



This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

How to cite this thesis / dissertation (APA referencing method):

Surname, Initial(s). (Date). *Title of doctoral thesis* (Doctoral thesis). Retrieved from [http://scholar.ufs.ac.za/rest of thesis URL on KovsieScholar](http://scholar.ufs.ac.za/rest_of_thesis_URL_on_KovsieScholar)

Surname, Initial(s). (Date). *Title of master's dissertation* (Master's dissertation). Retrieved from [http://scholar.ufs.ac.za/rest of thesis URL on KovsieScholar](http://scholar.ufs.ac.za/rest_of_thesis_URL_on_KovsieScholar)

UNIVERSITY OF THE FREE STATE



Challenges and lessons learnt in the financing of public infrastructure in South Africa, Czech and Slovak Republics: A Comparative Study

by

Ncedo Cameron Xhala

Department of Quantity Surveying and Construction Management

Doctor of Philosophy in Construction Management

2017

UNIVERSITY OF THE FREE STATE

**Challenges and lessons learnt in the financing of public infrastructure in South
Africa, Czech and Slovak Republics: A Comparative Study**

By

Ncedo Cameron Xhala

A thesis submitted in fulfilment of the requirements in respect of the degree of

DOCTOR OF PHILOSOPHY IN CONSTRUCTION MANAGEMENT

in the Department of Quantity Surveying and Construction Management

in the Faculty of Natural and Agricultural Sciences

at the University of the Free State

2017

Supervisor

Professor Kahilu Kajimo-Shakantu

Co-Supervisor

Professor Ing Juraj Nemec Csc

Declaration

Academic Thesis: Declaration of Authorship

I, Ncedo Cameron Xhala declare that this thesis and the work presented in it is my own and has been generated by me as the result of my own original research.

Title: Challenges and lessons learnt in the financing of public infrastructure in South Africa, Czech and Slovak Republics: A Comparative Study

I confirm that this thesis is my original work and wherever contributions of others are involved, every effort is clearly made to indicate due reference to literature and acknowledgement of collaborative research and discussions. I certify that these statements are true to the best of my knowledge.

Candidate: Ncedo Cameron Xhala.....

Signed atthisDay of2018.

Supervisor: Prof Kahilu Kajimo-Shakantu.....

Signed atthisDay of2018

Abstract

The aim was to explore how to optimize public-private partnerships in public infrastructure investment and development as an alternative financing instrument by identifying and developing core success factors and establishing key lessons learnt from failed projects. The study, underpinned by a constructionist epistemological viewpoint, used the case study approach and expert interviews to undertake an empirical study in South Africa and the Czech Republic. Purposive sampling was used to identify the interviewees as well as two case studies that fitted the context of the study. Semi structured interviews and documents were utilized as means of collecting data. Being exploratory and qualitative in nature, the study applied qualitative data analysis techniques comprising a 3-step coding process and theme building. The findings revealed that economic, financial and social factors were predominantly the main factors which constrain public finance in public infrastructure investment. Implications of constrained public finance in public infrastructure were classified as having social, economic, investment and fiscal consequences. Findings further revealed that optimization of public-private partnerships requires improved comprehensive knowledge, methodology and implementation as key strategies. Further, the study developed five core success factors of public-private partnerships implementation ranked as follows: 1st ranked core factors were legal and regulatory frameworks, technical feasibility studies and public servant's readiness. The 2nd ranked factors were risk allocation, monitoring and evaluation. The 3rd ranked factors were decision-making, project procurement, cost benefit analysis, public institution readiness and in-house technical skills. The 4th ranked factors were risk management, good partnerships, methodological support, clear vision and competition. The 5th ranked factors were ownership, governance, project benefits, capacity building, financing capacity, project management, land acquisition, environmental impact analysis and contract management. Another significant finding was establishing core lessons from failed public-private partnerships projects. Among these critical lessons, project management lessons were found to be predominant. Other key lessons centred on institutional structure, lessons from failure, socio-economic purpose, shared vision, methodological support, legislative and regulatory framework, knowledge management and avoidance of financial losses. The findings showed that public decision makers require comprehensive public-private partnerships knowledge, because these arrangements are characterized by inherent conflicts and opportunistic behaviours, which require to be well managed and/or mitigated in order to optimize their implementation. The findings revealed that conflicts in public-private partnerships are primarily caused by asymmetrical information which leads to adverse selection strategies and moral-hazard problems due to agents'

opportunistic behaviour. Overall, the findings suggested that if the public sector did not effectively monitor construction firms in a well-structured project framework, the agents would maximize profits, increase transactional costs and undermine the potential of public-private partnerships. Results inferred that when public-private partnerships are appropriately structured with reasonable incentives, they can contribute to economic, financial, social, environmental and technological benefits. This study provides an overview of challenges associated with the implementation of public-private partnerships. It highlights useful lessons and makes a contribution by identifying and examining core success and failure factors which can improve public-private partnerships implementation. Rather than re-invent the wheel, key lessons can be learnt from failed projects and applied in practice to improve successful implementation. The study concludes that public-private partnerships are an alternative financing instrument in public infrastructure investment and development with long-term suitability.

Keywords: construction, infrastructure development, infrastructure investment, moral-hazard problems, public finance, project implementation, public-private partnerships, transactional cost.

Acknowledgements

I would like to express my sincere gratitude and special appreciation to my supervisor Professor Kahilu Kajimo-Shakantu especially and to my co-supervisor Professor Ing Nemeč Juraj Csc for their thought-provoking and wonderful mentorship throughout this study. Their everlasting research advice and encouragement have been priceless in this study and in my career. I sincerely thank them for the academic support and their invaluable contributions, which allowed me to grow as a researcher. My sincere gratitude to the European Commission through an Erasmus Mundus programme with the **INSPIRE** project. The INSPIRE project provided financial support which enabled the completion of this research study through the exchange doctoral mobility grant tenable at Masaryk University in the Czech Republic. Special thanks also to Mr Erika Andersson who effectively coordinated the INSPIRE project.

I sincerely thank the Department of Public Economics at Masaryk University for hosting my doctoral exchange mobility tenure and providing a mentor to support me. Ms Violeta Osoučová, Mr Adams Hykl and others in the international office tirelessly facilitated my pleasant exchange and stay at Masaryk University and their work is kindly acknowledged. I cannot discount the support of Mrs Elza van der Walt, of the department of Quantity Surveying and Construction Management at the University of the Free State; her outstanding assistance and encouragement are acknowledged.

I also extend my sincere gratitude to the University of Economics and the University of Karolina in the Czech Republic, as well the Universitas Matthiae Belii in the Slovak Republic for academic support given during the study period.

I sincerely and affectionately thank my parents Mr Mxolisi Archibold and Mrs Ianah Xhala for their steadfast support as well as my sisters, brother and my sympathetic children for their unwavering support during this study period. I cannot express how grateful I am for the sacrifices and prayers they made during my study period. My sincere gratitude also goes to my friends who unselfishly supported and inspired me to undertake this research project to realize my goal. I fondly express my sincere gratitude to my beloved wife, Mrs Nomandla Xhala, who spent sleepless nights tirelessly and constantly supporting me, especially in moments when there was no one to answer my queries. Above all, I thank God for His wisdom and strength during the journey of my study.

Table of Contents

Declaration.....	i
Abstract.....	ii
Acknowledgement.....	iii
Table of contents	iv
List of tables.....	x
Table of figures	xi
Abbreviations and acronyms	xiii
Glossary of terms.....	xv
Justifying the Czech and Slovak Republics' research setting	xvi
Peer reviewed articles.....	xvii
List of annexures.....	xviii
CHAPTER 1: INTRODUCTION AND PROBLEM SETTING	1
1.0 Introduction.....	1
1.1 Background to the study: public finance issues.....	1
1.2 Problem formulation.....	4
1.2.1 Public infrastructure investment	4
1.2.2 Public infrastructure investment via public-private partnerships	5
1.2.3 South African construction industry	8
1.2.4 Czech Republic's construction industry in brief.....	8
1.2.5 Slovak Republic's construction industry in brief.....	9
1.3 Problem statement.....	9
1.4 Research aim and objectives	10
1.5 Research questions	10
1.6 Justification and research motivation	10
1.6.1 Significance of the research area.....	10
1.6.2 Neglected research problem and knowledge gap	11
1.7 Key assumptions	12
1.8 Scope and limitations.....	12
1.9 Outline of research methodology	12
1.10 Thesis structure	13
1.11 Concluding remarks	14

CHAPTER 2: PUBLIC FINANCE ISSUES AND PUBLIC INFRASTRUCTURE INVESTMENT	15
2.0 Introduction.....	15
2.1 Conceptualising public finance.....	15
2.1.1 Public finance as an important function of the public sector	15
2.1.2 Global macro-economic issues and public finance	18
2.2 Public infrastructure investment	25
2.3 South African public infrastructure investment	28
2.3.1 South African macro-economic development	28
2.3.2 South African public infrastructure investment	31
2.4 Czech Republic’s public infrastructure investment	34
2.4.1 Czech Republic’s macro-economic development	34
2.4.2 Czech Republic’s public infrastructure investment	36
2.4.3 Czech Republic’s public expenditure	38
2.5 Slovak Republic’s public infrastructure investment.....	39
2.5.1 Slovak Republic’s macro-economic development	39
2.5.2 Slovak Republic’s public infrastructure investment.....	41
2.5.3 Slovak Republic’s public expenditure	44
2.6 Chapter summary	45
CHAPTER 3: PUBLIC-PRIVATE PARTNERSHIP EXPERIENCES	46
3.0 Introduction.....	46
3.1 Conceptualisation of PPP as a viable financing instrument	46
3.2 International PPPs implementation	47
3.3 Assessment of PPPs in public infrastructure investment	49
3.4 Universal challenges in public-private partnerships.....	51
3.4.1 United Kingdom PPPs challenges.....	51
3.4.2 Indian PPP challenges	52
3.4.3 PPP advantages and disadvantages in public infrastructure investment.....	55
3.5 South African PPPs assessment.....	57
3.5.1 South African PPPs challenges	58
3.5.2 South African PPPs affordability	59
3.5.3 South African PPPs opportunities	60
3.6.1 Czech PPPs challenges.....	61
3.7 Slovak Republic’s PPPs assessment.....	64
3.7.1 Slovak PPPs opportunities.....	66

3.8	South African PPPs lessons	66
3.9	Czech Republic's PPPs lessons	68
3.10	Slovak Republic's PPPs lessons.....	69
3.11	Theorising public finance, public infrastructure investment and PPPs.....	72
3.12	Chapter summary	74
CHAPTER 4: CONCEPTUAL FRAMEWORK.....		75
4.0	Introduction.....	75
4.1	Rationale for adopting a multi-disciplinary approach	75
4.2	Principal agency theory.....	77
4.3	Transaction cost economics theory.....	82
4.4	Overview of institutional theory	85
4.5	Re-conceptualising the research.....	87
4.5.1	Institutional capability responses in PPPs implementation.....	87
4.5.2	Institutional capacity and PPPs implementation	88
4.5.3	Capable institutions and PPPs benefits.....	89
4.5.4	PPPs implications for public infrastructure investment and development	90
4.6	Restating the research questions.....	92
4.7	Chapter summary	92
CHAPTER 5: RESEARCH METHODOLOGY		93
5.0	Introduction.....	93
5.1	Ontological and epistemological assumptions.....	93
5.1.1	Constructionist paradigm.....	95
5.2	Theoretical perspectives	95
5.2.1	Phenomenology	96
5.3	Research methodology	97
5.4	Case study design and the research procedure	99
5.4.1	Justification of case study	100
5.4.2	Case units of analysis	101
5.4.3	Analytical strategies	101
5.4.4	Case study selection procedure	102
5.4.5	Research procedure	103
5.4.6	Case study analysis procedure	103
5.5	Expert interview design and procedure	105
5.5.1	Qualitative interview research method.....	105

5.5.2	Qualitative interview design and procedure	105
5.6	Data analysis techniques	108
5.6.1	Close reading of data	108
5.7	Research protocol and ethical consideration.....	113
5.8	Methodological limitations	114
5.9	Chapter summary	115
CHAPTER 6: PRESENTATION OF EMPIRICAL FINDINGS	116
6.0	Introduction.....	116
6.1	Overview of study objectives.....	116
6.2	Document analysis of case studies	117
6.2.2	Profile of the case studies.....	119
6.2.3	Case study description Project 1. KHI Solar One Project; South Africa	119
6.2.4	Case study description Project 2: R4 Expressway Project in the Czech Republic	124
6.3	Findings from case study documents and interviews	128
6.3.1	Theme 1: Factors constraining public finance in public infrastructure investment	130
6.3.2	Theme 2: Implications of constrained public finance public infrastructure investment..	131
6.3.3	Theme 3: Optimising PPPs in public infrastructure investment	132
6.3.4	Theme 4: core PPPs success factors.....	132
6.3.5	Theme 5: Key lessons learnt from failed PPPs projects.....	134
6.3.6	Cross-case analysis.....	136
6.4	Expert interviews	138
6.4.1	Profile of respondents.....	139
6.5	Phenomenon 1: Nature of public finance constraining factors.....	142
6.5.1	Economic factors.....	144
6.5.2	Fiscal management factors	145
6.5.3	Social factors	146
6.6	Phenomenon 2: Implications of constrained public finance	147
6.7	Phenomenon 3: Optimising PPPs in public infrastructure investment.	150
6.7.1	Comprehensive PPPs knowledge	150
6.7.2	PPPs methodology.	151
6.7.3	PPPs implementation.....	152
6.8	Phenomenon 4: Important core PPPs success actors.....	152
6.8.1	First ranked important core PPPs success factor	153
6.8.2	Second ranked important core PPPs success factors	156

6.8.3	Third ranked important core PPPs success factors.....	157
6.8.4	Fourth ranked core PPPs success factors.....	159
6.8.5	Fifth ranked important core PPPs success factors.....	161
6.9	Phenomenon 5: Key lessons learnt from failed PPPs projects.....	162
6.10	Cross case analysis.....	164
6.11	Chapter summary.....	166
CHAPTER 7: DISCUSSION AND INTERPRETATION OF RESULTS		168
7.1	Introduction.....	168
7.1	Nature of public finance constraints factors.....	168
7.1.1	Economic constraints.....	168
7.1.3	Social constraints.....	173
7.2	Optimising PPPs as alternative financing instruments in public infrastructure investment.....	175
7.3	Core PPPs success factors.....	178
7.4	Key lessons learnt from failed PPPs projects.....	184
7.5	Optimising PPPs in public infrastructure investment.....	187
7.5.1	Strategies that optimise PPPs in public infrastructure investment.....	188
7.5.2	PPPs and public infrastructure investment.....	190
7.5.3	Balancing PPPs in public infrastructure investment.....	190
7.6	Chapter summary.....	192
CHAPTER 8: CONCLUSIONS AND RECOMMENDATIONS		193
8.0	Introduction.....	193
8.1	Restating the research context and problem.....	193
8.2	Restating the research aims and objectives.....	193
8.3	Restating the research questions.....	194
8.3.1	Main research question.....	194
8.3.2	Research sub-questions.....	194
8.4	Revisiting the conceptual and theoretical issues.....	194
8.4.1	Theoretical issues raised in Chapter 1.....	194
8.4.2	Theoretical issues raised in Chapter 2.....	195
8.4.3	Conceptual issues raised in Chapter 3.....	195
8.4.4	Revisiting the development of an analytical framework in Chapter 4.....	196
8.5	Summary of key research findings and achievement of objectives.....	198
8.5.1	Objective 1.....	198

8.5.2	Objective 2	199
8.6	General conclusions and implications	201
8.7	Contribution to knowledge.....	202
8.8	Recommendations	203
8.9	Areas for further research	204
8.10	Generalizability	204
	References	206
	APPENDIX 1: RESEARCH PERMISSION LETTER	246
	APPENDIX 2: PARTICIPANT'S CONSENT FORM	247
	APPENDIX 3: PARTICIPANT'S CONSENT FORM LETTER.....	248
	APPENDIX 4: INTERVIEW GUIDE; SEMI-STRUCTURED INTERVIEW QUESTIONS	249
	APPENDIX 5: TWO SAMPLES OF INTERVIEW TRANSCRIPTS	250

List of Tables

Table 1. South African public infrastructure expenditure by sector (2010 to 2015).....	33
Table 2. Financing forecast of mega projects in South Africa (2012 to 2020).....	34
Table 3. Czech Republic’s general government expenditure (2001 to 2013).....	39
Table 4. Slovak Republic’s public expenditure since 2007 to 2015.....	45
Table 5. Advantages and disadvantages associated with PPP implementation	55
Table 6. Typologies of risks in PPPs	79
Table 7. Conditions and factors that give rise to PPPs transaction costs	84
Table 8. PPPs tenets in public infrastructure investment	88
Table 9. Alignment of research sub-questions and interview questions.....	116
Table 10 Overview of various documents analysed as part of the case study.....	118
Table 11. Identified case study projects.....	119
Table 12. Thematic analysis of interview questions	129
Table 13 Cross tabulation of KHI Solar One and R4 Expressway and the case study interviews	137
Table 14. Experts’ demographic profile.	139
Table 15. Participants’ industry experience	140
Table 16. Thematic analysis of interview questions	140
Table 17. Description of limited public finance consequences.	149
Table 18 Risk allocation and monitoring and evaluation.	157
Table 19. Third most important success factors	159
Table 20. Fourth most important success factors	160
Table 21. Cross tabulation of two case studies findings.....	164

Table of Figures

Figure 1. Real GDP growth in percentage	19
Figure 2. Global current account balance 2011 to 2020.....	20
Figure 3. Global fiscal issues.....	23
Figure 4. Global public debt as % of GDP.....	24
Figure 5. Public debt as % of GDP in selected countries.....	25
Figure 6. Public infrastructure investment financing shortfall 2013-2030.....	32
Figure 7. Infrastructure class and number of financed infrastructure projects.....	34
Figure 8. Czech Republic's public investment volume and infrastructure classes (2006 to 2015).....	37
Figure 9. Slovak republic's public investment volume and infrastructure classes from 2006 to 2015.....	42
Figure 10. Slovak Republic's public and private investment composition from 2000 to 2013.....	43
Figure 11. PPP scale in public infrastructure investment in billions.....	51
Figure 12. UK PPPs in public infrastructure and the capital project value (1980 to 2011).....	52
Figure 13. Indian PPPs public infrastructure projects.....	53
Figure 14. Czech Republic's PPPs closed projects.....	63
Figure 15. Locating the analytic framework.....	76
Figure 16. Principal agent framework.....	80
Figure 17. PPPs incentive relationships.....	81
Figure 18. Different factors that characterise transaction costs in PPPs.....	83
Figure 19. Process framework of the PPPs interaction dynamics.....	85
Figure 20. Institutional capacity framework.....	89
Figure 21. PPPs benefits by capable institutions.....	90
Figure 22. Adapted epistemological approach, theoretical perspective, methodology, and methods.....	97
Figure 23. Interactive qualitative approach model.....	98
Figure 24. Case study research design, and steps in a multiple case study design.....	100
Figure 25. Typology of analytic process of raw data.....	109
Figure 26. Step 2 coding process.....	111
Figure 27. Study interactive methodological approach.....	112
Figure 28. KHI Solar One Map.....	122
Figure 29. R4 Development location.....	126
Figure 30. R4 Expressway site layout.....	127
Figure 31. Ranged and ranked nature of factors that constrain public finance.....	143
Figure 32. Economic, fiscal management and social factors that constrain public finance.....	144
Figure 33. Impact of constrained public finance.....	148
Figure 34. Description of respondents' impact of constrained public finance.....	148
Figure 35. PPPs knowledge level.....	150
Figure 36. Most important PPPs success factors by range and rank.....	153
Figure 37. Most important PPPs success factors ranked first.....	154
Figure 38. Fifth most important success factors.....	161
Figure 39. Most important lessons learnt from failed projects.....	162
Figure 40. Project management most important lessons.....	163
Figure 41. Important core PPPs success factors.....	178
Figure 42. Key lessons learnt from failed PPPs projects.....	185

Abbreviations and Acronyms

AC	:	Axis Consulting
ADB	:	African Development Bank
ADB	:	Asian Development Bank
ADB I	:	Asian Development Bank Institute
ANC	:	African National Congress
ASGISA	:	Accelerated and Shared Growth Initiative for South Africa
BBBEE	:	Broad-Based Black Economic Empowerment
BEE	:	Black Economic Empowerment
BEPPP	:	Black Empowerment and Preferential Procurement Policy Framework
BRICS	:	Brazil, Russia, India, China and South Africa
CBA	:	Cost-Benefit Analysis
CEE	:	Central Eastern European
CEFTA	:	Central European Free Trade Agreement
CMOF	:	Czech Ministry of Finance
CNB	:	Czech National Bank
CO ₂	:	Carbon Dioxide
CTF	:	Clean Technology Fund
DBFOM	:	Design Build Finance Operate and Maintain
DTI	:	Department of Trade and Industry
EBRD	:	European Bank for Reconstruction and Development
EC	:	European Commission
EIB	:	European Investment Bank
EIU	:	Economist Intelligence Unit
EPEC	:	European PPP Expertise Centre
EU	:	European Union
FRA	:	Fiscal Responsibility Act
GDP	:	Gross Domestic Product
GEAR	:	Growth, employment and redistribution
GW	:	Gigawatt
IDC	:	Industrial Development Cooperation
IMF	:	International Monetary Fund
IPAP	:	Industrial Policy Action Plans
KSO	:	KHI Solar One

MFMA	:	Municipal Finance Management Act
MSA	:	Municipal Systems Act
MTBPS	:	Mid-Term Budget Policy Statement
MW	:	Megawatt
NATO	:	North Atlantic Treaty Organization
NDP	:	National Development Plan
NGP	:	New Growth Path
NPC	:	National Planning Commission
NTCGP	:	National Treasury Code and Good Practice
OBC	:	Outline Business Case
OECD	:	Organization for Economic Cooperation and Development
PICC	:	Presidential Infrastructure Coordinating Commission
PMFA	:	Public Finance Management Act
PPIAF	:	Public-Private Infrastructure Advisory Facility
PPPs	:	Public-Private Partnerships
PRC	:	Presidential Review Committee
PSC	:	Public Sector Comparator
PWC	:	PricewaterhouseCoopers
RDP	:	Reconstruction and Development Programme
RSA	:	Republic of South Africa
SA	:	South Africa
SGP	:	Stability and Growth Path
STATSA	:	Statistics South Africa
SITDA	:	Slovak Investment and Trade Development Agency
SKK	:	Slovak Koruna
SMOF	:	Slovak Ministry of Finance
SNB	:	Slovak National Bank
SOEs	:	State Owned Enterprises
TASR	:	The Slovak Spectator
TIC	:	Transparency International Czech
UK	:	United Kingdom
UN	:	United Nations
UNDP	:	United Nations Development Program
UNECE	:	United Nations Economic Commission for Europe

US : United States
VFM : Value for Money
WBDCR : World Bank Development Committee Report
WEF : World Economic Forum

Definition of Terms

Black economic empowerment: Means the integrated and socio-economic process that directly contributes to the economic transformation of South Africa to bring about significant increases in the number of black people who manage, own and control the country's economy, and the lessening of income inequalities (DTI, 2003).

Broad-based black economic empowerment: Means the economic empowerment of all black people and the inclusion of women, youth, people with disabilities and people living in the rural areas through the diverse but integrated socio-economic strategies (RSA, 2003).

Category: Means the unit of data that is analysed in grounded theory research. The analytical process involves events, the number of occurrences and the short labelling of the phenomenon (Creswell, 2014).

Cost-benefit analysis: It is sometimes called the **benefit-costs analysis (BCA)** and is a systematic approach that is used to estimate the economic strengths and weaknesses of alternatives such as the economic transactions, activities and the functional business requirements or projects investments (EBRD, 2011)

Current account: Means the country's difference in value between its exports and imports over a particular period (World Bank, 1994).

First step coding: Is the first step in the analysis of data that is underpinned by grounded theory which involves the closer reading of data and segmenting it into categories of information (Bohn, 2004).

Fiscal deficits: Is the excess total government expenditure over the revenue generated, excludes the borrowed money and is different from debt because debt accumulates over the years (World Bank, 2011).

Incentive theory: Is one of the major theories of motivation and suggests that behaviour is motivated by the desire for reinforcement or incentives (IMF, 2009).

Moral hazard: Is the risk that a party to a transaction has not entered into the contract in good faith or has provided misleading information that cannot be prevented by the contract (Ho and Tsui, 2009).

National Development Plan: Is a long-term development plan that is developed by the national government to promote inclusive economic growth, build capacities that enhance the capacity of the state to solve structural complex economic and social issues collectively (Wentworth, 2012).

Principal agency theory: Is the theory that explains the relationships between the principals and agents in a business environment. It addresses the problems that arise due to differences between the desires and goals of the principal and agent (Welhua, 2014).

Public finance: Is the study of the role of the government in the economy and is a branch of economics that assesses government revenue, expenditure and adjustments to achieve the desired effects (OECD, 2014).

Public-private partnership: Is a long-term contract between a private partner and the public sector to provide a public asset or service where the private partner bears the risks and management while compensation is linked to performance (EPEC, 2014)

Second step coding: Is the second step coding process following the first coding process after the identification of the primary phenomenon with the re-examining of data to identify (i) factors for causes, (ii) strategies or actions as a response, (iii) the intervening conditions that influence the strategy and (iv) the consequences that result from the strategy (Bohn, 2004).

Substantive theory: Is a low level theory that is applicable to immediate situations and evolves from the study of a phenomenon that is located in one context (Crotty, 1998).

Third step coding: Is the last stage of coding information whereby the data is selectively and systematically related to the investigated phenomenon in categories, validating relationships and filling the categories that need improved refinement and development (Bohn, 2004).

Transaction costs: Is a concept that denotes the costs to the use of markets, such as costs in transaction exchange (Bensako, Danove, and Shanely, 2000).

Justifying the inclusion of the research settings of the Czech and Slovak Republics

This doctoral study was undertaken at the University of the Free State in South Africa. The study was partially sponsored by the European Commission through a doctoral student exchange mobility programme under the auspices of the Erasmus Mundus Inspire project. Under this exchange programme and funding arrangement, the researcher spent some time in Brno at the Masaryk University in the Czech Republic. Consequently, the research being reported in this thesis had to consider not only the South African context but also the contexts of the Czech and Slovak Republics in exploring the key success factors of PPPs and the most important lessons learnt from failed projects aimed at enhancing knowledge and optimising PPP implementation, especially in South Africa. This exchange mobility programme added value to the research and provided invaluable lessons and experiences for lifelong learning.

Peer reviewed publications

Peer reviewed publications emanating from this study are as follows:

Xhala, N.C., Nemeč, J. & Kajimo-Shakantu, K. 2017. Public Private Partnership Projects: The Solution to Limited Public Finance for Public Infrastructure Investments (?). *African Journal of Public Affairs* 9(7), 66-78.

Xhala, N.C., Nemeč, J. & Kajimo-Shakantu, K. 2017. The Breadth of Success and Failure Factors with PPPs Implementation. *European Financial and Accounting Journal* 12(2), 05-16.

Xhala, N.C. & Nemeč, J. 2016. The Quality of Public Institutions as the Core of Success Factor in the Realization of PPPs: Literature Review. *Acta Aerarii* 13(2), 95-108.

Xhala, N.C. 2016. Spatial Planning as an Instrument for Public Infrastructure Investment. IISBE Forum for Young Researchers in Sustainable Building 2016. Central Europe Towards Sustainable Building 2016. In: Proceedings of the 4th *International Sustainable Built Environment Conference-CESB16*, 21-24 June 2016, Prague. Czech Republic.

List of Annexures

- | | | |
|----------|----|------------------------------------|
| Annexure | 1: | Letter of permission |
| Annexure | 2: | Ethical Clearance Certificate |
| Annexure | 3: | Consent Forms |
| Annexure | 4: | Interview Guide |
| Annexure | 5: | Interview Transcripts |
| Annexure | 6: | Turn it in Similarity Index Report |

CHAPTER 1: INTRODUCTION AND PROBLEM SETTING

1.0 Introduction

This chapter presents the broad context of the study relating to public finance, public infrastructure investment and public-private partnerships. The chapter also relates these wider research contexts to governmental broad economic development policy objectives and to the construction industry. The chapter identifies the research problem, formulates the purpose of the research, the research objectives, research questions, and motivation for the study, and outlines the research methodology applied in this study. The chapter further presents the scope and limitation, key assumptions and an outline of the thesis structure. In addition, the chapter identifies the knowledge gap to which the study contributes within the broad body of knowledge of construction management.

1.1 Background to the study: public finance issues

The historic development of public finance as a discipline, over time, highlights that public finance plays a significant role in the financing of public infrastructure investment projects (Kennedy, 2012). The definition of public finance evolved and changed over time, and is generally described as an economic inquiry that focuses on public revenue, expenditure, fiscal systems, fiscal administration and fiscal policy challenges (Kennedy, 2012; Chand, 2008; Taylor, 1970; Grooves, 1958). As an instrument for steering countries' economic development, it is constrained by suboptimal fiscal and monetary policies (Infrastructure Consortium for Africa, 2006). Airoidi, Chua, Gerbert, Justus, and Rilo (2013) claim that global fiscal instability constrains expenditure in infrastructure investment. PriceWaterhouseCoopers (2014) indicates that developing countries are faced with poor credit rating and inadequate records of accomplishment, more so than developed countries.

PriceWaterhouseCoopers (2014) asserts that emerging economies are characterised by relatively lower debt loads for financial markets. Notwithstanding the development of public finance, developing countries are characterised by sizable fiscal deficits that constantly undermine public finance and public infrastructure investment and development (PriceWaterhouseCoopers, 2014). The extent to which public finance is limited in the financing of public infrastructure investment is a debate, which currently confronts the construction industry and the built environment at large (Kennedy, 2012). For instance, the diminishing Gross Domestic Product (GDP) of 3% in countries such as Kenya, Malawi, and Mozambique annually, reflects public infrastructure financing constraints (Airoidi et al., 2013). Public finance constraints in

Nigeria and South Africa, as reflected by the GDP growth constraints, averaged 4% and 5% of annual growth (PriceWaterhouseCoopers, 2014). Public infrastructure investment financing in developed countries is constrained by disproportional taxes and revenue collection (PriceWaterhouseCoopers, 2014). According to Bianchi and Drew (2013) the public sectors' fiscal stability in many countries is strained to provide finance for public infrastructure investment projects. PriceWaterhouseCoopers (2014) claims that despite a constant lower debt burden in most emerging economies, the opportunity to borrow and develop infrastructure is inhibited by limited public finance. In addition, PriceWaterhouseCoopers (2014) asserts that infrastructure investment and development are limited by fiscal volatility. Kennedy (2012) states that public finance is essential for taxation, protection of industries, provision of employment, economic planning, equity, economic stability, optimum utilisation of resources, savings and investment. Chand (2008) argues that public finance serves to teach bureaucrats and leaders the ultimate adoption of policies that promote economic development.

Estache, Serebrisky, and Wren-Lewis (2015) state that fiscal constraints and competing spending priorities limit the financing of public infrastructure investment. In addition, Estache et al. (2015) assert that the financing challenges of infrastructure investment, as reflected in developed and developing countries, are attributed to historic publicly financed infrastructure investment. As explained by Estache et al. (2015), the continued increase of public infrastructure financing through prolonged debt, as argued in this study, compounds the fiscal outlook and increases macro-economic uncertainty. Public finance in infrastructure investment and development in developing countries are constrained by effects of economic recession and widening infrastructure deficits in the public sector (Foster, Butterfield, Chuan, and Nataliya, 2009).

Badu, Owusu-Manu, Edwards, and Holt (2013) postulate that renewed infrastructure investment stimulates economic growth and improves the quality of life. Afonso, Ebert, Schiknecht, and Thone (2005) posit that macro-economic stability contributes to effective and clear fiscal policy implementation. Similarly, Eldrup and Schutze (2013) state that shrinking public finance affects public investment in infrastructure, while lessening of the debt target is a challenge that amplifies public consumption. Afonso et al. (2005) assert that an effective policy mix not only supports the monetary policy, but also stabilises prices to lower rates of interest. In addition, Afonso et al. (2005) highlight that effective fiscal policies contribute to sustained public finance, whilst expenditure policies and tax systems contribute to lower deficits and debt ratios. Ferreiro, Carrasco, and Comez (2014) assert that the EU macro-financial climate limits public finance of many member states in financing infrastructure. In addition, the European Monetary Union (EMU)

restricts the financing of public infrastructure investment, because the macro-economic climate is uncertain. The European Commission (EC) (2014) indicates that the European debt averaged 87.1% in 2013, 88.1% in 2014 stabilising at 88.3% of GDP in 2015. The increase of the debt to GDP ratio within EU member states, with a noticeable constant higher deficit, is the result of weak growth and rising interest rates (EC, 2014). Uppenberg et al. (2011) indicate that tight fiscal, economic, and financial crises constrain numerous countries' renewed infrastructure investment objectives.

Pessoa (2008) postulates that numerous governments acknowledge that public finance is limited, which restrains public infrastructure development. In addition, Pessoa (2008) claims that fiscal debt is a risk which threatens fiscal stability due to increased borrowing. The restructuring processes that governments undertake are means to secure finance elsewhere to fund public infrastructure investment programmes (Pessoa, 2008). The Organization for Economic and Cooperative Development (OECD) (2005) reports that complications and difficulties that reflect in developing countries' development and maintenance of infrastructure, are costly. In addition, the OECD (2005) reports that infrastructure maintenance estimates averaged 7% of real GDP, amounting to \$600 million per year during 2004.

Airoldi et al. (2013) assert that economic recession effects globally affect governments and public finance for investment in infrastructure is limited. In addition, debt levels in many countries are expanding while risks constantly jeopardise the ability to pay debts, resulting in the increased probability of bankruptcy (Airoldi et al., 2013). Eldrup and Schutze (2013) assert that the global economic recession strained countries' public finances. In addition, Eldrup and Schutze (2013) indicate that countries within the EU are currently restricted by budget rules, and spending on public infrastructure is inhibited. PriceWaterhouseCoopers (2014) adds that infrastructure investment is stifled by insufficient finance, which is attributed to heightened fiscal unpredictability, because of increased market risks. Eldrup and Schutze (2013) contend that fiscal risks distort taxes and expenditure on public investment for infrastructure. Banks and institutional investors revise regulatory frameworks for lending as a result of fiscal climate risks (Hatheway, 2009). Ngowi, Pienaar, Akindede, and Iwisi (2006) assert that global infrastructure deficits constrain public infrastructure investment.

1.2 Problem formulation

1.2.1 Public infrastructure investment

The South African construction industry plays a significant role in the country's economic development inputs towards growth and employment (Crampton, 2016). It significantly contributes to the Gross National Product (GNP) and is a critical factor to the GDP increase, which averaged 3.9% in 2016 (Crampton, 2016). Statistics South Africa (StatsSA) (2015) reports that the construction industry contributes to the labour market increase and employs more than 1.4 million people. The construction industry supports government socio-economic objectives and delivers the infrastructure needed for various activities (Wentworth, 2012). Public infrastructure spending is viewed as a good indicator of the construction industry's performance. However, public infrastructure requires large volumes of capital investment to be delivered (PwC, 2013).

Chong and Poole (2013) assert that infrastructure investment is fundamental to economic growth and societal development, because structures and facilities support economic and social services. According to Chong and Poole (2013), infrastructure investment and development stimulates government interest, because it is viewed as a vehicle to enhance economic development. Chand (2008) argues that heavy borrowings for infrastructure investment increases insolvency. Chong and Poole (2013) describe infrastructure as being monopolistic, because of its exclusive control of investment and development of infrastructure and its contribution to substantial scales of economies. Banda (2013) asserts that the monopolistic nature of public infrastructure stimulates governments' interest by developing policies favouring their direct involvement in public infrastructure. Positive infrastructure investment externalities stimulate government interest and thus the development of infrastructure networks (Chong and Poole, 2013). Positive infrastructure externalities influence governments' investment in public infrastructure, because of positive net benefits (Chong and Poole, 2013).

According to Airoldi et al. (2013), population growth, increased urbanisation, new schools, clean water, sanitation and per capita income growth drive infrastructure investment. PriceWaterhouseCoopers (2014) asserts that substantial improved infrastructural backlogs enhance mobility patterns and improve the standard of living, employment opportunities and skills development. Airoldi et al. (2013) state that infrastructure investment in developing countries is driven by the need to maintain dilapidated roads and power stations, and to improve travelling. Airoldi et al. (2013) add that the infrastructure investment drive in developed and developing countries is constrained by strained fiscal deficits. PriceWaterhouseCoopers (2014) argues that investment in public infrastructure is a catalytic mechanism to economic growth. Economic and

financial imperatives in infrastructure investment by middle-income countries translate to improved annual growth (PriceWaterhouseCoopers, 2014). Over a period of 40 years since 1970, the infrastructure-spending rate declined in developed countries (Airoldi et al., 2013). In addition, infrastructure deficits averaged \$2.7 trillion during 2008 and 2010 globally (Airoldi et al., 2013). The historic spending regime in public infrastructure investment in Europe averaged 2.5% of GDP in 2000, while the investment rate averaged 5% of GDP during 1970, reflecting a steady decline (Valila et al., 2005).

According to PriceWaterhouseCoopers (2014), most African countries have an infrastructural holdup of 30%, and in others the dilapidated infrastructure surges the demand because of backlogs in every infrastructural type. Adam and Bevan (2014) add that previous decades reflect an increased demand for infrastructural investment with long-term sustainability of economic growth. Bianchi and Drew (2013) assert that global fiscal deficits constantly impede infrastructural investment projects in developed and developing countries. Bianchi and Drew (2013) postulate that the declining capital infrastructure investment budgets of projects are attributed to unpredictable economic growth and fiscal instability. Airoldi et al. (2013) posit that the infrastructure financing gap averaged between \$1.1 and \$1.5 trillion in developing countries annually since 1990.

According to Adam and Bevan (2014), the rising infrastructure demand diminishes public finance and affects investment in public infrastructure. Quiggin (1996) argues that over the past two decades, trends of increased declining expenditure in public infrastructure investment are noticeable. Pessoa (2008) posits that public finance is limited and thus affects the quality and efficiency of public infrastructure investment. Gemson et al. (2012) postulate that developed and developing countries' public infrastructure financing constrains borrowing to develop infrastructure. Page, Ankner, and Jones (2008) theorise that limited public finance impedes public investment infrastructure. In addition, Page et al. (2008) highlight that it is important to engage the private sector in public infrastructure investment. PriceWaterhouseCoopers (2014) asserts that substantial financing challenges contribute to institutional finance fragmentation and inadequate infrastructure planning at macro level. Garvin (2003) adds that public finance constraints contribute to an increased understanding that public-private partnerships are alternative approaches to finance public infrastructure investment.

1.2.2 Public infrastructure investment via public-private partnerships

The increasing financing gap in infrastructure investment contributes to the exploration of funding mechanisms and consideration of public-private partnerships (PPPs) as a suitable option

(Azaino, 2012). PPPs are generally acknowledged by numerous governments as the means to collaborate in public infrastructure investment (Estache et al., 2015). Banda (2013) articulates that PPPs are quests to improve service delivery, increase the economies of scale, improve private agency competition, transfer of risks, access to management and better prices, and increase efficiency in public infrastructure. Limited public finance contributes to the spread and maturity of project finances and to public-private partnership development (Engel et al., 2010; Yescombe, 2007). Eldrup and Schutze (2013) assert that public-private partnerships have been used to expedite public infrastructure investment due to limited public finance. The OECD (2014) reports that PPP's alternative financing approach is a suitable financing instrument and that it enhances private sector participation.

Hammami et al. (2006) add that macro-economic stability is inseparable from effective PPPs implementation in developed and developing countries. Emirullah and Azam (2014:14) assert that "macro-economic stability, quality of regulations and governance are significant factors that determine PPPs implementation into infrastructure". However, Banda (2013) shows that while the legislative and policy development framework in Zambia favoured PPPs in water projects, none of those projects attracted PPPs. Eldrup and Schutze (2013) assert that PPP implementation differs from country to country and is used to fill the financing gap in infrastructure investment. Kahwajian et al. (2014) indicate that public- and private-sector collaboration contributes to implementing infrastructure projects. Pessoa (2008) claims that the current infrastructure challenges with public finance demands public-sector collaboration with increased public infrastructure investment programmes, because public finance is limited.

Consideration of PPPs requires good partnerships to realise public infrastructure investment (Kripa and Xhafa, 2013). Kahwajian, Baba, Amudi, and Wanos (2014) highlight that the rationale for PPPs implementation in public infrastructure investment is steered to bridge financing gaps. Emirullah and Azam (2014) argue that countries with limited public finance perceive the private sector as an option through public-private partnerships. According to Della-Croce and Gatti (2014), the steady emergence of private sector involvement through PPPs indicates that public finance is limited in finance capital infrastructure programmes. Della-Croce and Yermo (2013) highlight that the private sector is significant to the global development of public infrastructure investment. The World Bank Development Committee Report (2015) states that private sector finance is globally available for infrastructure investment projects. However, challenges primarily lie with the terms of engagement between the public and private sectors (WBDCR, 2015). Davies (2003) highlights that governments with limited public finances implement PPPs and leverage public infrastructure investment. Della-Croce and Yermo (2013)

assert that private sector finance through a PPP provides a channel through which public infrastructure investment can be implemented.

Uppenberg, Strauss, and Wagenvoort (2011) indicate that infrastructure networks are the backbone of countries' economic activity. Providing PPPs promote countries' investment opportunities and public infrastructure development projects (Davies, 2003). In addition, infrastructure projects, such as energy, dams, transport, and airports, benefit from PPPs without additional debt through loans (Davies, 2003). According to Della-Croce and Yermo (2013), comprehensive collaboration is required to fulfill the long-term financing requirements for public infrastructure investment. Banda (2013) postulates that PPPs include three predominant principles, namely informative, incentive and monitoring principles, which enhance the holistic information about PPPs. These principles further improve incentives to implement PPPs successfully in public infrastructure investment and enhance the public sector's effective monitoring of PPPs implementation (Banda, 2013). Della-Croce and Gatti (2014) argue that public sector inability to fund public infrastructure investment contributes to major shifts in public infrastructure investment. Hagerman (2012) argues that the political will is needed to realise public infrastructure investment projects through PPPs. Grimsely and Lewis (2004) indicate that although PPPs are alternative instruments, PPP implementation challenges exist and holistic understanding of PPPs is required when PPPs are considered. The financing of public infrastructure investment through debt and deficits is unsustainable. This study recognises that excessive public debt and increased fiscal deficits increase macro-economic sustainability risks and that the rising infrastructure needs are incompatible with available finance, because of budget cuts in infrastructure investment.

