facilitate deal flow. Furthermore, based on the findings, a systemic model for PPP planning, implementation and monitoring has been evolved.

**Value** – This paper contains partial output and makes an original contribution to the PPP body of knowledge in form of a systemic model developed from the structured PhD research process. Other findings include: a robust policy and regulatory framework for PPPs exists; there is an inadequate level of PPP awareness and training, and there is a lack of project management capacity to facilitate deal flow in South Africa. The findings of this research are of relevance to both the public and private sector.

**Keywords:** Construction, Projects, Public Private Partnerships, Systemic Model

## **1. INTRODUCTION**

This is partial output for a PhD case study research based on Yin (2006) methodology being conducted at the department of Construction Management, Nelson Mandela Metropolitan University and culminates in the evolution of a systemic model for implementation and monitoring of performance of PPP projects in South Africa and the Southern Africa Development Corporation (SADC) region. The model focuses on the inputs, processes, outputs, outcomes and eventual impact of a PPP process. We live in an age of shifting accountability requirements in asset and service

delivery in South Africa and beyond coupled with the ever increasing need for producing results. There's need to ensure that PPP practitioners are provided with an efficient tool to guide planned activities through a sound process that produces results, outcomes and creates desired impact in society. Furthermore, Hamilton (1996) provides the historical overview of PPP projects in Africa.

## **2. THE SYSTEMIC MODEL**

### **Purpose**

The purpose of this new systemic PPP model is to: define the systemic processes that will be used to implement PPP projects; clarify complexity of the causal interrelationships within the PPP system, and provide direction for the current and future researchers into new discoveries.

### **2.2 Scope**

The proposed model covers the processes for PPP projects implementation and management of end user outputs over the entire project life cycle.

### **2.3 Definition**

A systemic model is a highly visual graphical method of demonstrating relationships between project resources, activities, outputs, and outcomes. Systemic models are planning, implementation and monitoring tools that indicate the resources a PPP project will employ to conduct activities that are intended to produce specific, describable, and measurable changes or results in people, organisations, or the broader physical and social environment (Senge, 2006).

The elements of the systemic model in Figure 4 are displayed in individual cells that are read from left to right. The cells depict a set of "if-then" relationships, for example, if resources are available, then a certain set of activities can be implemented, then certain outputs would be expected-PPP Agreement, and the outputs, if successfully achieved, would then be likely to produce expected outcomes-assets and or services. Finally as a result of successful outcomes, the end user/community would enjoy a better quality of life and feel empowered (Khosa, 2000).

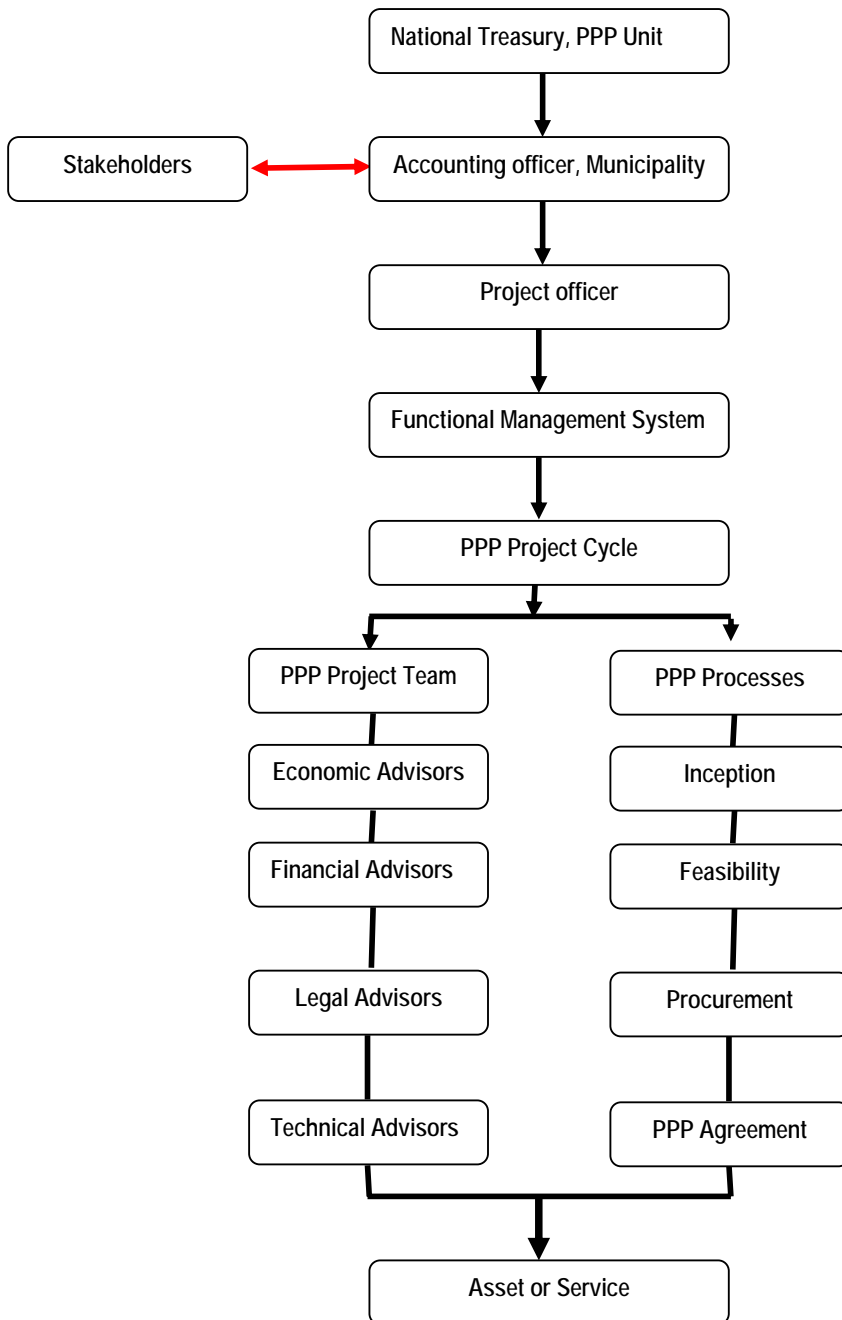
### **2.4 Why a systemic model for PPPs?**

Systemic models can be useful tools to demonstrate integrated, systemic planning in relation to the achievement of goals and expected outcome. Often PPP project proposals may not clearly specify the relationship shared among resources, planned activities/outputs, and the benefits expected from the PPP project. The systemic model helps to crystallize the extent to which the PPP project has made a difference or how it can make a difference.

The graphic features of a model serve to depict the relationships among components of the PPP project. A model provides a common vocabulary to describe elements of project work in a way that encourages deeper understanding over a variety of projects. Once internalized within the PPP sector, this approach will transform the mindset of PPP managers in the way of solving PPP related problems.

According to MacNamara (2006), systemic modeling is a tool that helps to organize the relationship between major project activities and anticipated outcomes. It can be effective in planning a PPP project design, implementing project activities, and evaluating project success. It should be noted that while a systemic model demonstrates the relationships shared by PPP project elements such as expected results changes, or effects derived through project activities, a systemic model does not take the place of performance indicators within a PPP project context. Relevant performance indicators or criteria must still be developed for each specific PPP project. Relevant evaluation questions, targeted data and data sources, and data collection strategies are essential elements of a PPP project's ongoing continuous quality assurance and improvement. It is acknowledged that

models are not static; hence there will be need for continuous review and improvement. The existing generic PPP model is shown in the Figure 1.



**Figure 1: Existing generic PPP Model**  
Adapted from National Treasury, PPP Unit website.

## 2.5 The status quo

The current PPP structure is governed by both the Public Finance Management Act (1999) and the Municipal Finance Management Act, MFMA (2003). Under the current arrangements, the National Treasury has evolved a generic PPP project life cycle for national and provincial governments and the Municipal Finance Management Act's PPP regulations to guide the implementation of PPP projects. This existing model follows the approach developed by Grimsey and Lewis (2004).

## 2.6 Project Inception

According to the Gazette Notice (Government of South Africa, 2005), only the accounting officer or the accounting authority of an institution may enter into a PPP agreement on behalf of that institution. Clause 16.3.1 states “as soon as the institution identifies a project that may be concluded as a PPP, the accounting officer or accounting authority must in writing-

- a) Register the PPP with the relevant treasury;
- b) Inform the relevant treasury of the expertise within the institution to proceed with a PPP;
- c) Appoint a project officer from within or outside the institution; and
- d) Appoint a transaction advisor if the relevant treasury so requests.