In addition, public finance is limited by restrictive regulations and rules, tight budgets and budget cuts in infrastructure investment which impede infrastructure investment (Gutman, Sy and Chattopadhyay, 2015). The ability to borrow for public infrastructure investment spending is limited because of restrictive lending terms (Emirullah and Azam, 2014). Limited public investment in infrastructure investment stifles economic growth and constrains social and economic objectives (Ishmael and Ajija, 2013). Numerous studies have been conducted in the financing of public infrastructure investment and PPPs are perceived as weak links in public infrastructure investment (Della-Croce and Gatti, 2014). Limited knowledge about PPPs heighten the criticisms and apprehension towards their use in public infrastructure investment as appropriate financing instruments (Nataraj (2007). Nataraj (2007) claims that out-dated information on PPPs increases the misunderstanding in public infrastructure investment. Therefore, inadequate knowledge about PPPs is a challenge which affects the financing of public infrastructure investments (Zhang, 2001).

1.2.3 South African construction industry

The South African construction industry plays a significant role in the development of infrastructure, and contributes to the delivery of numerous infrastructure projects (PwC, 2013). The financing of public infrastructure is related to strategic policy direction and support in decision making in furtherance of economic and social policy objectives (Wentworth, 2012). However, understanding the financing of public infrastructure investment through public-private partnerships and its impact on the construction industry are not clear from the literature study. The financing of public infrastructure investment through PPPs tend to shape how the construction industry develops (Schoeman and Creamer, 2014). According to Creamer Media (2017), the South African economic growth outlook does not bode well for the South African construction industry. For Winning (2017), economic growth forecasts averaged less than 1% in 2017, while the National Treasury fixed economic growth projections in 2017 at 1.3% with continuous improvements averaging 2% in 2018 and 2.2% in 2019 (Creamer Media, 2017). Despite the bleak projected South African economic outlook, the construction industry's activities increased at a slow pace (Winning, 2017; Creamer Media, 2017). The anticipated public sector infrastructure investment implementation over the medium term with constrained public finance and fiscal concerns became worrisome (Creamer Media, 2017).

1.2.4 Czech Republic's construction industry in brief

According to Willoughby (2016), the Czech Republic's construction industry depends on state contracts and plays a pivotal role in the Czech Republic's economic development and growth. The Czech Republic's construction industry has been severely affected by the declining economic growth, with an averaged 36.5% decline in public contracts in 2016, despite the mild growth in 2014 and 2015 (Willoughby, 2016). Rozhlas (2014) notes that the Czech Republic's gloomy economic forecasts affected the country's construction industry firms due to the deteriorating economy which averaged 3.8% in 2014. The Czech Republic's economic growth was further revised to 1% growth, with a reported 2.5% average increase in 2015 and 4% reported in 2017 (Rozhlas, 2014).

The effects of the weak economic growth affected the small and medium sized construction industry firms; hence the economic output averaged 1% decline in 2014 compared to 2015 (Willoughby, 2016). The Czech Republic's construction industry revenue averaged 40% of public contracts and created a dependency on state contracts (Willoughby, 2016). The Czech Republic's housing construction sector has been the driving force behind the construction industry

with a gradual recovery from the economic downturn with an averaged 4% growth increase in 2017 (Rozhlas, 2014). According to Rozhlas (2014), the Czech Republic's construction industry sector and firms are characterised by distress due to frequent public finance constraints for new infrastructure investment projects, excessive bureaucratic constraints and the complexity of legislation.

1.2.5 Slovak Republic's construction industry in brief

According to Rybarova, Braunova, and Jantosova (2016), the Slovak Republic's economy is characterised by two major industry players, namely the automotive industry and the construction industry, which are pivotal to the Slovak Republic's economic development. CEEC Research (2014) shows that the Slovak Republic's economy has been affected by the decline of the construction industry's contribution to the GDP. However, this trend highlights that while the Slovak Republic's GDP increased, the share of construction in GDP decreased (CEEC Research, 2014). Rybarova et al. (2016) report that the decline in the Slovak Republic's construction sector between 2008 and 2014 averaged 1.4% of GDP amounting to €1 984 million, or 44%. The tumbling trend of the Slovak Republic's construction industry is attributed to the global financial and economic crisis of 2009, which adversely affected the industry (Statistical Office of Slovak Republic, 2015a). The industry felt the consequences of the economic crisis in 2012 as construction production declined further, averaging 10% of the country's GDP, equivalent to €4 987 billion. This decline plummeted further to 7%, equivalent to €4 639 in 2014 (SOSR, 2015b). Nejedly (2015) indicates that the majority of the Slovak Republic's construction firms were affected by the declining demand for construction projects, hence most construction firms lost their contracts. Rybarova et al. (2016) highlight that public finance constraints, weather, reckless customer payments, insolvency, tight competition, procurement credibility challenges, and low construction prices affected the Slovak Republic's construction production. It will take several years for the construction industry to recover, thereby affecting the Slovak Republic's economic growth and development (Rybarova et al., 2016).

1.3 Problem statement

The main research problem addressed in this thesis is that: *“public finance is limited and PPPs are not optimised as alternative financing instruments in public infrastructure investment and development”*.

The above problem statement subsumes the following related problems:

- There is a lack of holistic PPPs knowledge in public infrastructure investment,
- There is a lack of understanding of the important core success factors of PPPs, and
- The key lessons to be learnt from failed PPP projects are not clearly established.

The present study identified that PPPs offer alternative financing instruments to fill the financing gap in public infrastructure investment. However, PPPs are characterised by many challenges and there seems to be a lack of a shared understanding of the requirements of PPPs.

1.4 Research aim and objectives

The aim was to optimise PPPs implementation as alternative financing instruments in public infrastructure investment and development by enhancing knowledge through developing core success factors and key lessons learnt from failed PPP projects.

The study pursues the following research objectives to achieve the aim:

- 1) To identify and examine the main causes of limited public finance.
- 2) To develop important core PPPs success factors.
- 3) To determine key lessons to be learnt from failed PPP projects.

1.5 Research questions

The main research question is: how can PPPs be optimised as alternative financing instruments in public infrastructure investment and development?

The following sub-questions guide this research;

- 1) How does limited public finance constrain the financing of public infrastructure investment and development?
- 2) What are the core PPPs success factors?
- 3) What are the key lessons that can be learnt from failed PPPs projects?

1.6 Justification and research motivation

1.6.1 Significance of the research area

The attainment of macro-economic and social development objectives through public infrastructure investment requires developed and resilient infrastructure networks as the

backbone of economic activity (Uppenberg, Strauss and Wagenvoort, 2011). Limited public finance in infrastructure investment and development holds up decision-making processes, and stalls bureaucratic public infrastructure processes (Pessoa, 2008). Further strict lending revisions make it difficult for governments to access financing for infrastructure investment in the long term (Regan, 2014).

The study was motivated by the need to blend financing instruments and to realise the financing of public infrastructure investment (Feremo, 2015). Della-Croce and Yermo (2013) claim that financing mechanisms and models need to be complementary and efficient to enhance PPPs. The construction sector is a vital agent that plays a pivotal role in the delivery of fixed infrastructure investment. Thus, the financing of infrastructure is important in facilities such as roads, hospitals, schools, bridges, railways, ports and telecommunication networks (Chan, Forwood, Roper and Sayers, 2009). The global economic climate shapes approaches in which infrastructure investment is financed, and the public sector is required to adapt to these changes and adopt sustainable financing instruments (Della-Croce and Gatti, 2014). Therefore, it is important to find sustainable and suitable financing instruments in the long term which contribute to infrastructure investment growth (Deau and Touati, 2014). The study is important to the development of the construction industry, since effective PPPs have the potential to contribute to increased development performance and output (Wentworth, 2012). Therefore, it is important that the knowledge of PPPs in the financing of infrastructure is enhanced through the study. The long-standing financing approaches through public debt, fiscal deficits, and balanced budgets give rise to macro-economic risks and an uncertain economic climate. Improving the body of knowledge on PPPs will benefit the financing of public infrastructure, ascertain macro-economic development, economic growth and social development objectives, lessen the pressure on public finance and improve construction industry development.

1.6.2 Neglected research problem and knowledge gap

Public infrastructure investment through public finance as core financing instruments have been widely discussed in the literature. While various studies have indicated positive and negative PPP benefits, it is important to develop the body of knowledge on the most successful factors of PPPs and learn important lessons from failed projects to enhance PPPs knowledge in public infrastructure investment (Riley and Chate, 2014). The need to develop adequate PPPs knowledge is highlighted by criticisms and resistance in public infrastructure investment (Valila, 2005). There is inadequate PPPs knowledge and the literature provides no clear lessons learnt from failed projects to enhance PPPs implementation. The identified gaps in the literature need

to be addressed in order to improve the body of knowledge on PPPs in practice and contribute to the body of knowledge of financing public infrastructure investment in construction management and the construction industry in general.

The study stands to benefit policy and public decision makers, and construction industry stakeholders. Better understanding of PPPs as alternative financing instruments has implications for enhanced decision-making processes by policy makers in the public sector, and could inform the design of policy strategies in the financing of public infrastructure investment with realised implementation of public infrastructure investment. The construction industry firms stand to benefit from this study and could enhance their competitiveness in the delivery of public infrastructure investment. Additionally, the study also expands the knowledge on financing of public infrastructure investment and PPPs.

1.7 Key assumptions

The researcher assumed that limited public finance impedes the financing of public infrastructure investment and development. This researcher further assumed that the widening financing gap constrains public infrastructure investment and jeopardises public infrastructure development. It was also assumed that PPPs are alternative financing instruments suitable for public infrastructure investment and sustainable over the long term.

1.8 Scope and limitations

The researcher focused on the construction industry, public finance and public infrastructure investment perspectives in the financing of public infrastructure investment and PPPs. The study was limited to the financing of public infrastructure investment and PPPs in the construction industry. The empirical part of this study focused on South Africa and the Czech and Slovak Republics by examining the financing of public infrastructure investment and PPPs in these three countries.

1.9 Outline of research methodology

The study is based on a review of the literature and an empirical study. The empirical study consisted of a qualitative approach, as the study was exploratory in nature, with the phenomenology paradigm justified as most appropriate. The case study research, using a purposive sampling strategy, was selected for the study, supplemented by interviews with expert knowledge within and outside the case study. The snowball sampling strategy was used to identify

experts knowledgeable about public finance, public infrastructure investment and PPPs. Semi-structured interviews were also used for data collection to complement data collected from case study documents. Qualitative data analysis techniques were used comprising mainly a three-step coding process. The research used semi-structured interviews to gain an in-depth and rich understanding of financing in public infrastructure investment and PPPs.

The case study is a flexible approach that is used to analyse and understand a complex social phenomenon (Charmaz, 2003; Yin 2009). It is important to highlight that document analysis is justified as important to answer “why” and “how” questions (Yin, 2009). Furthermore, Yin (2003) supports the application of multiple sources of evidence as appropriate when the boundaries between the phenomenon and context are not clearly evident. The discussion and justification of the methodology are presented in Chapter 5.

1.10 Thesis structure

The study comprises eight chapters, which are as follows:

Chapter 1 introduces the research context, identifies the problem, formulates the aim and objectives, and justifies the research. This chapter contextualises financing of public infrastructure investment through limited public finance and the use of public-private partnerships in the context of the construction industry.

Chapter 2 discusses public finance and public infrastructure investment with a focus on South Africa, and the Czech and Slovak Republics. This chapter highlights public finance and public infrastructure investment issues and conceptualises PPPs as alternative financing instruments despite several criticisms.

Chapter 3 discusses public-private partnerships in public infrastructure investment, PPP experiences, challenges, opportunities and lessons in public infrastructure investment and the key lessons to be learnt.

Chapter 4 discusses the conceptual framework developed from the literature review, drawing from the principal agency theory and transaction cost economic theory and institutional theory. This chapter also discusses theories used in the financing of public infrastructure investment and PPPs in the construction industry.

Chapter 5 discusses and justifies the selected epistemological stance, theoretical perspectives, research methodology and methods that underpin this study.

Chapter 6 presents the empirical findings from the case study documents and interviews with experts.

Chapter 7 discusses and interprets the empirical findings and relates them to the conceptual framework and literature review.

Chapter 8 demonstrates the achievement of research aims and objectives, provides the study conclusions, recommendations and areas for further research.

1.11 Concluding remarks

Chapter 1 provided the background of the research, identified the research problem and developed the objectives for pursuing the aim of the research. This chapter justified the undertaking of this research, provided an outlined justified methodological approach, limitations and scope, and thesis structure. The following chapter discusses the relevant literature.

CHAPTER 2: PUBLIC FINANCE ISSUES AND PUBLIC INFRASTRUCTURE INVESTMENT

2.0 Introduction

The primary objective of this chapter is to establish how public finance is viewed as a primary financing instrument in public infrastructure investment and to identify factors that constrain public finance in public infrastructure investment. The chapter also reviews literature reporting on the implications of limited public finance in public infrastructure investment. The chapter's further objective is to establish whether any coherent theoretical framework that guides public finance and public infrastructure investment is available, that can be applied to the current study. Chapter 2 is organised in five sections: public finance is conceptualised and discussed in section one, section two discusses public infrastructure investment globally, and the third section in this chapter discusses public infrastructure investment in South Africa, followed by a discussion of public infrastructure investment in the Czech Republic in section four and the Slovak Republic in section five. The chapter concludes with a summary.

2.1 Conceptualising public finance

2.1.1 Public finance as an important function of the public sector

There is no single definition of public finance. Shehu (2015:30) defines public finance as a "science that studies the phenomena, relations and institutions with regards to collection, distribution, spending and management of monetary resources to meet the general and common social needs of the population." Comaniciu and Bunescu (2010) define public finance as an instrument used by the state to procure the necessary resources, to cover up the expenses and to distribute resources amongst the population. Shehu (2015) describes public finance as a built system that is developed and reformed, and that corresponds to political and economic changes that take place within the country. Stiglitz (2002:1) acknowledges that "public finance has become a rigorous branch of applied microeconomics, incorporating the best thinking and most advanced tools of both theoretical economics and econometrics." The historical development of public finance as a science included certain characteristic features and elements that associated it with other sciences (Plehn, 1900). However, public finance is distinguishable from other sciences because of its uniqueness (Plehn, 1900). The patterns and elements of public finance entail a fundamental scope and objectives that direct public finance, including core functions, values, principles and laws, which regulate the functioning of public finance (Plehn, 1900). Shehu

(2015:56) describes modern public finance as a “scientific branch of economy that studies the problem of finances in a country, the methods, the system and the policy of securing budget revenues, state expenditure, financing system, as well as development of instruments of public finance, public debt and other financial instruments”.

The debates around the importance of public finance illustrate its significance in public infrastructure investment, which is linked to countries’ economic development (Comaniciu Bunescu, 2010). Sabina (2011) asserts that the three key government functions are to obtain financial resources, to regulate and to intervene in the economy within the wider society. In addition, Shehu (2015:30) states “public finance development is important to the advancement of economic processes and gives rise to countries’ financial, economic, and business and socio-economic development”. Public finance is significant to accomplishing tasks and obligations that the state is assigned with, and the realisation of these tasks is difficult without developed financial resources (Sabina, 2011).

Harvey (2002:39) claims that “modern public finance focuses on the macro-economic function of government, and on how government operates and affects the allocation of resources and the distribution of income, likewise, the macro-economic functions of government, the use of taxing, spending, and monetary policies to affect the overall level of unemployment and the price levels.” Shehu (2015) highlights that limited public finance constrains public sector function and impedes public sector operations. This affects the given political, economic and social objectives because of diminishing public finance (Shehu, 2015). Sabina (2011) highlights the interlinkage of public finance with government existence and the public sectors’ role within the economy. Riley and Chate (2014) assert that it is important to understand public finance relationships, assessment and its prioritisation on future development.

Riley and Chate (2014) state that the implementation of tax and spending policies during the mid-2000 highlight the substantial limitations of public finance because of the economic crisis. The 2008/9 economic recession compounded these financial limitations. Phillips and Sandall (2009) underline the importance of relationships between the state and corporate taxpayers in establishing links among taxation, governance and the investment climate. Comaniciu and Bunescu (2010) add that public finance development correlates with the maintenance of financial mechanisms. The development of public finance influences the modern systems of financial methods and the establishment of an institutional framework acting as a public authority which produces and consumes goods and services (Comaniciu and Bunescu, 2010). It is important to adhere to appropriate practices of public financial management systems in order to secure growth and development, capitalise on efficiency and for effective use of limited public finance

(Muhammed, 2014). Comaniciu and Bunescu (2010) assert that public finance serves to establish financial and legal frameworks through legislation of procedures, rulings and other regulations that enforce compliance with statutory provisions. Atkinson (2012) notes that the current challenges facing various governments around the world are fiscal in nature. In addition, studies trace the historical limitations of public finance from historic rulers and governments that faced the mounting challenge of financing public sector activities (Atkinson, 2012). Winer and Hettich (2008) maintain that the contextual analysis of public finance in modern democracies highlight the debate of market expectations.

Winer and Hettich (2008) highlight that public finance discussions originate from the earliest theory of welfare economics and link private competitive markets with efficiency in resource allocation. This theory places the public sector as an adjunct to the aid of private sector competitive market performance and perceives the private sector as efficient, and the presence of public goods as the cause of failure (Winer and Hettich, 2008). Sobel (n.d.) claims that a philosophical approach spanning from the writings of Adam Smith viewed public sector's response to private sector failure as a cause for limited public finance within a market economic environment. In addition, Sobel (n.d.) indicates that recent economic thinking incorporates the idea that public-sector institutions are imperfect and costly. Sobel (n.d.) adds that the reasoning behind the use of public- and private-sector institutions is their alternative roles of scarce resource allocation within the economy.

Moreno-Dodson and Wodon (2008) assert that developing countries face a multitude of challenges that lead to market failures. According to Moreno-Dodson and Wodon (2008), these challenges include uneven income, population growth, external shocks, inadequate policies and regulations, and weak judiciary systems. Public finance is explained in normative as well as positive statements (Jain and Kaur, 2009). Tresch (2015:5) states that the normative theoretical understanding of public finance considers "what government ought to be, through the broadly accepted norms by society." Harvey (2002) highlights that normative statements in public finance address the ethical decision-making issues in the public sector. Public finance normative statements develop value judgments (Holcombe, 1998). Broadway (2001) postulates that policy statements are prescriptive for evaluation purposes. Jain and Kaur (2009:5) add that normative theoretical science, norms or ideals describe "what ought to be" or "what is right or wrong" as value judgment. Broadway (2001) asserts that public finance in a normative context serves as policy evaluation objective and is used for instructional purposes that contribute to a real world impact on collective decision making. According to Holcombe (1998), the public finance theory supports the design of real world public-sector institutions and the use of value judgment. Chand

(2015) emphasises that positive statements deal with issues of public revenue, public expenditure, budget constituencies, and fiscal operations incidences. Holcombe (1998) highlights that the positive context of public finance contributes to the development of economic facts. Buchanan (1975:383) states “positive analysis of public finance as an alternative that offers better insights to predict the effects of tax behaviour of individuals and industries within the private economy.”

Tresch (2015) postulates that positive statements generate policy and economic output interests. Positive statements are dominant in fiscal systems and in public finance (Chand, 2015). Both normative and positive statements in public finance are important to the financing of public infrastructure investment (Chand, 2015). It is important to understand the theoretical normative and positive theoretical knowledge of interrelated issues such as revenue, expenditure, debt and deficits (Jain and Kaur, 2009). It is also important to understand the challenges of public finance in public infrastructure investment (Jain and Kaur, 2009). Tresch (2015) states that it is difficult to separate normative and positive theories in public finance and that each theory complements each other in practice.

2.1.2 Global macro-economic issues and public finance

2.1.2.1 *Linking public finance to global economy*

The UN (2015) reports that global macro-economic imbalances are the result of shrinking economic climates projected in the long term. In addition, the UN (2015:65) reports that macro-economic imbalances are the result of “cyclical downturn, weak external demand in deficit countries, and structural changes in a few surplus countries.” Furthermore, the UN (2015) indicates that structural consolidation measures cause global macro-economic imbalances and undermine economic stability. The IMF (2014) indicates that global exchange reserves accumulated to \$2.1 trillion by 2000. In addition, 2012 projections highlighted the staggering \$12.0 trillion macro-economic imbalances in developed countries and \$8 trillion in developed countries (IMF, 2014).

The UN (2015) reports that constant financing and investment inadequacies jeopardise economic and social objective targets because public finance is limited. In addition, the UN (2015) shows that capital financing flows are volatile and the private-sector financing volume is insufficient to finance public infrastructure investment. Macro-economic instability in developing countries is the result of substantial fiscal deficits that occurred during 1970 and 1980 (UN, 2002). Weak financial markets, inadequate fiscal policies and lack of effective fiscal management

contribute to limited or unpredicted cash inflow (UN, 2002). Aldasoro and Seiferling (2014) postulate that studies in public finance highlight the lack of decentralised power to implement tax collection.

Dzoibek, Gutierrez, and Kufa (2011) assert that lack of implementable decentralised tax collection and decentralised revenue allocation and expenses create “vertical fiscal imbalances”. Vertical fiscal imbalance affects fiscal performance of the public sector (Rodden, Eskelund and Litvack, 2003; Kornai, Maskin and Roland, 2003; Crivelli, Leive and Strattmann, 2010). Rodden et al. (2003) claim that budget constraints contribute to disincentives and result in increased transfers and debt by central government. Eyraud and Lusinyan (2013) contend that it is impossible to decentralise tax collection to subnational governments.

2.1.2.2 Real gross domestic product growth issues

Several countries prolonged their fiscal adjustments because of the 2008/9 economic recession that affected the global growth and quality of public finance (OECD, 2012). Numerous forces brought fundamental shifts in the global GDP because of the high unemployment rate, demographic changes, aging, traveling, urbanisation and fiscal imbalances. The prevalence of these challenges limit public finance and compounds social and economic problems (OECD, 2012). Figure 1 illustrates rising trends in real GDP and shows that economic growth is adversely affected by economic upheavals.

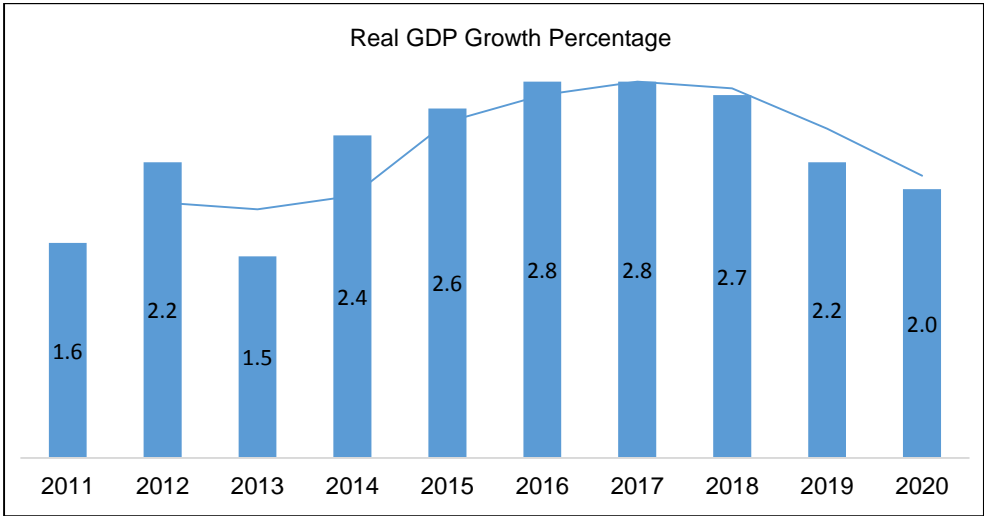


Figure 1. Real GDP growth in percentage

Source: IMF (2015)

Figure 1 illustrates that during the period 2013 to 2018, the GDP was projected to increase slightly because of limited spending and structural consolidation measures in various countries. Numerous countries' GDPs are expected to decline further in 2018 because of the expansion of debt and fiscal deficits. Pasquali (2015) states that the aftershocks of the 2008/9 economic recession compound the challenges faced by developed and developing countries with limited budgets. In addition, Pasquali (2015:18) argues "the mix of liquidity crunch decreased tax revenue, shrank the huge economic stimulus, recapitalisation of banks and led to a dramatic increase in the public debt for most advanced economies."

2.1.2.3 Global current account balance issues

The 2008/9 macro-economic recession characteristics created substantial global deficits in current accounts due to the volatile economic climate (Lane and Milesi-Ferretti, 2014). In addition, Lane and Milesi-Ferretti (2014) claim that globally, current accounts compression lessened domestic demand in countries characterised by substantial deficits, because of commodity price decline. Intermittent exchange rate policies adversely affect domestic growth, weaken global growth and affect trade partnerships (IMF, 2007). Lane and Milesi-Ferretti (2012) state that despite rectifications of current account balances, increased deficits in matured economies are caused by external imbalances. El-Erian (2012) asserts that policy implementation requirements need to address domestic and international distortions and global imbalances. The lack of balanced accounts exposes the country to risks of stoppages if a country is characterised by substantial deficits and large net foreign financial liabilities (IMF, 2014). As shown in Figure 2, the recurrent global current account balance shrinkage during 2014 was caused by increased public deficit, external liabilities and an uncertain macro-economic climate.

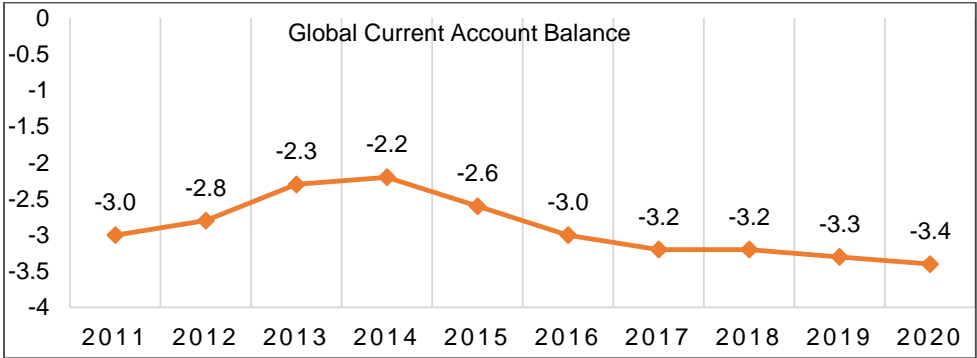


Figure 2. Global current account balance 2011 to 2020. Source: IMF Forecasts (2015)

The IMF (2014) reports that it is important to implement policies that address internal and external imbalances in order to expand global current account balances positively. Global current account imbalances, as highlighted in Figure 2 and by various scholars, suggest that macro-economic contractions globally limit public finance (Bini-Smaghi, 2008; Obstfeld and Rogoff, 2009; Lane and Milesi-Ferretti, 2012; IMF, 2014).

2.1.2.4 Global fiscal deficit issues

The IMF (1996) indicates that the substantial emergence of massive fiscal deficits are due to public overspending rather than reported inadequate tax collection. Over the past 40 years, there has been a noticeable increase in budget deficits as a percentage of GDP in developed countries (IMF, 1996). Tesic et al. (2014) contends that the classical economic doctrine, which states that a change in supply should be matched by a change of demand to balance the economy, justifies fiscal deficits and public debt expansion because of needed public expenditure over the short term. In addition, The classical doctrine justifies the expansion of fiscal deficits and public debt in the financing of capital infrastructure projects in the long term (Tesic et al., 2014). In contrast, Perry (2014:8) asserts that “fiscal deficits adversely affect public-sector consumption.”

Perry (2014) argues that expanded public-sector consumption lessens government savings and decreases public investment. The classical doctrine advocates fiscal deficits to balance the shifts in demand and increases interest rates (Perry, 2014). However, increased borrowing makes no difference to increasing fiscal deficits from the classical economic point of view (Tesic et al., 2014). In contrast, increases in interest rates lessen the borrowing ability of the private sector and reduces the demand for public investment (Perry, 2014). In addition, the classical school of thought rejects increased fiscal expenditure because of counter-production and shifting of funds to public-sector consumption rather than to investment (Perry, 2014:10).

Perry (2014:11) opines that “economists believe that when the economy gets worse, investment and consumption falls, people would buy treasury bonds to be safe and this pushes the yields down.” In addition, Tesic et al. (2014) assert that full utilisation of economic resources with increased consumption lessens public-sector savings. Furthermore, the neoclassical economists identify the total impact of spending to outweigh the loss of investment. Neoclassical economists believe that increases in interest rates expands investment and balances the economic equilibrium (Tesic et al., 2014). Bernheim (1989:89) states that “this would have devastating effects on economic growth because in this way, permanent deficits crowd out the private accumulation of capital.”

Perry (2014) highlights that classical and neoclassical schools of thought on fiscal deficits are differently perceived by Keynesians. Keynesian philosophers support the expansion of fiscal deficits because timely deficits contribute to desired benefits (Tescic et al., 2014). Keynesians also recognise the generated adverse effects of aggregate demands because of deficits (Tescic et al., 2014). Perry (2014:11) opines that “interest rates would fall and the increase in investment would bring economic systems back to full employment” which is in contrast to what the classical school believes. Keynesians highlight that “investment is not just a function of interest rates but a function of how future profit opportunities are perceived” (Perry, 2014:11).

The present study argues that the financing of infrastructure investment opportunities require careful consideration of all financing approaches rather than merely the expansion of debt and fiscal deficits. Perry (2014) states that economic development is affected by a lack of deficits and that investor confidence is re-energised by deficits. Tesci et al. (2014) add that Keynesian views on fiscal deficits are both negative and positive and depends on the state of the economy. High fiscal deficits are serious concerns in both developed and developing countries as they contribute to fiscal cyclical challenges (Kumhof and Laxton, 2013). In contrast, substantial fiscal bailouts with structured stimulus measures and automatic stabilisers expand fiscal deficits and increase public debt ratios in various countries (Ferrarini, Jha, and Ramayandi, 2012).

Baldacci and Kumar (2010) state that fiscal deficits and public debt expansion are causes for concern in numerous countries because of their long-term effects. As shown in Figure 3, these concerns are reported by the IMF (1996:18), as “the aging population, population growth and sluggish economic growth is becoming a worrying trend and consequently various governments are left with no choice but to restructure their spending programs” to accommodate the direct and indirect increased burden on tax revenue.

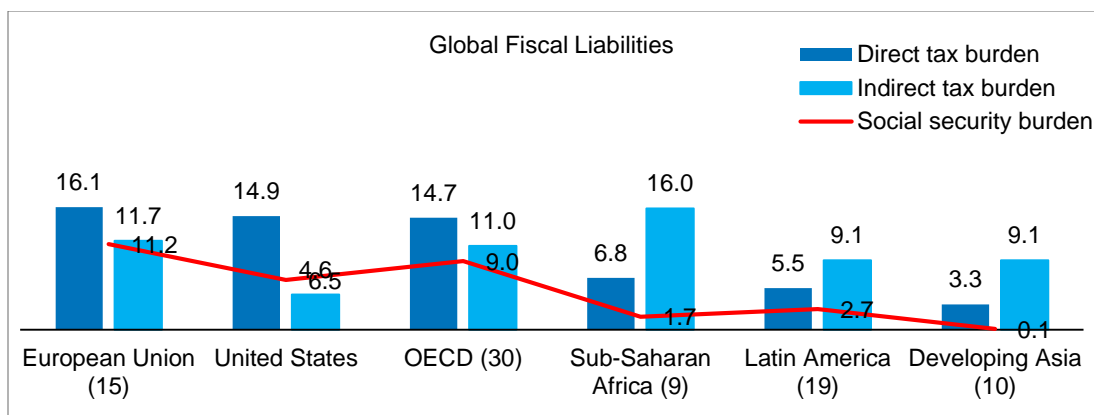


Figure 3. Global fiscal issues.

Source: OECD (2015)

In Figure 3, the global fiscal outlook reflects high direct tax burdens in matured economies whilst developing countries reflect indirect tax burdens. As shown in Figure 3, the social security burden is a challenge that is dominant in matured economies while emerging economies reflect less burden patterns in social security burdens. Figure 3 presents a dynamic pattern of why fiscal deficits and debt expand in both developed and developing countries.

2.1.2.5 Global public debt issues

Numerous governments implement fiscal policies for strategic purposes (Svaljek, 2002). Furthermore, Svaljek (2002: 70) claims “public debt is a result of strategic conflicts among political parties and social groups exerting simultaneous pressure on political decisions”. Characteristics of global modern democracies increase public debt because of groupings in political parties’ coalition governments that are characterised by strategic objectives (Roubini and Sachs, 1989a). Government strategic objectives influence budget structure and consumption size (Roubini and Sachs, 1989a). According to Allesina and Perotti (1994), public debt increase is a result of inadequate fiscal discipline. Furthermore, public debt increase is caused by budgetary institutions’ inability, because they lack the power to facilitate strict execution of budget laws (Allesina and Perotti, 1994).

Svaljek (2002) indicates that politicians expand debt despite limitations and sustainability concerns. Increase in public debt heightens financing constraints and contributes to monetary risks that limit available public finance (Svaljek, 2002). For Clayton (2000), rapid public debt expansion globally is the result of failure as reflected by Japan’s estimated \$500 billion debt crisis in Asia. Increased public debt also reflects multi-billion subsidies that the IMF offered to constrained economies (Clayton, 2000). Clayton (2000:146) claims that “capitalism goes through

bouts of excessive optimism followed by episodes of excessive pessimism and that the inevitable fluctuations make every country prone to the crisis.”

In contrast, the IMF (1998) reports that various governments globally need to recognise the volatility of a capitalist system and that effective policies need to stabilise the economic climate. Public debt should not exceed 60% of GDP and deficits should not rise above 3% of GDP (Clayton, 2000). Countries need to tighten their fiscal policies. This approach is already implemented in Europe through the Structural Growth Path (Clayton, 2000). The IMF (2011a) also reports that large structural deficits and the build-up of public debt are concerns for future fiscal policies. Ferrarini et al. (2012) argue that concerns over the spread of the debt crisis in Europe reduced debt prospects. Public debt increases impede potential economic prospects, constrain prospective fiscal policy and expose the economy to external shocks (IMF, 2013).

The IMF (2013) states increased public debt risks economic growth. Emerging market economies perceive public debt as a challenge, because expanded public debt negatively impact economic development in the long term (Ardagna, Caselli, and Lane, 2007). In addition, Ardagna et al. (2007) postulate that public debt escalates the suspicion that advanced economies will falter to service their liabilities and increase credit risk. Baldacci and Kumar (2010) posit that inflationary forces expand interest rates in countries characterised by substantial public debt and affect long-term structured terms due to increased borrowing costs. Financial crises globally increases sovereign debt and probable risks of indebtedness in the long term (Pasquali, 2015). The IMF (2012) reports several countries face the prospect of heavy debts in the coming years. Figure 4 illustrates the countries’ level of debt while Figure 5 shows the context of public debt expansion.

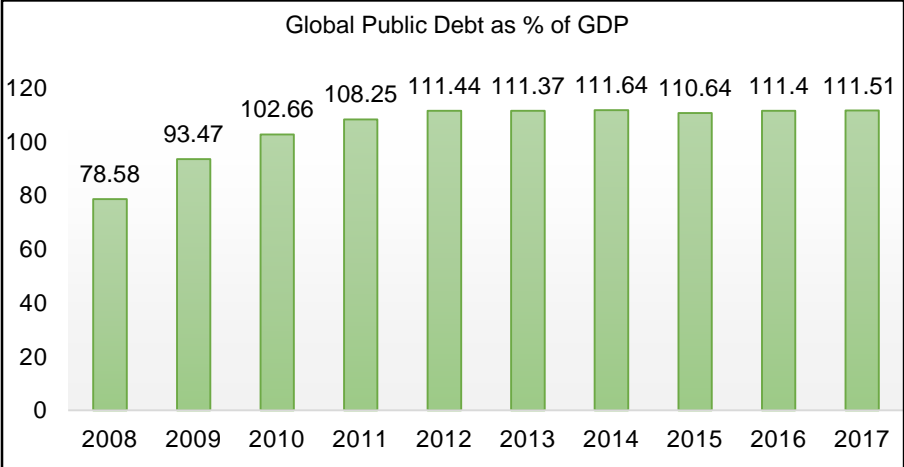


Figure 4. Global public debt as % of GDP.

Source: OECD 2015

Figures 4 and 5 illustrate the public debt pattern as a percentage of GDP. The Organisation for Economic Co-operation and Development (OECD) countries' public debt as a percentage of GDP averaged 70% throughout 1990 and accelerated to 110% during 2014 (Pasquali, 2015). In contrast, fiscal projections reflected constant public debt increases that averaged 111.2% during 2015 (OECD, 2014). Pasquali (2015) and the IMF (2014) illustrate that historically, public debt rose at an alarming rate in countries with historic debt challenges such as Japan, Italy, Greece, Belgium, Spain, Singapore, and Portugal. In addition, the adverse economic upheaval effects illustrate that the rising public debt was reduced in countries such as the USA, UK, France and South Africa, although remaining high, as shown in Figure 5

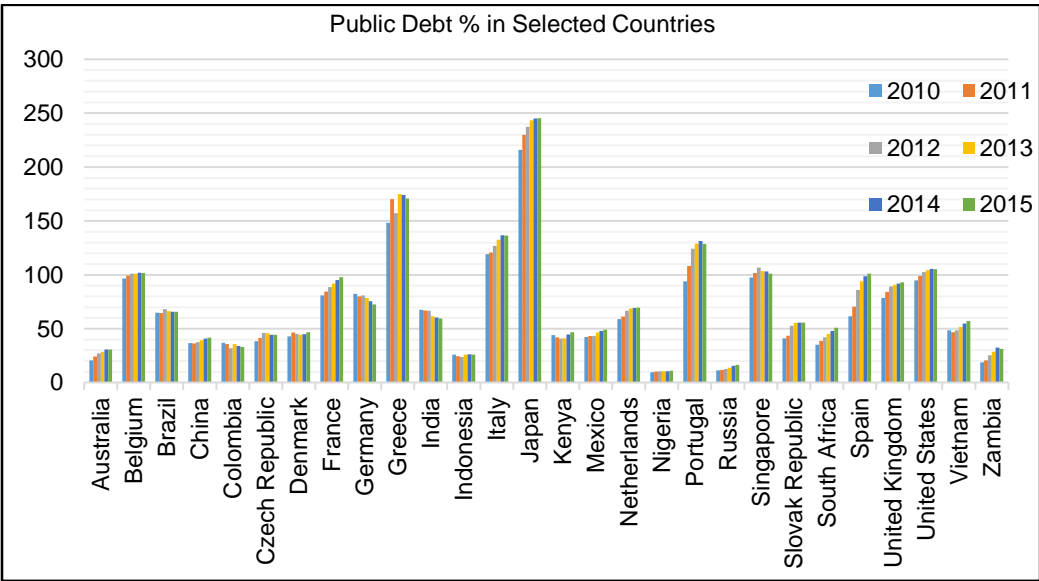


Figure 5. Public debt as % of GDP in selected countries. Source: In IMF (2014) as cited by Pasquali 2015

2.2 Public infrastructure investment

2.2.1 Public infrastructure investment and public finance

Henckel and Pierre-Rirchard (2009) assert that lack of public spending in infrastructure and maintenance impedes countries' development potential. The World Bank (1994) indicates that lack of public investment in infrastructure within developing countries is equated to annual and quarterly losses in investment opportunities. In addition, the World Bank (1994) reports that losses in investment is expressed by technical inefficiencies. Inefficiencies in infrastructure investment constrains public facilities such as road construction, railway upgrades, building of dams and power stations (World Bank, 1994).

Henckel and Pierre-Richard (2009) state that lack of public finance in public infrastructure investment and maintenance create investment losses and affect the private sector. Similarly, Henckel and McKibbin (2010) note that infrastructure investment in various countries, especially in developing countries, is fragile and constrained by insufficient finance. These fundamental challenges affect the developing countries' efforts due to changing demands and fragmented infrastructure investments (Henckel and McKibbin, 2010). Vinuela (2016) opines that inadequate reforms in the public sector spans from intergovernmental fiscal framework design. Collier and O'Connell (2007) assert that landlocked countries are characterised by challenges which affect infrastructure investment and development. To the contrary, Henckel and McKibbin (2010) indicate that Switzerland and Austria are evidence of landlocked countries that benefit from infrastructure investment in neighboring countries.

Investment in public infrastructure contributes to trade covenants in landlocked countries (Henckel and McKibbin, 2010). PriceWaterhouseCoopers (2014) asserts that continuous parallel trends to lessen the debt burden in relation to GDP within the developing and developed economies constrain borrowing opportunities. Bianchi and Drew (2013) state that public investment in infrastructure within various countries is strained and limited by unstable fiscal climates that limit public finance. Sizeable fiscal deficits diminish anticipation to investment in developing economies (PriceWaterhouseCoopers, 2014). The public sector's provision of public infrastructure investment is tainted by cost overruns, inadequate planning, and delays in construction, lack of innovation and inadequate modern technology. Furthermore, the public infrastructure investment push in various countries is affected by the limited public finance, which intensifies the need to collaborate with the private sector (Henckel and McKibbin, 2010).

Edwards (2013) indicates that global infrastructure investment requirements are expanding and the delivery of infrastructure requires trillions of US dollars. The private sector is perceived as capable of delivering public infrastructure investment as the global shifts in infrastructure delivery demonstrate private sector preparedness (Edwards, 2013). PriceWaterhouseCoopers (2014) states collaborative delivery shifts in public infrastructure are accelerating, because of suboptimal credit ratings and inadequate records of accomplishment. Henckel and McKibbin (2010:9) contend that current price tags in infrastructure investment and maintenance in developing countries surpass the available public finance. Public infrastructure expenditure is often compared to increments in private-sector investments (Edwards, 2013).

Elson (2013) states that expenditure cuts and withdrawal in foreign direct investment constrain public infrastructure investment. According to Elson (2013), budget cuts in public infrastructure spending averaged 40% of GDP as a result of the decline in fiscal balance during

1980 and 1990. Public infrastructure investment expenditure cuts lead to long-term economic costs and negative future output growth (Elson, 2013). Commodity prices boost a country's economic backbone. The gross capital formation in the developing countries averaged 19% of GDP in 2000 (Vinuela, 2016). Elson (2013) claims that budget cuts in public expenditure is a result of political leadership difficulties due to constraints in public consumption. Vinuela (2016:63) states that the "presence of high volatility in various countries disrupts public infrastructure investments and result to inadequate revenue forecasts by public officials to elusive decision-making on multiyear projects." Monetary policy implementation is used to stimulate public spending, while public infrastructure investment is used to control exchange rates and to enhance exports (Pettinger, 2010). Furthermore, monetary policy limitation constrains spending in public infrastructure investment (Pettinger, 2010).

The UN (2015) indicates that cyclical and structural factors, infrastructure deficits, lack of economic reforms, strong reliance on commodity exports and political woes affect emerging economies and hold back economic growth. The UN (2015) further reports that emerging economies are mostly vulnerable because of external exposure to geopolitical risks, political instability, and heavy reliance on international commodity exports. Macro-economic stability and support growth sustainability are challenged by unwarranted asset prices (UN, 2015). Another challenge lies with the relaxation of the fiscal policy that supports growth, currency depreciation, and capital flows (UN, 2015). In addition, the UN (2015) illustrates that major challenges relate to high levels of public debt, which exceeds in average 100% of GDP in most developed countries. The structure of public expenditure and entitlements are challenges that expand the expenditure agenda (UN, 2015). The developing countries' challenges include lack of stable fiscal balance because of lower revenues, to offset spending through sovereign wealth funds and numerous domestic issues such as borrowing (UN, 2015). The International Monetary Fund (2015) asserts that policy mistakes adversely affect and prolong global market turmoil and impede economic recovery.

International Monetary Fund (2015) maintains that monetary policy implementation is needed to stabilise the financial climate and the sustenance of economic growth. Braconier, Nicoletti, and Westmore (2014) highlight that the decline in economic growth in emerging markets is the result of numerous constraints that are intertwined with long-term financing challenges. The current fiscal policy tensions and global imbalances are caused by the unprecedented demographic changes, current account imbalances, rising income polarisation and advances in technology that limit public finance (Braconier et al., 2014). Furthermore, stabilised economic

growth is unpredicted without policy shifts due to daunting public infrastructure investment financing challenges (Braconier et al., 2014).

2.3 South African public infrastructure investment

2.3.1 South African macro-economic development

The financing of public infrastructure investment in South Africa is linked to economic development policy objectives which outline the importance of public infrastructure investment and development (Wentworth, 2012). The economic development policy objectives seek to accelerate economic growth, and narrow structural, social and economic fragmentation that widens structural socio-economic fragmentation (Wentworth, 2012). The post-1994 South African democratic government inherited substantial infrastructural backlogs which have a racial bias and lack the required economic diversity due to substantial lack of public infrastructure investment (Infrastructure Dialogues, 2015). The public infrastructure investment in South Africa is characterised by continuous political legacies inherited from the apartheid regime, which comprise high unemployment, illiteracy, crime, substantial lack of skills, and structural socio-economic challenges that still exist (Manchidi and Merrifield, 2001; Wentworth, 2012).

The South African approach in response to socio-economic and infrastructure challenges is to develop the required technical skills through public infrastructure investment with government facilitating substantial investments (Wentworth, 2012). Ferreira and Khatami (1996) assert that governments with publicly financed infrastructure investment programmes increase indefinite macro-economic instability, due to rising debts and increasing investment needs. Furthermore, Ferreira and Khatami (1996) state that countries that publicly finance their infrastructure investment fail to meet the increasing public infrastructure investment demands.

International empirical evidence highlight relationships between infrastructure investment delivered by the state and the economic development objectives (Meyer, 2012; Kessides, 1993). Mabugu (2015) states that although the South African government has made substantial strides to realise socio-economic objectives, structural challenges still persist, which reflect inequality, poverty and unemployment due to inadequate economic performance. Kirsten and Davies (2008:5) state that “the prevalence of diversified structural changes that characterised economic development in South Africa resulted in major shifts in support of infrastructure investment.” Wentworth (2012) adds that substantial structural challenges contribute to alternative economic growth approaches. Alternative approaches consider public infrastructure investment as the best approach to increase economic growth (Meyer, 2012). Fedderke, Perkins, and Luiz (2005), and

Perkins, Fedderke, and Luiz (2005) claim that public infrastructure investment in South Africa strongly affects economic growth. Infrastructure investment is linked to accelerated economic growth and is reflected in various developed countries (Meyer, 2012). The Urban Land Institute and Ernest and Young (2011) report that justified modernisation and improved infrastructure contributes to competitive future acceleration of economic growth. In addition, the Urban Land Institute and Ernest and Young (2011) highlight that employment creation is a response to numerous social and economic challenges that face South Africa. Bogetic and Fedderke (2006) opine that public infrastructure investment and development in developing countries strongly enhance the developmental agenda through economic growth. Ehlers (2014:1) states that “infrastructure is a key determinant of potential growth of economy.” In addition, public infrastructure investment and development increase the economic developmental perspective that public infrastructure investment is a tool for redressing numerous structural challenges (ANC, 2012).

The South African government realised the importance of public infrastructure investment finance because infrastructure investment responds to economic and social challenges. The South African government developed numerous policy development objectives to usher in public infrastructure investment and development in the long term (Chege, 2001). The diverse policies developed to achieve the socio-economic development objectives comprised the Reconstruction and Development Programme (RDP), the Growth, Employment and Redistribution (GEAR) policy, the Accelerated and Shared Growth Initiative for South Africa (ASGISA), and the National Development Plan (NDP) (Wentworth, 2012).

2.3.1.1 Reconstruction and Development Programme (RDP)

The first South African policy implementation that ushered in socio-economic public infrastructure investment is the Reconstruction and Development Programme (RDP) which is defined as the South African socio-economic policy framework that targeted economic growth through reconstruction of social infrastructure (African National Congress, 1994). Mahabir and Mabena (2014) highlight that the implementation of the RDP was to ensure that the public-sector finances the development of infrastructure for the poor as supported by the constitution. The South African Constitution of 1996 highlights that South Africa is mandated to provide investments in social and economic infrastructure that must be shared by the poor and to support economic growth.

Mabugu, Maisonnave, Chitiga, and Decaluwe (2014) state that the South African ambitious goals enshrined in the constitution for the RDP were difficult to implement but people still benefited from health, education, land and other services. The difficulty emanates from the

substantial structural challenges, fiscal deficits and public debt that increased sharply (Mabugu et al., 2014). Furthermore, Mabugu et al. (2014) claim that the implementation of the RDP is unsustainable due to fiscal deficits and public debt that pose substantial challenges to the new administration. Subsequent to problems that characterised the RDP, government reversed the RDP in favour of the GEAR policy due to numerous fiscal challenges, nevertheless continuing implementing the RDP's last phases.

2.3.1.2 Growth, employment and redistribution (GEAR)

The second South African macro-economic policy development framework, namely the Growth, Employment and Redistribution (GEAR) policy, shifted government policy direction to policies that promoted "privatization, macro-economic stability and trade liberalization" (Fourie, 2006:14). Manchidi and Merrifield (2001) indicate that the GEAR policy deliberately focused government on strategic objectives to create jobs as top priority during 1996. Mabugu et al. (2014) assert that GEAR was short-lived as a policy programme because of increased criticism by alliance partners who viewed GEAR as critically challenging due to strict fiscal constraints. GEAR (1996:4) reports as a policy strategy, it intended to provide "adequate and efficient economic infrastructure services in support of industrial and regional development and to address the major backlogs in the provision of municipal and rural services." Mabugu et al. (2014) state that the criticism about GEAR was attributed to implementation failure because of excessive constraints in structural adjustments as prescribed by the World Bank, the IMF and Bretton Woods. Mabugu et al. (2014) contend that GEAR was characterised by adverse effects on fiscal stability and increased budget deficits. GEAR's main challenges resulted in its abandonment as a second policy programme due to increased constraints in its implementation leading to a third policy consideration (Mabugu et al., 2014).

2.3.1.3 Accelerated and Shared Growth Initiative for South Africa (ASGISA)

The third South African macro-economic development policy programme was implemented because of numerous structural challenges with the implementation of GEAR. The Accelerated and Shared Growth Initiative for South Africa (ASGISA) implementation during 2006 favoured numerous economic development objectives that targeted South African economic growth and expansion (Calitz and Fourie, 2007). However, substantial challenges reflecting in numerous public infrastructure investments and assets showed a dilapidating state of social and economic infrastructure constraining economic growth (Calitz and Fourie, 2007). Similarly, Calitz and Fourie

(2007:4) state that ASGISA was a short-term macro-economic policy programme that sought to “soften the high risks associated with high current account deficits.” The fundamental purpose of implementing ASGISA failed because of the same stringent fiscal implementation rules which affected GEAR (Mabugu et al., 2014). Similarly, ASGISA policy implementation restricted government expenditure on the required social and economic infrastructure expenditure redress objectives (Mabugu et al., 2014). Ferreira and Khatami (1996) indicate that the South African government needed increased labour productivity levels and business performance in social and economic infrastructure investments. Implementing ASGISA intended to address the rising rates in unemployment with economic growth prospects (Ferreira and Khatami, 1996).

2.3.1.4 National Development Plan (NDP)

Abiad, Almansour, Furceri, Granados, and Topalova (2014:78) state that “public infrastructure investment boosts the aggregate demand through the short-term multiplier and also crowd-in private investment.” Socio-economic realisation through public institutionalised vision requires an integrated plan that addresses structural, social and economic challenges through a National Development Plan (NDP) (Mabugu, 2015). The NDP implementation strategically focuses on infrastructure investment and development, and ensures the financing of public infrastructure investment by the state (Meyer, 2012). In addition, strategic institutions were set to streamline and prioritise public infrastructure investment such as the National Planning Commission (NPC) (Meyer, 2012). The NPC established a “long-term vision and a strategic plan for South Africa” that focused on public infrastructure investment as pillars of delivery (Meyer, 2012: 7).

The Presidential Infrastructure Coordinating Commission (PICC) was formed through the Infrastructure Development Act of 2012 as a coordinating oversight in strategic infrastructure investment (Meyer, 2012). The Presidential Review Committee on State Owned Enterprises (SOEs) was established to ensure that SOEs align infrastructure investment plans with the state’s developmental agenda (Meyer, 2012). The NDP is instrumental in infrastructural investment and development (Mokgabudi, 2013). In addition, Mokgabudi (2013) asserts that the NDP implementation aligns spending in public infrastructure with a targeted averaged 10% of GDP in 2030. Wentworth (2012) suggests that partnerships are pivotal to promote economic growth, increase labour capacity and improve public infrastructure investment implementation.

2.3.2 South African public infrastructure investment

The financing of public infrastructure investment in South Africa is, as is the case with many countries, influenced by numerous trends that affect the financing of public infrastructure

investment (Greve, 2015). The most dominant financing factors comprise fiscal position, economic growth, current account, public debt, and fiscal deficits. The IMF (2014:2) indicates that “greater private sector participation would help as the public balance sheets are stretched.” The National Treasury (2014) reports that the South African macro-economic outlook is under pressure, due to numerous factors described in the Mid-Term Budget Policy Statement of 2014. The South African macro-economic development outlook was affected by the 2008/9 economic recession, and global economies are still recovering from the 2008/9 economic shocks (National Treasury, 2015). Khumalo (2015) projects that increased spending in major public infrastructure investment with different classes and sizes in public infrastructure projects is set to continue up to completion of all major projects. Khumalo (2015) states that capital infrastructure expenditure increases through fiscal consolidation and fiscal frameworks as means to finance public infrastructure investments. The South African public infrastructure investment trend has changed due to risky infrastructure projects (Ministry of Finance, 2012). Public infrastructure investment and development are constrained by limited public finance due to increasing debt and fiscal deficits, and PPPs in public infrastructure investment reduces this pressure over the long-term (Kumo et al., 2014; IMF, 2014; Ministry of Finance, 2012). Figure 6 shows the public infrastructure investment financing shortfall from 2013 to 2030.

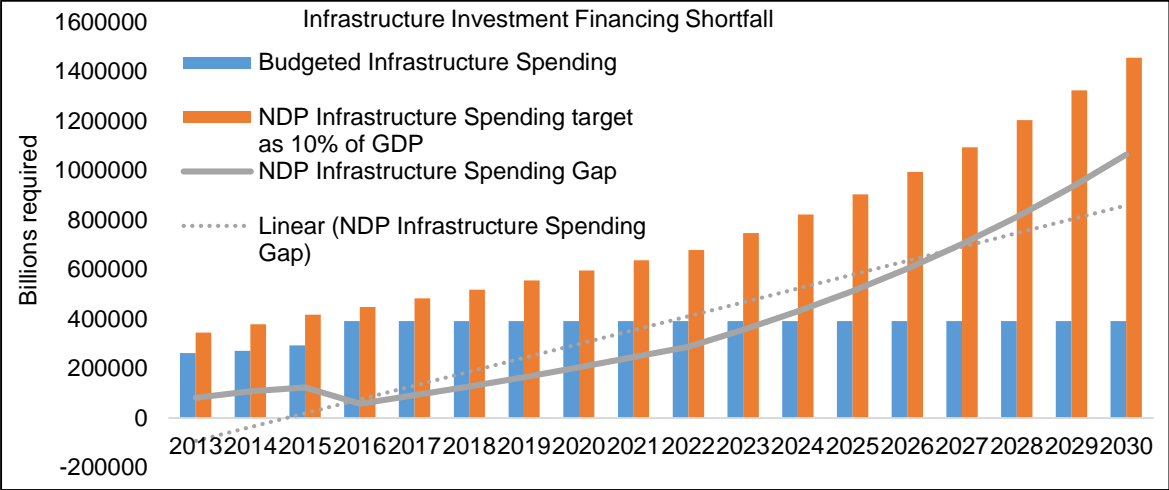


Figure 6. Public infrastructure investment financing shortfall 2013-2030.

Source: Mokgabudi (2013).

As shown in Figure 6, the financing shortfall in public infrastructure investment is substantial and heavy reliance on limited public finance is unsustainable in the long term. Figure 6 shows that it is impossible to realise the NDP targets due to limited public finance in public infrastructure

investment for targeted development. The National Treasury (2012:7) reports that “greater public-private financing is likely to bring better decision making and improved spending discipline that enhance rigorous assessment, shareholder accountability and reporting.” As shown in Table 1, the South African public infrastructure investment expenditure by sector rose from 2010 to 2015.

Table 1. South African public infrastructure expenditure by sector (2010 to 2015)

R Million	2010/11	2011/12	2012/13	2013/14	2014/15	MTEF Total	Per cent of Total
Capital Infrastructure Expenditure	147077	183996	211655	228315	237094	677063	80.2
Social Infrastructure Expenditure	25646	34893	38577	48487	53131	140195	16.6
Justice and Security	3007	3223	3392	3542	3713	10647	1.3
Central Government Expenditure	1744	3817	7923	3478	2779	14180	1.7
Financial Services	325	706	719	749	921	2388	0.3
Total	177799	226635	262266	284571	297637	844473	100.0
GDP	2754.27	2995.53	3301.37	3622.15	3997.02		
	5	0	4	5	6		
% of GDP	6.5	7.6	7.9	7.9	7.4		

Source: National Treasury (2012)

As shown in Table 1, increases in public-sector expenditure is attributed to public sectors' aggressive objectives to invest in public infrastructure development, increase employment and accelerate economic growth. However, social infrastructure expenditure increases are explained by government intentions to reduce backlogs in education and health. Table 2 shows the financing forecasts of mega projects in South Africa. Public infrastructure investment trends, as shown in Tables 1 and 2, and Figure 7, illustrate that publicly financed infrastructure investment is not sustainable due to mounting pressure in public finance as a result of fragile and weak macro-economic outlooks.

Table 2. Financing forecast of mega projects in South Africa (2012 to 2020).

R Billion	Concept	Pre feasibility	Feasibility	Financing	Detailed Design	Tender	Construction	Ongoing Programmes	Total
Water	20	-	-	32	-	5	18	-	74
Transport	310	-	78	17	12	88	8	71	583
Electricity	720	268	314	-	95	103	345	101	1945
Liquid Fuels	-	-	211	-	2	-	-	-	213
Education	20	-	-	40	-	-	-	125	185
Health	-	-	50	29	-	-	-	31	110
Telecommunication	12	-	-	-	-	-	3	-	15
Human Settlement	-	-	-	78	-	-	-	-	78
Total	1082	268	653	195	109	195	374	328	3204
% total expenditure	33.8%	8.45	20.4%	6.1%	3.4%	6.1%	11.7%	10.2%	100%

Source: National Treasury (2012)

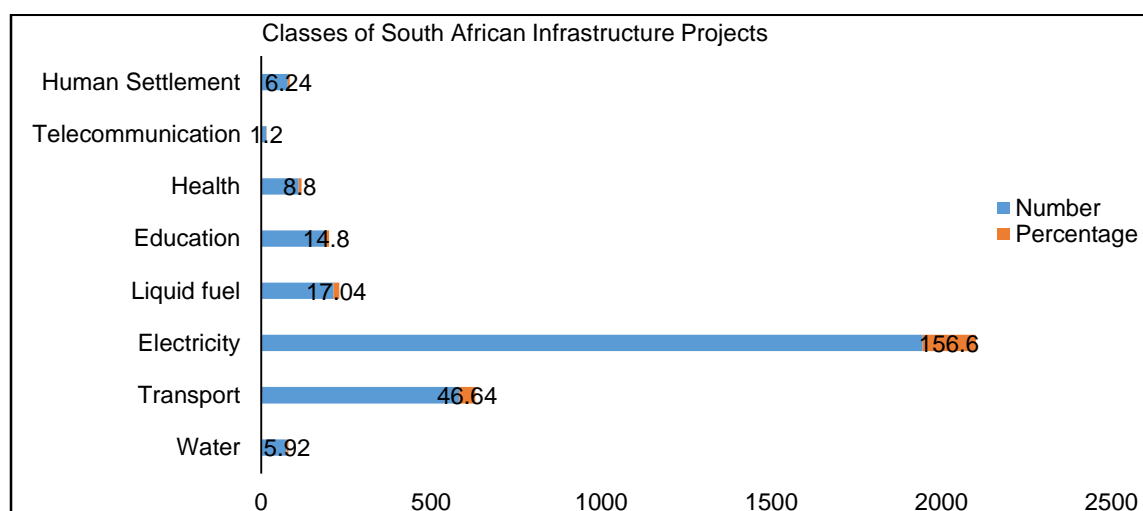


Figure 7. Infrastructure class and number of financed infrastructure projects.

Source: National Treasury (2012)

The National Treasury (2012) reports that the substantial financing of public infrastructure investment projects, such as electricity, transport, energy, education, health, water, and human settlement, place substantial pressure on public finance. Schoeman and Creamer (2014) state that the public sector's public infrastructure investment through an indefinite fiscal policy implementation without going bankrupt through debt financing, is questionable.

2.4 Czech Republic's public infrastructure investment

2.4.1 Czech Republic's macro-economic development

The Czech Republic's macro-economic development foundation originates from the collapse of Czechoslovakia, which dates back to its division into the Czech and Slovak Republics

(Jeneralova, 2011). The Czech Republic's economic development ideologists adopted diverse command economic policies (Murray, 2014). The Czech Republic's economic development policies promoted "price, market and trade liberalization, foreign investment, internal convertibility of the country's currency, privatization of state-owned enterprises and tax reforms" (Murray, 2014:234). However, the Czech Republic's macro-economic development policies reflected substantial challenges in economic and business development with adverse effects on public finance during 1993 (Rod, 2015). Furthermore, the Czech Republic's implementation of privatisation policies substantially distorted institutional frameworks, increased public expenditure and substantially affected public-sector operations due to adverse revenue shocks (Rod, 2015). Rajan (2010) indicates that the Czech Republic's continuous macro-economic challenges posed adverse fiscal risks in public finance sustainability because of excessive risks, imperfect regulations and a negligent tax system. Rod (2015) states that the Czech Republic's revenue and expenditure mismatch widened the financing gaps and increased new deficits and public debt. The Czech Republic's economic development objectives subsequently suffered due to a lack of ethical boundaries in privatisation and economic growth promotion that was stimulated through substantial investment packages by foreign investors (Jeneralova, 2011). However, the Czech Republic's incorporation into the European Union (EU) in 2004 reinforced the economic stance, with improved economic developments despite the exposure of local markets to international trade (Jeneralova, 2011).

The World Bank (2015) reports that complex policy challenges, which resulted from global forces, drove the EU economic development recovery. Furthermore, the Czech Republic's systematic policy mix significantly increased monetary policy effectiveness, and the fiscal policy elasticity complements structured consolidation plans in the medium term (World Bank, 2015). The Czech Republic's macro-economic development pursuit nurtured primary industries in metallurgy, engineering, automotive industry, electronics, and agro-processing which averaged 41% of GDP, while the service sector averaged 55% of GDP (Jeneralova, 2011). The Czech Republic's macro-economic development pursuit nurtured domestic markets and export performing industries that averaged 7% while the traditional markets instilled consumer and progressive economic confidence (IMF, 2014). Wyplosz (2012) opines that the global economies are constantly adversely affected by economic recession and increased domestic risks on fiscal deficits, debt and responsible accounting.

Cangiana, Curristine, and Lazare (2013:5) assert that the Czech Republic's fiscal policy rules reflected "reinforcement of Stability and Growth Pact [during] 2011 and set new rules for economic and fiscal surveillance." The IMF (2012) reports that matured and emerging economies

inadequately understand fiscal positions because of integral obligations that are attributed to the financial sector. Furthermore, the adverse global economic effects highlighted substantial risks due to inadequate debt and deficit recording (IMF, 2012). Brenck, Beckers, Heinrich, and Von Hirschhause (2005) note that substantial widening gaps in the Czech Republic's financing of public infrastructure investment during the 1990s were due to the collapse of the Soviet Union. The collapse of the Soviet Union increased public infrastructural investment requirements in the "telecommunication, highways, railways, airports, air traffic security and water" (Brenck et al., 2005:85). Hirschhausen (2002) indicates that the Czech Republic's historic and political constraints substantially increased infrastructural services and investment demands. The Czech Republic demonstrated a willingness to close the widening gaps in public infrastructure investment through budget deficit (Hirschhausen, 2002). The debt and deficits were unsustainable because of rising debt trends in the long term (Hirschhausen, 2002). Brenck et al. (2005) highlight that the Czech Republic's transition adversely affected the financing of public infrastructure investment with limited borrowing.

2.4.2 Czech Republic's public infrastructure investment

The Czech Republic's public infrastructure investment pattern during 1999 and in 2004 reflected a persistent expansion that averaged 3.3% in 1999 while 2004 reflected 4.8% of GDP (Hanousek and Kocenda, 2011). The Czech Republic's public infrastructure investment declined to an average of 4.9% of GDP during its incorporation into the EU from 2004 to 2007 (Hanousek and Kocenda, 2011). The Czech National Bank (2016) reports that the EU investment fund withdrawal in the Czech Republic's public infrastructure investment heightened uncertain risks in the country's public infrastructure investment. The EU structural investment fund predominantly supported the Czech Republic's public infrastructure investment projects (CNB, 2016). The CNB (2016) reports that the EU investment fund withdrawal adversely affected the publicly procured investment types and heightened the decline in construction during 2015.

Hanousek and Kocenda (2011) argue that private investment marginally increased, averaging 49.5%, while constant increases in GDP averaged 53.5% in 2007. The decline in public infrastructure investment and the marginal increase in private-sector infrastructure investment showed an imbalance in public infrastructure investment and development. Hanousek and Kocenda (2011) highlight that the Czech Republic's fixed public investment increased in 2004. The Czech Ministry of Finance (2014) reports that public infrastructure investment in 2013 declined and averaged 9%, accounting to decreases in accrual subsidy development and diminished revenue in public infrastructure investment due to public financed approach.

Figure 8 shows that the Czech Republic's public infrastructure investment constantly declined and averaged 20% in 2006 and in 2014, while averaging 10% in 2015. The contrast in infrastructure investment and private investment, which averaged 68% in 2006 and 2014, and a decline that averaged below 30% in 2015, is clear from Figure 8. This investment pattern in the Czech Republic's infrastructure investment reflected proportional increases in the private sector compared to the public-sector investment. The total investment fluctuation was due to recession effects. Consequently the constant infrastructure decline was a result of limited public finance in public infrastructure investment. The Czech Republic's consolidation and tight budget measures lessened public infrastructure investment as a percentage of GDP, as shown in Figure 8.

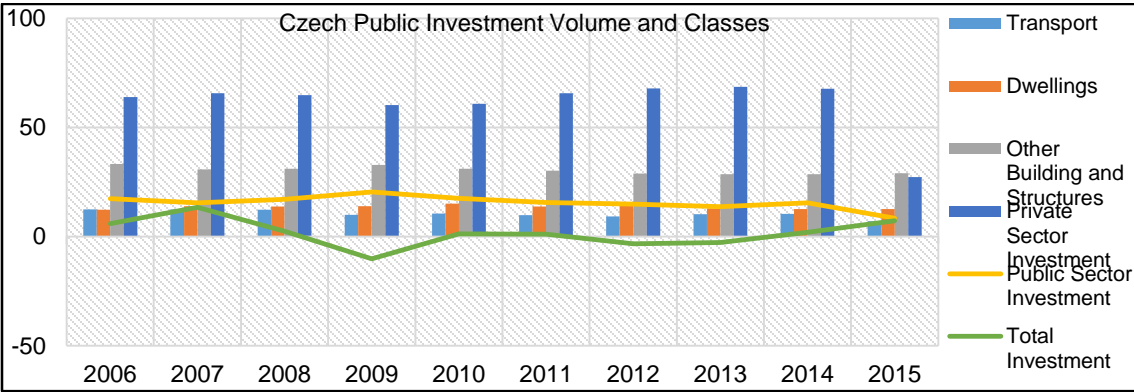


Figure 8. Czech Republic's public investment volume and infrastructure classes (2006 to 2015). Source: OECD (2016).

Fainboim, Last, and Tandberg (2013) indicate that substantial risks in the Czech Republic's fiscal sustainability approach in the long term adversely affected public infrastructure investment. However, the OECD (2003) reports that inadequate cost-benefit analysis in the Czech Republic's public infrastructure investment and development, and lack of transparent tendering reduced private sector participation. The Czech Republic's public infrastructure investment and development substantially increased infrastructure financial requirements due to poor practices (OECD, 2003). Furthermore, the OECD (2016) reports that the Czech Republic's fiscal consolidation measures were a result of the 2008/9 adverse economic effects which affected public infrastructure investment by constraining public finance.

PWC (2008) reports that the Czech Republic's public finance is constrained by competing spending priorities, which put public infrastructure investment under pressure. Politicians steer positive fiscal discipline through debt and deficit expansion and disregard longstanding financial and legal frameworks (Joyce, 2011). Shick (2013) states that financial markets trigger negative fiscal precedents and strain public finance. However, the Czech Republic's recovery approach

penalised public infrastructure investment and development objectives due to substantial public infrastructure investment cuts (Rubio, Rinaldi, Pellerin-Carlin, and Letta2016). The restrictive fiscal policies lacked private sector leverage and constrained public-private partnerships (Kolev and Tanayama, 2015). Oliveira and Vazquez (2001) assert that the Czech Republic's public expenditure ballooned because of the increase in restructuring, public employment, wage bill, social benefits and grant disbursement through unfunded spending activities.

2.4.3 Czech Republic's public expenditure

Solanska (2011) argues that the Czech Republic's public spending regime comprised increased public sector spending and increased transfers. Peková (2005) highlights that the Czech Republic's public expenditure increases correlated with public choice theoretical principles, which explains how public decisions are made, the interaction of the voting public, the politicians, bureaucracy and political action committees in public expenditure and public debt. The Czech Republic's consumer spending regime pattern, compared to capital investment spending, formed part of the government spending strategy (Solanska, 2011). Furthermore, the municipal and public-sector agencies with unprioritised mandated expenditure priorities stretched public expenditure (Solanska, 2011).

The constant transfers in investment programmes in the medium and long term through numerous programmes stretched the capacity of public finance (Peková, 2005). During the period 1993 to 2000, the expenditure pattern averaged 88% of GDP and increased mandatory spending shifts contributed to current expenditure shifts, which averaged 90% of gross public expenditure (Solanska, 2011). The Czech Republic's constant mandatory expenditure increased, and constrained the public finance and sustainable management as a result of control and management issues and the legal framework (Solanska, 2011). Unpopular implementation of legal prescripts and regulations ballooned the Czech Republic's public expenditure (Solanska, 2011). Table 3 illustrates that the Czech Republic's public expenditure featured financed issues that permeated the state budgets from 2001 up to 2013.

Table 3. Czech Republic's general government expenditure (2001 to 2013)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total Expenditure	13.8	8.8	14.7	-5.2	5.7	5.0	7.0	5.3	6.1	-0.7	0.6	3.8	-3.2
Compensation of staff	11.8	10.8	11.9	3.7	7.1	6.1	6.4	4.1	4.7	-2.5	-2.1	2.3	2.6
Intermediate consumption	6.0	15.6	13.6	0.0	2.8	8.0	3.7	4.8	3.6	-1.5	-3.6	-8.1	4.6
Social benefits	6.3	6.8	3.8	4.1	4.2	8.7	12.1	4.1	7.1	1.7	1.8	1.2	2.1
Social benefits in kind	10.4	13.9	5.5	6.7	4.0	2.1	7.8	6.1	10.3	1.5	2.3	2.4	0.5
Property income	31.1	23.9	-0.8	12.1	7.4	3.4	13.0	-2.2	21.3	7.7	2.7	8.2	-5.4
Interest	31.2	23.9	-0.8	12.1	7.4	3.4	13.0	-2.3	21.3	7.8	2.7	8.2	-5.5
Other property income	-19.2	50.0	-25.4	12.8	-3.8	41.2	9.7	26.6	11.0	-	16.7	-47.1	178.4
Subsidies	6.9	-	20.4	-	-7.3	11.6	1.6	2.8	18.9	45.9	25.6	0.4	9.7
		12.5		12.4									
Gross fixed capital	-3.8	3.8	105.2	-	12.5	6.1	2.4	13.9	9.2	-	-	-6.3	-9.8
				29.7						14.0	11.0		
Capital transfers	134.7	1.7	-2.3	-	6.8	-	2.8	-	-6.5	-0.7	-5.3	133.8	-66.6
				36.8		23.5		14.2					
Investment grants	6.7	31.9	-3.0	1.1	-3.5	7.4	-3.4	-2.0	-5.7	-3.8	12.0	-5.4	-35.7
Other capital transfers	249.5	-6.6	-2.0	-	14.9	-	10.8	-	-7.6	4.0	-	454.7	-78.8
				51.3		44.1		27.9			30.2		
Final Consumption Spend	8.1	12.0	9.3	3.7	4.8	5.3	4.6	4.6	6.0	-0.3	-2.2	-1.1	2.4
Collective consumption	7.3	8.0	10.7	0.4	8.8	6.6	3.4	5.0	4.1	-0.5	-4.8	-2.8	3.8
Individual consumption	9.0	16.2	7.8	7.0	1.0	4.0	5.7	4.3	8.0	0.0	0.4	0.5	1.1

Source: Czech Statistical Office (2014).

The Czech Republic's public expenditure issues were attributed to the economic transformation processes and development. As shown in Table 3, the public expenditure increases ballooned public debt and fiscal deficits. The widening fiscal deficits and debt are illustrated by the spending priorities, which constantly pushed the spending priorities to the ceiling. The Czech Republic's inadequate uncoordinated spending was explained by the need for economic growth.

2.5 Slovak Republic's public infrastructure investment

2.5.1 Slovak Republic's macro-economic development

The Slovak Republic's macro-economic development ideals span from the split of Czechoslovakia into the Czech and Slovak Republics. The pursuit of macro-economic development in the Slovak Republic consisted of uncomplimentary economic policies that preferred macro-economic prudence, inflation lessening targets and decreasing of unassertive debt (World Bank, 1994). The development of the financial sector substantially fragmented the social transfer systems and limited public finance sustainability (World Bank, 1994). In addition, the Slovak Republic's macro-economic policies preferred resilient and prudent management systems by implementing monetary and fiscal policies in order to reduce inflation rates (World Bank, 1993). However, the

Slovak Republic's prudent management system compacted public expenditure from 8.4% to 2.8% during 1993, while earlier narrowing the fiscal deficits from 13.1% to 7.5% in 1992 (World Bank, 1993).

The Slovak Investment and Trade Development Agency (2012) indicates that the Slovak Republic's economic development increased by 6.8% of GDP during 2008. However, the global economic recession of 2008/9 shrunk the economic growth to 4.7% in 2009 (SARIO, 2014). The Slovak Ministry of Finance (2013) indicates that economic growth was characterised by major investments in the automotive industry, which helped to avoid the recession while the domestic demand remained sluggish. The Slovak Ministry of Finance (2013) states that foreign trade strengthened the economic resilience with the net exports contributing to 5.5% of GDP in 2012 while characterised by many negative elements. The Slovak Republic's consolidation measures prolonged the weak growth pattern, while inventories fell, household consumption diminished and the uncomplimentary labour conditions weakened investment (Slovak Ministry of Finance, 2013).

The IMF (2014) reports that the Slovak Republic's economic development intensified economic growth with lesser inflation ratios. Murray (2014) asserts that the Slovak Republic's economic development trends flourished in the service sectors and generated employment for the labour force. However, the Slovak Republic's macro-economic development was adversely affected by global economic effects, because of increased public debt, deficits and the increased household rates, which affected bond repayment (Murray, 2014). The Slovak Republic's macro-economic development failed to absorb the rising rates of unemployment, inflation, foreign debt, widening budgets and current account deficits (Murray, 2014). The European Commission (2015) indicates that the Slovak Republic's inadequate investment performance lessened public infrastructure investment and limited public investment opportunities. The Slovak Republic's transition was constricted by challenges such as tax fraud and limited revenue collection, which risked the sustainability of public finance (EC, 2015).

The Slovak Republic's public finance is constantly pressurised by pension systems and constrained by public budgets (EC, 2015). The OECD (2012) indicates that the Slovak Republic's budgetary imbalances increased indirect liabilities and affected the quality and the volume of public finance. Harris, Hughes, Ljungman, and Sateriale (2013) assert that the historic and future fiscal policy effects highlight the need for optimal fiscal policies in countries that are characterised by liability concerns. Public finance sustainability evaluation requires the determination of future calculated financial pressure and alternative financing models that enhance public finance sustainability (Brix and Schick, 2002).

Bohn (1998) indicates that the essential evaluation of public-sector balance sheets enables the determination of a sustainable fiscal outlook, and contributes to long-term public finance sustainability. Deburn, Hauner, and Kumar (2009) highlight that fiscal policy challenges develop because of borrowing, revenue and expenditure concerns, rather than the development of monetary policies. Harris et al. (2013) opine that inadequate macro-fiscal management is the cause of a suboptimal fiscal discipline that causes debt and deficits due to hidden spending costs.

2.5.2 Slovak Republic's public infrastructure investment

The OECD (2003) indicates that a non-viable concession-based financing approach eradicates critical public infrastructure obstacles and lessens infrastructure implementation costs. The Slovak Republic's procurement in public infrastructure investment is discriminatory, because procurement rules favour qualitative approaches (Opke, 2011). The OECD (2016) reports that the ineffective decision-making strategies of public infrastructure in the Slovak Republic lead to misuse of public finance. Shick (2013) asserts that the Slovak Republic's institutional support is weak, and the public infrastructure investment approach through public procurement processes requires an increased consideration of Value for Money (VfM) principles. In addition, Shick (2013) asserts that institutional support favours high quality delivery of public infrastructure investment through transparency.

The OECD (2012) indicates that the Slovak Republic's economic indicators reflected reduced public investment in public infrastructure, whilst expenditure increased in other spend priorities. The EC (2016) indicates that public investment in public infrastructure is poorly managed due to increased macro-economic development objectives. The Slovak Republic's expansion of domestic demand is the result of low energy prices and reduced funding costs with improved access to financial markets (EC, 2016). However, Ègert et al. (2009) argue that the public infrastructure investment decline in the Slovak Republic is attributed to structural, consolidation factors and suboptimal domestic demand despite the positional advantage. The OECD (2016) reports that the Slovak Republic's public infrastructure investment decline is due to tightened public budgets and cuts in public infrastructure investment across Europe. In addition, the strict public finance measures, because of investment inefficiencies, constrain public infrastructure investment and development (OECD, 2016).

Kolev and Tanayama (2015) highlight that the weak economic growth and increased gross-fixed investment in machinery and equipment limit investment in the construction of buildings and structures. The Slovak Republic increased private-sector partnerships due to budgetary constraints, and this approach drives PPPs as an alternative financing approach in

public infrastructure investment (Araujo and Sutherland, 2010). As shown in Figure 9, the Slovak Republic’s public infrastructure investment featured different classes of infrastructure. The adverse economic effects, strict fiscal rules to public expenditure, and tight and limited budgets in public infrastructure investment limit public infrastructure investment and development.

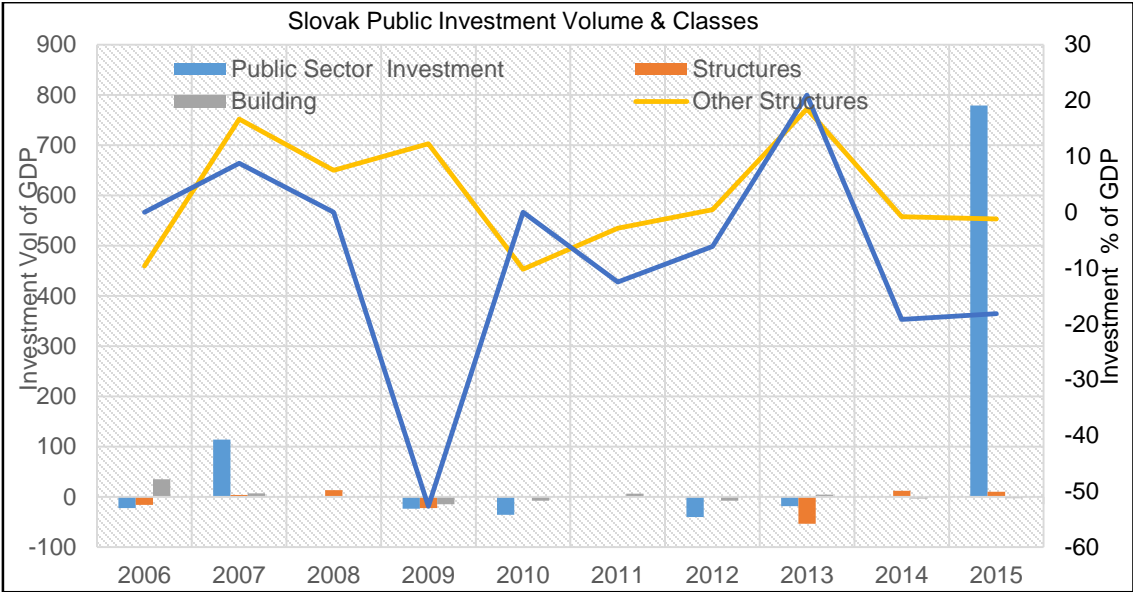


Figure 9. Slovak republic’s public investment volume and infrastructure classes from 2006 to 2015.

Source: National Bank of Slovakia (2016)

Figure 9 shows that the Slovak Republic’s fixed-gross formation was high despite the recorded decline in investment during the 2008/9 economic crisis. Figure 9 illustrates that the Slovak Republic’s public investment expanded during 2013 and declined rapidly during 2014 and 2015. The Slovak Republic’s public infrastructure investment from other structures remained high and the investment on buildings and structures remained weak, signalling that public finance in public infrastructure investment and development is constrained. As shown in Figure 10, the Slovak Republic’s public infrastructure investment is dominated by private-sector investment, and the public infrastructure investment reflects lessening variations from 2000 to 2013.

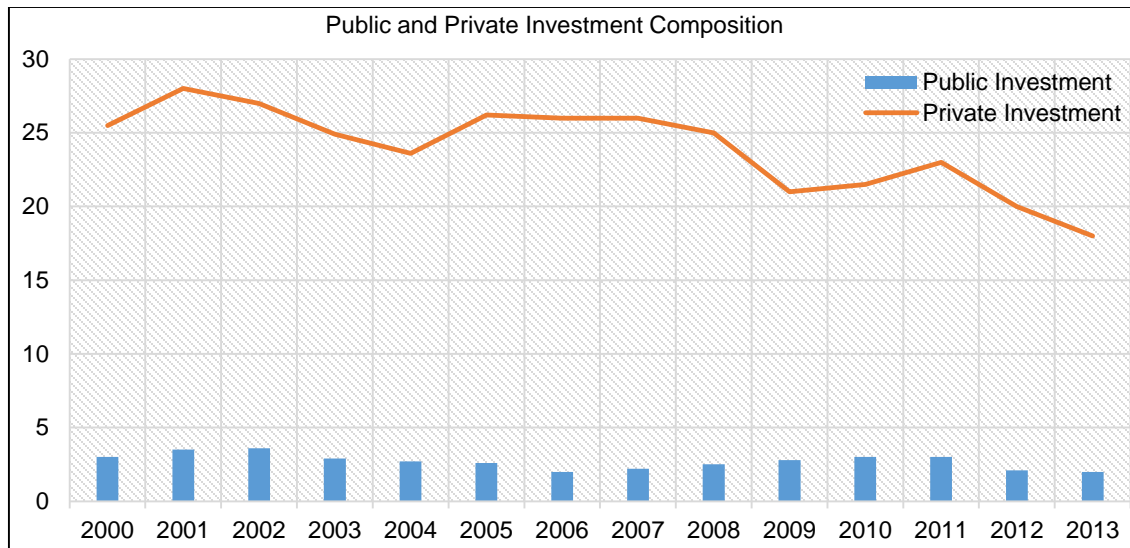


Figure 10. Slovak Republic's public and private investment composition from 2000 to 2013.