## **2.7 Shortcomings - The ‘missing link’**

The Treasury regulations, which provide policy direction for the implementation does not make any mention about the following:

- a) Project management competency levels required for both the accounting officer, institution or officer responsible for implementing the PPP project;
- b) The appointment of the project political champion;
- c) Appointment of a PPP project manager;
- d) Appointment of an independent PPP project auditor;
- e) The establishment of the project management office and systems, and
- f) PPP education and training

It is clear from the current structure and policy arrangements that an accounting officer is responsible for PPP agreement management and that an appointed project officer operates in a “systems vacuum” to deliver important projects worth millions of rand. Further, the issue of a PPP project champion and independent PPP project auditors is not addressed. The need for a project office and associated systems is also lacking as well as the policy direction on PPP education, training and awareness.

Extensive review of related literature has been conducted on the broad aspects of PPP implementation. However, there is no evidence as to how PPP implementing agencies are supposed to address above issues. However, interestingly, the Municipal Finance Management Act (Government of South Africa, 2005 :) makes clear provision for the following: competency levels for financial officials; resources or opportunities for training of officials by the municipality, and external intervention by the National Treasury in training of officials. The forgoing issues constitute the missing link in the existing model for PPP life cycle process. The development and application of the new PPP systemic model intends to fill this gap.

## **2.7 The proposed PPP model – Key Actors**

The proposed model consists of the following added functions besides the generic ones as depicted in Figure 3.

### **2.7.1 The political champion**

This function is targeted to be at the chief executive level of Mayor or Member of Executive Committee and will provide input towards political support and broader stakeholder consultation relative to the PPP procurement. This role should be seen as a unique active role as opposed to the passive generic role of politicians, when it comes to implementation of projects of this nature.

### **2.7.2 The PPP project manager**

This will be a well rounded and experienced person in PPP projects policies, procedures and processes. The PPP project manager’s principal responsibility will be to deliver the project end-

item, the asset or service within specified objectives or level of investment, schedule and risk allocation. Though responsibilities are likely to vary, they will usually include: planning, organizing and controlling project resources; selecting and organizing the project team; interfacing with stakeholders, monitoring project status, identifying technical and functional problems, solving problems and closing the project. The PPP project manager should establish a fully functional institutional framework consisting of a project support office, staff and relevant infrastructure. He should have clearly defined roles and tacit authority to manage the PPP process from inception to closure -PPP Agreement during the development phase.

### 2.7.3 PPP project auditor

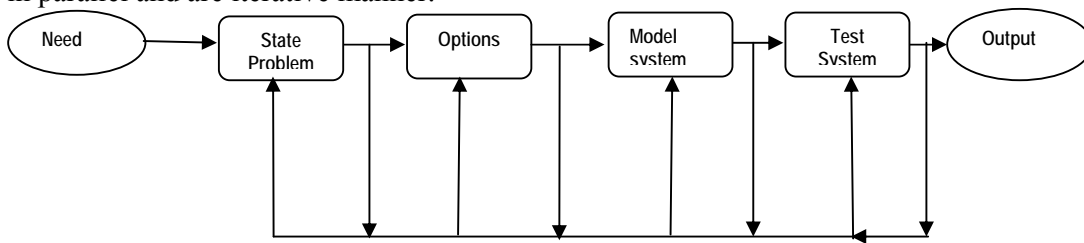
The PPP project auditor will establish and administer project monitoring procedures during contract negotiations and implement them during operation to ensure fulfilment of quality related requirements for the asset and or service. The overall responsibilities encompass raising awareness of quality and instituting means for improving PPP operations to meet desired goals.

### 2.7.4 PPP Training & Awareness

The solution of PPP related problems in South Africa and the SADC requires a mindset change by PPP actors from traditional “systematic thinking” to “systemic thinking”. The problems must be viewed from a broader real world context. PPP actors must create learning organizations to view issues from a systems perspective or viewpoint. System thinking employs the concept of a system: an organized whole in which parts are related. By continuous training and creating awareness, the model will contribute the creation of a PPP friendly environment that is supportive of the whole process. The slow deal flow is due to several factors, both internal and external to the PPP delivery system, which includes lack of modeling of risk (Wibowo & Patria, 2007).