Source: OECD (2015)

The Slovak Republic's public infrastructure investment, as shown in Figure 10, illustrates that investment trends averaged 5% lower than GDP, due to historic and recent cuts in capital infrastructure investment. The OECD (2016:3) reports "public investment is a powerful tool [that] boosts economic growth and leverages private-sector investment into public infrastructure when correctly done." Furthermore, the OECD (2012) reports that transparency and efficient public infrastructure investment procurement principles reinforce PPPs as alternative finance instruments. PWC (2008) reports that the Slovak Republic's inadequate institutional structures, sub-optimal budgeting, skills development, and procurement management constrains the implementation PPPs. The OECD (2016) also states that adequate public infrastructure investment and management significantly improves public-sector investment coordination and narrows fiscal policy gaps. Shick (2013) notes that the EU developed rules on fiscal deficits, expenditure, and lending that constrain public infrastructure investment and development. However, the EU rules have unintended fiscal and economic consequences in the Slovak Republic because of alienated public investment in infrastructure and development whilst the EU financial support targeted the Slovak Republic's increased economic growth. Limited public finance impedes public investment in public infrastructure (Fainboim et al., 2013). The EC (2016) reports that the Slovak Republic's public infrastructure investment was balanced through strategic EU funds for infrastructure, which enhanced the economic growth in the Slovak Republic. The European Bank for Reconstruction and Development (1996) and Valila et al. (2005) assert that budget consolidation and falling taxes periodically constrain public infrastructure investment.

Weak capital markets increase the risks and uncertainty because of publicly financed infrastructure investment and development (Brenck et al., 2005).

2.5.3 Slovak Republic's public expenditure

The OECD (2012) reports that the Slovak Republic accumulated increased structural deficits during the 2008/9 economic crisis and the exponentially increased public spending regime. The constant deterioration of the Slovak Republic's economy from 2004 to 2008 limited taxes because of mismatched tax and revenue services (OECD, 2012). Shick (2013) reports that the socio-economic and fiscal targets of the World Bank, the IMF and the EC triggered the Slovak Republic's budget cuts. However, the pronounced budget cuts by the multi-lateral financing institutions were unsubstantiated and affected the investment in public capital infrastructure investment (Shick, 2013). The OECD (2012) reports that the expenditure targeted education and prioritised infrastructure investment, which increased economic growth.

According to the OECD (2012), public expenditure through balanced revenue was characterised by substantial fiscal spirals, which adversely affected public finance because of increased incentives and subsidies. The Slovak Republic's public expenditure pattern enhanced private sector and labour participation, competitiveness and productivity (OECD, 2012). Public expenditure in the Slovak Republic distorted optimal budget planning, and expanded fiscal deficits while inaccurate financial accounts were caused by public servants' limited capacity (Shick, 2013).

Table 4 illustrates that the volume of public expenditure was through public debt and budget deficits. Total consumption expenditure fluctuated during 2007 to 2015 and featured periodic expansions and constrictions. Table 4 also shows that debt expenditure financing generated minimal economic surpluses. The expenditure pattern rapidly accumulated, and averaged 12.08% of GDP during 2007 while economic growth averaged 2.7% of GDP during 2015. The OECD (2012) reports that the Slovak Republic's incorporation into the EU in 2004 symbolised compliance to the EU policies with the trends that declined expenditure.

Table 4. Slovak Republic's public expenditure since 2007 to 2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015
General Government Expenditure									
Total Capital Expenditure	-1.04	-2.44	0.53	7.28	-1.97	-1.48	0.03	0.77	0.64
Compensation of Staff	-0.1	-0.55	0.21	1.07	-0.1	-0.18	0.04	0.33	0.26
Intermediate Consumption	0.87	-0.76	-0.3	1.2	-0.31	-0.07	0.09	-0.02	0.05
Social Benefits	-0.47	-0.37	-0.24	2.46	0.28	-0.53	0.2	-0.01	0
Social Benefits in Kind	-0.03	0.05	0.25	0.52	0.02	-0.35	0.02	0.13	0.13
Property Income	-0.25	-0.07	-0.12	0.18	-0.13	0.23	0.24	0.11	0.03
Interest	-0.25	-0.07	-0.12	0.18	-0.13	0.23	0.24	0.11	0.03
Other Property Income	-0.37	-0.04	-0.29	0.14	-0.4	-0.01	0.2	-0.24	-0.05
Subsidies	0.01	-0.12	0.46	-0.02	-0.31	-0.46	-0.13	0.1	-0.09
Gross Fixed Capital	0.33	-0.65	0.2	0.47	-0.26	0.18	-0.37	-0.09	0.62
Capital Transfers	-0.69	-0.19	0.3	0.81	-1.04	0.08	-0.21	-0.04	0
Current transfer	478.42	411.49	373.46	532.17	1 911.01	2.8	781.57	-747.36	-20.61
Current Transfer Interest Paid	88.05	120.45	-110.84	-122.22	101.36	142.57	241.87	-82.84	115.26
Grants and transfer	704.49	140.11	113.46	232.09	569.44	186.08	227.65	-292.15	-812.43
Other Capital Transfer	-0.5	-0.05	0.01	0.36	-0.21	-0.09	0	0.17	0.03
Final Consumption Expenditure	0.52	-1.6	0.45	2.46	-0.55	-0.79	-0.33	0.22	0.7
Collective consumption	0.31	-1.93	0.03	1.44	-0.4	-0.21	-0.46	-0.1	-0.89
Individual consumption	0.21	0.33	0.42	1.02	-0.14	-0.59	0.13	0.31	1.59

Source: Nation Bank of Slovakia (2016)

Shick (2013) indicates that the Slovak Republic's spending regime reflects shifts from allocation and provisioning of public infrastructure in the public sectors. Shick (2013) asserts that the European fiscal rules were ineffective prior to the global economic crisis, and failed to shield the European regional economy as a consequence of increased deficits and debt. The Stability and Growth Path increased deficits due to misguided borrowing targets, which increased the fiscal risks to public finance (Shick, 2013).

2.6 Chapter summary

Chapter 2 started with an overview of global public finance issues and of how public finance is limited in the financing of public infrastructure investment. The chapter also contextualised public infrastructure investment and development accounts, as well as public finance in South Africa and the Czech and Slovak Republics. The chapter demonstrated that public infrastructure investment is constrained due to limited public finance in these three countries, and that limited public finance constrains public infrastructure investment. The chapter also presented a nexus between macro-economic development, public finance and public infrastructure investment and the countries' socio-economic development objectives. The chapter showed that public finance in public infrastructure investment in these three countries is limited and highlighted the need for exploring public-private partnerships (PPPs) in public infrastructure investment and development to realise their social and economic development objectives. The following chapter discusses PPPs.

CHAPTER 3: PUBLIC-PRIVATE PARTNERSHIP EXPERIENCES

3.0 Introduction

This chapter provides a theoretical review of public-private partnership as an alternative financing instrument for public infrastructure investment in the long term. It examines the challenges and opportunities that characterise PPPs implementation globally and in South Africa, and the Czech and Slovakia Republics in particular. The chapter is organised as follows: section one discusses public private partnerships and PPPs implementation internationally, section two discusses challenges and opportunities, while sections three to five discuss the South African, and the Czech and Slovak Republics' PPP experiences respectively. Section six highlights the key PPP lessons learnt and section seven provides the summary of this chapter.

3.1 Conceptualisation of PPP as a viable financing instrument

The global economic trends, which are characterised by periodic fluctuations, deplete public-sector funds and widen infrastructural financing gaps (Airoldi et al., 2013). Insufficient public finance in public infrastructure investment is associated with inconsistent macro-economic stability (Pessoa, 2008). PPPs contribute to fiscal stability in various countries and public infrastructure investment and development is viewed as suitable public choices. While PPPs bear similar characteristics with loans offered by a group of lenders, they represent a special discipline characterised by discrete subsets of syndicated lending (Kahwajian et al., 2014).

It is important that the public sector blends the financing of public infrastructure development with sustainable approaches and techniques that attract the private sector in the financing of public infrastructure (Feremo, 2015). The financing mechanisms and models need to be complementary and efficient to enhance the implementation of PPPs (Della-Croce and Yermo, 2013). Weihs-Raabi (2012) argues that European governments realised their limited capacity to finance major public infrastructure investment projects and collaborated with the private sector. However, PPPs implementation requires numerous legislative frameworks, as well as policy and regulatory reforms to increase the successful delivery of the number of PPP projects (Weihs-Raabi). Numerous challenges that confront European countries are identical to challenges facing the African continent, especially South Africa (Weihs-Raabi, 2012). Deau and Touati (2014) indicate that the public sector's view of PPPs include a number of benefits, namely improved costing, optimised construction, operation and maintenance costs, better risk management, and improved and efficient project delivery. While PPPs are important instruments characterised by economic benefits, some criticise PPPs implementation (Valila, 2005). Limited knowledge of

PPPs heightens the criticism of public infrastructure investment and development as a sustainable financing instrument (Nataraj, 2007). Nataraj (2007) highlights that outdated information or knowledge of PPPs centres around incomplete information, which compounds the misunderstanding in public infrastructure investment. Several studies, such as those of Della-Croce and Yermo (2013) and Ehlers (2014), indicate the positive and negative benefits of PPPs. The need for holistic knowledge on PPPs is compounded by increasing criticism and resistance to public infrastructure investment due to inadequate knowledge (Valila, 2005).

3.2 International PPPs implementation

Numerous fiscal constraints that affect most developed and developing countries are unavoidable and affect infrastructure investment, increasing investment capital in trillions of US dollars (Akitoby, Hemmin and Schwartz, 2007). Dheret, Martens, and Zuleeg (2012) highlight the importance of investment in order to enhance public infrastructure and human capital. Akitoby et al. (2007) assert that fiscal discipline, taxation, and borrowing constraints highlight the limitation of using taxes and debt as primary sources in the financing of public infrastructure investment and development. Dheret et al. (2012) assert that the global economic effects adversely limit public finance and public infrastructure investment globally is constrained. Public infrastructure investment globally is driven by the private-sector partnerships and triggers public investment increases in some countries (Dheret et al., 2012).

Akitoby et al. (2007) indicate that the rising public infrastructure requirements advocate for a balanced approach in physical capital investment rather than human capital investment. It is important to leverage private partnerships in order to implement public infrastructure investment stock (Dheret et al., 2012). Furthermore, the reason for favouring PPPs implementation against other financing methods is the desire to harness public and private-sector collaboration and the need to improve partnerships (Dheret et al., 2012). As evidenced in various countries, PPPs implementation is increased by the need to implement economic infrastructure compared to social infrastructure implementation (Akitoby et al., 2007). The global financing trends are a concern, because the financing requirements for the new public infrastructure and the maintenance of existing public infrastructure are increasing (Shaykin, 2010). There are reports of bridges, highways, ports, railway lines and airports that are deteriorating and are in a state of disrepair in various countries (Shaykin, 2010). Numerous options exist to offset public infrastructure investment and development, including lending, savings and public spending, but these are not sustainable (Akitoby et al., 2007). Dobbs, Pohl, Lin, Mischke, Garemo, Hexter, Matzinger, Palter, and Nanavatty (2013:2) state that “to support the projected economic growth between now and

2030, global infrastructure investment would need to increase by nearly 60% from the \$36 trillion spent on infrastructure over the last 18 years to \$57 trillion over the next 18 years". The public sector is unable to fund infrastructure globally because of limited expenditure in public infrastructure. PPPs are alternative mechanisms (Shaykin, 2010). Deau and Touati (2014) highlight that it is important to implement PPPs and grow public infrastructure investment for economic growth. Insufficient public finance constrains the need to increase infrastructure investment because globally public finance is limited (Dobbs et al., 2013) Shaykin (2010:18) states that the "financial crisis placed significant pressure on financial strapped public officials to avoid tax increases and seek alternative ways of funding infrastructure improvements." Catlin (2009:32) states that "private sector financing through PPPs is [the] way to get the job done. PPPs aren't a silver bullet but should definitely be considered as an option." PPPs have gained ground in developed countries, such that the United Kingdom, United States of America and the European Union are effectively implementing PPPs (Deau and Touati, 2014).

In Europe, the limited share of total public infrastructure investment projects accumulates through the developed frameworks that focus on low-carbon energy generation projects (Deau and Touati, 2014). Shaykin (2010) indicates that investors have developed substantial appetites to invest through PPPs and the US reflects such investments through pension funds. Veech (2008) opines that public infrastructure investment is affected by the volatility of public markets. According to Valila (2005), the fiscal limits and widening infrastructure requirements stimulate PPPs as a consequence of limited financing. Valila (2005) argues that at project level PPPs have better benefits and advantages than limited public funds. Deau and Touati (2014) assert that PPPs in developed economies attract numerous governments' interest in utilities due to excessive constraints in public finance.

Constraining public budgets, limitation on lending and stringent bank systems increase PPPs implementation (Dobbs et al., 2013). PPPs implementation is also attributed to timely delivered budget efficiency and adjusted project risks for investors (Deau and Touati, 2014). Bini-Smaghi (2008:1) contends that a balanced domestic current account emanates from the fact that "external imbalances are often a reflection and even a prediction of internal imbalances." Dheret et al. (2012) indicate that whilst a range of PPPs existed before, the financial and economic challenges clearly highlight substantial constraints that were too big to contain. Furthermore, Dheret et al. (2012) claim that the burden of debt and reduced tax revenue increase PPPs implementation as financing instruments in public infrastructure investment. PPPs have economic benefits despite the criticism against their implementation (Valila, 2005). The EC (2010) indicates that the financial and economic pressures have cracked the European markets and the public

sector because of debt and deficits. The EC (2010) highlights that there is an increased reality to work with the private sector based on the European strategic frameworks that had been developed. The European 2020 strategy is an example of the PPPs implementation strategy and is used to accelerate investment and growth due to limited public finance (EC, 2010). The World Economic Forum (2013) highlights that the PPPs focal importance is its feasibility and the conditions that enhance its access potential.

3.3 Assessment of PPPs in public infrastructure investment

The Asian Development Bank Institute (2011) indicates that PPPs accelerate because of limited public finance and numerous restrictions that constrain public infrastructure investment. Yamout and Jamali (2007) highlight that public policy instruments such as PPPs emerged globally during 1990, signalling a courteous alternative approach to privatisation. Reidenbagh (1997), Edwards, and Shaoul (2003) indicate that PPPs are implemented by various governments due to intolerable privatisation of public assets. Globally, governments consider PPPs as alternative financing methods that are suitable in the long-term financing of public infrastructure (Kulasingam, 2012). PPPs illustrate “the sharing of risks [wherein] governments retain asset control in retrospect to privatization” (Mutandwa, 2015:118).

Jerome (2004), cited in Mutandwa (2015:127), articulates that increased PPPs implementation reflects that public finance is constrained, and the limited fiscal space limits upgrades and maintenance of public infrastructure. PPPs implementation in developing countries is increasing due to lower productivity and suboptimal cost recovery strategies (Zhou, 2012; World Bank, 2009; Bailis and Hall, 2000). The developing countries’ experiences show that public finance is adversely affected, and the PPPs are considered alternative financing mechanisms (Zhou, 2012; World Bank, 2009; Bailis and Hall, 2000). As shown in developed and developing countries such as Australia, UK, Germany, Indonesia and Nigeria, PPPs are marred by challenges of inefficiency and suboptimal pricing strategies (Harris, 2003).

The African Development Bank (2011:14) reports that PPPs are financing mechanisms used to “attract finance, share the risks, mobilize technical expertise, the managerial know-how, a tool to avoid cost overruns and which is associated with the closing of the infrastructure deficit gap.” Ogunsanmi (2013) states that the Nigerian PPPs were driven by the increasing public infrastructure deficits, and economic growth and development objectives. Furthermore, Ogunsamni (2013) indicates that the Nigerian PPPs narrowed the public infrastructure investment financing gaps. The required Nigerian financing in public infrastructure capital averaged \$19 trillion and was difficult to close (Ogunsamni, 2013). The global PPPs experiences are shown

to attract private infrastructure investment (Colverson and Perera, 2012). PPPs stimulate governments' interest due to the rising public infrastructure capital expenditure (Hodge and Greve, 2008). HM Treasury (2013) indicates that in the UK, PPP experiences reflect a total volume of 600 PPPs that were implemented through the Project Finance Initiatives. The UK PPPs averaged \$100 billion in schools, roads, military equipment, bridges, and hospitals. The global increase in PPPs for health averaged \$4 billion worth of contracts in 2010 (Carty, 2012). PWC (2010) indicates that the PPPs' global increase is five-fold. ADBI (2011:4) highlight that PPPs in public infrastructure investment are associated with positive socio-economic growth benefits. Mutandwa (2015) articulates that PPPs positive spin-offs narrow public infrastructure deficits. The European PPP experiences, as highlighted in EPEC (2014a), suggest that PPPs averaged €16.9 billion during 1990 and 2013. The European Investment Bank issued 80% in loans that directly contributed to PPPs in public infrastructure projects (EPEC, 2014a).

Romero (2015) indicates that the PPP experiences in emerging markets increased infrastructure investments that averaged \$22.7 billion and \$134.2 billion in 2004 and 2012 (Romero, 2015). Furthermore, Romero (2015) reveals that PPPs increase economic growth prospects and increase public infrastructure investments and development. PPP experiences in matured markets are driven by low interest rates and stimulate investors' quest for more yields (Romero, 2015). Although PPPs implementation has increased globally, public infrastructure investment projects fell in 2013, averaging \$84.4 billion (Romero, 2015). The global economic climate is progressively fragile, uncertain and characterised by steady economic recovery (Domingues and Zlatkovic, 2014).

The European PPP experiences reflect an increased private sector participation in the financing and development of public infrastructure investment (Domingues and Zlatkovic, 2014, Maynard, 1986; Zheng et al., 2008; Mahoney et al., 2009; Anderson, 2012). PPPs increase diversity and contestability (Roehrich, Lewis George, 2014) and enhance quality in public infrastructure services, improve cost savings and risk allocation (Kwak, Chih and Ibbs, 2009). Shen, Platten, and Deng (2006) express that PPPs fundamental significance in public infrastructure investment and development is emphasised by risk sharing at different stages of public infrastructure projects. Ho (2006), and Li and Akintoye (2003) assert that risk sharing is characterised by sharing of cost overruns and reduction in project delays. Roehrich et al. (2014) indicate that the numerous benefits of PPPs in public infrastructure investment comprise cost savings, efficient use of resources, and economic consideration of public infrastructure projects. Tadimalla (2015) expresses that the prominence of PPPs in 2015 and post-2015 is a response to the financing challenges in public infrastructure investment. The IMF (2013) indicates that

globally, various governments now realise that partnerships in public infrastructure investment are crucial to close the financing gap in public infrastructure investment. Anyaegbunam (2009) highlights that PPPs are globally advocated as sustainable financing instruments. The IMF (2013:2) highlights that “investment in infrastructure is critical to achieve inclusive and sustainable growth; however, governments face significant capacity constraints in financial and technical terms.” Cost Action TU1001 (2013b) and Romero (2015) highlight that PPPs expansion in public infrastructure investment projects are due to limited public finance. However, the growth of PPPs in developing countries is attributed to fragile macro-economic climates, which constrain public finance in public infrastructure investment (Hodge and Greve, 2008).

3.4 Universal challenges in public-private partnerships

The PPPs universal experiences, as highlighted by Alfen, Jan, Satyanarayana, and Singh (2009) indicate that globally, PPPs are divergently applied across many countries as shown in Figure 11. The global PPP trends reflect distributed growth in both the developed and developing countries (Alfen et al., 2009). Romero (2015) highlights that the increase in PPPs, as shown in Figure 11, suggests that PPPs are suitable for public infrastructure investment in countries that experience public financing constraints.

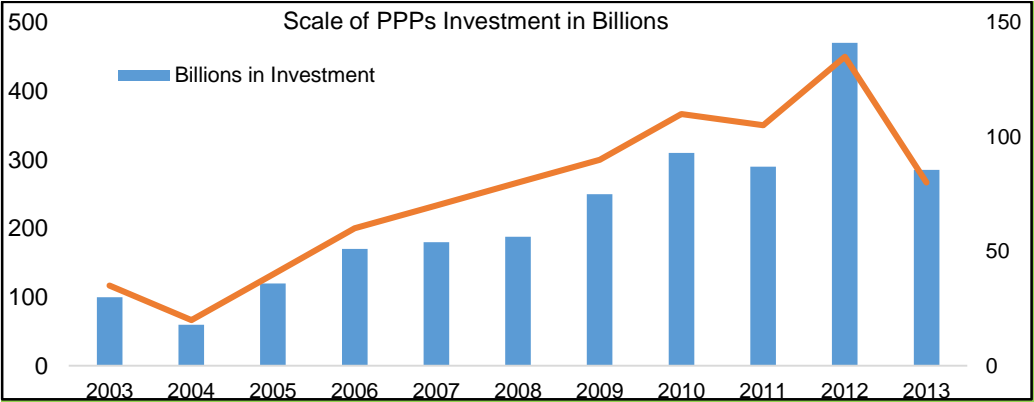


Figure 11. PPP scale in public infrastructure investment in billions.

Source: Romero (2015)

3.4.1 United Kingdom PPPs challenges

McQuaid and Scherrer (2005) assert that the UK’s PPPs implementation pioneered the country’s economic development, and increased economic performance across the country’s regions. The UK’s PPPs implementation has revolutionised the way PPPs are implemented globally (HM Treasury, 2012). Furthermore, the UK’s PPPs approach, as shown in Figure 12, reflects that

PPPs contributed to improved delivery of public services (HM Treasury, 2012). Furthermore, HM Treasury (2012) indicates that PPP projects increased in 1980 and 2010, as shown in Figure 12.

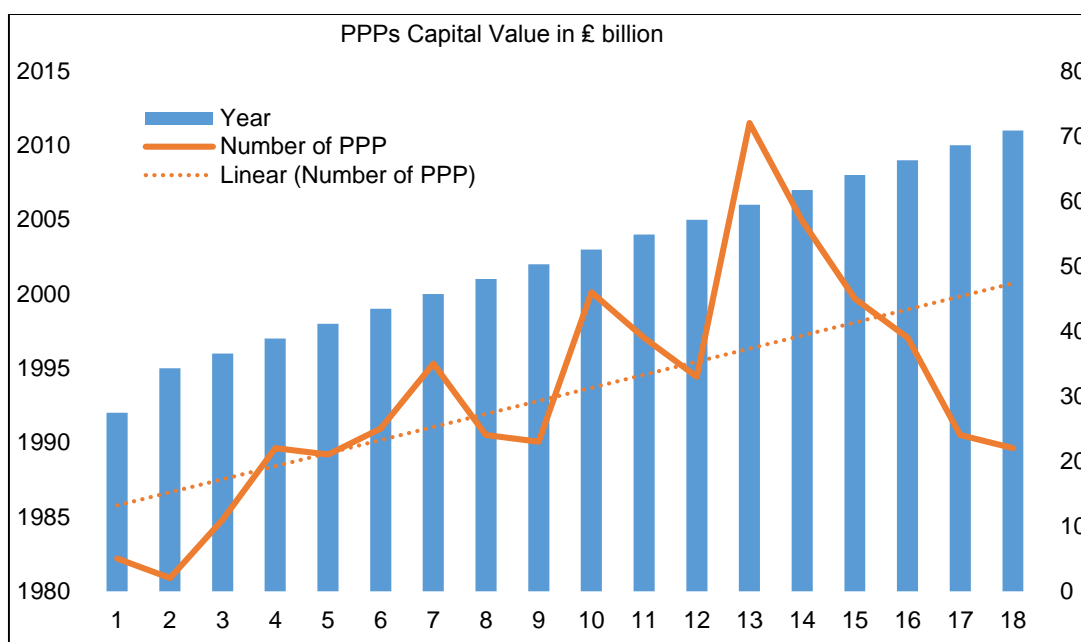


Figure 12. UK PPPs in public infrastructure and the capital project value (1980 to 2011).

Source: HM Treasury Data (2012)

The expansion of PPPs during 1980 to 2011, as shown in Figure 12, was attributed to the diversified scope of PPPs that included “a range of business structures and partnership arrangements, the reformed PFI, concessions and joint ventures, as well as outsourcing with sale of equity stakes in state-owned enterprises” (HM Treasury, 2004:4). McQuaid and Scherrer (2005) indicate that the UK’s implementation of PPPs influenced the implementation of the German and Austrian PPPs. The UK’s implementation of PPPs, which was prolonged over two decades, contributed to financial closure of numerous PPPs in public infrastructure investment projects (McQuaid and Scherrer, 2005). The UK’s PPPs implementation improved the results of PPP implementation in India; Brazil, Mexico, Germany, Nigeria and Australia because of improved understanding of PPPs (Tadimalla, 2010; Domingues and Zlatkovic, 2014; Hodge and Greve, 2008).

3.4.2 Indian PPP challenges

Tadimalla (2010) indicates that the expansion of PPPs highlight the importance of PPPs implementation, especially in the Brazil, Russia, India, China, and South Africa (BRICS) grouping

of countries. The Indian PPPs approach, as shown in Figure 13, reflects that PPPs are implemented in several public sectors, and are diversely classified in public infrastructure projects. Aziz, Karthkeyan, Chatri, and Shah (2012) highlight that the diverse implementation of Indian PPPs is entrenched in aviation and in the telecoms sector. The extended scope of the PPPs increases financing opportunities and are significant to skills development (Aziz et al., 2012; Wu, 2014; OECD, 2014; Kirsten and Davies, 2008). Previously monopolised public-sector infrastructure is characterised by poor services and higher costs (Aziz et al., 2012).

In contrast, the Indian PPPs, as shown in Figure 13, reflect improvements in efficiency, improved management and cost-effective pricing in public infrastructure investment. Aziz et al. (2012) argue that the Indian PPPs were important to overcome constrained public finance in public infrastructure investment. Indian PPP experiences, as shown in Figure 13, suggest that PPPs are extensively implemented in public-sector industries.

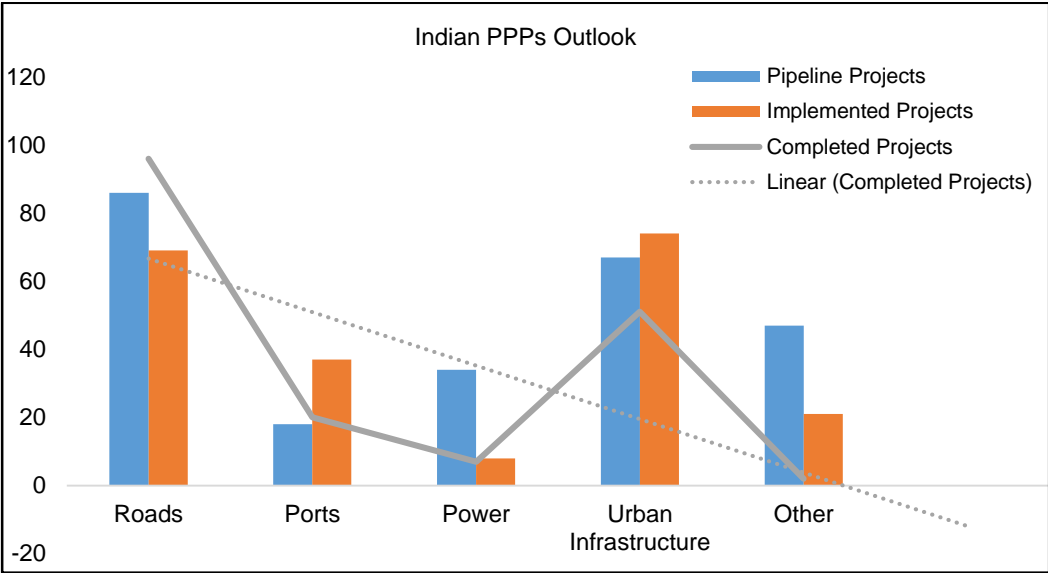


Figure 13. Indian PPPs public infrastructure projects.

Source: Gajendra (2010)

Nataraj (2007) indicates that PPPs are underpinned by substantial criticism in public infrastructure investment. Tang, Shen, and Cheng (2010) assert that despite the documented criticism on PPPs, they have widespread positive spill-overs. Kumaraswamy and Zhang (2001:10) argue that the acceptance of PPPs in public infrastructure investment is ineffective because PPPs are “[not] free lunch.” According to this popular belief, PPPs are affected by a lack of political will that pose significant challenges to the successful implementation of PPPs (Algarni, Arditi and Polat, 2007). Tang et al. (2010) assert that the lack of political will perpetuates the inadequate development of

PPPs and the lack of specialised legislation misguide the best practical implementation of PPPs. Feyzioglu (2009) argues that PPPs implementation in various countries threaten the budget integrity processes and undermines efforts that safeguard the country's macro-economic sustainability. In addition, Feyzioglu (2009:10) states that "PPPs potentially complicate the maintenance of fiscal discipline and good governance." Aziz et al. (2012) argue that the associated risks of PPPs require simplistic developmental policies that ensure effective risk allocation between stakeholders. Wang; Tiong, Ting, and Ashley (1999b) assert that considering PPPs requires extensive risk allocation measures and needs integrated risk management frameworks.

Ogunlana and Abednego (2009) argue that poor decision making in PPPs result in erroneous resolutions and incompatible strategies that contribute to implementation failure. Aziz et al. (2012) argue that inadequate PPP approaches lead to moral-hazard problems. Siddiquee (2011) and Reeves (2011) state that PPPs accountability is a major concern that taints the positive outlook of PPPs. The PPP international experiences, as shown in Figures 12 and 13, reflect that PPPs can be implemented in diverse public infrastructure investment projects. The experiences of PPPs in developing countries are fraught with deficient accountability in the procurement processes (Fombad, 2013). Inadequate structuring of PPP projects diminishes their successful implementation (Aziz et al., 2012). PPPs are fraught with deficient accountability, for example the Australian PPPs were characterised by a lack of accountability (Johnston and Kouzmin, 2010).

Johnstone and Kouzmin (2010) assert that the accountability challenges of PPPs emanate from underbidding, inadequate risk allocation, higher PPPs costs, suboptimal transparency and disclosure, and lack of trust (Fombad, 2013). Furthermore, Fombad (2013) indicates that the concerns, which affect PPPs, include a lack of public consultation, because many PPPs are completed in secrecy. The growing critique on PPPs is because of a lack of public consultation, and because the contracts of PPPs overlook proper public participation (Fombad, 2013). The lack of access in PPP decisions heightens the lack of transparency with the view that PPPs are secretly benefitting those closer to power (Armstrong, 2005). Fombad (2013) indicates that the non-disclosure issues of PPPs compromise public-sector integrity and heightens the lack of accountability and transparency. The lack of transparency and accountability contributes to misallocation of public funds and diminishes investments due to limited competition (Fombad, 2013). The UNDP (2004) indicates that negative PPP factors, such as tightly monopolised PPP contracts, inadequate discretion, and limited or inadequate accountability, heightens corrupt practices and fiscal risks. Walker (2003), and Fussell and Beresford (2009) claim that despite the challenges, PPPs are substantially attractive due to the off-balance sheet financing approaches.

The investment in public infrastructure requires an upfront substantial capital and PPPs offer long-term sustainable repayment approaches (Pina, 2001; Fussell and Beresford, 2009; Sculli, 2010; Forrer, Kee, Newcomer and Boyer, 2010). The comprehensive assessment of PPPs at international level highlights numerous substantial benefits with recorded shortcomings (Ehlers, 2014). The international PPP experiences, as shown in matured markets, indicate that the public sector should strengthen its institutional and regulatory framework to successfully realise PPPs (Economist Intelligence Unit, 2015:9).

3.4.3 PPP advantages and disadvantages in public infrastructure investment

Well-developed structured PPPs approaches result in successful implementation (Heymans and Schur, 1999). The structured implementation of PPPs fosters accountability, clarifies responsibilities and strategically guides the partners’ involvement in their implementation (Heymans and Schur, 1999). Gupta and Biswas (2010) indicate that PPPs contribute to public infrastructure development due to the growth in technical skills, human and financial resources, and elimination of the financing constraints that impede public-sector infrastructure and development. Kaizer Associates (2005:26) indicates that the identifiable PPPs benefits enhance the private sectors’ finance in public infrastructure investment and development. Chege (2001) notes that PPPs implementation lessons highlight consideration of investment risks and increases of lower interest rates in the long term. PPPs also increase job creation, contribute to enterprise development, increase the pool of funds, and promotes local content spending (Bluehorizon, 2015). Table 5 shows the advantages and disadvantages which characterise the implementation of PPPs.

Table 5. Advantages and disadvantages associated with PPP implementation

PPP Implementation Advantages	PPP Implementation Disadvantages
<ul style="list-style-type: none"> • Value for money - Risk transfer - Output based specifications - Long term nature of contracts - Performance measurement and incentives - Private sector management skills - Competition 	<ul style="list-style-type: none"> • Poor value for money - Higher transaction costs - Higher capital costs - Advantages which can turn in to disadvantages • Insecurity • Ineficiencies

PPP Implementation Advantages	PPP Implementation Disadvantages
<ul style="list-style-type: none"> • Cost efficiency • Time to delivery savings • Reduction on the public treasury • Improved response to market forces • Broad support • Improved cost calculations • Better infrastructure solutions • Faster project completion and reduced delays on infrastructure • Return on investment • Full appraisal of risks • Transfer of operational and project implementation risks to private partner • Increased efficiency • Enable government funds to be redirect to other important socio-economic areas • Maintenance of high quality standards through the project lifecycle • Reduce costs and lower taxes 	<ul style="list-style-type: none"> • Culture gap • Short term rigidities • Hold up problems • Public-sector staff concern • Risk compensation • Limited number of participants limit competitiveness required for cost effective partnerships • Profits depend on assumed risks • Matured private sector expertise disadvantages public sector assessment of costs and risks

Source: adopted from Van Herpen (2002) and Rodriguez (2017).

Table 5 shows that the implementation of PPPs in public infrastructure investment projects has numerous benefits that are essential for public infrastructure development. As shown in Table 5, PPPs implementation is also characterised by limitations. It is possible to successfully implement PPPs and realise benefits with well developed structures which support their implementation (Heymans and Schur, 1999). However, inadequate and ad hoc PPPs implementation methods contribute to the highlighted limitations shown in Table 5, and increases PPPs failing due to inappropriate approaches (Aziz et al., 2012). According to Mitchell (2007), PPPs improve public-sector expenditure and narrows the financing gap. In contrast, Fombad (2013) indicates that PPPs in various countries fail to stimulate effective collaboration and partnerships. Fombad (2013) asserts that PPPs implementation increases efficiency, innovation, accountability, risk sharing, transparency and planning in public infrastructure projects and development. Furthermore, Fombad (2013) states that PPPs successful implementation depends on the credibility of the public sector's implementation approach, since the public sector is a major role-player in these partnerships. The implementation of PPPs is challenged by conflicting

requirements and requires immediate response (Dasch, 2010). Implementing PPPs enhances the public sectors' delivery efficiency and innovative approaches, which improve multi-faceted financing challenges (Holman, 2010). Appropriate selection of PPPs enhances their effective management and monitoring in public infrastructure investment (Essey, 2010). Holman (2010:9) states that "regulatory and legislative framework ensure affordable PPPs with value for money and transfer of risks", and the legislative controls need to ensure that PPPs are successfully realised.

3.5 South African PPPs assessment

Fombad (2014:1) states that the South African PPPs are directly linked to "socioeconomic, political and fiscal and societal challenges" and are at the forefront of service delivery. Maseko (2014) indicates that the South African PPPs are characterised by a lack of resources and that the lack of experience in PPPs affects project development. The development of partnerships through PPPs increases its implementation expertise and development (Maseko, 2014). Fombad (2014) asserts that the South African PPPs mirror an integral development strategy that underlines the national and local strategic development plans. Copley (2001) asserts that the South African PPPs are characterised by "partnerships" in the financing of public infrastructure investment.

Axis Consulting (2013) indicates that the South African PPPs are instituted inter-departmentally, with partnerships favouring legislative, policy and institutional development reforms. Valentine (2008) asserts that the legislative reforms in PPPs enhance transparent procurement processes and support successful PPPs implementation. The AC (2013) indicates that the National Treasury institutionalises PPPs, and is the only specialised unit that provides technical support in line with the Public Finance Management Act of 1999. Mitchell (2007) asserts that the South African PPPs are two-fold, namely traditional partnerships and partnerships that are outside the PPP concept with separate legal structures. Mitchell (2007) indicates that the South African PPPs have emerged in compliance to the Public Finance Management Act, No. 1 of 1999; Municipal Finance Management Act No. 56 of 2003, and Regulation 309, Municipal Systems Act No. 32 of 2003, and Treasury Regulations 16 of 2004. Mitchell (2007) highlights that the South African PPPs are compliant with the National Treasury Code and Good Practice, Black Economic Empowerment Act No. 53 of 2003 and Preferential Procurement Policy Framework Act No. 5 of 2000. Kaizer Associates (2005) indicates that Treasury Regulation 16 defines the

standards and the procedures in PPPs and that the PPP manual guides the identification, management and the closure of PPPs public infrastructure investment.

3.5.1 South African PPPs challenges

Mitchell (2007) indicates that while the South African PPPs are robustly legislated, they are threatened by numerous challenges. Malao (2011:3) states that “despite [the proliferation] of PPPs procurement in South Africa” successful implementation of PPPs is slow. Furthermore, Maseko (2014) indicates that the South African lag in PPPs is attributed to the lack of a conducive macro-economic climate. PPPs in South Africa are increasingly constrained by imperfect partnerships although there are policies that support PPPs (Malao, 2011). Furthermore, Malao (2011) asserts that the suboptimal dialogues in PPPs underline the lack of political will, confidence and the preparedness to effectively implement PPPs. Literature indicates that there were about 19 successfully realised PPP projects since 2004 in the transport, health, and human settlements areas (Malao, 2011). Furthermore, Malao (2011) indicates that increased political interference at national, provincial and municipal level hinders feasibility studies and affects the procurement processes of PPPs. Nell and Associates (2007) allege that the lack of capacity and oversight in public infrastructure investment delay the implementation of PPPs. The lack of integration and coordination in public-sector institutions is a major challenge that affects PPPs implementation (Malao, 2011). The South African PPPs implementation practice is fuelled by skills mismatch. The inadequate implementation of PPP projects increases the financial burden to the fiscus (Kaizer Associates, 2005). Furthermore, Kaizer Associates (2005) highlights that the inadequate implementation in PPPs is caused by suboptimal technical studies during the design and planning stages.

Zhang (2005) alleges that the South African approach to PPPs implementation does not guarantee positive benefits because of inappropriate approaches. Maseko (2014) indicates that the increasing cases of project failure are caused by increasing project tariffs. For Maseko (2014), the criticism of PPPs is attributed to lack of clearly defined objectives and expectations. Furthermore, Maseko (2014) indicates that in South Africa the PPP experiences are similar to the Chinese PPPs challenges in terms of numerous backlashes with implementation. Management controls, project life-cycle costs and inadequate contract management weaken the South African PPPs (Maseko, 2014; Bender and Gibson, 2010). Bender and Gibson (2010) argue that the increases in concessions are a result of negligent compliance due to inadequate monitoring and evaluation. However, Leigland (2003) indicates that the Municipal Systems Act No 32 of 2000 supports the implementation of PPPs.

Cruiz and Marques (2013:1) indicate that the South African PPPs are “developed as a bypass to public budget constraints.” Furthermore, Cruiz and Marques (2013) highlight that the South African PPPs feature numerous challenges that emanate during negotiation and re-negotiation, which increase the public financial burden in the long term. However, the public sectors’ perception of PPPs features the highest degree of a lack of consideration of affordability because they are viewed as expensive (Cruiz and Marques, 2013). Engel, Fischer, and Galetovic (2009) note that the rising public deficits compromise the merit-based competitive approach of PPPs and widen the financing gaps in public infrastructure investment.

3.5.2 South African PPPs affordability

Burger, Bergval, and Jacobzone (2008) indicate that the South African PPPs highlight affordability, and are understood as the contributor to flexibility of government in its spending choices and the financial wellbeing of government (Heller, 2005). PPPs are perceived as an alternate financing mechanism due to increasing public debts and fiscal deficits (Burger et al., 2008). Essey (2010) asserts that the South African PPPs are implemented due to limited public finance and the widening gap in financing in public infrastructure investment. The National Treasury Budget Speech (2009) indicates that Mr Pravin Gordhan, who was the Minister of Finance, advocated private-sector partnerships in order to increase public infrastructure investment delivery synergy. Calitz, Sebrits, and Stuart (2013) and Saxegaard (2013) argue that the fiscal deficits and public debt are constant, while the increases in borrowings illustrate that the fiscal space is constrained. PPPs reduce this pressure on financing.

PPP requirements consist of viability, affordability and benchmarking of costs as important principles (Burger et al., 2008). The international assessment approach of PPPs considers the value for money (VfM) principles and affordability in selected public infrastructure investment (Cruiz and Marques, 2013). The National Treasury (2004) indicates that the South African PPPs are underpinned by affordability and value for money consideration as a strict requirement. Mbele (2010) notes that the South African PPPs’ affordability considerations are assessed by balancing the economic merits, benefits and fiscal implementation risks, and the total public infrastructure investment costs. Letlhakanyane (2010) asserts that the South African PPPs also consider Black Economic Empowerment (BEE) since it commissions and drives public infrastructure investment and development. According to the Department of Trade and Industry (DTI) (2003), BEE means the integrated and socio-economic process that directly contributes to the economic transformation of South Africa and significant increases in the number of black people to manage, own and control the country’s economy, and the lessening of income inequalities.

PPPs should be described by clear objectives, outlined expectations and good partnerships (Mbele, 2010). The EC (2003) indicates that the primary objectives of PPPs are value for money throughout the inception and design stages. The VfM in PPPs considers the life-cycle cost reduction, risk allocation, prompt project execution, quality standards into public services and financial benefits (EC, 2003). Tolmie (2014) highlights that the implementation of PPPs is required to reflect affordability because increased PPPs delays heighten fiscal risks. The criticism of PPPs affordability and VfM is a concern due to the lack of public consultation and transparency, and jeopardises PPPs implementation in public infrastructure (Tolmie, 2014). Botha (2010) contends that the competitive bidding processes in PPPs increases competitiveness and competitive price consideration. However, affordability in PPPs is two-fold and is characterised by project price and transfer of risks (Botha, 2010).

3.5.3 South African PPPs opportunities

Farlam (2005) indicates that the cumulative experiences of South African PPPs are beneficial compared to other African countries. Legislative maturity and regulatory frameworks support the PPP benefits. However, more is needed to improve the South African PPPs climate and implementation (Farlam, 2005). The well-established institutional support systems, such as the National Treasury and the standardised PPP manual, encourage PPP implementation (Farlam, 2005). The South African PPPs implementation shows innovative financing approaches because of increased bilateral agreements with the financing partners (Ogunbiyi, 2004). Farlam (2005) asserts that the PPPs financing approach is suitable in countries whose public infrastructure investment is constrained and limited by public finance.