### 2.7.5 Motivation for the new model

Figure 5 shows the new systemic PPP model which is based on systems theory developed in the 1950s and popularized by (Senge, 2006). The model adopts systems thinking viewpoint, where role players are supposed to see the broader picture of ongoing, reciprocal relationships (Andrew, 1999), which a PPP project may be exhibiting. One of the core impediments to systems thinking approach in PPP processes is lack of project management expertise. The new model proposes to encapsulate a fully fledged role of a qualified project manager, complete with an integrated project management system in the delivery processes. The project management system envisaged is rooted in the following simplified systems engineering flow chart, figure 2. The model functions are performed in parallel and are iterative manner.



**Figure 2: Generic Systems Engineering Flow Chart**

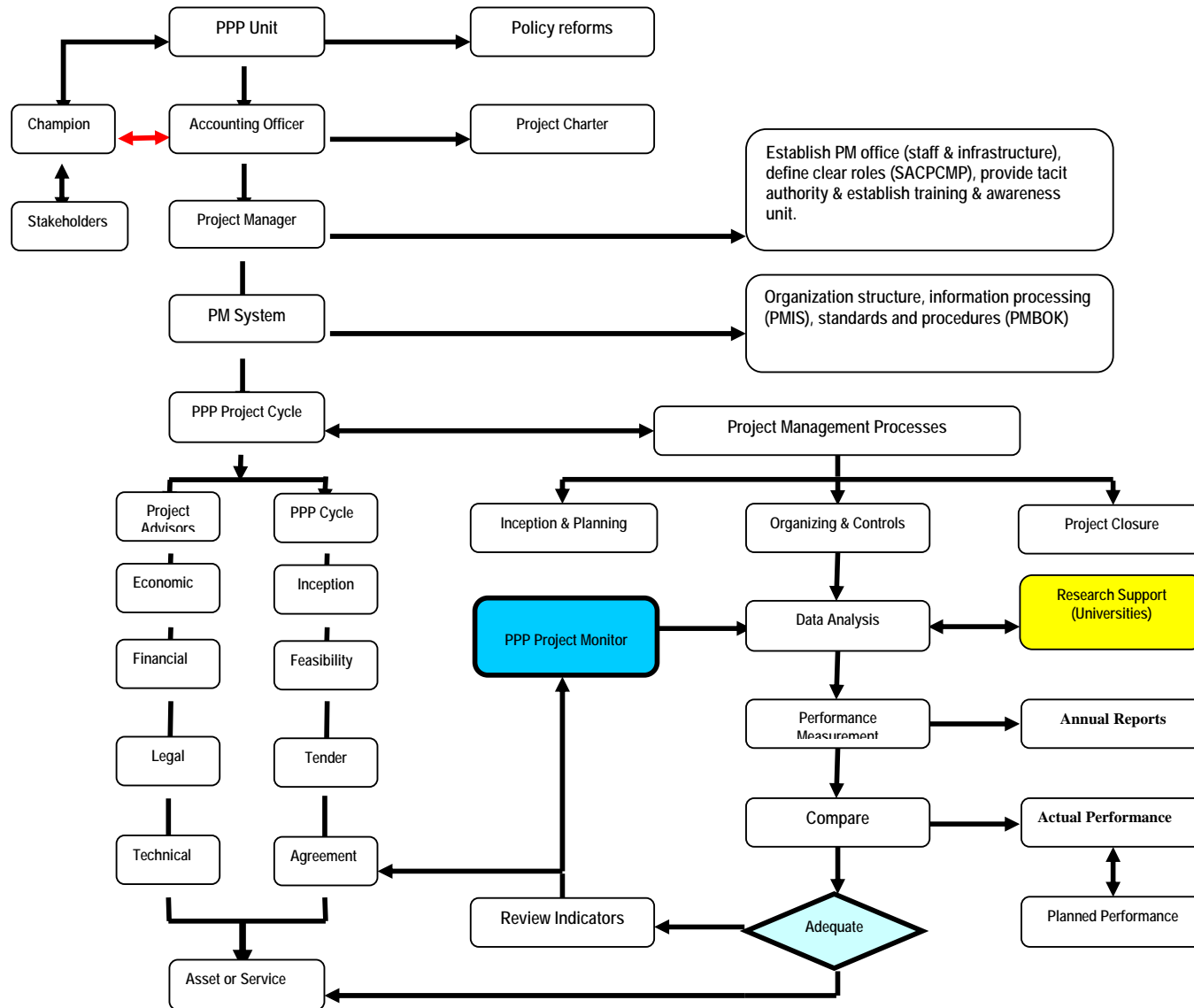


Figure 3: New Systemic PPP Model

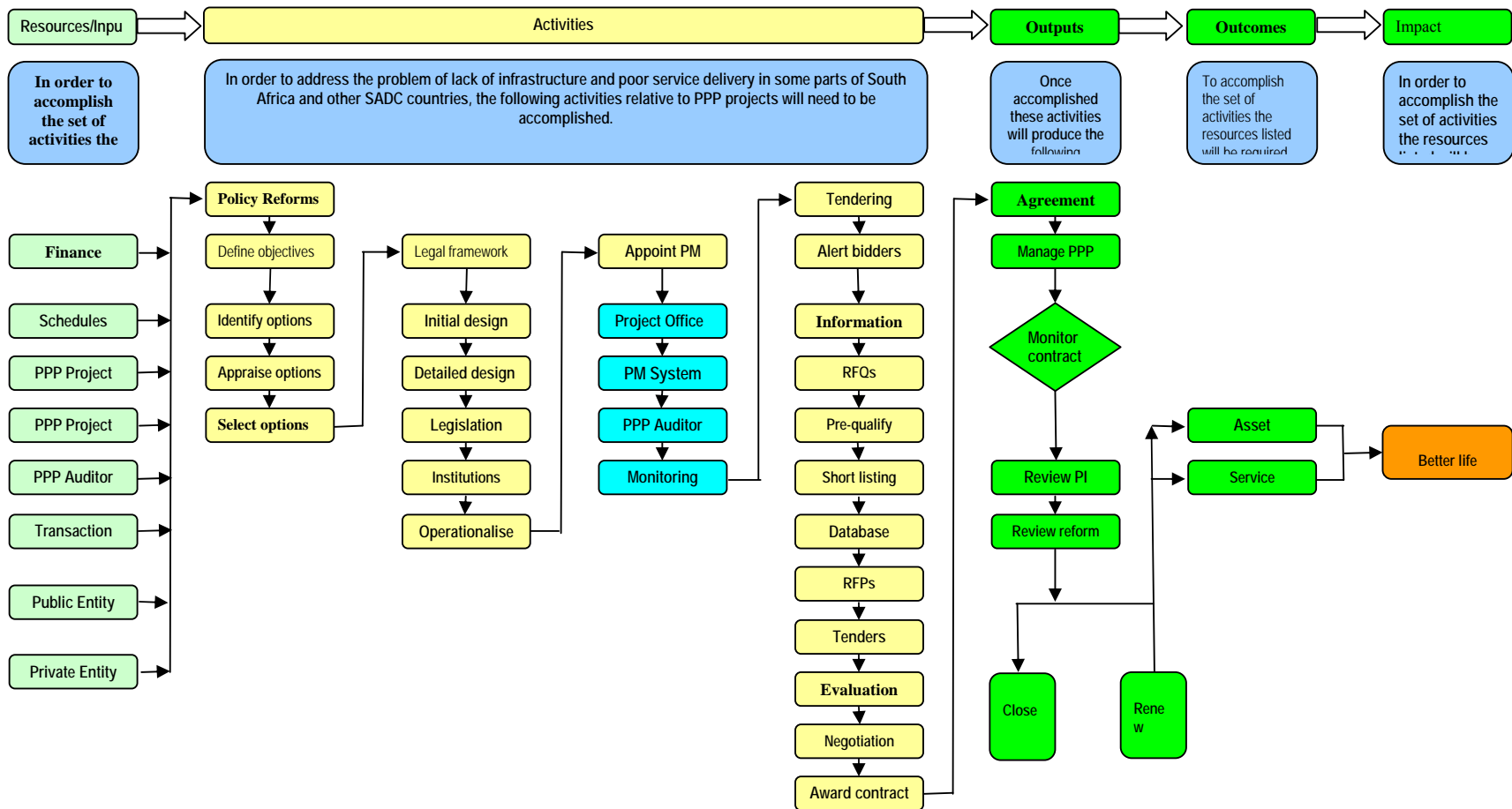
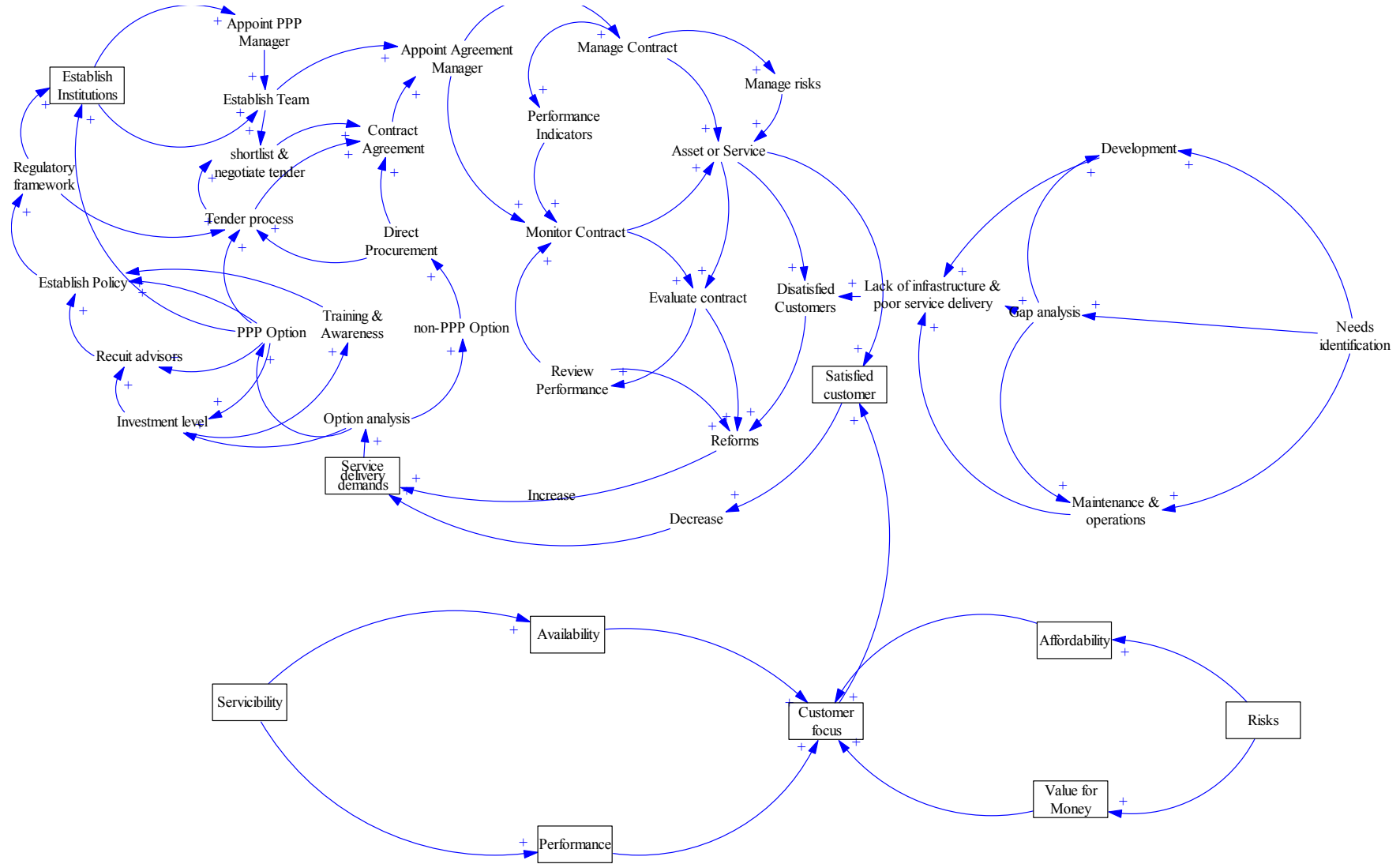


Figure 4: Model Systemic Phases and Parallel and Linked Tasks



**Figure 5: Systemic PPP Model - Causal Loop Diagram**

### 3. RESULTS AND DISCUSSION

#### 3.1 Testing of the new Model

The new PPP systemic model was tested for appropriateness by surveying sixty PPP and non-PPP participants, who were attending an international conference on ‘Financing Infrastructure in Africa through Public Private Partnerships’ held at the Saint George Hotel, Johannesburg on 28 and 29 August 2007. The researcher administered a two-page questionnaire during the two-day conference. A summary in the form of statements and their related MSs is presented in the following Tables 1.

Table 1: Summary of test results

<b>A.</b>	<b>Infrastructure &amp; poor service delivery</b>	<b>Mean Score</b>
1	Lack of infrastructure and poor service delivery activates policy reforms to address the problem	3.89
2	Service delivery problems decrease with an increase in investment levels	2.95
3	Service delivery problems result in increased demand for policy reforms	3.86
4	Poor service delivery leads to an increase in PPP agreements closure	2.78
5	Poor service delivery leads to high demand for more PPP experts	3.43
<b>B.</b>	<b>Project management</b>	
6	Increased PPP tenders leads to increased demand for project management services	3.81
7	Increased use of project management approach facilitates PPP deal flow / throughput	3.81
<b>C.</b>	<b>PPP awareness and training</b>	<b>Mean Score</b>
8	A PPP culture exists within the public sector	3.03
9	A PPP culture exists within the private sector	3.38
10	A PPP culture exists within the built environment	3.54
11	PPP expertise is pervasive within the public sector	2.68
12	PPP expertise is pervasive within the private sector	3.38
13	PPP expertise is pervasive within the built environment	3.22
14	Increased demand for PPP monitoring increases demand for PPP experts.	4.19
15	A high demand for monitoring experts increases demand for PPP training and awareness and vice versa	3.95
16	High demand for education and training leads to an increased role for universities in the PPP sector	3.73
17	Tertiary built environment PPP related education is inadequate	3.68
18	Corrupt practices lead to increase in infrastructure and service delivery problems	4.32
<b>D.</b>	<b>Investment level</b>	<b>Mean Score</b>
19	Increased PPP agreement throughput facilitates investments	4.22
20	Increase in PPP agreements increases portfolio of assets and scope for service delivery	4.11
21	High demand for service delivery increases demand for private sector investment and expertise	4.32
22	Increased level of investment leads to a decrease in demand for infrastructure and service delivery	2.73
<b>E.</b>	<b>PPP monitoring</b>	<b>Mean Score</b>
23	High throughput for assets / services leads to a high demand for monitoring and evaluation services	3.73
<b>F.</b>	<b>Policy and regulatory framework</b>	<b>Mean Score</b>
24	Policy reforms lead to the establishment of PPP regulatory agencies	3.76
25	Policy reforms lead to a reduction in infrastructure and service delivery problems	3.14
26	Establishment of PPP legal and regulatory agencies leads to a	3.00

	decrease in need for policy reforms	
27	PPP legal and regulatory agencies promotes PPP growth	3.81
28	Closure of more PPP deals leads to reduction in service delivery problems	3.51

<b>G.</b>	<b>Costs and affordability</b>	<b>Mean Score</b>
29	High transaction costs reduce the number of agencies participating in PPP deals	3.89
30	High transaction costs lead to a decrease in PPP deals output	3.84

<b>H.</b>	<b>Risk Transfer</b>	<b>Mean Score</b>
31	Inadequate risk management increases inappropriate risk transfers	4.11
32	Higher risk projects decreases investment levels in PPP projects	3.84

Given that the MSs of *'lack of infrastructure and poor service delivery activates policy reforms to address the problem'*, *'service delivery problems result in increased demand for policy reforms'*, and *'poor service delivery leads to high demand for more PPP experts'* are  $> 3.40 \leq 4.20$ , the degree of concurrence relative to the statements can be deemed to be between neutral and agree / agree. However, given that the MSs of *'service delivery problems decrease with an increase in investment levels'* and *'poor service delivery leads to an increase in PPP agreements closure'* are  $> 2.60 \leq 3.40$ , the degree of concurrence relative to the statements can be deemed to be between disagree and neutral / neutral (Summary Table 1).

Furthermore the MS of 3.81 ( $>3.40 \leq 4.20$ ) for the category of the statements under project management indicates that the degree of concurrence relative to the statements that: *'Increased PPP tenders leads to an increased demand for project management services'* and *'increased use of a project management approach facilitates PPP deal flow / throughput'*, can be deemed to be between neutral and agree / agree.