However, affordability and the best value for money principles need to reflect the increasing PPPs benefits, and the appropriate risk allocation between partners must champion their implementation (Burger et al., 2008; Lund, 2004; Farlam, 2005). Gqoli (2005) expresses that the South African PPPs are favoured by well-developed financial markets and matured banking systems. Axis Consulting (2013) indicates that the South African PPPs stimulate the private sectors' participation in public infrastructure investment and development, because of the expanded market presence and the business volume. The South African PPPs need to reinforce broader private sector participation in public infrastructure investment and development (Axis Consulting, 2013). Shuping and Kabana (2000) highlight that the South African PPPs need to complement and improve the financing of public infrastructure investment. The Public Private Infrastructure Advisory Facility (PPIAF) (2011:4) reports that South African PPPs are characterised by localised financial currency and are beneficial to local revenue generation.

3.6 Czech Republic's PPPs assessment

Pavel (2009) asserts that the Czech Republic's public infrastructure investment and expenditure through traditional public procurement methods averaged 18% of GDP in 2008. Vsechynzakazky.cz (2014) indicates that the Czech Republic's expenditure partially targets the construction of roads and railway networks through the Ministry of Transport. Ehrenberger (2014) asserts that the Czech Republic's public infrastructure investment improves the Central Eastern European regional transport infrastructure and enhances competitiveness in economic development. The Czech Republic's public infrastructure is integrated in the Central Eastern European regional infrastructure (Ehrenberger, 2014). The implementation of PPPs is substantially more complicated than the traditional procurement approach and the Czech Republic's substantial infrastructure investment projects in motorways and freeways heightens the complexity of PPPs (Ehrenberger, 2014).

Nemec, Wright, and Stillman (2002) assert that the New Public Management (NPM) theory shows that private-sector partnerships require improved public sector capacity, due to tight budgets and increased default risks. The NPM theory allows the decision makers in the public sector to have greater discretion of entrepreneurial spirit in public service to improve innovation, customer satisfaction and a range of choices to choose from (Barzelay, 2001). Ehrenberger (2014) argues that the long-term investment interests validate the operational efficiency in PPPs. PPPs require constant transparent practices and a complex network of relationships (Pavel, 2007). Kamenickova (2011) indicates that the implementation of PPPs as alternative financing instruments in public infrastructure investment is perceived to relieve public-sector budgets. PWC (2008) reports that PPPs enhance the "value for money, depth, breadth of skills, improved implementation of projects with reduced budgetary burdens" and have stimulated PPPs implementation in the Czech Republic.

Kamenickova (2011) asserts that the Czech Republic's public infrastructure investment is constrained by limited public finance and this affects public infrastructure investment and development. The recent public-sector reforms improved the implementation approaches of the Czech Republic's PPPs, because public finance is constrained in public infrastructure investment due to budget cuts and structural fiscal consolidations (Kamenickova, 2011).

3.6.1 Czech PPPs challenges

Ondráčka (2007) indicates that the Czech Republic attempted the implementation of 10 pilot PPP projects in the transportation sector in 2007. Transparency International Czech (TIC) discovered

that “Czech contracting authority was ill-prepared to undertake PPPs projects because of inadequate PPPs understanding which was perceived as easy money to solve lack of funding” (Ondráčka, 2007:9). Subsequently, the Czech Republic’s PPPs implementation in the motorway project, namely the D-47 project, constituted PPP misinterpretation, which contributed to its total collapse (Ondráčka, 2007). Hrcir Construction (2009) asserts that the D-47 PPPs infrastructure investment project was the Czech Republic’s first PPP public infrastructure investment project developed in partnership with the Israel construction company.

Ondráčka (2007) highlights that the D-47 PPP public infrastructure investment project was valued at CZK35 billion and averaged 1.1% of GDP as a highway construction project that favoured the user pay principles (E-tolling System). Aseidu (2004) indicates that the D-47 public infrastructure investment project failure was due to the diverging attitude and understanding of the PPP. Ondráčka (2007) asserts that the Czech Republic’s first PPP public infrastructure investment project failed because of a lack of technical skills. However, the Czech Republic’s PPPs Centrum was developed as a special agency mandated with PPPs implementation despite the failure (Ondráčka, 2007). The Czech Republic’s initial legislative reforms, which followed the D-47 public infrastructure investment project failure, accelerated the necessary reforms with a clear purpose and objective functions of the PPPs (Ondráčka, 2007).

Aseidu (2011) adds that the Czech Republic’s PPPs methodological reforms targeted procurement, concessions and the legal aspects in which to implement PPPs. Drapark, cited in Aseidu (2011), indicates that the PPPs fiscal implications are bound by the public infrastructure development measures and institutional setup. Ondráčka (2007) reports that the Czech Republic’s PPPs implementation reflects that it was underlined by the selection of unwanted projects that were inappropriate for PPPs schemes. The selection of the inappropriate projects was due to a lack of understanding of PPPs, because numerous projects that appropriately fitted in the PPPs frameworks were not considered (Ondráčka, 2007). Ehrenberger (2014) argues that inadequate contractual understanding and lack of contract management caused the the collapse of the Czech Republic’s PPPs public infrastructure investment project.

Janeba (2013) asserts that the lack of public authority further contributed to the collapse of the Czech Republic’s PPP public infrastructure investment project as a result of incompetent planning, lack of determined risks, and lack of holistic contract management (Ehrenberger, 2014). Pavel (2007) highlights that inadequate relationships’ networking further contributed to deficiencies in asset costs and quality. Trojak (2013) asserts that the Czech Republic’s PPP implementation reflects an inadequately defined vision, which increased the PPP project’s failure. O’Looney (1998) argues that the implementation of PPPs improves public expenditure efficiency

and enhances the quality of public services. PPPs implementation in public infrastructure investment are prompted by risk management issues as a consequence of improved quality and infrastructure asset costs (Pavel, 2007)

Ehrenberger (2014) argues that the implementation success of PPPs is affirmed by the desired project outputs, within the specific parameters that define the public infrastructure investment project delivery against the set parameters. Pavel (2005) maintains that the misinterpretation of PPPs increases public deficit. Boeuf (2003) asserts that PPPs implementation is characterised by hidden debt and requires substantial risk consideration. Figure 14 shows the Czech Republic's PPPs closed projects.

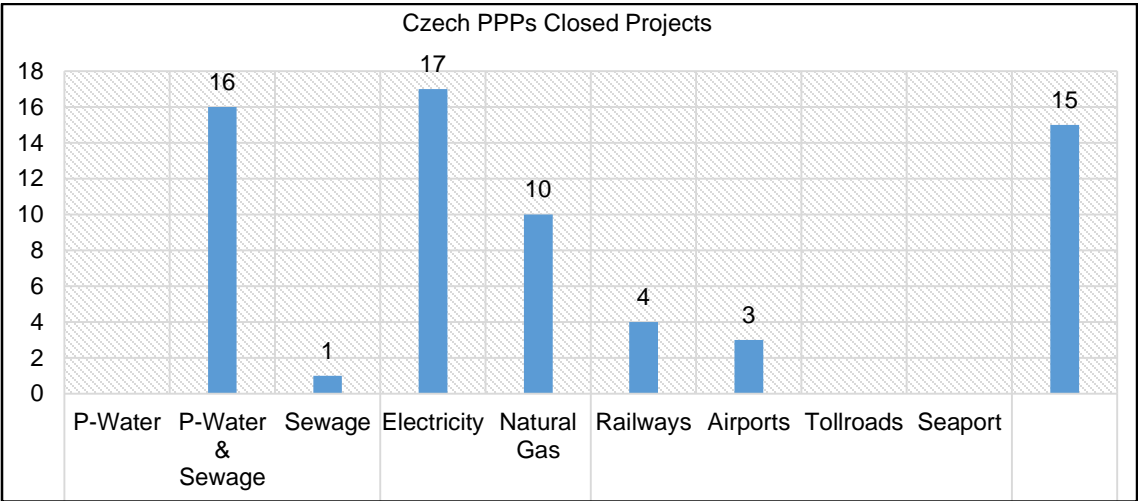


Figure 14. Czech Republic's PPPs closed projects.

Source: World Bank (2015)

Brenck et al. (2005) assert that PPP implementation does not absolve government liabilities and debt; however, PPPs are alternative financing instruments in public infrastructure investment. In contrast, the PPPs successful implementation depends on the country's selected approach in the light of fiscal challenges (Brenck et al., 2005). Ondráčka (2007) claims that despite the negative perception of PPPs, their experiences illustrate that there are no clear-cut conclusions for the failure and success, other than inadequate understanding. In addition, Ondráčka (2007) indicates that the PPPs fiscal consequences highlight poor contracting, deficiency in public authorities, output measurements and lack of risk allocation. Ondráčka (2007) shows that the suboptimal institutional capacity, lack of negotiations, lack of risk identification, and inadequate contracting of large PPPs public infrastructure investment projects are major challenges in PPPs implementation. PWC (2008) indicates that the appropriate PPP selection methods enhance the

implementation approaches due to sensible risks and warranties to realise public infrastructure investment.

Ehrenberger (2014) asserts that the success of PPPs is derived by appropriately defining contracts sensibly and correctly, since contracts are the PPPs' basic project price control. Klee (2014) indicates that effective contract management of PPPs requires a holistic understanding of the International Federation of Consulting Engineers (which is best known as FIDIC—*Federation Internationale des Ingenieurs Conseils*). FIDIC contract implementation understanding must be consistent with public officials' knowledge (Klee, 2014). Sace (2010) highlights that the successful implementation of PPPs needs an independent adjudicator to settle disputes that emerge and to circumvent the delays. Havlicek, Pilat, Svoboda, and Tok (2014) assert that the public- and private-sector network relationships are important to professionalise the public servants' practices. Ehrenberger (2014) notes that the PPPs legal understanding, professional public authorities, and better and cheaper construction of roads in the long term reduce public finance risks.

3.7 Slovak Republic's PPPs assessment

Kolev and Phillip-Bastian (2015) argue that the 2008/9 economic crisis compromised countries' increased inflows and outflows. Brenck et al. (2005) assert that the Russian financial crisis exponentially affected the Slovak Republic's public infrastructure investment, development and upgrades. Kolev and Tanayama (2015) assert that the fiscal consolidation rules and policies, and the current fiscal and tight budget rules lessen public infrastructure investment. The Slovak Republic's public infrastructure investment reflects that the private-sector partnerships through the PPPs are limited and the public finance in public infrastructure investment is limited (Kolev and Tanayama, 2015). Meinecke (2007) indicates that the Slovak Republic's PPPs are integrated in the institutional frameworks, which are sets of formal organisational structures, rules and informal norms for service provision; a model adopted from the German PPPs.

Meinecke (2007) maintains that the Slovak Republic's PPPs targeted motorway construction, multi-functional halls, new football stadium, and reconstruction of the railway station averaged SKK6.5 billion. Kamenickova (2011) argues that the Slovak Republic's PPPs in the public transport sector feature in the built infrastructure, which stretched over 130 km in highways and roads during 2014. Kovalcik (2010) indicates that the Slovak Republic closed only one (1) PPP public infrastructure project. Furthermore, Kovalcik (2010) highlights that the Slovak Republic's PPPs projects are tainted by overpricing and contract cancellation. The Slovak Republic's PPPs public infrastructure investment projects were characterised by hidden debt

costs that averaged 3% of GDP (Kovalcik, 2010). However, Meinecke (2007) asserts that the PPPs in other EU countries increased the regional demand, because PPPs are cautiously implemented in road repairs, educational infrastructure, technology parks, and in residential construction projects.

The Slovak Republic's PPPs are characterised by numerous challenges (Meinecke, 2007). Kovalcik (2010) asserts that the Slovak Republic's PPPs reflect political interference and contributes to the overpricing of PPPs public infrastructure investment projects. The Slovak Republic's PPPs lack the consideration of contract price and negotiation, contributing to being more expensive than traditional public procurement (Kovalcik, 2010). The overpricing of PPPs in the Slovak Republic and perceived adverse fiscal risks in public finance fuelled increasing criticism and negative perceptions of PPPs (Kovalcik, 2010). Tlacova Agentura Slovenskej Republiky (TASR) (2015) indicates that the Bratislava bypass construction project, which amounted to over €1 billion more than the traditional procurement approach, is evidence that PPPs were marred by overpricing. The Institute for Economic and Social Reforms, cited by TASR (2015), reports that "the bypass was overpriced compared to traditional procurement of up to billion euros."

Kubina (2015) asserts that the Slovak Republic's PPPs lack the political will and viability as alternative financing instruments in public infrastructure investment and development due to overpricing. Kovalcik (2010) highlights that the PPPs legislation that the Slovak Republic had developed, had supported critical public infrastructure investment and development since 2006. However, the Slovak Republic's single PPP public infrastructure investment project that was closed was worth more than €1 billion while the three piloted PPPs lacked VfM principles and affordability in 2008 and 2010 (Kovalcik, 2010). The OECD (2012) reports that, because of the Slovak Republic's continuous concerns and substantial liabilities, and because the Slovak Republic's PPPs bypassed the fiscal rules, they all contributed to the PPP project's failure.

According to Kovalcik (2010), the Slovak Republic's PPPs price ballooned and was due for price and contract amendments soon after the initial contracting phase. The Slovak Republic's inadequate PPPs practices contributed to the overpricing and high price, because of the inadequate pricing and a lack of negotiation (Kovalcik, 2010). The Slovak Republic's PPPs episodes in public infrastructure investment projects culminated in negative attitudes and unwillingness to consider PPPs in public infrastructure investment (Kamenickova, 2011). However, the Slovak Republic's macro-economic trends reflected serious chronic challenges because debt and deficits were risking public finance sustainability (Kamenickova, 2011). Meinecke (2007) indicates that the Slovak Republic's PPPs are supported by numerous

legislations such as the Procurement Management Act of 2006 and Concession Laws, which outline PPPs and describe the conditions in which to implement PPPs.

According to Novackova and Saxunova (2015), the Government Procurement Act 25/2006 provides public procurement rules in contractual work and is a secondary legislation to the EU legislation. The EU legislation directs the transportation contractual work and is classified as 2004/18/ES and 2004/17/ES (Novackova and Saxunova, 2015). The Government Procurement Act 25/2006 describes contracting conditions for domestic and international applicants in PPPs projects (Novackova and Saxunova, 2015). In addition, the Protection of Economic Competition Act 136/2001 controls the selection of private partners in PPPs projects, while the Public Asset Management Act 534/2004, Public Budget Administration Rules 583/2004 Z.z. of Municipal and Regional Government are used to administer PPPs contracts in the Slovak Republic (Novackova and Saxunova, 2015).

3.7.1 Slovak PPPs opportunities

Meicnecke (2007) highlights that although the Slovak Republic's PPPs were characterised by many failures, numerous opportunities exist to implement PPPs in selected public infrastructure investment projects that fit the PPPs framework. EC (2014), Bornhorst and Ruiz-Arranz (2013) highlight that the public infrastructure investment lapse in the Slovak Republic still holds up the economic development objectives because of weak public finance and the shrinking current account balances. Bornhorst and Ruiz-Arranz (2013) assert that the private-sector partnerships are historic in the Slovak Republic and the economic growth initiatives and the PPPs need to be tailored per Slovak needs. Brenck et al. (2005) indicate that the Slovak Republic's opportunities increase due to limited domestic resources, limited lending conditions and international project developers' appetites. Fainboim et al. (2013) assert that studies in PPPs show positive benefits in public infrastructure investment contributions due to limited budgets. The borrowing constraints and uncertain macro-economic developments and long-term risks that constrain public finance sustainability in the long term increase PPPs implementation and realisation of public infrastructure investment and development (Fainboim et al., 2013).

3.8 South African PPPs lessons

The South African lessons indicate that the implementation of PPPs is linked to the country's socio-economic development objectives and the redress of economic and social structural challenges (Fombad, 2014). However, these indicate that the South African PPPs implementation

is affected by a lack of resources and experience, which affect project management (Maseko, 2014). PPPs implementation requires adequate institutionalisation and should be supported by matured legislative reforms (Axis Consulting, 2013). Lessons highlight that while PPPs are supported by numerous legislations, they may not be absolved from many challenges that threaten their successful implementation (Mitchell, 2007). Notwithstanding the increase in PPPs in South Africa, lessons indicate that numerous projects have experienced many challenges and it is important to resolve them (Tshombe and Malokwane, 2016). It is important that public-sector decision makers develop a full understanding of PPPs to enhance the design, redesign and the negotiation of contracts (Tshombe and Malokwane, 2016).

The lessons regarding the South African PPPs indicate that many implementation challenges limit good partnerships (Malao, 2011). According to Nell and Associates (2007), factors such as the lack of political will, political interference, inadequate PPPs oversight, inadequate coordination and integration of public institutions are challenges that constrain the successful implementation of PPPs (Malao, 2011; Nel and Associates, 2007). Inadequate monitoring and evaluation is a major constraint in PPPs implementation (Bender and Gibson, 2010). According to Cruiz and Marquez (2013), PPPs implementation is affected by inadequate negotiation, affordability, pricing and contracting in public infrastructure investment. The lessons highlight that PPPs are implemented because of constraints in public finance due to impediments in investment and in public infrastructure development (Essey, 2010).

It is important to consider affordability, viability and benchmarking principles and embrace the international implementation practice of PPPs (Burger et al., 2008). According to Mbele (2010), the most important principle is to balance PPPs implementation risks, economic and fiscal benefits, investment costs and project social benefits. As shown in the South African experiences, lessons highlight that PPPs affordability concept need to incorporate life-cycle costs, risk allocation, quality implementation standards, socio-economic and fiscal benefits (EC, 2003). PPPs need to embrace adequate consideration of public-sector competitiveness and competitive procurement processes when PPPs are implemented (Botha, 2010). However, despite the challenges and affordability concerns with full implementation, there are increasing opportunities to implement PPPs successfully in public infrastructure investment as a result of matured legislation (Farlam, 2005). According to Farlam (2005), well-established institutional frameworks enhance better implementation of PPPs and institutions need to improve and prepare their implementation efficiently. PPPs implementation in public infrastructure investment leverage private finance in public infrastructure investment and develop healthy partnerships between the public and the private sectors (Ogunbiyi, 2004). PPPs require developed financial markets,

legislative reforms and adequate banking financial systems to increase successful implementation of PPPs in public infrastructure investment (Gqoli, 2005). PPPs implementation should be considered in sectors where efficiency needs to be improved (Tshombe and Malokwane, 2016). The South African lessons learnt improve the understanding that PPPs implementation is diverse and cannot be implemented similarly, but should follow the same VfM principles (Tshombe and Malokwane, 2016).

3.9 Czech Republic's PPPs lessons

The Czech Republic's PPPs lessons highlight that PPPs are not free money but alternative financing instruments because of increasing public finance pressure. The lessons demonstrate that PPPs require good partnerships, and appropriate and adequate infrastructure investment projects. Furthermore, the lessons highlight that public deficits and public debt expansion as the financing approach constrain and impede public infrastructure investment and development. In addition, public debt and deficits threaten public finance sustainability in public infrastructure investment and compromise the country's financial and economic standing (Rubianes, 2011). According to Snelson (2005), the Czech Republic's PPPs span from the 13th century and were implemented with exclusive rights within the brewing sector. PPPs were later extended to the Austro-Hungarian Empire as an instrument to procure the railway line infrastructure and development (Snelson, 2005). PPPs were later used in concessions, public services and facilities and during the political and economic transition.

Cocek (2015) highlights that the Czech Republic's PPPs expanded in public transport infrastructure investment projects. Snelson (2005) argues that during 1995, the Czech Republic's administration diverted from PPPs and used balanced budgets to finance public infrastructure investment and development. The publicly financed infrastructure requires sustainable public infrastructure investment because public finance is limited. The Czech Republic's lessons highlight that inadequate understanding of PPPs, weak institutional support and the lack of political support jeopardise the successful implementation of PPPs. Adequate institutional and legal frameworks, and holistic understanding of PPPs enhance the successful implementation of PPPs. In addition, the lessons highlight that PPPs have collapsed in the transportation sector because of legal and implementation factors. The Czech Republic's lessons highlight that policy makers need to dichotomise PPP misunderstanding and extricate unrealistic expectations. PPP misinterpretation creates a mismatch in policy and confusion as an alternative financial instrument (Dheret et al., 2012). Expansion of public debt and fiscal deficits result in an uncertain macro-

economic climate, which constrains public finance. According to Dheret et al. (2012:1), an inadequate strategic public infrastructure investment approach compromises economic growth. Public infrastructure investment, undertaken through debt and deficits, constrains the country's public finance and increases sovereign debt risks.

Dheret et al. (2012) assert that PPPs are alternative financial instruments that meet the long-term public infrastructure requirements. PPPs also increase efficiency, on-time delivery, innovation, and public reforms (Dheret et al., 2012). PPPs incorrect implementation fuels public finance risks because of limited understanding of PPPs. In addition, the lessons highlight that inadequate regulatory frameworks jeopardise PPPs successful implementation. PPPs require adequate public management because PPPs are characterised by sophisticated infrastructure capital projects, contract management, monitoring and evaluation, and contract negotiation. PPPs do not function in unstable political and bureaucratic environments. According to Sip (2014), unstable political and bureaucratic climates impair PPPs successful implementation. The lessons highlight that inadequate political support increases PPPs' failure because of the lack of risk harmonisation, inadequate PPPs project bankability and the lack of public authority support (EBRD, 2011). Carbaja (2007) highlights that PPPs political and bureaucratic support is a prerequisite that fosters successful implementation without which PPPs are doomed to total failure. PPPs successful implementation requires an adequate project selection that fits the PPPs schemes (Carbaja, 2007). Adequate contract management, political and bureaucratic support and consistent government behaviour increase the PPPs successful implementation. Imperfect PPPs implementation increases their failure. The UN (2008) indicates that the success of PPPs depends on adequate institutions that advance transparency, standard procedures, competent public servants and a competent private sector. Adequate PPPs systems and processes improve partnerships, stakeholder management, risk allocation and contract management.

3.10 Slovak Republic's PPPs lessons

The EPEC (2014:88) indicates that the Slovak Republic's PPPs lessons reveal the importance of nurturing public servants' technical skills to "select, prepare, deliver and manage PPPs efficiently." While the country enjoyed EU financial support in public infrastructural investment and development via the Cohesion and Structural funds, there are fiscal challenges. The EU structural funds facilitated further PPPs implementation in public infrastructure investment projects in the transport sector. The World Bank (2015) indicates that the Slovak Republic is not immune to the PPPs challenges, since the Slovak Republic's PPPs unit is periodically unbundled due to

declining support. However, the Slovak Republic's lessons reveal that the country's PPPs are regulated and also guided by the general Procurement Act of 2006 which supports the concessions and complies with EU regulations (World Bank, 2015). Colverson and Perera (2012) claim that the Slovak Republic's PPPs, although not supported, are viable financing mechanisms that crowd in private-sector capital in public infrastructure investment.

The Slovak Republic's lessons highlight that the PPPs mechanisms are alternative financing instruments, notwithstanding the way PPPs are perceived in public infrastructure investment. The Slovak Republic's lessons provide useful insights about the PPPs and highlight that the substantial challenges in PPPs have developed over time due to the lack of political will (Kubina, 2015). PPPs challenges accumulate substantial negative perception due to the lack of political will, overpricing, and pre-contract price amendments that were not standard practice in PPPs (Kubina, 2015). It is important to gain extensive political support and the necessary bureaucratic support. Public service officials need to follow standard practices when considering PPPs contracts and avoid overpricing and re-negotiating PPPs contracts effectively. Lack of contract negotiation, inadequate management, lack of public-sector technical expertise, lack of monitoring and evaluation, and inadequate political interference compromise successful PPPs implementation. Gonenc and Walkenhorst (2004) assert that inadequate planning, selection and evaluation of desired infrastructure investment projects through PPPs schemes increase project failures. Inappropriate selection of PPPs public infrastructure investment projects that do not fit the PPPs schemes lead to total failure of the PPPs. Kovalcik (2010) states that inadequate selection of public infrastructure investment projects increases the hidden costs which adversely affect the fiscal sustainability and risks public finance. Della-Croce and Yermo (2013) suggest that the political interpolation in public infrastructure investment projects, via the PPPs method, need to be curtailed because of the adverse effects in public infrastructure investment and public finance. Significant policy considerations for policy makers should receive attention, because the PPPs extend over a prolonged period and require highly skilled technical personnel (Colverson and Perera, 2012).

The Slovak Republic's lessons highlight that the need for transparency, accountability, competitiveness, and fair contractor selection is paramount in order to increase private-sector partnerships in public infrastructure investment projects. Kamenickova (2011) claims that the increased PPPs implementation is due to chronic public debt and fiscal deficits that constrains public finance in public infrastructure investment. Cuttaree and Mandri-Perrott (2011) indicate that PPPs implementation need to be underscored by three objectives, namely economic, social and financial factors and an increase in public benefit. Cuttaree and Mandri-Perrott (2011) assert that

the need for a strong legislative framework is required to safeguard the judicial enforcement of PPPs contractual obligations. The Slovak Republic's lessons demonstrate that a clear legal framework dispenses accountability, fair bidding and competent contractor selection. PPPs are more complex than traditional procurement methods due to the dynamic contractual arrangements, and different types of relationships that require efficient management of relationships and contracts. Trebilcock and Rosenstock (2013) assert that PPPs implementation more require an increased technical skillset than the traditional procurement approach. PPPs technical skills help to identify the infrastructure feasibility and risks during the planning and design stage.

The Slovak Republic's lessons highlight the importance of strengthening institutional capacity with capacity building programmes and avert contract cancellations that adversely affect public finance (Trebilcock and Rosenstock, 2013). The CEE Bankwatch Network (2008) indicates that numerous public infrastructure schemes fail due to public-sector constraints, unimaginative planning, lobbying and personal interests, corruption and unsatisfactory tender practices. Furthermore, the CEE Bankwatch Network (2008) indicates that the substantial challenges of PPPs rest with a balanced lack of public objectives and private sector wishes, inadequate accountability and lack of public consultation. It is important to increase public participation and accountability and develop clear long-term objectives for PPPs implementation.

3.11 Theorising public finance, public infrastructure investment and PPPs

Historically, numerous governments globally seem to have favoured diverse macro-economic policy instrument implementation in the financing of public infrastructure investment to increase economic growth. However, there are contrasting views on how public infrastructure investment should be financed. One such view favours the use of monetary policy in order to stimulate public spending in public infrastructure investment and to weaken exchange rates and exports (Pettinger, 2010). However, the use of monetary policy has limitations because it limits spending and constrains public infrastructure investment and development (Pettinger, 2010). Sprinkle (1963) indicates that monetary policy is ineffective because economic recession distorts capital markets and is a major financial risk to fiscal balances. A different view supported by economists favour shifts in monetary policy through re-adoption of quantity theoretical approaches because monetary policy is adjusted quicker than fiscal policies (Fieldstein, 2009). Heakal (2018:1) describes quantity theory as the “direct relationship of money and the quantity of money in an economy and the level of prices of goods and services sold.”

The monetary policy view argues that interest rate changes are aggregated through various channels rather than fiscal policies (Fieldstein, 2009). The advocates of quantitative easing programmes argue for monetary policy approaches that are used to streamline quantitative easing approaches to lower global interest rates. The quantitative easing proponents argue that this programme in Europe effectively stimulated global monetary policy and yielded positive results (Wilson, 2015). Consequently, the lessened interest rates contribute to the oil price's positive decline averaging 50% and influenced global growth and contributed to better growth due to relaxed austerity measures (Wilson, 2015). However, the quantitative easing programme in the EU highlights that higher debt levels continue to impede growth and financial stability (IMF, 2015).

The implementation of public infrastructure investment through public debts and deficits, as argued in this thesis, does not harness economic growth but constrains public finance in public infrastructure investment. Hall (2014) asserts that fiscal limitation policies constrain economic growth. Hall (2014) postulates that the mainstream policies favour the limits of 3% of GDP and as a rule in many European countries, debt should not exceed 60% of GDP. According to Truger (2015), fiscal policies and consolidation measures are implemented due to increased public debt and deficits. In addition, tight fiscal restrictions, and strong fiscal and expansionary policies severely affect public infrastructure investment (Truger, 2015). Hall (2014) asserts that the global implementation of austerity measures lessens the public sectors' role in the provision of services, public employment and in public infrastructure investment and development. Barbiero and Darvas

(2014) indicate that policies limiting public spending in European public infrastructure investment affect all types of public investments.

Ahmed and Miller (1999) assert that public infrastructure investment implemented through taxes and debts deplete the countries' savings and raise interest rates because private investment is lessened. However, Abdullah (2006) contends that publicly financed investment through loans and public deficits does not increase interest rates because the world financial markets are interconnected. Bahan, Montelpare, and Savard (2012) indicate that public infrastructure investment in the medium and long term contributes to higher inflationary risks, and increases inflation rates. In addition, Bahan et al. (2012) assert that public infrastructure investment undertaken through loans and deficits adversely affect private-sector investment. Public debt accumulates through heavy loans over time and affects public infrastructure spending, which affect macro-economic stability (Bahan et al., 2012).

Bahan et al. (2012) indicate that the Keynesian school of thought does not support public deficit expansion in public infrastructure spending, especially when the economic activity is closer to full employment. However, Erden and Holcombe (2005) emphasise that private-sector investment is lessening due to effects of public finance, but it is better than in the public sector. Braconier et al. (2014) postulate that tensions and imbalances are characterised by unprecedented demographic change, current account imbalances, rising polarisation of income and advancement of technology limits public finance. Braconier et al. (2014) indicate that the stabilisation of economic growth is not clear without policy shifts because of daunting financing challenges. International Monetary Fund (2015) suggests the need for vigorous engagements on policy issues as a matter of importance. The IMF (2015) reports that sustainable economic output is needed to contain the financial excesses that reflect across the global markets through additional policies.

Edame and Fonta (2014:50) state that "development economists long acknowledged the centrality of public expenditure, particularly [into] infrastructure as an important instrument in the development process." Musgrave's theory indicate that "public expenditure growth is based on the explanation of increasing public expenditure [with] the need to provide social amenities for growth and development" (Edame and Fonta, 2014:50). Numerous empirical studies highlight and provide information relevant in the financing of public infrastructure investment and macro-economic policies which drives economic growth (Musgrave, 1959; IMF, 2015).

The literature overview highlights financial constraints in public infrastructure investment and leads to searching for an alternative financing instrument that suits long-term financing in public infrastructure investment and development (Fombad, 2013; and Walker, 2003). PPPs are

favoured and advocated as alternative financing instruments championed by various scholars of public infrastructure investment (Heymans and Schur, 1999; Aziz et al., 2012). However, PPPs implementation has some limitations (Armstrong, 2005). In addition, despite limitations, PPPs are considered suitable instruments that require improved understanding when considered in public infrastructure investment (Nataraj, 2007). The rationale is to ensure that PPPs implementation is feasible as instruments in public infrastructure investment.

The reviewed studies on financing of public infrastructure investment lacks comprehensive contextual analysis in a construction management perspective; neither do they suggest appropriate theory to formulate a theoretical framework for the empirical research. Therefore, this thesis argues that there is a lack of established and agreed upon theory in literature that optimise knowledge of PPPs in public infrastructure investment within the practice of the construction industry.

3.12 Chapter summary

The chapter provided a general overview of how PPPs are understood and the core PPPs success factors informing their successful implementation. The chapter highlighted that there is no clear theoretical framework to implement and improve the understanding and implementation of PPPs. The chapter indicated gaps in the literature and highlighted the importance to fill these identified gaps in the literature. The chapter provided the rationale to enhance PPPs knowledge, methodology and implementation to contribute to the body of knowledge in construction management, particularly in the financing of public infrastructure investment. The chapter provided valuable information on PPPs at international level, explained and described PPPs examples and highlighted implementation challenges, benefits and opportunities. The chapter highlighted similar experiences through PPPs implementation because of limited public finance, legal reforms and risk allocation. The chapter emphasised monitoring and evaluation as important considerations for PPPs, in not only South Africa, but also in the Czech and Slovak Republics. The chapter pointed out that there are considered legislative differences, which affect PPPs implementation in public infrastructure investment. The chapter outlined further that PPPs in South Africa and the Czech and Slovak Republics are characterised by numerous challenges and opportunities in public infrastructure investment. Chapter 4 discusses the conceptual framework of the study.

CHAPTER 4: CONCEPTUAL FRAMEWORK

4.0 Introduction

Chapters 2 and 3 highlighted the importance of public finance, public infrastructure investment and the PPPs. Chapter 2 discussed the importance of financing public infrastructure investment and the link to the country's socio-economic development objectives. Chapter 3 discussed PPPs implementation in public infrastructure investment. Furthermore, Chapter 3 presented the key PPPs lessons learnt in public infrastructure investment and development. However, the review of the literature highlighted a lack of a comprehensive theoretical framework that guides the PPPs in the financing of public infrastructure investment and development. The reviewed studies instead showed that PPPs in public infrastructure investment and development is a contested topic. In Chapter 4, an analytical framework is developed in order to conceptually examine the research problem holistically.

4.1 Rationale for adopting a multi-disciplinary approach

PPP in public infrastructure investment is a subject area that falls within the context of the broader public policy (Wentworth, 2012). PPPs are affected by the country's macro-economic development policies and are compromised by the lack of comprehensive generic theories (Fisk, 2009; Williams and Henderson, 2011). The reviewed literature discussed previously highlighted that each country's socio-economic development goals are linked to the broad-based policy objectives, and to realise those objectives it is important to enhance public infrastructure investment (Wentworth, 2012). It is necessary to narrow the financing gap in public infrastructure investment and development in order to improve the country's economic growth and reduce the underlying structural socio-economic challenges (Wentworth, 2012). Martternsson, Fors, Sven-Bertil, and Zander (2016) claim that it is important to adopt a multi-disciplinary approach to gain a better understanding, to improve the quality of research and to create novel theoretical knowledge. Therefore, the multi-disciplinary approach in this study hinges on the balance of capitalising on the strengths of each theory.

PPP in public infrastructure investment and development is a multi-faceted subject as established in the literature. The significant areas identified in this research relating to the research problem needing further examination are as follows:

- PPPs have the potential to finance public infrastructure investment, but due to controversies, they create misunderstandings in public infrastructure investment.

- There are benefits and limitations associated with PPPs in public infrastructure investment and development.
- Private construction firms engage in different interactive strategies with the public sector due to evolving institutional frameworks in an attempt to increase profits and incentives within PPPs.

The researcher acknowledges the overlapping significance of the identified areas above because they are not isolated from each other, since the private construction firms tactically employ different behaviours in public infrastructure investment when they compete for PPP projects. The construction firms have the potential to create tension and constrain the delivery of public infrastructure investment contributing to the failure of PPPs implementation. The study places the intersection of the analytical framework within three perspectives, namely principal agency theory, transaction cost economic theory and the incentive theory, as illustrated in Figure 15.

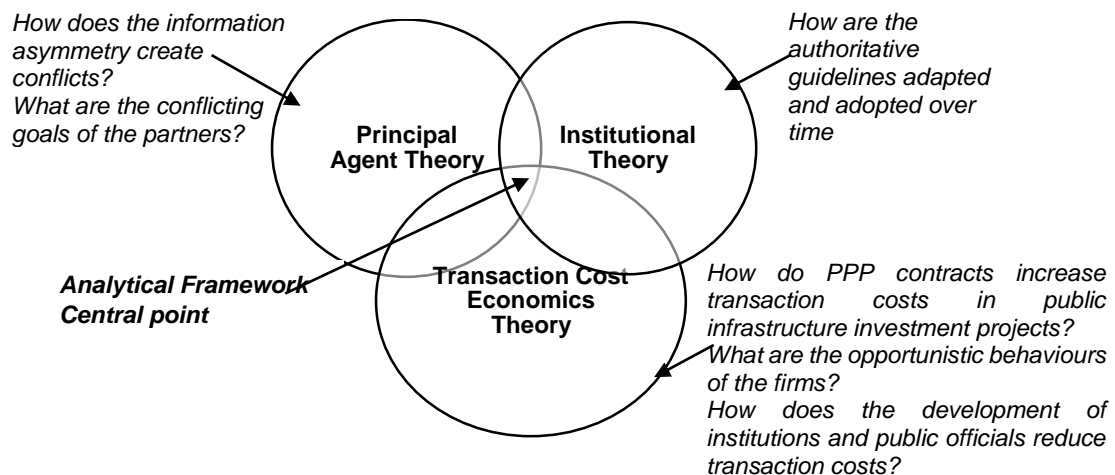


Figure 15. Locating the analytic framework.

Source: Adapted from Kajimo-Shakantu (2007)

Figure 15 shows that the delineated analytic framework and the three significant areas overlap as the mainstream components of the field. The researcher briefly discusses the three main components in public infrastructure investment from a construction management perspective. The researcher further synthesises the three components and re-conceptualises the research problem in the following sections of this chapter. The following sections provide an overview of principal agency theory, the transaction cost economics theory, institutional theory and other theories applicable to this research.

4.2 Principal agency theory

The basic principal agent theory highlights the existence of relationships between the principal and the agent who is required to perform services on behalf of the principal, which involves the delegation of discretionary decision-making authority (Soudry, 2007). According to Soudry (2007), the delegated discretion in decision making gives rise to adverse selection, moral-hazard problems and holdup, because the agency model is characterised by divergent decisions of the principals and agents that would benefit the maximisation of principal benefits. However, agents give rise to agency problems because they seek to maximise their profits at the expense of the principal in the delegated decision-making process (Soudry, 2007). The agency model highlights the following agency problem principles:

A. Moral hazard

Moral hazard is the exchange of asymmetric information between the principal and agent, which changes their behaviour after the contract closure (Nickolas, 2017). According to Hajjej, Hillareit, Mnif, and Pontier (2017), the principal-agent relationship in PPPs is characterised by splitting the tasks in the design, build, finance and operation (DBFO) set-up within the scope of construction projects intended for providing services. The public may not effectively monitor the agent's implementation efforts that give rise to agent self-interest decisions causing principal agent problems because of moral hazard (Hajjej et al., 2017). The principal may only observe the social welfare impact of the project and fail to monitor and evaluate the project delivery risks (Hajjej et al., 2017).

B. Adverse selection

Nickolas (2017) states that a lack of symmetrical information before the conclusion of the contract causes adverse selection. PPPs across the globe are viewed as means to compensate the widening fiscal constraints and substitute public spending in various governments, but private partners withhold critical information before the signing of contracts (Natarajan, 2015). PPPs information is misplaced and contributes to failure as a consequence of ineffective gains effected by private partners with self-interested profit maximisation (Natarajan, 2015).

C. Holdups

According to Balkenborg, Kaplan, and Miller (2010), holdup problems are central to the theory of incomplete contracts and emanate from the difficulty to conclude contracts, because of

asymmetrical information. Asymmetrical information gives rise to renegotiation of contracts and escalate the agents' behaviour to hold up the principal. Holdup problems constitute inefficiencies when the principal is reluctant to make investments ex-ante due to fear of agents' bargaining power exploitation and the principal will hold up the agent (Balkenborg et al., 2010).

Weihua (2014) indicates that under the principal agency theory, construction firms and contractors are viewed as agents, while the public sector is viewed as the principal. The principal agency theory is concerned with the study of decision-making processes. In public infrastructure investment transactions, agents are associated with having better information than the principals (Weihua, 2014). The IMF (2009) indicates that the gap in information is caused by historic developments, which saw the transfer of public infrastructure investment project delivery to the private sector. The public infrastructure investment projects delivery by the private sector hinges on the lack of public finance, and that numerous agreements are entered into with the private sector to deliver public infrastructure investment projects (IMF, 2009).

The delivery of public infrastructure investment through the private firms is affected by asymmetric information and causes mismatch and lack of discretionary control between the agent and the principal (Weihua, 2014). The IMF (2009) indicates that the mismatch is caused by the deregulated monopolistic nature of open competitive markets. Economic efficiency theorists highlight that numerous competitive agreements in public infrastructure investment are driven by asymmetrical information (IMF, 2009). Laffont and Tirole (1993) argue that success in financing of public infrastructure investment projects through PPPs hinges on the balance of private firm behaviours and strategies that the principal and the agents employ in implementing PPPs. Furthermore, Laffont and Tirole (1993) claim that when using the agency theory in public infrastructure investment, the principal is unable to monitor the delivery of public infrastructure investment projects adequately. However, the public sector gives incentives to private construction firms in an attempt to increase performance efficiency (IMF, 2009).

The relationship between the principal and agent is affected by conflicts and differing interests, which contribute to holdups in public infrastructure investment project delivery agreements (IMF, 2009). The underlying concern in this theory is how to harmonise the conflicting interests to ensure optimal performance. Furthermore, the IMF (2009) indicates that the underlying challenge is how to instruct the private construction firms as stipulated to deliver within relevant and specific parameters in terms of the contract. Quiralte, Magro, and Solino (2007) and Harding, Bodarwe, Cadez (2010) indicate that the principal agency theoretical framework uses different contracting payment formulae between the principal and the agent. The agent's associated performance is linked to quality delivery measurement outputs, and the highest

required quality is measured by a series of indicators (Solino, 2013). Furthermore, Solino (2013) states that the principal agency theory provides a good description of incentive systems in a contract and applies the agency contractual performance in line with optimal resources. The principal agency theory is suited to understand PPPs in public infrastructure investment better since PPPs are characterised by complex contracts. Table 6 shows the typologies of risks that are associated with PPP contracts in the context of asymmetrical information.