The overall MS of 3.55 ( $>3.40 \leq 4.20$ ), as shown in the category of 'PPP awareness and training' indicates that *'a PPP culture exists within the public sector'*, *'a PPP culture exists within the private sector'*, *'a PPP culture exists within the built environment'*, *PPP expertise is pervasive within the public sector'*, *'PPP expertise is pervasive within the private sector'*, *'PPP expertise is pervasive within the built environment'*, *'Increased demand for PPP monitoring increases demand for PPP experts'*, *'a high demand for monitoring experts increases demand for PPP training and awareness and vice versa'*, *'a high demand for education and training leads to an increased role for universities in the PPP sector'*, *'tertiary built environment PPP related education is inadequate'* and *'corrupt practices lead to an increase in infrastructure and service delivery problems'* indicates that the degree of concurrence, relative to the statement that: *'A PPP culture exists within the public sector'*, can be deemed to be between neutral and agree / agree.

Given that the MS of 3.85 ( $>3.40 \leq 4.20$ ), in the category of investment level, the degree of concurrence relative to the statements *'Increased PPP agreement throughput facilitates investments'*, which leads to *'an increase in PPP agreements increases portfolio of assets and scope for service delivery'*, a *'high demand for service delivery increases demand for private sector investment and expertise'*, and *'an increased level of investment leads to a decrease in demand for infrastructure and service delivery'* can be deemed to be between neutral and agree / agree.

A MS of 3.73 ( $>3.40 \leq 4.20$ ) indicates that the concurrence relative to the statement *'High throughput for assets / services leads to a high demand for monitoring and evaluation services'* can be deemed to be between neutral and agree / agree.

The MS of 3.44 ( $>3.40 \leq 4.20$ ) for the category of 'policy and regulatory framework' indicates that respondents' concurrence relative to the statements that: *'Policy reforms lead to the establishment*

*of PPP regulatory agencies*, 'leads to a reduction in infrastructure and service delivery problems', 'establishment of PPP legal and regulatory agencies leads to a decrease in need for policy reforms', 'PPP legal and regulatory agencies promotes PPP growth and that 'closure of more PPP deals leads to reduction in service delivery problems' can be deemed to be between neutral and agree / agree.

Table 96 depicts a MS of 3.87 ( $> 3.40 \leq 4.20$ ) for both statements under the category of '*costs and affordability*', which indicates that the concurrence relative to the statements '*High transaction costs reduces number of agencies participating in PPP deals*', and '*high transaction costs lead to decrease in PPP deals output*' can be deemed to be between neutral and agree / agree.

The overall mean score of 3.98 ( $> 3.40 \leq 4.20$ ) for both statements under the category of '*risk transfer*' indicates that the overall degree of concurrence relative to the statements '*inadequate risk management increases inappropriate risk transfers*' and '*higher risk projects decreases investment levels in PPP projects*' can be deemed to be between neutral and agree / agree.

### **3.2 Application of the New Model**

This model will be applicable to all PPP projects, resource persons, activities and processes that have holistic interrelationships (Boisjoly & DeMichiell, 1994). It is anticipated that PPP and non-PPP practitioners in South Africa and the SADC region will use the model.

### **3. CONCLUSION**

The results of this model testing bring to the fore a number of causal interrelationships within the PPP project environment that would ordinarily not be clear through the conventional research process. Examination of these results prompts the researcher to stress the importance that must be given to the use of systemic models in the planning and implementation of PPP projects. The systemic modeling of the interconnected PPP variables provides a vital tool that is useful on various levels.

The new PPP Model is based on systems theory developed in the 1950s. The model adopts systems thinking viewpoint, where role players are supposed to see the broader picture of ongoing, reciprocal relationships (Andrew, 1999), which a PPP project may be exhibiting. One of the core impediments to systems thinking approach in PPP processes is lack of project management expertise. The new model proposes to encapsulate a fully fledged role of a qualified project manager, complete with an integrated project management system in the delivery processes.

This model will be applicable to all PPP projects, resource persons, activities and processes that are have holistic interrelationships (Boisjoly & DeMichiell, 1994). It is anticipated that the model will be used by PPP and non-PPP practitioners in South Africa and the SADC region.

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