Table 6. Typologies of risks in PPPs

	Project	Risk Bearer	Partnership	Risk bearer	
Private information of the firm (with perception bias by the government)	<ul style="list-style-type: none"> Construction risks not linked to the state of nature (cost overruns, delays, poorly designed asset). Maintenance risk Performance risk (poor quality of operations once the project is complete). Demand risk (due to poor performance of the private operator). 	<i>Private</i>	<ul style="list-style-type: none"> Ability risk (the private operator may not be able to manage efficiently the project). Renegotiation risk (expropriation of the government by renegotiation initiated by the private operator) 	<i>Public</i>	
Symmetric information (with possible perception bias by all parties, including the voters)	<ul style="list-style-type: none"> Financial risk (inflation, interest rates and exchange rates fluctuations). Natural disasters (storm, flood and hurricane). Macro-economic shocks (recession, international crisis) Demand risk (due to the macro-economic situation) 	<i>Public and private</i>	<ul style="list-style-type: none"> Residual value risk (uncertainty about the value of the asset at the end of the contract) 	The service is indispensable	<i>Public</i>
				The service is not indispensable	<i>Private</i>
Private information of the government (with perception bias by the firm)	<ul style="list-style-type: none"> Risk of holdups 	<i>Public and private</i>	<ul style="list-style-type: none"> Political risk (expropriation of the firm, political violence) Regulatory risk (government's default on contractual obligations). Demand risk (government's default on contractual obligations). 	Strong regulatory body	<i>Public</i>
				Weak regulatory body	<i>Private</i>

Source: Adapted from IMF (2009)

The above table summarises previous studies that have used principal agency theory in project delivery, including the study by Jensen and Meckling (1976), who argue that the principal agency theory explains the contractual delegated relationship of the principal (public sector) and the agent (construction firms). Loeb and Magat (1979), and Baron and Myerson (1982) use the agency theoretical framework to understand the regulatory problems and risks in monopolistic delivery of public infrastructure, and use the asymmetrical information approach as a condition between the principal and the agent. Eisenhardt (1989) claims that the asymmetrical information conditions create agency problems between the principal and the agent, due to the conflict of interest and

that it is expensive to verify the agent’s performance due to the inability of the principal to monitor and evaluate performance. The critical aspect that underlines the principal-agent relationship is the consideration of risks and the attitude of the contracting parties to risks (Solino, 2013). Figure 16 shows the principal-agent framework and highlights the performance of each and the desired benefits within the framework;

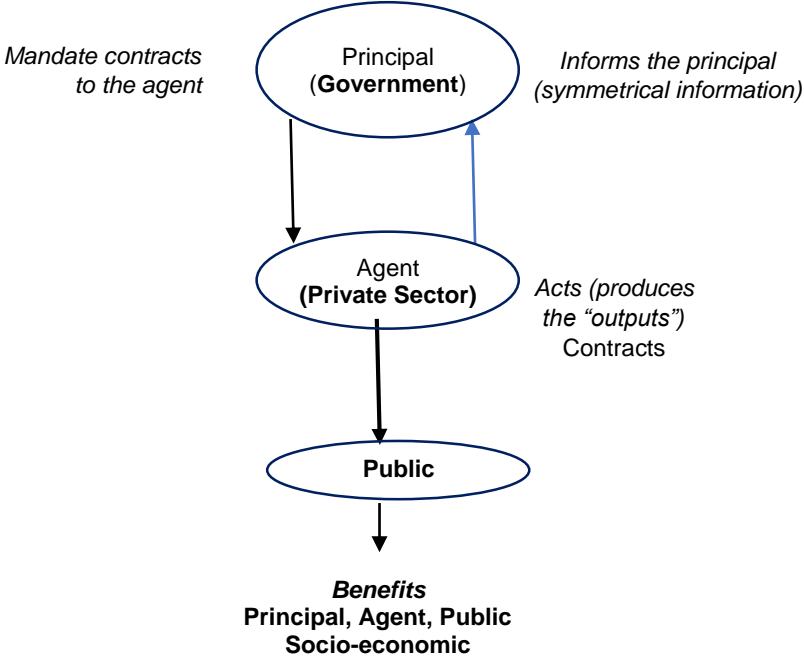


Figure 16. Principal agent framework.

Source: Adapted from IMF (2009)

In PPPs, the contextual understanding is that the design of construction, maintenance, operation and the service of public infrastructure investment is separated and assigned to different agents (Diwatripont and Legos, 2005; Solino, 2013). The use of the principal agency theory in public infrastructure investment through PPPs implementation is conceivable. Diwatripont and Legos (2005), Martimort and Pouyet (2008), and Iossa and Martimort (2008) indicate that PPP contracts are most beneficial compared to public procurement. Solino (2013) asserts that PPPs benefits hinge on the agents’ efforts during the agents’ performances and reflect during the operational stage. The principal agency theory highlights that greater incentives are internalised by the agent through the highest realised quality in public infrastructure investment, and leads to optimal risk allocation (Solino, 2013). Furthermore, Solino (2013:4) asserts that “the 2008 financial collapse increased applicability of PPPs because it incorporates substantial transfer of the demand risk to the agent.”

The governance of PPPs in public infrastructure investment and development is affected by incentive mechanisms, because incentives form part of inclusive management challenges (Grove, 1973). Leontescu and Svilane (2012) add that appropriate incentive rules stimulate symmetrical information spread in order to make optimal decisions. The complexity and spread of the public sector makes it difficult to develop incentive systems because they affect the behaviour and performance of public officials (Beatty and Zajac, 1994). Leontescu and Svilane (2012) indicate that it is critical that the public sector refrain from processing financial incentives due to the complexity of public-sector institutions, because they are large and use multi-dimensional bargaining games. Public institutions have numerous agents and principals who accelerate the public sectors' moral-hazard problems and misplace the purpose of incentive power (Leontescu and Svilane, 2012).

Dixit (1997) states that lack of public sector employees' incentives causes public sectors' poor performance. However, the incentivised public infrastructure investment projects contribute more to timely completion of projects and improved qualitative performance than those with no incentives (Meng and Gallagher, 2011). Leontescu and Svilane (2012) indicate that "time, cost and quality" are project input performances, which increase the agents' required performance, highlight the significance of project management and the desired quality outcomes through partnerships. Figure 17 illustrates the nature of incentive relationships and information;

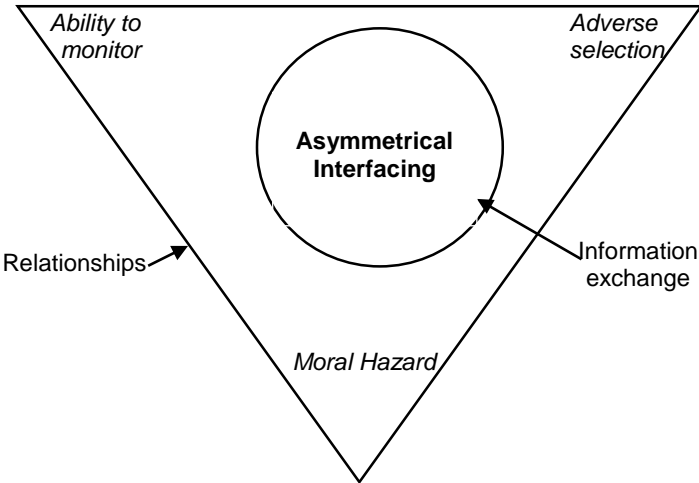


Figure 17. PPPs incentive relationships

Source: Author's own compilation (2017)

Figure 17 highlights that the suboptimal relationship structure is due to information exchange that is asymmetrical and affects the actions of the principal while benefiting the agent. Meng and Manley (2010), cited in Meng and Gallagher (2011), indicate that it is important to develop incentive relationships that are mutually beneficial to both agents and the principals, but the most

important factor should reflect the increased project benefits. Leontescu and Svilane (2012) add that the incentive provisions should be used as contractual strategies and are the most efficient to deal with performance challenges. Meng and Gallagher (2011) indicate that contractual strategy is important because large public infrastructure investment projects are affected by quality and time. Bower, Ashby, Gerald, and Smyk (2002) indicate that it is important to consider two incentives, although more incentives can be added, but multiple incentives are difficult to manage. Meng and Gallagher (2011) argue that the importance of considering incentives in PPPs in public infrastructure investment is that good performance is encouraged by rewards and motivation. This implies that public officials, through PPPs in public infrastructure investment project delivery, need to be rewarded and motivated appropriately to successfully implement PPPs.

Herten and Peeters (1986) highlight the following:

- Incentives cannot be linked to one of the aspects (time, cost and quality) only as they may lead to decreasing other aspects;
- Incentives reduce cost overruns;
- Only simple incentives have been proven to be beneficial, as complex and sophisticated incentives are more difficult to implement and rarely influence the motivation of people to work more productively;
- Incentives require organisational visibility and knowledgeable project management; and
- Incentives have been proven to be effective if project objectives are more important.

It is important to highlight that despite the development of a good incentive scheme, as discussed by Herten and Peeters (1986), it cannot make bad project management practice good, suggesting that the incentive schemes should complement project management practices when PPPs are considered in public infrastructure investment and development.

4.3 Transaction cost economics theory

The transaction cost economics theory explains the embedded costs in business transactions, PPP schemes and the unique governance relationship issues between the principal and the agents, as well as the complexity in the financing of public infrastructure investment via PPPs (Ho and Tsui, 2009). The basic principles which characterise the transaction cost economics theory are principal-agent problems, renegotiation, holdup problems and budget constraints (Ho and Tsui, 2009).

Dudkin and Valila (2005:3) define transaction costs as “the costs of establishing and maintaining partnerships, the transaction costs comprise the legal, financial, and the technical advisory incurred by both the public and the private sectors in the procurement and the operational phases.” Ho and Tsui (2009) state that the underlying factor to understand when considering PPPs in public infrastructure investment is the importance of “governance structure” because the structure has the possibility to increase transaction costs if not well managed. However, while PPPs are good instruments to pool public infrastructure investment financial resources, they are embedded with opportunist’s behaviours, as explained in the principal agency theory (Ho and Tsui, 2009). Despite high transactional costs and opportunism, PPPs contribute to improvements in cost effectiveness, time and project lifecycle in public infrastructure investment (Henk, 1999).

Ho and Tsui (2009) indicate that it is also important to establish inter-organisational collaboration to complement resources and competencies. PPP governance in public infrastructure investment projects is the most challenging aspect, because of unique relationships and complex financing factors (Ho and Tsui, 2009). Furthermore, PPPs have highly efficient effects due to optimal utilisation of resources (Ho and Tsui, 2009). In contrast, high transaction costs affect the potential of PPPs as alternative financing instruments in public infrastructure investment and development (Ho and Tsui, 2009). Figure 18 shows different transaction cost factors in public infrastructure investment when PPPs are considered.

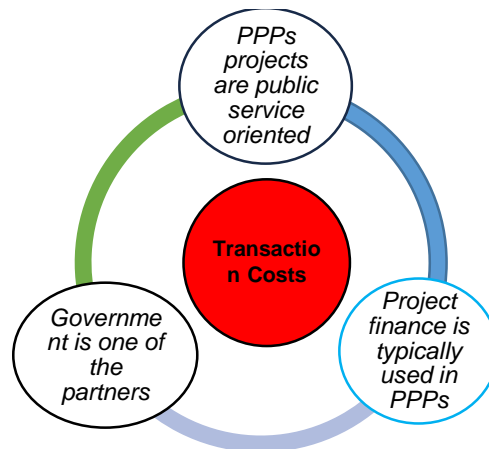


Figure 18. Different factors that characterise transaction costs in PPPs.

Source: Author’s own compilation (2017)

As shown in Figure 18, the transaction costs in public infrastructure investment projects through PPPs’ consideration are caused by the increasing general differences such as public-private partnering, project finance and PPP project schemes. Ho (2006) indicates that the other factors in transaction costs are hidden and difficult to assess, including opportunism costs as a consequence of renegotiation and holdup problems. Furthermore, Ho (2006) highlights that

transaction costs substantially wane the anticipated PPPs benefits and have negative effects if not properly managed. It is important to carefully design the PPPs governance structures in public infrastructure investment projects and limit the hidden costs when PPPs are considered (Ho and Tsui, 2009). Parker and Hartley (2003) assert that it is important to identify the different trade-offs in different governance structures in order to regulate the benefits and economise transaction costs.

Ho and Tsui (2009) state that the problems that increase transaction costs can be better understood through a “process theoretical framework”. A process theoretical framework improves PPPs governance design because each partner in the process jointly determines all the decisions objectively and interactively (Ho and Tsui, 2009). In addition, the process theoretical framework enhances goal congruence, while the interactive dynamic game theoretical perspective improves government screening strategies and policies that limit agents’ opportunism (Ho and Tsui, 2009). Table 7 illustrates the diverse project and institutional factors that increases transaction costs in PPP infrastructure projects.

Table 7. Conditions and factors that give rise to PPPs transaction costs

Project Factors	Institutional Factors
<ul style="list-style-type: none"> • Project scale: too large to fail • Project nature: too important to fail • Project complexity: too difficult to replace the incumbent firm • Profit structure: large construction contract returns, slow equity return • Composition of shareholders: the lack of major shareholders who are interested in the returns of operation contracts • Information asymmetry: too high to differentiate the promoter types 	<ul style="list-style-type: none"> • PPPs policies: too immature and not effective • PPPs administration: inexperienced and inconsistent • Financial markets: immature • Hardness of budget constraints: too soft • Legal system: immature • Political environment: unstable and immature

Source: Adapted from Ho and Tsui (2009)

As shown in Table 7, transaction costs arise due to project and institutional factors. Table 7 indicates that it is important to consider both institutional factors and project factors because they affect PPPs in public infrastructure investment project costs. The following figure (Figure 19) illustrates the process theoretical framework.

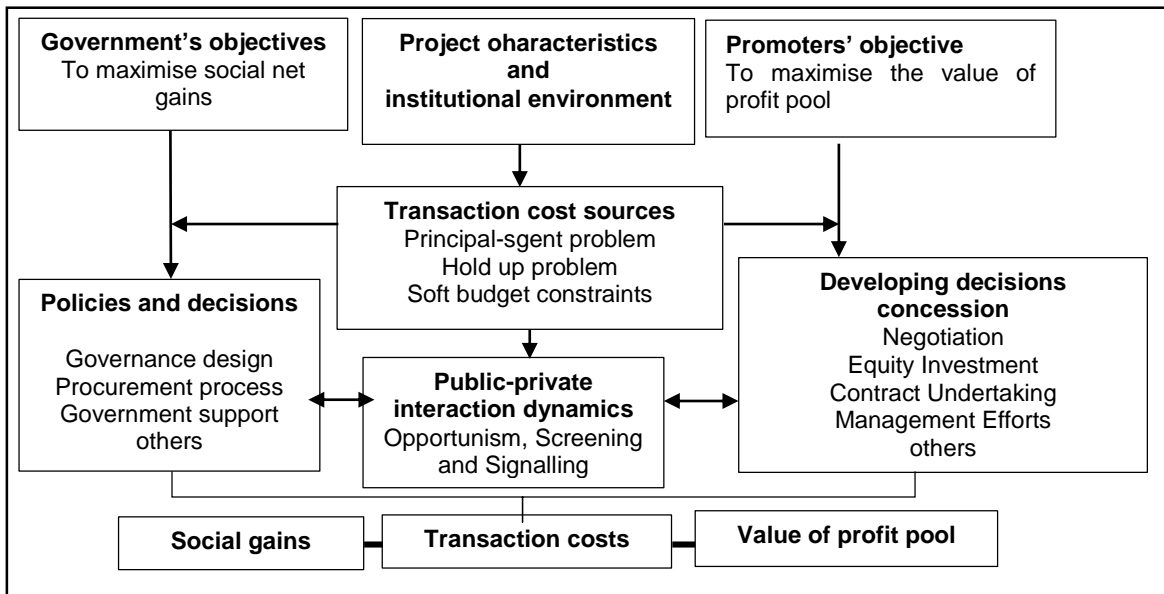


Figure 19. Process framework of the PPPs interaction dynamics.

Source: Adapted from Ho and Tsui (2009).

Figure 19 shows that successful PPPs implementation can be realised by considering the transaction costs in public infrastructure investment projects. It is important to highlight that the underlying institutional setting and the governance design structure for PPPs in public infrastructure investment is critical as shown in Figure 18. Ho and Tsui (2009:10) state that “PPP through an inadequate governance structure would be suboptimal for public facility projects where the resultant transaction costs overweigh the value or synergy created by applying PPPs.” Hefetz and Warner (2004) add that it is important to have appropriate institutions that effectively administer PPPs because the lack of appropriate institutions affect market solutions. Parker and Hartley (2003) indicate that the lack of suitable institutions compromise PPPs economic efficiency. Ho and Tsui (2009) suggest that PPPs should not be applied to every project due to the uniqueness of projects and because public infrastructure projects do not exhibit the same characteristics.

4.4 Overview of institutional theory

The founding principles of institutional theory, as explained by Rirchard (2004), comprise the deeper and resilient aspects of social structure, which consider the process of structure, schemes, rules and norms, and routines that are established as authoritative guidelines on social behaviour. According to Rirchard (2004), institutional theory explains the different creation, diffusion,

adoption and adaption of authoritative guidelines over space and time. The character and depth of PPPs development and implementation in different regions and countries are influenced by different contextual policy considerations and numerous institutional regulations (Ho and Tsui 2009). However, the most important element is characterised by the effectiveness of politics and institutions that support PPPs as viable instruments in public infrastructure investment and development (Delhi, Palukuri, and Mahalingam, 2010; Jooste, Levitt, and Scott, 2011; Mu and Heuvelhof, 2010). The development of PPP programmes is shaped by the uniqueness of the country's political and institutional frameworks that shape the PPP's required path and depth (Jooste et al., 2011). Delhi et al. (2010) indicate that the institutional setting offsets any rising PPP's governance issues in public infrastructure investment. Matos-Castano, Dewulf, and Mahalingam (2012) indicate that the public sector's function is to describe and define PPPs' roles and responsibilities within an optimal institutional setting to enhance sustainable PPPs arrangements.

Adequate institutional structure in PPP settings plays a pivotal role in having a comprehensive PPP policy, with a clear legal framework and enhancing transparency, risk sharing and sustainable development (Matos-Castano et al., 2012). Mu and Heuvelhof (2010) assert that the inadequate institutional structure in PPP settings increases the agent's poor performance or opportunistic behaviour. An optimal institutional setting is primarily responsible for influencing PPPs' successful development programmes and champion positive project outcomes (Mu and Heuvelhof, 2010). An appropriate optimal institutional setting develops specific conditions to implement PPPs that are profitable, and this manifests through a developed, balanced set of interests that benefit the state, the market, the industry and society in general (Gavin and Bosso, 2008).

The institutional theoretical perspective is particularly important for this study because optimal institutions prescribe necessary specifications that enhance improved quality in public infrastructure investment and development with lower costs when PPPs are considered. Khan (2005) claims that optimal public institutions develop equitable socio-economic development assessment formulas which provide responsibilities, subject risks to legislations, regulations and policies in a transparent manner. However, all the processes require optimal institutions that have the capacity and public servants with comprehensive PPP knowledge (Khan, 2005).

4.5 Re-conceptualising the research

The literature review showed that public finance constrains public infrastructure investment and development due to various factors (Dheret et al., 2012; Dunkin and Valila, 2005). The study conceptualises PPPs as alternative financing instruments in public infrastructure investment and development, in order to meet the country's socio-economic development objectives (Ho and Tsui, 2009). The global macro-economic climate uncertainty requires that the public sector select a sustainable financing instrument that is suitable in public infrastructure investment and development (Wentworth, 2012). The financing of public infrastructure investment through public debt, fiscal deficits, and saving and current accounts, is susceptible to long-term serious fiscal challenges with adverse effects to the country's fiscal position (Ferrarini et al., 2012; Baldacci and Kumar, 2010). However, PPPs in public infrastructure investment and development have numerous benefits when considered (Ho and Tsui, 2009). Thus, the private agency behaviour of the construction firms and inadequate institutional legal requirements, limits PPPs effectiveness (Marttensson et al., 2016). The PPPs in public infrastructure investment are characterised by conflicts that diminish PPPs benefits (Mu et al., 2010).

4.5.1 Institutional capability responses in PPPs implementation

Matos-Castano et al. (2012) indicate that the leading institutional PPP activists place substantial emphasis on important developed capabilities of institutions to govern PPP projects effectively. However, institutions are required to have holistic knowledge of PPPs. The UNECE (2007) indicates that it is important to develop institutions that have knowledge, and to build the capacity of institutions with improved expertise to manage projects efficiently. The most critical part that characterises optimal capacity building of institutions is comprehensive PPP knowledge and the need to optimise PPP implementation in public infrastructure investment (Ho and Tsui, 2009). In addition, private sector agents need to have developed PPP knowledge in public infrastructure investment (Khan, 2005). It is important to highlight that despite the universal lack of consensus with PPP definition, it is important to understand that PPPs offer renewed dynamic methods to manage risks in public infrastructure investment (Dunkin and Valila, 2005). Table 8 shows the beneficial PPPs doctrines that public institutions need to understand when PPPs are considered in public infrastructure investment projects.

Table 8. PPPs tenets in public infrastructure investment

Basic tenets that best describe PPPs in Public Infrastructure Investment
<ul style="list-style-type: none"> • PPPs are typically contractual or institutional arrangements between the public sector and the private sector for the private delivery of public infrastructure services or other basic services. • The public infrastructure investment or service is funded in whole or in part, by the private partner. • Risks are distributed between the public partner and the private partner, being allocated to the party best positioned to manage each individual risk. • PPPs are complex structures, involving multiple parties and relatively high transactional costs. • PPPs are procurement tools where the focus is payment for the successful delivery of services (transfer of the performance risk to the private partner). • PPPs are output/performance based arrangements (the traditional model of public service delivery is “input-based”). • PPPs typically involve “bundled “services (i.e. design, construction, maintenance and operation) in order to maximise the synergies and discourage low-capital /high operating costs proposal).

Source: Adapted from Kosovo Ministry of Finance and Economy (n.d: 3).

4.5.2 Institutional capacity and PPPs implementation

Matos-Castano et al. (2012) state that public institutions need to overcome their limited capacity, which is a major constraint in PPPs implementation. Mahalingam (2011) indicates that the institutional capabilities are categorised in three elementary groups, namely legitimacy, trust and capacity. Mahalingam (2011) indicates that the public sector is required to develop legitimacy to implement PPPs with clearly defined rationales for PPPs implementation, provide proactive political willingness and provide symmetrical information and strategies to realise PPPs implementation. Figure 20 shows the interplay between legitimacy, trust and capacity and the public and private sectors' capability to leverage PPPs in public infrastructure investment through a structured PPPs approach.

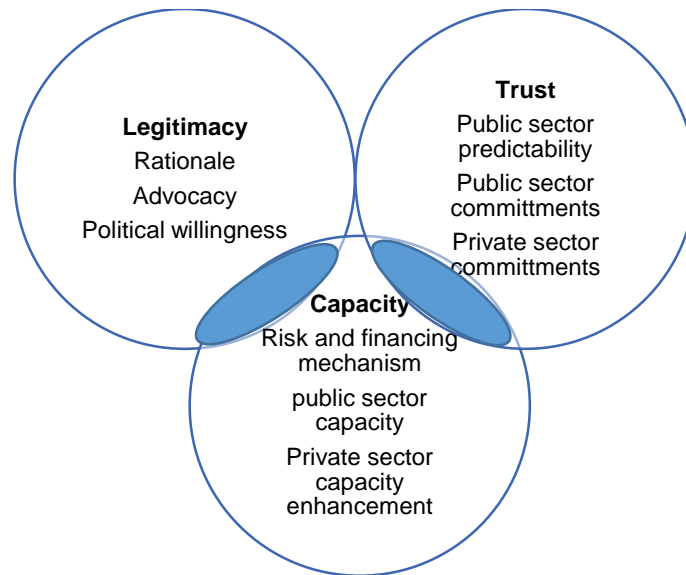


Figure 20. Institutional capacity framework.

Source: Adapted from Mahalingam (2011)

Furthermore, Mahalingam (2011) states that the disposition of trust within the public sector relies on public-sector willingness to depend on construction agents, and numerous stakeholders who are willing to contract and deliver public infrastructure investment (Smyth and Pryke, 2008). Mahalingam (2011) indicates that the public sector's capacity to implement PPPs strengthens the institutional structuring, improves the governance and enhances strategies to transfer and manage risks in PPPs implementation.

4.5.3 Capable institutions and PPPs benefits

Herpen (2002) opines that institutions that are capable of implementing PPPs successfully demonstrate their commitment with capacity building programmes that are directed at building the necessary expertise. Scott (1995) and Henisz, Levitt, and Scott (2012) indicate that capable institutions are driven by three guiding principles to realise the positive benefits of PPPs in public infrastructure investment, namely regulatory, cognitive, and normative elements. Matos-Castano et al. (2012) indicate that institutional cognitive elements direct the extent to which public institutions impose their cultural frameworks and belief systems, while the institutional normative elements support the prescribed acceptable values and norms. Eggertsson (1996) adds that the agents' and principals' behaviours in an institutional context are guided by numerous principles. The informality or formality of these principles informs broader beliefs and the institutional cultural framework in which public infrastructure investment PPPs takes place (Eggertsson, 1996).

Therefore, capable public institutions need to exhibit consideration of risk, value for money and broader socio-economic benefits in PPPs implementation. Figure 21 shows the benefits of PPPs.

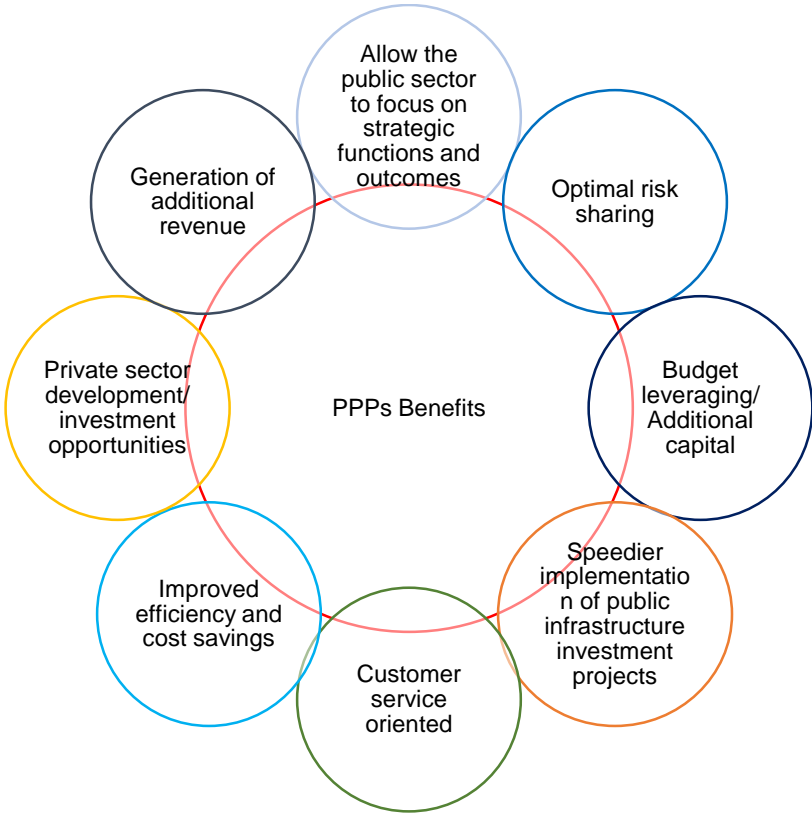


Figure 21. PPPs benefits by capable institutions

Source: Kosovo Ministry of Finance and Economy (n.d: 9).

4.5.4 PPPs implications for public infrastructure investment and development

PPPs in public infrastructure investment and development are driven increasingly by the widening infrastructure deficits, limited public finance and constraints in public infrastructure investment and development (Dheret et al., 2012). The PPPs implementation in public infrastructure investment is underpinned by three principles, which include value for money, risk allocation, and public benefits (Solino, 2013). In order for PPPs to achieve these benefits, public institutions are required to maximise their social net gains by ensuring that PPPs are implemented optimally and align with the public sectors’ socio-economic objectives (Delhi et al., 2010). PPPs implementation in public infrastructure investment needs critical consideration of project objections and institutional development frameworks (Ho and Tsui, 2009). This process requires good governance and developed institutional frameworks that takes into consideration the balance of

the private sector's interests, with those of the public sector (Parker and Hartley, 2003). Since PPPs are characterised by contractual obligations in the long term, it is important that public institutions develop policies and regulations to minimise opportunistic behaviours, which are embedded in private sector construction firms and which heighten transaction costs in PPPs (Mu et al., 2010). Public institutions need to develop more holistic knowledge and understanding about PPPs in order to have optimal decision-making processes and administer PPPs efficiently (Matos-Castano et al., 2013). Public institutions need to instil capacity development programmes in public officials and instil trust, legitimacy and capacity to improve institutional credibility in PPPs (Mahalingam et al., 2011). Public institutions need to effectively manage and transfer PPP risks efficiently due to numerous embedded fiscal risks that affect and compromise PPPs' successful implementation (Dunkin and Valila, 2005). Public institutions need to rationalise social gains, reduce the embedded transactional costs, and add the value pool of profits to private construction firms' development within the construction industry. The implications for public-sector institutions are to find partners who are willing and are good partners in PPPs, in order to increase the successful realisation of public infrastructure investment (Smyth and Pryke, 2008). It is important that public institutions develop effective monitoring and evaluation tools as well as performance indicators that are integrated with incentives and provide the right incentives-based systems to performance (Dixit, 1997).

Furthermore, Dixit (1997) asserts that public-sector institutions need to nurture optimal qualitative performance of public-sector employees and provide incentives that are project linked. However, the pattern of asymmetrical information between the public sector (principal) and the private construction firms (agent) is one of moral hazard that has the potential to compromise the successful implementation of PPPs in public infrastructure investment and development (Solino, 2013). Ho (2006) indicates that transaction costs in PPP settings substantially weaken the anticipated benefits of PPPs and have negative effects if not properly managed. The selection of contractors in public infrastructure investment projects through non-competitive means is fuelled by asymmetric information and increases fiscal risks (Solino, 2013). This practice compromises the realisation of public benefits because the agent will hold up the public sector (principal) and increase the transaction costs (Solino, 2013). The multi-disciplinary analytical framework approach, as applied in this study, was justified by the need to better understand the multi-faceted issues embedded in this research topic, the research problem and the gaps in the literature.

4.6 Restating the research questions

The elements of transaction cost economic theory, principal agent theory and institutional theory were synthesised with other theories in a multi-disciplinary approach to provide a conceptual framework for understanding the study. The study's research questions are restated as follows:

- a) How can PPPs be optimised as alternative financing instruments in public infrastructure investment?
- b) How does limited public finance constrain the financing of public infrastructure investment and development?
- c) What are the important core PPP success factors?
- d) What are the key lessons learnt from failed PPP projects?

In order to answer the study research questions, it was necessary to collect empirical data and to select an appropriate and suitable research methodology that could be applied to answer the study's research questions. It was also important to analyse and interpret the empirical data to give meaning to the research and to contribute to the body of knowledge by filling the existing gaps in theory.

4.7 Chapter summary

This chapter developed a conceptual framework to use in the study, analysing the research topic and the research problem holistically. The transaction cost economics theory, principal agency theory and institutional theory, as well as other theories, provided meaning in a multi-disciplinary approach. The multi-disciplinary stance in this study enhanced and improved the conduct of this research as it complemented the weaknesses of each individual framework. Chapter 5 discusses and justifies the research methodology of the study.

CHAPTER 5: RESEARCH METHODOLOGY

5.0 Introduction

The previous chapter argued for a multi-disciplinary analytic framework as the basis for conceptualising the research problem and analysing the data. Chapter 5 describes and justifies the choice of philosophy that underpins the methodology used to guide this study and also explains the procedures used to collect and analyse the data. This chapter is structured in terms of the following headings: ontological and epistemological assumptions, theoretical perspectives, methodology and methods, and ethical considerations.

5.1 Ontological and epistemological assumptions

There are different definitions of ontology but they all relate to reality. Hudson and Ozanne (1988) define ontology as the nature of reality. Blaikie (2010) defines ontology as “the science or study of being” which deals with the nature of reality. Dudovskiy (2016) describes ontology as the system of beliefs, which reflects the interpretative application of data. In addition, Dudovskiy (2016) states that ontological application in social research is centred on “objectivism” and “subjectivism” as social entities. The present study aligns with the subjective ontological view and social constructionist standpoint, which influence the researcher’s array of interpretations of phenomena through the social actors directly from data (Hudson and Ozanne, 1988).

Neuman (2000) highlights that the systematic interpretation of data is compromised if data interpretation is more fixated on reality than the optimal application of multiple meanings, which results in rigorous contextualised interpretation and analysis of reality. According to Lincoln and Guba (1985), the data explained through multiple perspectives is justified by the holistic dependence from other systems that derive significant rigorous contextualised meanings. Further, Edirisingha (2012), Carson, Gilmore, Perry, and Gronhaug (2001), and Hirschman (1985) assert that the generated knowledge through this direct process is constructed rather than objectively determined.

Crotty (2003:3) asserts that epistemology is a “way of understanding and explaining how we know what we know.” The importance of epistemology is to understand the basis of knowledge through different perspectives (Irene, 2014). Cohen, Manion, and Morrison (2006) indicate that epistemological knowledge can be hard, real or transmitted through concrete forms. Maynard (1994:10) states that epistemology is “concerned with providing a philosophical grounding for deciding what kind of knowledge is possible and how we can ensure that it is both adequate and legitimate.” The epistemological standpoint, as explained by Irene (2014), implies that knowledge

is internalised and symbolises a close connection of the knower and the known. Dudovskiy (2016) describes epistemology as a branch of philosophy that deals with sources of knowledge which can be in multiple forms. Hallebone and Priest (2009) add that by adopting a particular viewpoint, the researcher can determine what knowledge is and what constitutes knowledge.

Irene (2014) highlights that the humanistic science model views knowledge as an interpretivist or social constructionist stance. Smith (1983) opines that the interpretivist or social constructionist in qualitative research enables the researcher to undertake a subjective attitude through the inextricable links between facts and values. Irene (2014) asserts that the social constructionist or interpretivist paradigm aligns the research process through an inductive logical emphasis from specific observation to broader construction of theories. Crotty (2003) indicates that the epistemological constructionist stance in qualitative research holistically views knowledge as a meaningful reality of human practices that is constructed through interactive human interplay and is transmitted through social context. The constructionist paradigm as an epistemological stance adopted in this study guided the response to the study's main research question. The internalised knowledge of public finance in public infrastructure investment and development through PPPs was underpinned by the researcher's subjective attitude during the data collection process. The study rigorously analysed and interpreted data and created meaningful concepts and themes directly from data that answered the study questions. The researcher constructed meanings that were transmitted through the natural social contextual interviews.

Snape and Spencer (2003) note that the subjective epistemological stance carefully considers data collection through the researcher's minimised influence during interviews and document analysis. The epistemological stance in this research embraced the constructionist paradigm as appropriate and understood peoples' perspectives through thick descriptions that answered the study questions (Snape and Spencer, 2003). The study's epistemological stance enhanced the researcher's knowledge, and the interpretation of real situations, and improved the generation of new theoretical knowledge to answer the study's research questions adequately, using the researcher's subjective form of inquiry. The study justified interviews—using semi-structured open-ended questions—document analysis and selected case study projects as appropriate for this research.

5.1.1 Constructionist paradigm

Easterby-Smith, Thorpe, and Lowe (2009) indicate that the constructionist paradigm is the social construction of meaning through people, and wholesomely reject the view that reality is objective and exterior. Robson (2008) articulates that constructionism is the conscious creation of meaning through peoples' social world and through the attached meaning to peoples' external environment. Pathirage, Amaratunga, and Haigh (2008) describe constructionism as the main driver of science that contributes to the general holistic understanding of the phenomenon through the collection of rich data that is induced through theoretical abstraction. Collins (2007) states that constructionism in theory generation is significantly important. This is because data is gathered through multiple sources of evidence, and different viewpoints of different actors or observers termed as "what counts for the truth can vary from place to place and from time to time" (Collins, 2007:81).

The researcher constructs meaning directly from the empirical data (Mojtahed, Nunes, Martins and Peng, 2014:87). The researcher relies on participants' viewpoints and investigates the phenomenon by extracting meaningful information from participants and the analysed documents. Creswell (2013) highlights that this type of research approach is inductive and interpretative. Mojtahed et al. (2014) indicate that this approach is justified when it corresponds with and answers qualitative questions. The researcher embraced the constructionist paradigm and interactively engaged with the research participants and documents, and understood the constructed reality through the different research participants' views of their experiences with the investigated phenomenon.

5.2 Theoretical perspectives

Saunders, Lewis, and Thornhill (2003) elucidate that there is a clear distinction between positivist, interpretivist and post-positivist philosophies. In addition, Saunders et al. (2003) assert that these philosophies have the same weighting, but are differently applied. The different philosophies in research shape the research methodological approach, while the theoretical perspectives describe the philosophical study position (Crotty, 1998). The researcher's philosophical approach provided rich and in-depth contextual interpretation of documents and was underpinned by logic and criteria of selected case study projects. Furthermore, Crotty (2008) asserts that the research investigation is informed by epistemology, theoretical perspectives, methodology, and methods, because these elements depend on each other while they also inform each other. King and Horrocks (2010:10) indicate that this informed logic broadly reflects the inter-connectedness, and

is impossible to view in isolation. Creswell (2012) adds that the interrelatedness of the depth and breadth of this logic enhances the researcher's positive approach because of the broader encompassed assumptions through data collection.

5.2.1 Phenomenology

Kupers (2009:52) states that the phenomenological stance in research aims to “understand what experience is and means, better to say formalised account of conscious experience and its implications.” Smith (2013:18) elucidates that phenomenology is the “study of a “phenomenon,” appearances of things, or things as they appear in our experience.” Husserl (2001) states that the phenomenological stance in qualitative research directs and represents things that construct concepts, thoughts, ideas, and images and enhances the development of contextual meaning through the actor's experiences.

Lester (1999) elucidates that phenomenology in qualitative research highlights and identifies the research phenomenon through the participants' perspectives and their social settings. In addition, Lester (1999) adds that phenomenology translates in-depth collected data through inductive qualitative methods and may comprise interviews, document analysis, and participant observation, which represent data through participants' perspectives. The present study embraced this phenomenological perspective in attempting to gain a better understanding of how participants experience PPPs implementation and the success factors required for optimisation of the phenomenon. The researcher recorded the participant's perceptions, analysed documents and participants' ideas, and constructed a meaningful understanding of the phenomenon from the participants' perspectives (Lester, 1999). The researcher justified and embraced this phenomenological stance because the researcher aimed at giving a better understanding of PPPs in public infrastructure investment from the perspective of participants. The researcher embraced this phenomenological stance that was underpinned by interpretive application, purposive selection of the sample within the case study approach, and an analysis of documents that guided the researcher in answering the main study question. Figure 22 shows the theoretical framework employed by the researcher.

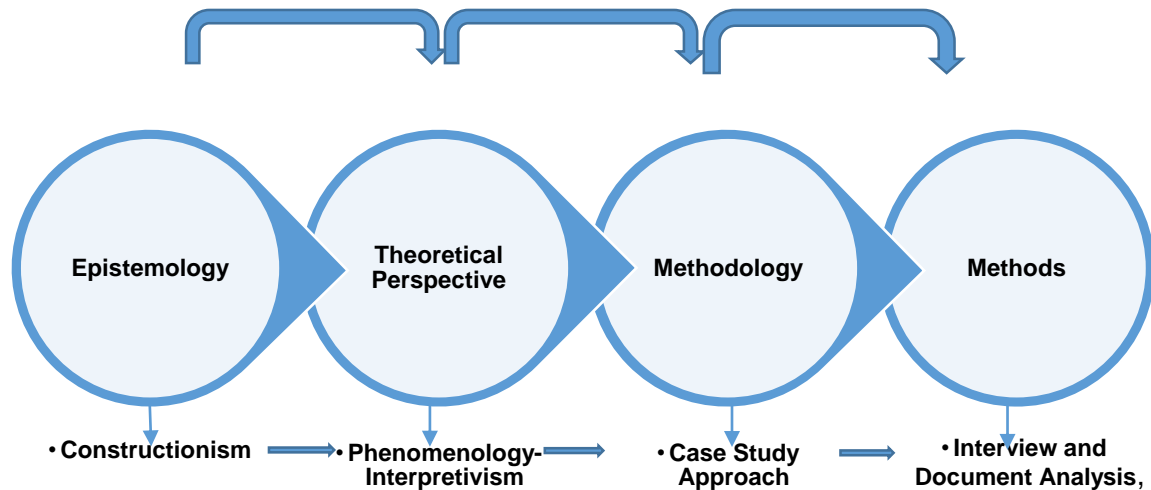


Figure 22. Adapted epistemological approach, theoretical perspective, methodology, and methods.

Source: Author's own compilation (2017)

5.3 Research methodology

The nature of the research problem in this study was formulated in a qualitative manner and guided the choice of methodology to be used. The researcher preferred a qualitative approach to explore the substantive areas that were not established, such as improving holistic knowledge on PPPs, constructing the core success factors in PPPs implementation, and identifying key lessons of failed PPPs projects. The researcher justified the collection of in-depth and rich original insights through a qualitative research approach as the primary approach that was consistent with approaches used by Creswell (2014) and Morse (1991). Creswell (2014) asserts that the qualitative research approach is most appropriate when the topic is new. The researcher selected a qualitative research approach that was consistent with Denzin and Lincoln (1998), who state that qualitative research is affirmed as an approach to construct social meaning through the researcher's understanding of the topic. Snape and Spencer (2003) claim that the naturalistic/interpretative approach is concerned with understanding peoples' sense of the phenomena through a natural social setting. The researcher applied a case study methodology and identified two case study projects, complemented them with interviews with experts in the field, and developed a deep and rich contextual understanding of the phenomenon. Other methodologies, such as a survey, would not have been the most appropriate approach or provided useful and rich data as PPPs are relatively new in South Africa, and the Czech and

Slovak Republics. The first case study was the KHI Solar One, which is a PPP energy infrastructure investment and development project in South Africa. The second case study was an R4 Expressway and PPP transport infrastructure investment project in the Czech Republic. Figure 23 shows the study's interactive approach.

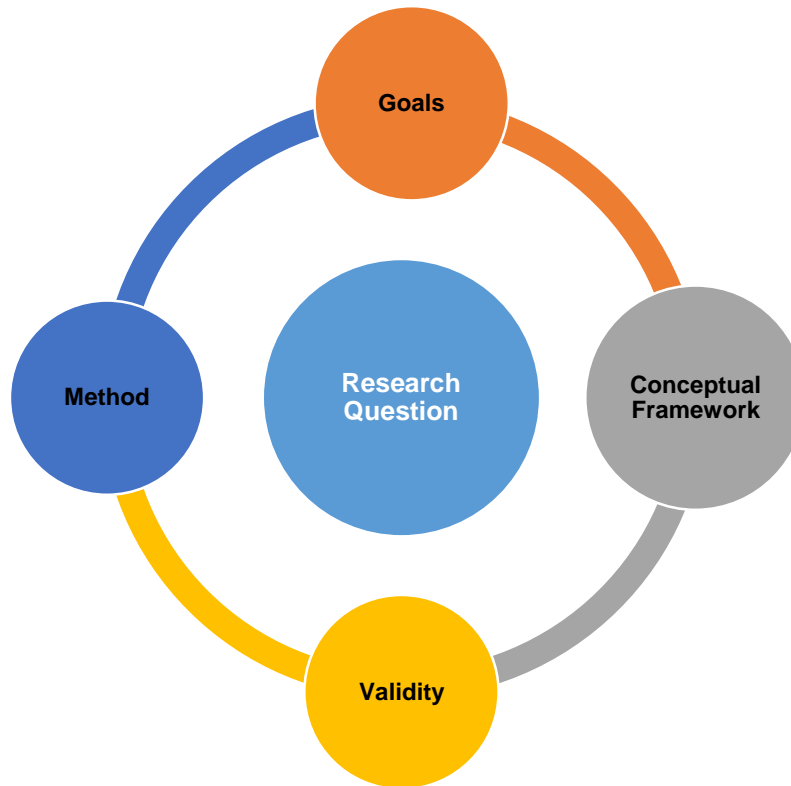


Figure 23. Interactive qualitative approach model.

Source: Maxwell (2005)

The researcher used the case study as the primary method of data collection and adopted the KHI Solar One and R4 Expressway PPP projects, analysed the documents and interviewed case study participants. The researcher used interviews to collect data as the second method of data collection and interviewed five experts using semi-structured interviews and an interview guide. The interviews were supplemented by case study documents. Two of the expert interviewees were linked respectively to the case studies, while the other five were not from the identified case studies. The selection of the case studies and interviewees is discussed in the next section.

5.4 Case study design and the research procedure

The application of the case study approach is centrally significant in qualitative research studies because of its flexibility in expanding and generalising theories and integrating the existing theoretical knowledge with new empirical knowledge (Yin, 2007). However, the case study approach transcends the locally investigated cases by capturing novel reality that establishes new cases, test theories and validate theoretical and practical insights (Eisenhardt and Graebner, 2007). Gummesson (2005) asserts that a case study guides the discovery, description, mapping and generation of relationships that are used to test, refute and refine theories. The critical importance of the case study approach is that it does not require to be linked to previous literature. However, a case study is used to build theory irrespective of lacking pre-existing theory (Eisenhardt, 1989).

A case study is important when contemporary issues appear inadequate, or when there are conflict and contradiction in the current research (Eisenhardt, 1989). Using a case study approach in this research was justified since there were diverse conflicting ideas in PPPs implementation in public infrastructure investment and development. The rationale for using a case study in this research was justified in order to investigate in detail the rooted dynamic, experiential and complex processes in public finance, public infrastructure investment and public-private partnerships. The case study design in this research gave rise to collecting data from multiple sources in the form of newspapers, journals, annual reports, archival records, and case reports (Daniels and Cannice, 2004). The case study approach was most appropriate because the research was conducted through smaller samples that made it impossible to generalise, as would be the case in quantitative approaches (Daniels and Cannice, 2004). Voss, Tsiriktsis, and Frohlich. (2002) show that the case study approach is feasible when multiple case studies are applied to augment external validity and restrict observer bias in qualitative research. The case study approach in this research was realised by identifying two cases.

A case study is important when the objective is to generate theory rather than to test the existing theory (Daniels and Cannice, 2004). Thus, the case study approach in this research was used to carefully identify the cases that linked and aligned to the research problem and the line of enquiry with actual properties of cases that matched the actual cases (Flyvbjerg, 2006). The collection of data was designed according to the identified case study projects in order to meet the study's strategic framework and improve the research logic and rigour by adequately structuring this research (Khatleli, 2009). The identified case study projects, as instruments for data collection, encompassed the stages shown in Figure 24. The researcher described the

identified case units, the analytic strategy, the case selection procedure and the research procedure, shown in Figure 24.

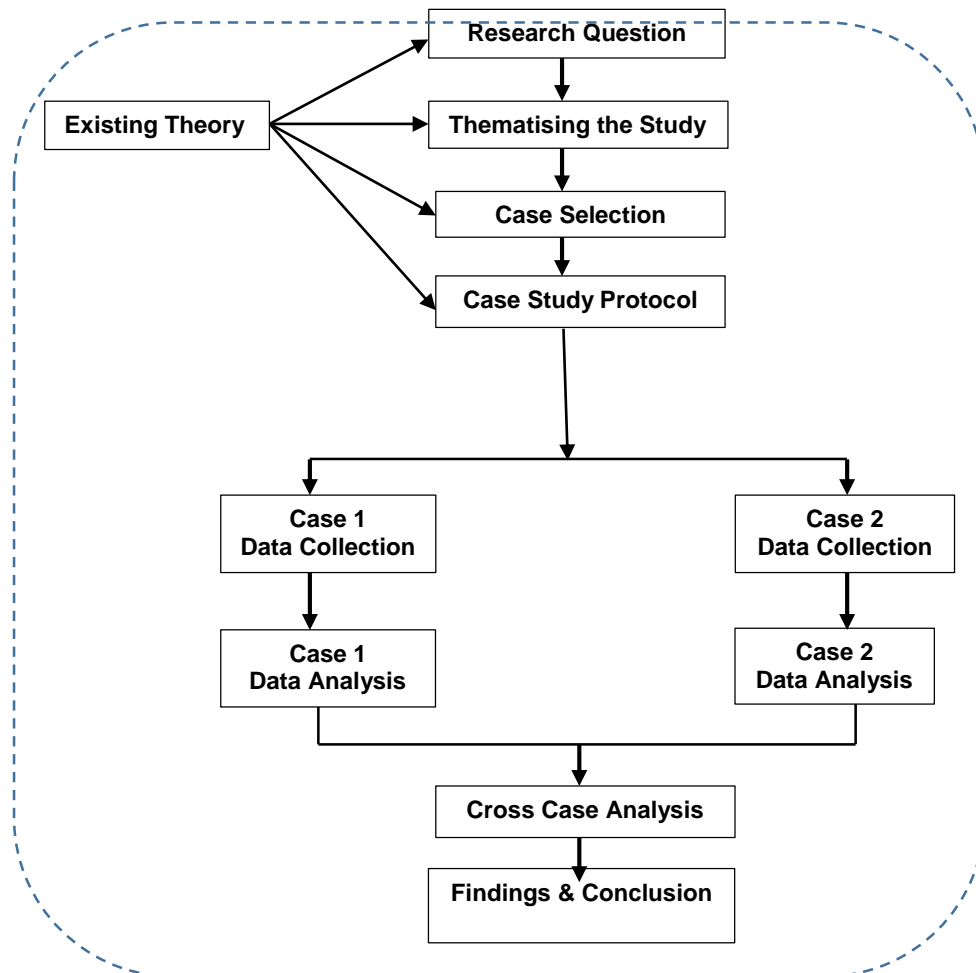


Figure 24. Case study research design, and steps in a multiple case study design.

Source: Adapted from Rose, Spinks, and Canhoto (2015)

5.4.1 Justification of case study

Yin (2009) asserts that case studies in qualitative research have been used in the areas of strategy, information systems, innovation and change, and in policy development. The case study approach, as used in this research, was justified based on design versatility. The case study design was justified by its flexibility and adaptability to investigate cases, analyse multiple sources of evidence and describe the specific situations and context (Eisenhardt, 1998). Using a case study was justified as an important instrument that was suitable to answer the study's primary research questions "why" and "how" and to build theory (Yin, 2003). Rose, Spinks, and Canhoto (2015) state that a case study facilitates comprehensive analysis of causality, because of the

specific and holistic treatment of cases. It also offers the possibility to investigate complex casual relevant factors.

5.4.2 Case units of analysis

Two important considerations emerge in case study projects; the first approach is to use case study projects as single cases while the second approach involves multiple case study projects (Yin, 2003). This study justified using multiple case study projects because they enhanced the comparative embedded depth of data while recognising their complexity. The case study projects are considered relevant in line with the type of research questions, and this study asks the “how” and “why” research questions (Miles and Huberman, 1994). Therefore, this study identified and selected two case study projects as the units of analysis.

The nature of case studies is described in different terms and includes explanatory, exploratory and descriptive cases (Yin, 2003; Stake 1995). The study adopted an exploratory approach to the selected two case study projects in order to make comparisons and identify similarities of results across the case study projects. The study justified the need to provide insight into PPPs knowledge, the success factors in PPPs implementation and lessons from failed projects to optimise the PPPs successful implementation in public infrastructure investment and development.

5.4.3 Analytical strategies

The main analytical strategies used to analyse qualitative data in this research encompasses revisiting evidence, and examining and categorising data in order to achieve the aims of the study (Yin, 2003). However, it was important in this study to begin with a general analytical strategy of case study projects as the best practice. The study applied pattern matching and explanation building as strategies to analyse and identify the chosen case study projects, which were also used in Khatleli's (2009) study. The study relied on four principles in order to attain the highest quality analytical strategies with the selected case study projects, namely all major rival interpretations of the analysis, addressed the most significant aspects of the identified cases, and made use of the researcher's prior knowledge to further analyse data (Yin, 2009). The case study projects' analytical strategies adopted in the analysis are as follows:

- Codes : Identified the anchors that allowed the key points of all data to be gathered.
- Concepts : Collected codes of similar content that allowed the data to be grouped.
- Categories: The broad groups of similar concepts were used to generate theory.

- Theory : The concepts explained the subject of research

The study ensured that the analysis of data was holistic and rigorous throughout the research process in order to gain a deeper and rich understanding of the phenomenon.

5.4.4 Case study selection procedure

The researcher ensured that the selected case study projects fitted this research and were relevant and applicable to the research question in order to achieve the objectives of this study.

5.4.4.1 Case study projects

The researcher used case study projects that are still operational after the promulgation of PPPs legislation. The identified PPPs case study projects were thus the KHI Solar One project in South Africa and the R4 Expressway in the Czech Republic; both have contracts of 30 years respectively.

The two selected case study projects enabled the researcher to trace the depth of success and challenges and to learn lessons from these projects. The selection of the projects was justified by the diversification of skills and disciplines and the diverse range of players and beneficiaries involved in PPPs implementation. The study justified the identified projects due to experiences of success and failure in implementing PPPs in public infrastructure investment. The two selected case study projects fitted this research because they provided in-depth evidence of PPPs implementation successes, challenges and the opportunities to improve the implementation of PPPs projects.

5.4.4.2 Project access and location

Access to both case study projects was established through personal contact. The study's co-supervisor enabled the researcher to contact people who worked in the industry and in academia in the Czech Republic whilst the supervisor enabled the researcher to contact people who worked in the South African industry. Whilst the implementation of PPPs in both the Czech Republic and South Africa are relatively new, there is an increasing demand for research in PPPs because PPPs are particularly implemented by the public sector and the conduct of research in PPPs is beneficial to the industry players, research community and to the public infrastructure practitioners. Since there were limited operational PPPs projects, potential case study projects

were in South Africa and the Czech Republic and these were particularly important to compare and identify similarities in PPPs project implementation in both case studies.

5.4.5 Research procedure

The literature review in the financing of public infrastructure investments and PPPs was contextualised to the construction industry. The study provided a case study interview design and developed the general rules to use the research instrument. It was important that the researcher developed procedures and general rules for data collection. The researcher developed an interview guide (Appendix 4) with open questions that were asked to the participants and compiled case study reports. The researcher analysed the case study documents and cross tabled the findings to determine correlation and differences. The researcher used numbers to indicate the extent of responses in analysing the data during the coding stage.

5.4.6 Case study analysis procedure

Bowen (2009) defines document analysis as a systematic procedure that is used to review and evaluate the printed and electronic document material. Corbin and Strauss (2008) and Rapley (2007) assert that document analysis in qualitative research requires data to be examined and interpreted to elicit meaning, gain a rich understanding and develop empirical knowledge. The variety of documents used in qualitative research include “advertisements; agendas, attendance registers, minutes, manuals, background papers, books and brochures, journals, letters and memoranda, maps and newspapers” (Bowen, 2009: 27). The significant use of documents in qualitative research studies increased immensely over the years, with a focus on organisational and institutional documents, because they provide evidence (Bowen, 2009).

Organisational and institutional reports, programme proposals, application forms and programme summaries form part of the evidence that enhance the building of theory which is important in qualitative research studies (Bowen, 2009). There is increased significance in using document analyses in qualitative research because they complement other research methods and are used to triangulate combined methodologies in the study (Denzin 1970). O’Leary (2014) indicates that document analysis comprises three sets of documents that are used in a case study, such as public records, personal documents and physical evidence. Using multiple sources in a qualitative research study converges and corroborates evidence by applying multiple data sources and methods (Bowen, 2009). The researcher’s application of multiple sources of evidence through the triangulation of data provides “a confluence of evidence that breeds credibility” (Eisner, 1991: 110). Bowen (2009) asserts that examining data through multiple

sources and methods enables the researcher to corroborate findings across the data sets and reduce the potential bias that can prevail when using a single method. Stake (1995) and Yin (2009) indicate that document analysis, as a research method in qualitative research, is particularly relevant, justified and valid in qualitative case studies, because they provide in-depth descriptions of the phenomenon, event, organisations and the programme. Khatleli (2009) recognises the importance of using multiple sources in collecting data qualitatively, which includes the consideration of document analysis as an important method to collect data. For the present study the researcher analysed documents of the two selected case studies, both in South Africa and the Czech Republic, as well as the interviews of the two selected case study participants to make sense of the case study project evidence.

Applying the two case study projects in this study was relevant to gain detailed data and evidence of the phenomenon, and validated the empirical data. Khatleli (2009) argues that there is no standard definition of a case study. When there is a lack of a strong theoretical framework in qualitative research, the case study projects are convenient, because they enhance the building of the theoretical base with the evidence provided by the case study projects (Khatleli, 2009). It is important to acknowledge that case studies provide rich contextual settings to generate theories and are relevant to enhancing the building of theories (Benbasat, Goldstein and Mead, 1987). It is important that researchers consider case studies carefully and select case study projects that fit in with the research. They form part of the document analysis and data collection methods to build theories when considered in qualitative research (Yin, 2009). The researcher analysed the case study project documents to gain a rich understanding of the phenomenon studied. This approach was justified in this study because the researcher gained knowledge of the deep holistic life events of individuals, organisational and managerial processes involved in making decisions about the financing of public infrastructure investments through the PPPs (Yin, 2003).

The analysis of qualitative empirical data from the identified case studies enhanced the development of new concepts, which helped to answer the research questions of this study. The study justified the qualitative research approach because the researcher relied on participants' views, asked broader general questions, captured the participant's responses in their own words and validated data through the identified case study projects. The study captured, analysed, and described the participants' verbal description of the phenomenon in themes. This research adopted a subjective fashion that excluded bias (Creswell, 2005).

5.5 Expert interview design and procedure

Research is a process that involves the collection, analysis and interpretation of data (Leedy and Ormrod, 2001). The study justified using a qualitative paradigm because of the nature of the problem, research questions and aim of the study. The justified research methodological approaches were informed by the exploratory nature of this study and were applicable to the collection of data and analysis, because the research approach was directed to generate theory rather than testing the existing theory. The application of qualitative methods in this study underpinned the case studies in both South Africa and the Czech Republic and expert interviews supplemented this research as explained further.

5.5.1 Qualitative interview research method

The study classified the selected qualitative type of research as inductive. Trochim (2006) defines the inductive approach as a process of moving from specific to general. Thomas (2003) asserts that the inductive approach supports the deeper understanding of complex data through meaningful interpretation. In this research process multiple sources of evidence were applied, such as the qualitative data collected through semi-structured interviews and an analysis of the documents of the two purposively selected case study projects. This study critically reviewed previous literature, reports, and documents as secondary data sources and justified the qualitative research approaches because of their inductive stance in research and the embeddedness of detailed explanations rather than generalisations (Douglas, 2003).

5.5.2 Qualitative interview design and procedure

5.5.2.1 *Sampling strategy*

It is important to understand the sampling theory when selecting a sampling strategy (Cochran, 1953). The correct sampling strategy increases the appropriate selection of the sample, reduces the research costs, improves efficiency, enhances flexibility and increases accuracy (Cochran, 1953). Battaglia (2008) describes the non-probability sampling technique as a subjective method. Ritchie, Spencer, and O'Connor (2003) note that the snowballing sampling approach is appropriate and suitable for small-scale and qualitative in-depth research studies. Schutt (2006) asserts that the sampling strategy used in most research studies comprises non-probabilistic techniques, such as snowball sampling, purposive sampling, availability sampling, and quota sampling.

Schutt (2006) indicates that the significance of a sampling approach depends on the nature of the research and needs to correspond with an in-depth investigation. Neuman (2000) highlights that a non-probability sampling technique justifies the snowball sampling technique when the population is small, and when the line of inquiry demands participants who are informed and have knowledge of the phenomenon. The study justified using a purposive sampling strategy that also included snowball sampling, because it was necessary to select only participants who have knowledge and experience of PPPs projects. The study selected seven experts on a snowballing basis who had extensive knowledge and experience in the financing of public infrastructure investment and PPPs implementation. The snowball selection of experts in this study was justified and guided by the research questions, study objectives and the researchers' personal judgement in the design of a snowball sampling technique (Saunders et al., 2003).

Unlike quantitative surveys, where numbers or quantities of large samples are very important, in this study the seven expert interviewees were sufficient, because the quality and depth of data were more important. Berg (1995) and De Koning et al. (1986) state that the small sampled study population limits generalisation; however, it provides rich and deeper contextualisation of data because of the interactive and lively engagement between participants and the researcher. Babbie (1990:97) asserts that the purposive sampling strategy is appropriately valid "on the basis of your knowledge of the population, its elements, and nature of your research aims." Frey., Carl, and Gary (2000:132) assert that purposive sampling is applicable and valid when the population is "non-randomly selected based on particular characteristics."

5.5.2.2 Methods of data collection

The study justified interviews as an appropriate research method because of the researcher's interplay with the research participants during the process of data collection (Creswell, 2004). The interviews in this study increased the researchers' strategy and enabled the researcher to ask follow-up questions since some responses were vague, and the participants clarified their responses in an interactive and constructive manner. Welman and Kruger (2001) indicate that conducting personal interviews requires a developed interview guide (Appendix 4) to minimise bias and false information. Holloway and Jefferson (2000) assert that developing an interview guide is in accordance with interview principles. The researcher developed an interview guide and built rapport with research participants.

Interviews were also justified as an applicable research method used to unearth the embedded data by asking open questions on the phenomenon. Holstein and Gubrium (1997)

assert that an interactive collaborative nature of the researcher stimulates the research process and increases the transmission of knowledge. Miller and Glassner (1997:97) indicate that interviews “provide access to the meanings people attribute to their experiences and social worlds.” While an interview is in itself a symbolic interaction, this approach does not miscalculate the possibility that social world knowledge cannot be mined beyond social interaction. Thompson (2000), Rubin and Rubin (1995), Kvale (1996), and Marshall and Rossman (1999) assert that the personal and professional qualities of the researcher increase the interview’s success rate as a preferred method in data collection in qualitative studies. Semi-structured interviews were justified as the most appropriate and valid method to collect data. Berg (1995) adds that the lack of predetermined assumptions justifies the interviews as a valid and applicable research method in qualitative research studies.

5.5.2.3 Methods of interviewing

According to Dawson (2002), qualitative research approaches holistically promote interviews, with semi-structured interviews as the choice of research method in numerous research projects. Semi-structured interviews in qualitative research enable the researcher to pre-construct the research, guiding questions that yield rich information (Dawson, 2002). Saunders et al. (2003) highlight that semi-structured interviews do not guarantee follow-up questions, but the questioning technique is altered by the flow of the conversation and dialogue with the research participant. The researcher applied this research interview method, because the researcher probed the phenomenon deeper and stimulated the participants’ clear and succinct description in detail. Patton (2002) articulates that semi-structured interviews influence the research reflexivity and the researcher does not distort the data presented by the participants. The researcher in this study pre-constructed the focused, guiding questions, and gained rich contextual data from participants.

Kvale (1996:174) adds that a semi-structured interview is “neither a free conversation nor a highly-structured questionnaire,” and comprises methodological awareness in the formation of questions. Semi-structured interviews enhanced the present study’s data collection, because the study recorded the participants’ responses verbatim. The researcher asked the research participants open questions about their experiences, financing interfaces, public infrastructure investment and development opinions on PPPs implementation.

According to Kvale (1996) the participants’ descriptive accounts and the researcher’s primary role during the interview process need to be interactive and inductive. This researcher justified the use of open-ended questions in order to gain a deeper understanding of the

phenomenon. The researcher explained the objectives of this study to each participant before the interview and obtained the participant's voluntary consent.

5.6 Data analysis techniques

The researcher used a qualitative data analysis method to analyse the interview data. Mayring (2000) asserts that data analysis is a method that applies analytic rules through systematic use of models that exclude a quantified rush. Analysing the data in this study stemmed from generating open codes, categories, concepts and themes that took shape during data analysis (Berg, 2001). Patton (2002) claims that data analysis does not exclude deductive reasoning.

5.6.1 Close reading of data

To achieve a meaningful data analysis process in a qualitative approach, it was important to realise that data analysis involves more than just identifying categories, concepts and themes from the raw data (Bazeley, 2009). The researcher read the transcripts repeatedly to ensure comprehension. This process enabled the researcher to make logical deductions out of the raw data (Miles and Huberman, 1994). Kajimo-Shakantu (2007) asserts that scrutiny of data through repeated closer reading helps to identify emerging issues from the collected raw data. Figure 25 shows the process the researcher followed to code and analyse data.

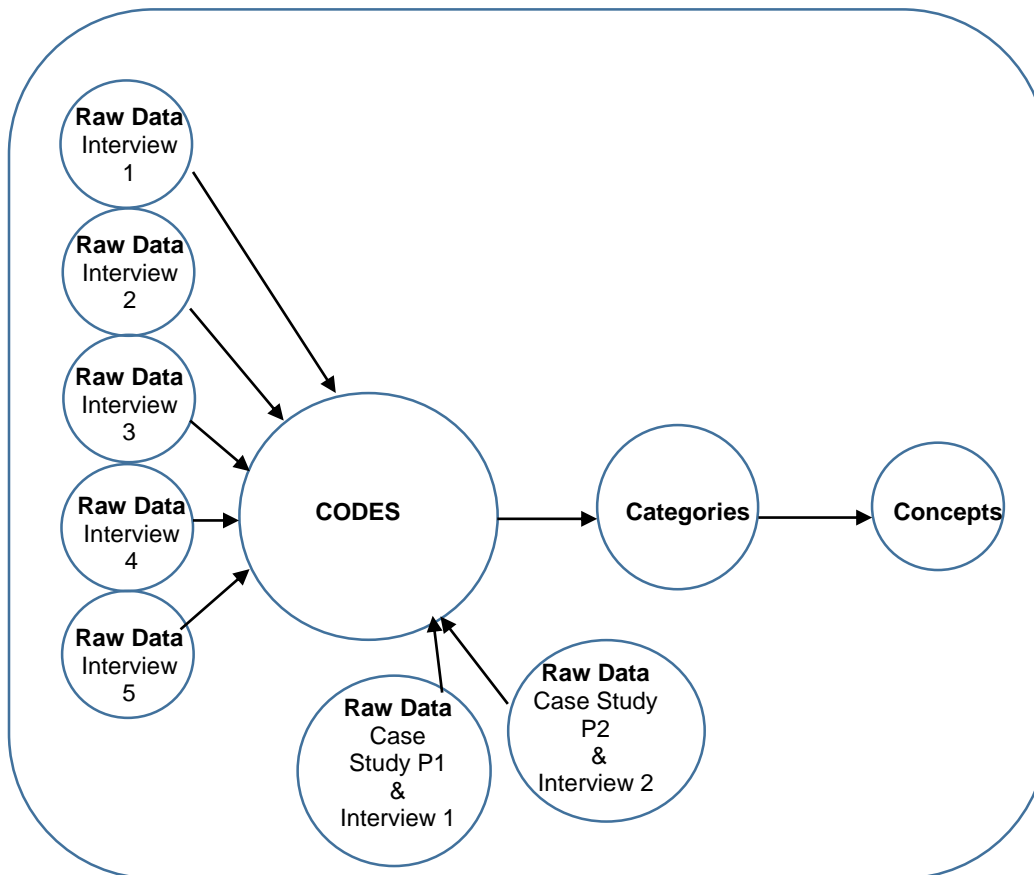


Figure 25. Typology of analytic process of raw data.

Source: Author's own compilation (2017)

As shown in Figure 25, the data gained from the five interviews with experts outside the case studies and two further interviews with experts within the selected case studies were transcribed. Coding was done from the first to the last interview, and from the first and second case study projects, moving from developing the codes to categories, concepts and explanations. The researcher transcribed the raw interview data while the organisational and project specific documents were read and analysed to generate concepts. The researcher categorised the generated concepts into provisional themes and rigorous analysis of the provisional themes generated substantive theory. The identified themes in this research emerged from the collected raw data.

The coding process was characterised by sorting, identifying and analysing the participants' accounts expressed during the interview and contributed to generating meaning that was relevant to the study's research questions. The data analysis process included all concepts that were expressed by the participants and the data was read closely and repeatedly. The rigorous and exhaustive analysis of data contributed to the generation of categories, concepts and themes. Holloway and Jefferson (2000), and Parker (1992) assert that it is important to

transcribe interviews precisely. The abstraction of data through a back and forth process, and the hierarchical systematic classification of data, increased the transparency of the process during the data analysis stage (Ritchie et al., 2003). The following three steps underpinned the analysis of data:

5.6.1.1 Step 1: Coding process

The analytical process at this stage abstracted the meaning from the volume of collected and transcribed data. The researcher started by developing the theoretical plausibility and making sense of data by “breaking down”, examining, comparing, conceptualising and categorising data to find meaning; this process is the first step of the coding process (Strauss and Corbin, 1998). The collected data was analysed iteratively while searching for similar patterns to emerge from the data (Strauss and Corbin, 1998). The process followed consisted of labelling identified passages with similar meaning from the large pool of data using different coding colours. Bohn (2004) asserts that this process highlights the important generation of the theory directly from the data by looking for a pattern of concepts and categories and checking them against the text. The conceptualised concepts were analysed by further abstracting the identifiable concepts that bear similar characteristics to categories that built the individual themes. The generated themes were compared to identify similarities and differences within the text. The provisional themes were later synthesised and contributed to developing final themes that were later synthesised for new understanding (Strauss and Corbin, 1998).

5.6.1.2 Step 2: Coding process

The Step 2 coding process, as shown in Figure 26, linked the identifiable coded concepts to categories from the Step 1 coding phase by assembling data in new ways. The Step 1 coding process was followed by making connections and identifying established relationships between the categories that were provisionally open coded previously. The second step coding process was used to relate the content and the relationships of the categories. The rigorous iterative process of relating the categories to the content and relationships enhanced the reduction of coded categories and improved the generation of theory (Bohn, 2004). Figure 26 illustrates the Step 2 coding process that was followed.

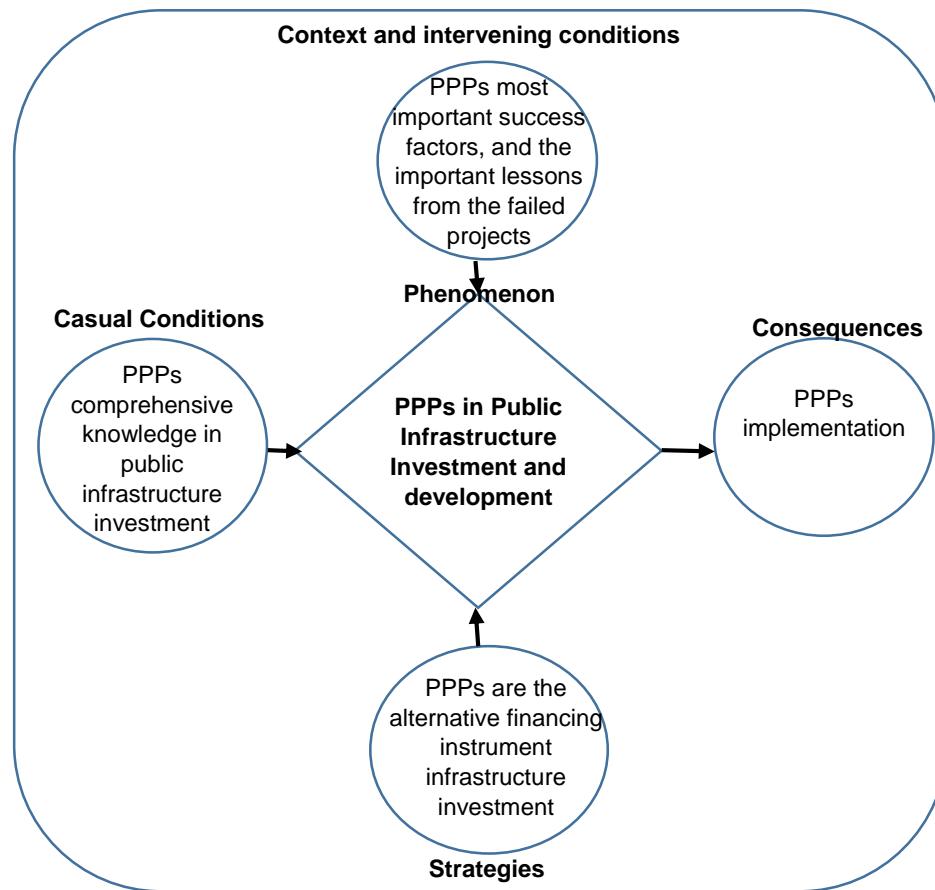


Figure 26. Step 2 coding process

Source: Author's own compilation (2017)

5.6.1.3 Step 3: Coding process

The conceptualisation of selective coding gave meaning to the analysis of findings. The Step 3 coding process in this study contributed to the generation of subcategories, categories and the themes that provided the generation of findings. Ritchie et al. (2003:232) state that data analysis is an iterative continuous process carried out in phases and enables the management of data and the “making sense of evidence through descriptive or explanatory accounts.” The study leaders and study peers in this research also validated the findings in this research against any bias. Seale (1999) indicates that the trustworthiness in qualitative research mirrors the validity and reliability of quantitative reports. Patton (2001) asserts that the validity and reliability in qualitative research originates from the study design and the analysis of data and the combination of the two methods complement each other because of data triangulation. The study design in this research was trustworthy and suitable to explore the phenomenon holistically. The chosen methodology’s

reliability enhanced the successful completion of this research by adopting the research methods in data collection that fitted this research. Figure 27 shows the integrated methodological approach.

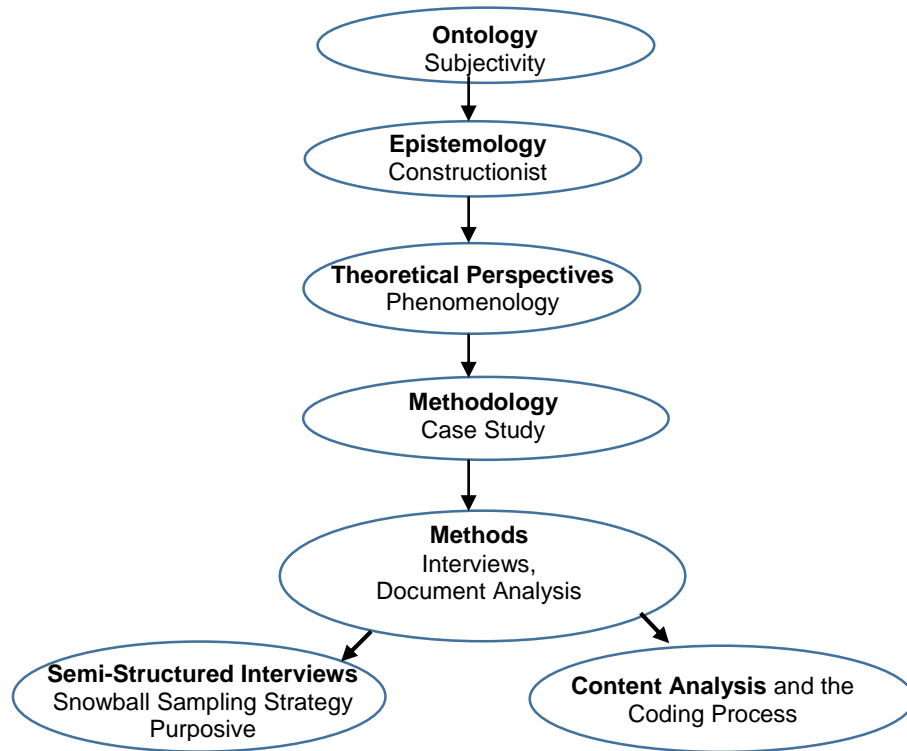


Figure 27. Study interactive methodological approach.

Source: Adapted from Kajimo-Shakantu (2007)

Figure 27 shows that the ontological and epistemological assumptions are underpinned by a constructionist perspective and phenomenological stance respectively. The methodology included case studies that used interviews and document analysis as key research methods. The researcher used semi-structured interviews with an interview guide after applying the snowballing sampling strategy. The researcher analysed empirical data through content analysis, which adopted three-step coding processes. The supervisors in this research validated the selected data analysis methods as appropriate while the research participants' accounts were considered as valid and trustworthy. Clont (1992), Seale (1999), and Lincoln and Guba (1985) assert that the adoption of numerous research processes enhance validity in qualitative research studies. The researcher consistently complied with the research processes, by increasing the research validity that was justified by the numerous research processes and methods which further increased the validity of findings (Seale, 1999).

5.7 Research protocol and ethical consideration

The researcher requested permission from the University of the Free State to collect data through interviews and case studies and permission was granted, as shown in Annexure 1. Ethical clearance was required and, as shown in Annexure 2, was obtained. The researcher collected data through face-to-face, semi-structured interviews, using an interview guide. The researcher in this study was used as an instrument to collect empirical data through face-to-face interviews and an analysis of the case study documents. The application of semi-structured interviews was justified on the basis that interviews were suitable and appropriate as method of data collection, and the participants' descriptive accounts were collected. The interview guide that was developed in this study directed the study questions to achieve the study's primary aims and objectives, while the data of the case study projects provided evidence that corroborated the data collected through the interviews (Ritchie et al., 2003).

The supervisors' guidance enhanced the researchers' research design and improved the development of the focused research interview guide (shown in Annexure 4) that was used to explore the phenomenon holistically. It also clarified the researchers' focused questions. The study's primary research question steered the depth of the exploration of the phenomenon. It is important to have an accurate record of the interviews conducted in order to obtain accurate data (Strauss and Corbin, 1998). The study participants consented to participate in this research and to the recording of interviews through an audio voice recorder for later retrieval of data, as shown in Annexure 3. All the interviews were thus recorded, which enabled the researcher to retrieve data during the analysis stage. The researcher's computer was used to save the recorded audio interviews, and to repeatedly play and listen to them, before transcribing and analysing them to make sense of the data, while the interviews continued. The retrieval of an interview recording improved the follow-up interview technique and enhanced the style because of familiarity with the analysis of data during the interview stage. The researcher transcribed all the audio-recorded interviews and printed them later, while the softcopy transcripts were referenced on the computer. The printed transcripts were later used during the analysis stage, as shown in Annexure 5. The researcher used some of the extracts of participants' expressions in the analysis and in the discussion of findings. The researcher labelled the experts' descriptions of the phenomenon and discussion of findings by using the first letter of their surnames, while the alphabet letters A and B were used to identify case study respondents. Data collection and analysis were done over a reasonably extended period (late 2016 and 2017).

The researcher maintained ethical standards and all participants voluntarily consented to take part in this research. The attached Appendix 2 was used to obtain participants' consent. The

researcher was identified to the research participants by the university's formal letters that approved the undertaking of this research, and further described the researcher's details and the purpose of the research. The researcher thanked all the research participants for their voluntary participation in this research before and after the interviews. Each participant's interview lasted about one hour and was conducted at the participants' work places at a time convenient to each participant.

5.8 Methodological limitations

The study limitations highlighted that it may be difficult to repeat this research, because of the semi-structured data collection approach and the uniqueness of the selected case study projects. However, Seale (1999:158) claims that research limitation is surpassed by reflexivity "showing the audience of research studies as much as possible of the procedures that have led to a particular set of conclusions." The researcher used reflexivity in response to this study limitation that enhanced the reliability of this research. Jootun and McGhee (2009) describe reflexivity as an invaluable tool used to promote the understanding of the phenomenon under study and the researcher's role. The researcher's justified reflexivity stance increased the researcher's feelings, enhanced personal and professional expectations, revised the researcher's previous understanding and made sense of the new phenomenon through the participants' perspectives that eliminated any bias. The study applied multiple methods to collect data and followed processes and procedures that improved the quality of the study research methodology and data analysis. The researcher used the recorded audio tape-recorded dialogues to improve the quality of the data collected instead of hastily written evidence of interviews. The techniques in each interview improved, which increased the reliability of evidence and accuracy of data (Gray, 2004). The recorded interview dialogues and written notes in a research journal help in the retrieval of interview conversations. The researcher played the interview tape recordings repeatedly while the interview transcripts were also read repeatedly to increase the accuracy of participants' version of accounts in their own words. Seale (1999) asserts that the reliability in qualitative research is significant because it validates the trustworthiness of participants' expressions.

The questions easily enhanced the participants' and researcher's interactive interplay while articulating their responses. The researcher repeatedly asked participants to clarify responses, which were vague in order to get clearer responses. The researcher asked research questions in a neutral tone and this limited numerous misunderstandings, and the follow-up questions provided deeper understanding of the phenomenon. The research supervisors in this study enhanced the study's integrity, research design, and the development of the focused

research questions. Their interactive role improved the research conduct. Both the Czech and Slovak language and accent when participants were responding to the questions were challenging to the researcher, which necessitated the researcher to ask participants to restate their responses twice to get clearly articulated responses. Time and geographic location limited the research, but the researcher constantly maintained time keeping schedules and departed timeously for interviews because of the distances in these countries.

5.9 Chapter summary

This chapter discussed the research's ontological and epistemological stances. The research methodology and methods of using qualitative research approach principles were justified as appropriate and valid. The chapter justified the use of semi-structured interviews, and the document analysis in the case study projects adopted qualitative data analyses techniques and strategies. The following chapter presents the findings obtained from the empirical study with a discussion in Chapter 7.

CHAPTER 6: PRESENTATION OF EMPIRICAL FINDINGS

6.0 Introduction

This chapter presents the findings obtained after undertaking the empirical study using the methodology documented in the previous chapter. This chapter contains two sections. The first section presents the findings of the selected two case studies. The second section presents the findings of the face-to-face interviews with experts of the two case studies. This chapter begins by presenting the results of the identified case study projects and interviewed participants, followed by the profiles of selected experts.

6.1 Overview of study objectives

The study's main and sub-questions, as well as the alignment of interview questions guided the collection of empirical data in this research. Table 9 below provides the alignment of research questions and interview questions.

Table 9. Alignment of research sub-questions and interview questions

Research sub-questions	Interview questions
1. How does limited public finance constrain the financing of public infrastructure investment?	<p>What constrains public finance in public infrastructure investment?</p> <p>How does the impact of limited public finance affect public infrastructure investment?</p>
2. What are the core PPPs success factors?	<p>What are the most important success factors in Public-Private Partnerships implementation?</p> <p>Why is it important to use cost-benefit analysis in Public-Private Partnerships?</p> <p>How does risk allocation affect Public-Private Partnerships?</p> <p>Why is it important to have partners who have the financing capacity in Public-Private Partnerships?</p> <p>How does policy and regulatory framework affect the Public-Private Partnerships?</p> <p>Why is it important to have well organised public sector?</p> <p>Why is it important to undertake technical feasibility studies in Public-Private Partnerships?</p> <p>What is the importance of project management in Public-Private Partnership?</p>

	<p>How can contract management in Public-Private Partnerships be improved?</p> <p>How is it important to adequately monitor and evaluate Public-Private Partnership implementation projects?</p> <p>How important is shared authority in Public-Private Partnership projects?</p>
3. What are the key lessons learnt from failed PPPs projects?	<p>What are the most important lessons of failed PPPs projects?</p> <p>How can the lessons of failed projects improve PPPs investment?</p> <p>Why is it significant to learn from failed projects?</p>

Source: Author's own compilation (2017)

The following section presents the document analysis of the case studies.

6.2 Document analysis of case studies

This section of the study presents the identified two case study projects, namely the KHI Solar One and the R4 Expressway, which include one PPP in an energy investment project in South Africa, and the R4 Expressway PPP transport infrastructure and development project in the Czech Republic. The basis for selecting these two case study projects evolved from the need to analyse and construct the generic and holistic knowledge of and experiences in PPPs implementation. Secondly, the selection of the identified case study projects was justified on the basis of developing the most important success factor framework in PPPs, aiming at enhancing PPPs implementation.

6.2.1 Official records and documents

The analysis of case study documents involved thorough reading of journals, conference papers, online news articles, company documents and other official publications obtained from various stakeholders. The KHI Solar One publications and R4 Expressway documents and reports, both from government and financing institutions, were identified and closely read. Table 10 provides an overview of different documents that were consulted during the analysis of the KHI Solar One and R4 Expressway case studies. The documents below are collectively referred to as case study documents.

Table 10 Overview of various documents analysed as part of the case study

Document name	Year of publication	Type of publication
KHI Solar One Near Upington Achieves a Technological Milestone	2016	Developers website
NERSA KHI Solar One Licence Application-Public Hearings	2012	Government document
Solar Farm Development, Scoping Layout Report	2014	Company report
Highways and Expressways in the Czech Republic	2016	Industry magazine
Possibility to Implement PPP on R4 and R7 Expressways. The Czech PPP Kick Off in Transport Infrastructure	2015	Government document
Concentrated Solar Power (CSP) Innovation Analysis in South Africa	2017	Academic journal
KHI Solar One, CSP Map	2017	Online news article
Construction and Projects in Czech Republic	2015	Online report
Rychlostni Silnice	2016	Online report
Access to South Bohemia, The Region of South Bohemia	2010	Online news article
The Czech PPP Kick Off in Transport Infrastructure, Possible PPP Project, Expressway R4-Brief Info	2015	Government document
Solar One Project Detail	2017	Company document
Abengoa Constructing CSP Plants in the Kalahari Desert	2014	Symposium paper
South Africa's First Solar Tower Project	2017	Online news article
Success Factors of Inter-Organisational Collaboration with Non-Profit Organisation. The Case of the Renewable Energy Sector	2017	Online news article
Project Financing of Concentrated Solar Power Plant Workshop	2017	International donor workshop
Sourcing Energy from the Sun, Kaxu and KHI Concentrated Solar Power	2017	Donor report
Proposed Upington Solar Thermal Plant Two	2014	Government report
Better Late Than Never, Big Infrastructure PPPs Finally in the Czech Republic	2015	Government online report
KHI Solar One	2017	Company document
Auctions for Renewable Energy Support in South Africa. Instruments and Lessons Learnt	2016	Case study report
Highway Projects Attracting Chinese Contractors	2015	Online news article

Source: Author's compilation (2017)

6.2.2 Profile of the case studies.

The KHI Solar One PPP project is a solar thermal energy project while the second case study project is the R4 Expressway project, which is a transport PPP infrastructure development project.

Table 11 below illustrates the identified case study projects.

Table 11. Identified case study projects

	South Africa				Czech Republic			
Case studies	Case study 1				Case study 2			
Project name	KHI Solar One				R4 Expressway			
Project infrastructure type	Energy PPPs infrastructure investment				Transport PPPs infrastructure investment			
Participants	1				1			
Designation	Infrastructure specialist				Construction project manager			
Interviewee ID	A				B			
Industry experience in years	16				12			
Infrastructure experience project Type	Public	68	Private	25	Public	5	Private	13

Source: Author' own compilation (2017)

Table 11 shows the number of case study projects in infrastructure investment and development types of projects, the project location, and the number of interviewed participants per project. As shown in Table 11, the selected participants had adequate experience in both public and private-sector infrastructure investment and development. The identified case studies and the selected participants in these case studies were justified as appropriate because of the line of inquiry of this research.

6.2.3 Case study description Project 1. KHI Solar One Project; South Africa

Since 2008 South Africa has experienced constant electricity power cuts due to limited electricity supply, which affected various sectors, such as business, health and education, as well as households and general industry. The Department of Energy developed a long-term strategic energy investment and development plan, which included PPPs in energy investment and development (Haidar and Bartel-Radic, 2017). The department's investment of R33.,8 billion to abstract the energy investment and development project and the KHI Solar One PPP is one of those energy infrastructure investment flagship projects in South Africa (Craig, Brenet, and Dinter, 2017). The KHI Solar One PPP case study project in the Northern Cape Province is a brown field development project that offers insights into PPPs generic knowledge and experiences. The KHI

Solar One Project case study project is the first South African solar thermal power infrastructural energy project. The project was delivered by a foreign-based company as a PPP arrangement via a consortium formed by different investors, namely the Industrial Development Cooperation (IDC), the KHI Community Trust, and Abengoa Pty Ltd. The researcher analysed the most important implementation documents, the challenges and the opportunities that may increase successful PPPs implementation. The core factors that enhance the success of PPPs and key lessons learnt from previous failed PPPs projects were identified and recorded. Interviews were held with the project expert and organisational documents were analysed and synthesised. The researcher perused the project organisational and institutional documents, research papers, online news articles, developers' publications and the websites on this particular case study.

6.2.3.1 Project background, KHI Solar One Project

The KHI Solar One case study project is one of many projects that the Department of Energy (DoE) issued for competitive procurement to supply the required 1 400 MW of wind- and solar-based energy infrastructure investment in South Africa (Craig et al., 2017). The Department's implementation plan is informed by the need to diversify energy mix projects to enhance energy supply, security and affordability with increased transformation. The KHI Solar One case study project is one amongst other projects with an estimated value of R33,8 billion in energy infrastructure investment. The South African approach is to build energy infrastructure development through the PPPs, as part of the broader strategy to generate 17 800 MW by means of renewable energy by 2030. The KHI Solar One (KSO) PPP project is the first solar power plant that has been built by a Spanish company called Abengoa in South Africa and in Africa. It emulates the two previous Spanish-built solar plants that generate lower energy capacity in Spain.

The South African KSO solar thermal plant bolsters the generation of energy, which is superheated by steam and produces 50 MW of electricity that feeds into the Eskom national power electricity grid (KHI Solar One Pty Ltd, 2017). The KSO solar plant provides electricity to 45 000 households in South Africa. This solar thermal plant has reached the 24-hour operation milestone and solely depends on solar power. Upon completion of all phases it will generate electricity continuously (Abengoa, 2014). This case study project is characterised by numerous environmental and socio-economic benefits as it eliminates the generation of 183 000 tons of CO₂ per annum while producing clean power to the Eskom grid (IMF, 2017). The project enhances local economic development opportunities to the local businesses. This case project is located in Upington in the Kai Garib Local Municipality, Northern Cape Province, in South Africa. The KSO solar thermal project is the first solar power generated utility plant in South Africa and in Africa.

The case project comprises three developers who are also financiers, contractors and beneficiaries, namely Abengoa Solar South Africa (Pty) Ltd, the Industrial Development Cooperation and the KHI Community Trust, who are major consortium partners through a PPP arrangement.

6.2.3.2 Project location

The case study project development incorporates 600 hectares of acquired land and is located approximately 20 km southwest of Upington, a town in the Kai Garib municipality just off the Lutzputs Road D3276 (Abengoa, 2016). The case study project site is located on Portion 3 of the Farm McTaggards Camp 453 and falls within the jurisdiction of Ward 8 in the Kai Garib Local Municipality. However, the project site is closer to Keimoes and Upington (Abengoa, 2016). The area is a brown field site and is adjacent to the Eskom powerline that is approximately 4 km south of the project site, and the Gariep River, which is approximately 10 km south of the project site (Abengoa, 2016). Access to the site is via the Lutzputs Road, a semi-tarred and gravel road. Figure 28 shows the regional locality of the project as well as the project site layout.



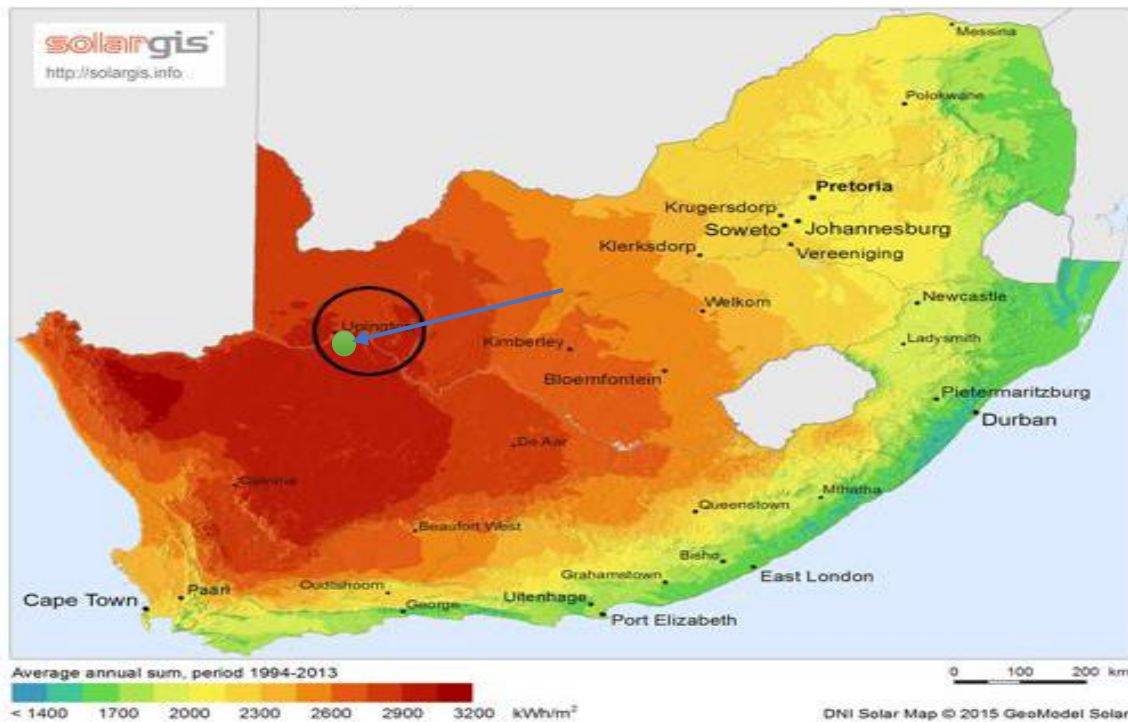


Figure 28. KHI Solar One Map.

Source: Solargis www.solargis.info (2016) and Craig et al. (2017)

6.2.3.3 Stakeholders

The KHI Solar One PPP case study project is characterised by the PPPs arrangement among three major development partners and numerous stakeholders that are actively involved in the project, with each stakeholder having different duties and responsibilities. The client of the project is the Department of Energy, Abengoa Solar South Africa (Pty) Ltd and IDC, while the KHI Community Trust is the developer. The project also has multilateral financial institutions, which provide financial support to the project through loans as stakeholders. The case study documents show that the Department of Energy provided guarantees to the IDC, Abengoa Solar South Africa (Pty) Ltd and the KHI Community Trust as developers (Abengoa, 2016). According to case study documents, the Kai Garib Municipality is the owner of the land and politically champion the case study project. The KHI Community Trust is a community trust that is backed through Broad-Based Black Economic Empowerment (BBBEE) and has stakes in the project (Abengoa, 2016). Broad-Based Black Economic Empowerment is the economic empowerment of all black people and the inclusion of women, youth, people with disabilities and people living in the rural areas, through diverse but integrated socio-economic strategies (RSA, 2003).

The KHI Solar One project ownership is structured as follows:

- a. Abengoa Solar South Africa (Pty) Ltd holds 51%
- b. Industrial Development Cooperation holds 29%, and
- c. KHI Community Trust holds 20%

Abengoa Solar Power South Africa (Pty) Ltd, the IDC and the KHI Community Trust, as the developers, were compliant to developmental legislations. The developers further provided project and site management, and contracted the contractors and the service providers (Solek Renewable Energy Engineers, 2014). The domestic and multilateral financial institutions provided financial support to the project through loans, while the client provided guarantees to the financing of the project (Abengoa, 2016). Kai Garib Local Municipality, the province and national government provided political support to the development of the project.

6.2.3.4 Project funding

The KHI Solar one case study documents show that the total costs of the project averaged \$450 million used over a period of four years. The case study documents indicate that the multilateral financing partners in the KHI Solar One PPPs project includes the Dutch Development Bank, with a Euro contribution equivalent to R312 million (EIB, 2017). The European Investment Bank contribution to the project is €90 million (CSP World.org, 2015). The contribution from the International Monetary Fund, which is a division of the World Bank, in US\$, is equivalent to R725 million (CSP World.org, 2015). The other financing streams to the project are the contributions of several domestic development finance institutions that average R2 346 million (CSP World.org, 2015). The Clean Technology Fund (CTF) contribution to the project is averaged at \$15.0 million, and the contribution from the Development Bank of South Africa and Proparco with long-term loans averaged R289 million and R179 million each (CSP World.org, 2015).

6.2.3.5 KHI Solar One project implementation

It is important to highlight that while the KHI Solar One PPP energy infrastructure investment project construction and development extended over time, the solar energy power plant currently delivers 50 MW to the Eskom power electricity grid (EIB, 2017). The case study documents show that the 50 MW of the project energy it generates contributes to the South African 46 GW; this is an important milestone because 45 000 households in South Africa benefit through this project (Seyer, 2014). The analysis of KHI Solar One implementation is structured in terms of the following sub-themes: PPPs drivers in public infrastructure investment impact on public finance

constraints in public infrastructure investment, comprehensive PPPs knowledge, most important success factors, and lessons learnt from the failed projects.

6.2.4 Case study description Project 2: R4 Expressway Project in the Czech Republic

The Czech Republic's strategic location in Central Europe gives the country some advantage (Transport Strategy, 2011). This advantage has the potential to improve the country's position as strategic logistical hub in Europe. Most transport motorways in the Czech Republic are not incorporated in the TEN-T, which aims to improve the international freight transport funded by the EU cohesive funds. This researcher justified the selection of this case study because the R4 Expressway is excluded from the TEN-T transport network, which is public infrastructure that is funded through EU cohesive funds. The objective of selecting this case study was to investigate PPPs experiences and learn key lessons. The R4 Expressway transport investment infrastructure and development is a PPP project that delivers public transport infrastructure investment. The researcher collected data on the R4 Expressway case study project and rigorously analysed documents related to the project. The R4 Expressway case study project in the Czech Republic is a transport investment and development project that provided insights into generic knowledge of and experiences in PPPs. The R4 Expressway case study project is the second Czech Republic PPPs transport infrastructure investment implemented after the failure of the first piloted projects financed through a domestic-based company via a PPP arrangement. The researcher analysed the documents and identified challenges and the opportunities which enhance or hinder PPPs successful implementation. The researcher recorded the most important factors, which enhanced PPPs' success and key lessons learnt from previous failed projects. The researcher analysed and synthesised organisational documents and conducted in-depth face-to-face interviews with the key project stakeholders. The researcher perused the project organisational and institutional documents, research papers, online news articles, developers' publications and relevant websites.

6.2.4.1 Project background

The R4 Expressway is a partially built expressway that connects the Czech Republic's capital (Prague) to the South-West Bohemia region and Bavaria as a first class road. The case study document analysis revealed that the Czech Ministry of Transport planned to construct 84 km of the highway through a PPP scheme. However, the currently completed portion of the highway comprises 47 km. The analysis of case documents revealed that 4.8 km of the highway is still under construction while 32 km of the highway still needs to be built. The remaining portion of the

R4 Expressway was subjected to cost-benefit-analysis (CBA) studies for approval. Although the Czech Republic is entitled to EU structural and cohesion funds, the R4 Expressway is excluded. EU structural and cohesive funding is dedicated for transport infrastructure investment and development under the TEN-T framework. The analysis of case documents revealed that the R4 Expressway does not form part of the TEN-T network that will be financed from 2014 to 2020 via the EU funds. The analysis of the documents revealed that the EU regional development funds and the Czech Republic's public finance are constrained regarding public infrastructure investment meaning that PPPs are options in the R4 Expressway project.

Case study document analysis revealed that, despite public finance sustainability uncertainty, the Public Sector Comparator (PSC) approved the R4 Expressway construction via a PPP framework. The Czech Republic's PPP framework is based on an availability payment mechanism. The R4 Expressway project is implemented via the Design Build Finance Operate and Maintain (DBFOM) model. The R4 Expressway project is a concessionaire investment approach that spreads over 30 years and already has completed parts that are considered through the Operate and Maintain (O&M) model. The financing structure of the R4 Expressway PPP project is based on the Outline Business Case (OBC) recommendations as part of the Public-Sector Comparator. The case document analysis highlighted the public finance constraints in the construction of the Czech Republic's highways with a limited public budget. Further, the case study shows that PPPs in the Czech Republic's transport infrastructure investment is considered to overcome the short-term financing difficulties. Consideration of the risks is a major factor via the consideration of PPPs and risks are appropriately allocated to improve the realisation of social benefits and inefficiencies. PPPs are considered based on principles of value for money in the R4 Expressway development. The analysis of documents also revealed that the political will is needed to ensure PPPs successful implementation and full enforcement of contracts.

6.2.4.2 Project location

According to the case study documents, the R4 Expressway PPP transport infrastructure investment and development project is 84 km in total and begins in Prague, the capital, and ends in Mirovice. The 8.6 km of the R4 Expressway began in Prague and Jiloviste with finished section S 24,5/100 built between 1966 and 1972. Section S 24,5/100 of the R4 Expressway began in Jiloviste and ended in Pribram, while 32 km was started in 1971 and completed in 1989. The S 22,5/80 began in Pribram and ended in Haje and is 4,8 km long. The construction dates back to 04/2015 and was expected to be completed by the end of 2017. The remaining 32 km is planned at R25,5/100 which will be built in five phases. The 6.6 km S 22,5/80 operates as an

expressway from Mirovice and was completed as part of the R4 Expressway built between 2005 and 2010. Figures 29 and 30 illustrate the project development layout and site layout plan.

Highways and expressways in the Czech Republic

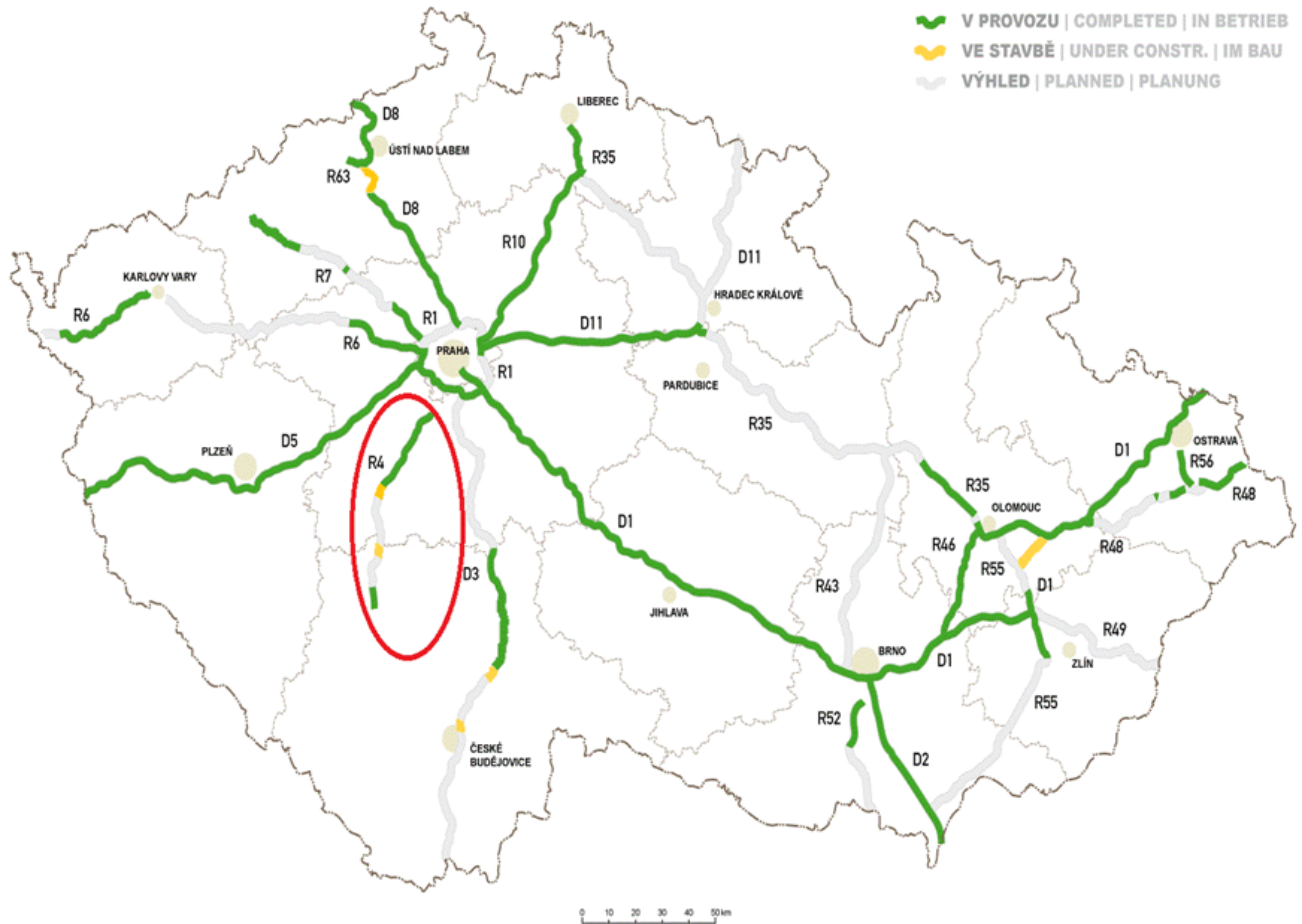


Figure 29. R4 Development location.

Source: www.ceskedalnice.cz (2015)

As shown in Figure 29, the Czech Republic has several highways that connect to the capital Prague and other towns. Figure 29 shows that highways are completely developed while a few highways are under construction. As shown in Figure 30, a large number of highways are still planned and the R4 Expressway project reflects various completed sections while others are still under construction or in the planning phases.

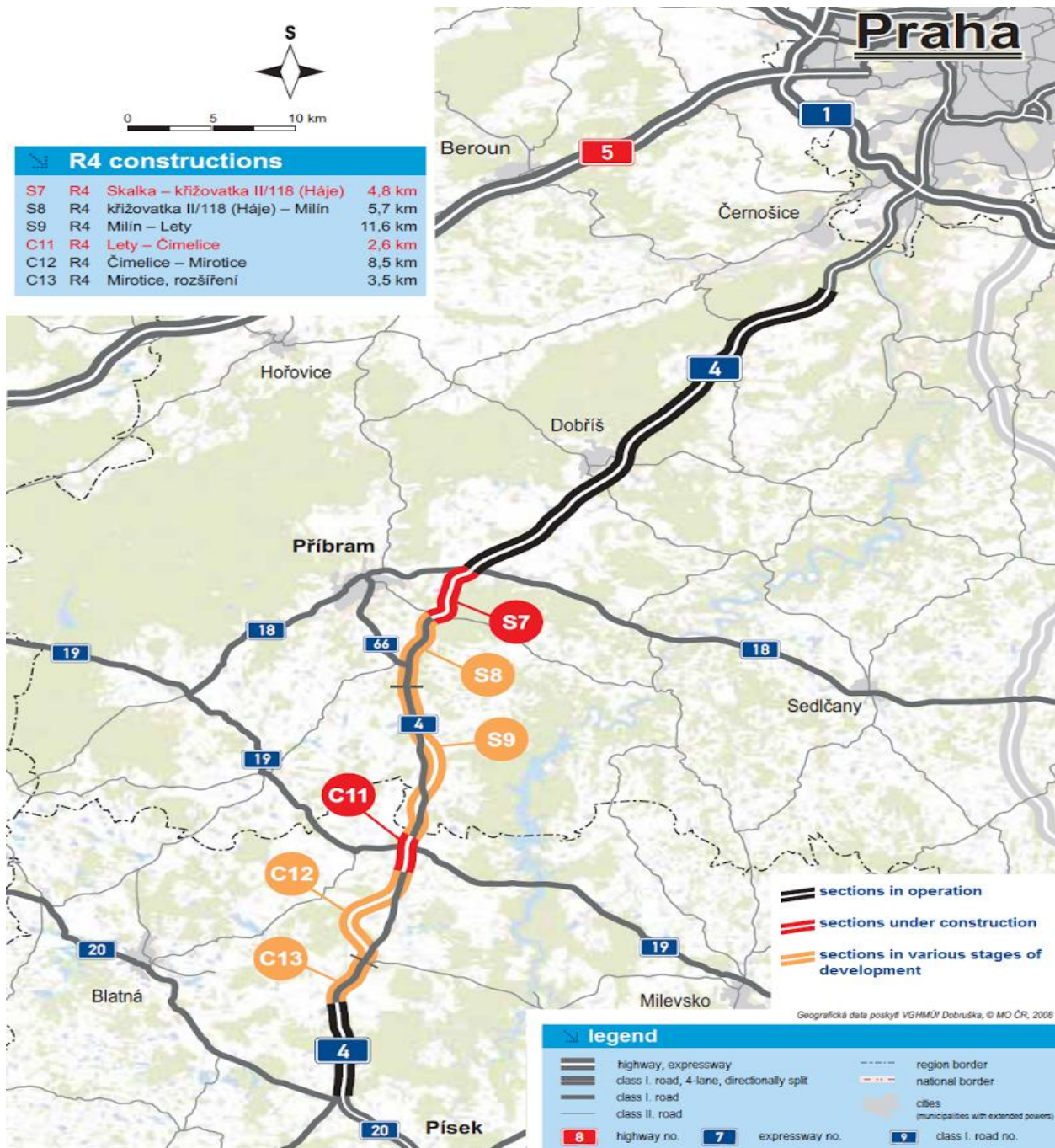


Figure 30. R4 Expressway site layout.

Source: Road and Motorway Directorate of the Czech Republic (2015)

As shown in Figure 30, there are sections that are operational, while others are under construction. Various sections of the highway are developed while others still need to be developed.

6.2.4.3 Project stakeholders and the funding stream

Case documents showed that project stakeholders in the R4 Expressway development project comprise the investor and client, financing institutions such as domestic development banks, and multilateral development finance institutions. Investment funds supplement primary financing sources in transport infrastructure investment projects via a PPP framework. The case study project has design and engineering firms, which are responsible for designing and redesigning the project whilst also obtaining relevant permits and approval certificates on behalf of the developers and the client. The project involves construction project managers who are responsible for managing construction on-site, and various contractors and subcontractors participate and contribute to the project in phases and stages. The remaining phases of construction of the R4 Expressway averaged €275 million in Capex funding which has been publicly procured through an open tendering process that reflects transparency in the available payment mechanism.

6.2.4.4 R4 Expressway implementation experiences

The case study reveals that the R4 Expressway project, a longstanding project dating back to 1966, is an important project characterised by completion in different phases. The last leg of the project completion comprises the remaining 32 km and is a big milestone to improve transport inefficiencies.

6.3 Findings from case study documents and interviews

The study interviewed two case study project interviewees to elicit their contribution to the comprehensive understanding of PPPs in public infrastructure investment and development. The selected case study project interviewees are shown in Table 12 with illustrated interviewees' industry experience in years, their designations and the infrastructure type of experiences. Interviews were audio and textually recorded. In the conducted interviews, five themes emerged and Table 12 shows the thematic analysis of interview questions which are discussed in the following sections.

Table 12. Thematic analysis of interview questions

Questions presented in the interview	Themes that emerged from the responses to each question
What constrains public finance in public infrastructure investment?	5-Environmental factors 6-Economic factors 4-Social factors
How does the impact of limited public finance affect public infrastructure investment?	11-Investment impact 8-Economic impact 5-Social investment impact
How can PPPs be optimised as alternative financing instruments in public infrastructure investment?	8-Instrument 5-Contract 4-Method
What inspires Public-Private Partnerships as an alternative financing instrument?	5-Financing constraints 4-Financing structure 2-Long-term payment methods
What are the important core success factors in Public-Private Partnerships implementation?	9-Risk allocation 6-Good partnerships 6-Legal framework 7-Land acquisition 4-Competition 8-Technical studies 9-Cost benefit analysis 7-Monitoring and evaluation 7-Contract management 6-Project management 5-Political will
Why is it important to use cost-benefit analysis in Public-Private Partnerships?	7-Value for money 8-Affordability 7-Feasibility
How does risk allocation affect Public-Private Partnerships?	9-Fiscal risks 7-Project risks 5-Implementation risks 4-Financing risks
Why is it important to have partners who have the financing capacity in Public-Private Partnerships?	5-Strong markets 6-Preparedness 4-Implementation
Why is it important to have effective policy and regulatory framework when implementing Public Private Partnerships?	8-Implementation 7-Contract enforcement 5-Arbitration
Why is it important to have a well organised public sector?	6-Competitiveness 5-Readiness 4-Efficiency
What are the key lessons of failed PPPs projects?	6-Failure 4-Financial 5-Project 7-Costs 9-Legislative 5-Methodological
Why is it important to undertake technical feasibility studies in Public-Private Partnerships?	6-Project feasibility 4-Project fit 4-Bankability
What is the importance of project management in Public-Private Partnership?	6-Costs 7-Schedule

Questions presented in the interview	Themes that emerged from the responses to each question
	5-Scope
How can contract management in Public-Private Partnerships be improved?	6-Knowledge 6-Monitoring
Why is it important to adequately monitor and evaluate Public-Private Partnership implementation projects?	6-Implementation risks 7-Risks
Why is shared authority important in Public-Private Partnership projects?	8-Decision making 6-Strategy

Source: Author's own compilation (2017).

The numbering that appears in the above table denotes the range of responses, as expressed by participants, in the analysis of data. The numbers represent the total coverage count of each concept that directly appears in the data.

6.3.1 Theme 1: Factors constraining public finance in public infrastructure investment

Theme 1 included factors that constrain public finance in public infrastructure investment. Respondents were asked about factors that constrain public finance in public infrastructure investment. The findings showed that fiscal management, economic and social factors were predominant as indicated by some responses:

“Public finance is restricted by the fiscal consolidation measures and the numerous austerity measures in public infrastructure investment” (A). “Public finance is restricted by numerous social, economic and environmental factors that affect numerous governments” (B).

“The current environmental issues demand that governments invest in programs that reduce environmental catastrophes because of the changing climate” (A). “Infrastructure investment is affected because much capital required in infrastructure investment is channelled to social, economic and environment and less capital is reserved for infrastructure investment” (B).

It was found that limited public finance in public infrastructure investment is driven by public finance limitations and constrains the financing of alternative energy infrastructure investment projects. Limited budgets and strict EU cohesive funding in public infrastructure that does not cater for funding of infrastructure outside the TEN-T framework were further constraints.

Case study document analysis findings revealed that public finance constraints in energy infrastructure investment projects elevates considering PPPs as alternative financing instruments to develop energy infrastructure investment. In support, the document findings revealed that

increased social and economic challenges constrain public infrastructure investment and development because of increasing fiscal consolidation measures.

6.3.2 Theme 2: Implications of constrained public finance public infrastructure investment

Theme 2 involved the implications of constrained public finance in public infrastructure investment and development. Respondents' responses showed that economic, investment, fiscal, and social implications were predominant as indicated by some responses:

“There is huge investment impact because the public sector is now limited to invest in critical infrastructure investment and this holds the country’s development agenda” (B).

“While it is important to comply with fiscal regulations, the people on the ground feel the pain because there is lack of social infrastructure investment and lack of job opportunities” (A).

“The current economic climate requires that the public sector invests more in public infrastructure because of the increasing unemployment rates, inflation and economic downgrades” (A).

“There is need to access more money, because the country is limited to borrow, the fiscal deficits are rising, public debt is ballooning and the private sector is seen as able to build the infrastructure” (A).

The findings from documents also revealed that the implications of constrained public finance in transport infrastructure investment affect the construction and development of the R4 Expressway. The document findings revealed that the long-term development of the 84 km highway since 1966 is evidence that constrained public finance limits public infrastructure investment. The document findings revealed that increasing constraints in public finance create transport infrastructure inefficiencies that result in backlogs in the development of the highway.

The findings from documents revealed that the implications of limited public finance in energy infrastructure investment and development included high cost because the public sector has limited borrowing power. The impact of constrained public finance in public finance investments affects the socio-economic wellbeing of South Africans and gives rise to increasing electricity prices as a consequence of energy infrastructure financing constraints. The findings from documents revealed that increasing environmental costs give rise to increased use of fossil fuels rather than the financing of alternative energy infrastructure systems.

6.3.3 Theme 3: Optimising PPPs in public infrastructure investment

Theme 3 involved comprehensive knowledge of the PPPs in public infrastructure investment and development. Respondents were asked to give their opinions about their knowledge of PPPs in public infrastructure investment. It was found that PPPs were mainly regarded as contracts and there was a misconception of PPPs knowledge in public infrastructure investment as indicated by some responses:

“PPPs are not the extra money that the public sector can use in public infrastructure, but are long term contracts to build infrastructure” (B).

“There is often a misconception to think that PPPs are a source of extra money in the public sector, but PPPs are contracts between the public and the private sector where the private sector finances the infrastructure and the public sector is required to pay in terms of the contractual agreement” (A).

Documents revealed that KHI One Solar energy investment project delivery highlights that PPPs are long-term contractual agreements that are used to deliver public infrastructure investment and development. In this case study, developers and contractors were bound by long-term contract performance agreements of up to 25 years with payments required annually. The most important factor that characterised the KHI Solar One project, is the structuring design of partnerships within this long-term contract. PPPs are understood as contractual agreements that hold the principal and development agency (owner and the developer) partners together to build transport infrastructure utilities because of public finance constraints. Document findings revealed that a comprehensive understanding of PPPs required the methodological development of an adequate implementation approach.

6.3.4 Theme 4: core PPPs success factors

Theme 4 concerned the important core PPPs success factors in public infrastructure investment and development. The findings show that risk allocation, legal frameworks, land acquisition, technical feasibility studies, cost benefit analysis, contract management, political will, monitoring and evaluation were predominant, as illustrated by some responses:

“Risk allocation in PPPs is the main success important factor that increase the success of public infrastructure investment project” (B). “In general PPPs require good partnerships with shared objectives to implement public infrastructure investment projects” (B).

“PPPs require matured and adequate legal framework to enforce the public infrastructure investment contracts” (A). “To be specific, PPPs require the upfront acquisition of land because the delays in land acquisition jeopardize PPPs implementation” (B).

“PPPs require good private sector agency that can compete in public infrastructure investment and development” (A).

“It is important that technical studies are undertaken to explore the practical implementation of PPPs” (A).

“The cost benefit analysis is important to determine the affordability of the PPPs and the value for money in PPPs implementation” (A).

“It is important to adequately manage contracts of PPPs in public infrastructure investment because of implementation risks” (A).

“PPPs require strong political will and the enforcement of public infrastructure investment contracts” (B).

“PPPs implementation require constant and frequent monitoring and evaluation because of the inherent risks that are a challenge in PPPs, and the public sector is required to constantly monitor those risks that are in PPPs” (A).

The analysis of the KHI Solar One revealed that the selection of experienced firms to construct similar energy projects through an open competitive bid or tendering process is an important factor. The case study documents revealed that the willingness of both partners to collaborate in PPPs projects, as shown in the KHI Solar project, improves project implementation. PPPs implementation stimulates the appetite of financing institutions to become partners and provide finance. Documents showed that the country’s political will and methodological support has the potential to increase the number of PPPs being implemented.

Consistent with the interview findings, the document findings revealed that the legal frameworks and regulations that were developed contribute to a successful PPP project framework. It was found that the technical feasibility and cost benefit analysis studies increased the bankability of PPPs projects, that comprehensive technical feasibility studies showed the economic value and affordability of the project, and that they increased the value for money principle. Also, the innovative use of technology through solar energy was the most important environmental factor that improved the project implementation.

The document findings revealed that a diversified energy mix was considered due to climate change concerns. It showed that adequate sharing of authority, decision making and political will are important elements that contribute to the project's successful implementation and that political and legislative risks negatively affect the projects. The transfer of skills and technical knowledge are important risks regarding the project's sustainability in the long term, and comprehensive project management knowledge and experience are critical to the delivery of infrastructure investment projects.

It was found that PPPs require technical feasibility studies, cost benefit analyses, economic and social benefits, value for money and risk allocation. The documents revealed that political support and long-term strategic infrastructure investment and development objectives increase PPPs successful implementation. The R4 Expressway's PPP transport infrastructure investment and development was openly procured on a competitive basis to a competitive bidder. It was found that it is important to have partners that are financially capable. The selected bidder should demonstrate the capacity of financing since most PPPs are structured around design, build, finance, operate and maintain. It was found that the R4 Expressway transport infrastructure investment project was considered through an availability payment approach. PPPs risks should be allocated adequately to the private partner to manage appropriately. Further, the presence of financial markets plays an important role in PPPs implementation, while domestic and multilateral financial institutions secure the provision of finance. The documents revealed that the financial injection of €275 million improved project equity in the R4 Expressway project and that PPPs require diverse stakeholders who understand contracts. PPPs also require highly specialised technical skills and comprehensive project management knowledge.

6.3.5 Theme 5: Key lessons learnt from failed PPPs projects

Theme 5 covered the key lessons learnt from failed PPPs projects in public infrastructure investment and development projects. Respondents were asked to give their views on experiences and important lessons learnt from failed projects. It was found that key lessons learnt from failed projects included avoidance of financial risks, increased political will, project management lessons. Project and institutional structure were predominant as indicated by some responses.

“It is important to learn lessons from the failure of public infrastructure projects in order to improve the delivery of PPPs projects” (B). The failed projects provide critical project

management lessons to improve the processes when developing PPPs infrastructure investment projects” (A).

“There are financial risks attached to the failure of projects and they are so huge in that it is important to avoid these financial risks” (A). The legislative and procedural matured frameworks enhance the implementation of PPPs and it is important to highlight that the legislation must be conducive to PPPs implementation otherwise without that projects are doomed to fail due to lack of enforceable contracts” (B).

“There is a need for increased political will to realize the success delivery of PPPs contracts and there are many examples where PPPs have failed because of lack of political will and inadequate bureaucratic support” (A).

“The lessons from the failed projects should improve project management processes, lessened the implementation failure and improve the project costs, schedule and the quality of projects in order to avoid the increasing failure in projects” (A).

“The importance of lessons from the failed projects often improve the institutional structure, improve the delivery of project with essential knowledge, enhance the need for political and bureaucratic support and improve the objectives of why projects are being implemented” (A).

The results showed that PPPs’ successful implementation requires the learning of lessons from failed projects. The R4 Expressway transport infrastructure investment project provided clear lessons on PPPs project failures. The lessons learnt from the first failed PPPs projects improved project delivery of the R4 Expressway transport infrastructure investment. It was found that it is important to have matured legal and regulatory frameworks to enable the delivery of PPPs projects and that failure of the first piloted PPPs projects was due to inadequate legal frameworks.

The study established that by learning from PPPs, the R4 Expressway project improved project risk allocation, project management processes and PPPs knowledge holistically. PPPs can be optimised as alternative financing instruments in public infrastructure investment and the implementation requires improved PPPs knowledge, increasing methodological support, matured legal and legislative frameworks and avoiding failure.

The findings revealed that adequate contract management and administration are important in order to avoid costly legal and financial burdens as a result of failure to implement PPPs projects. It is important to learn from failed projects. An important lesson is demonstrated

by the projects of the Abengoa Solar Company and IDC with numerous achieved milestones and delivery of various projects across the country. Improved methodological support, political will and adequate decision making are important lessons which the researcher could incorporate. The national, provincial and local government supported the project with the required resources which were important to the delivery of the project such as the acquisition of land. The case study found that a project's institutional structure is a major challenge and hampers project delivery in the long term.

Lack of strategic institutional structure that facilitates the transfer of technical skills and project knowledge in the long term was found to be a concern. The lessons learnt from the KHI Solar One project were that project management knowledge and skills had to be improved, a shared vision stimulated, and the willingness to implement projects holistically enhanced. It was found that it was important to improve the legal and legislative frameworks regarding the implementation of PPPs infrastructure investment projects. It was found that there were economic, social, technological, financial and environmental benefits to PPPs implementation.

6.3.6 Cross-case analysis

The study collected various sets of data as presented in Table 13. To cross-reference two case studies and interviews to identify differences and similarities, the study used a cross-tabulation method to explore relationships by tabling themes and categories. Table 13 shows the differences and similarities and the connections between the two analysed case studies and the interviews. These are highlighted by a colour coding system where the same colour denotes the same factors across the data set.

Table 13 Cross tabulation of KHI Solar One and R4 Expressway and the case study interviews

Research Question	Case Study 1 (Document analysis)	Case Study 2 (Document analysis)	Case Study Interviews (A and B)
SRQ1: How does limited public finance constrain the financing of public infrastructure investment?	<ul style="list-style-type: none"> - Limited budgets - Limited borrowing - Weak microeconomic climate - Economic factors - Social factors 	<ul style="list-style-type: none"> - Public finance constraints - Fiscal consolidations - Maastricht criterion - Economic conditions 	<ul style="list-style-type: none"> - Maastricht restrictions - Austerity measures - Social factors - Economic factors - Environmental factors - Climate change conditions
SRQ2: What are the core important PPPs' success factors?	<ul style="list-style-type: none"> - Project management knowledge - Technical knowledge and skills - Monitoring and evaluation - Risk allocation - Decision making - Political will - Shared authority - Innovative technology - Economic, environment, social and technical benefits - Feasibility studies - Affordability - Cost benefit analysis - Bankability - Legal framework - Methodological support - Presence of financing institutions - Willingness to implement PPPs - Open, transparent and competitive tendering 	<ul style="list-style-type: none"> - Land acquisition - Specialised technical skills - Project management knowledge - Strong financial markets - Partners financing capacity - Competitive bidding and tendering - Economic and social benefits - Risk allocation - Long-term strategic vision - Cost benefit analysis - Technical feasibility studies 	<ul style="list-style-type: none"> - Risk allocation - Good partnerships - Shared objectives - Matured legal framework - Land acquisition - Strong private sector presence - Technical feasibility studies - Cost benefit analysis - Affordability - Value for money - Contract management - Strong political will
SRQ3: What are the key lessons learnt from failed PPPs projects?	<ul style="list-style-type: none"> - Improve project management delivery - To realize social, technological, financial 	<ul style="list-style-type: none"> - Improved project management knowledge 	<ul style="list-style-type: none"> - Learn from failure - Improve project delivery - Avoid financial risks

Research Question	Case Study 1 (Document analysis)	Case Study 2 (Document analysis)	Case Study Interviews (A and B)
	<ul style="list-style-type: none"> and environmental benefits -To improve legislative framework -To enhance shared vision -To improve project management skills -To enhance the transfer of technical skills and knowledge -To improve the strategic institutional structure -To enhance methodological support -To increase political will -To improve decision making -To learn from failure -To avoid financial costs -To improve contract management -To avoid failure 	<ul style="list-style-type: none"> -Enhanced methodological support -Improved risk allocation -Improved project management processes -To learn lessons from failure -To gain lessons 	<ul style="list-style-type: none"> - Improve legislative frameworks - Enforce PPPs contracts - Increase political will - Improve bureaucratic support

Source: Author's own compilation

As shown in Table 13, some similarities and differences were presented when the research sub-questions were explored in case study interviews and from the document analysis in both case studies. As shown in Table 13, there are key lessons that can be learnt from failed PPPs projects to improve the successful implementation of PPPs in public infrastructure investment.

6.4 Expert interviews

The study also interviewed five further experts for their contribution to the comprehensive understanding of PPPs in public infrastructure investment and development. The selected five experts interviewed are shown in Table 13 with illustrated interviewee industry experience in years, designation and the infrastructure type of experiences in Table 14. Interviews were audio

and textually recorded, following the same procedures as with the interviewees in the two case studies.

6.4.1 Profile of respondents

The selected five experts in this study comprised four males and one female, following the snowballing strategy discussed in Chapter 5, and with each participant recommending another participant involved in the financing of public infrastructure investment and development as well in PPPs implementation. Table 13 shows the participants' level of education by gender and nationality.

Table 14. Experts' demographic profile.

Racial groups	Gender		Level of education					Nationality	
	M	F	Dip	BA	Hons	MA	PhD	SA	Czech
African	1	0	0	0	0	1	0	1	0
White	3	0	0	0	0	1	2	1	2
Coloured	0	1	0	0	1	0	0	1	0
Total	4	1	0	0	1	2	2	3	2

Source: Author's own compilation (2017)

As shown in Table 14, one participant has the minimum qualification of an honours degree while the other participants had master's and doctoral degrees. Table 14 highlights that the selected participants in this study were relevant because of their level of knowledge of the current trends in the financing of public infrastructure investment and development and the PPPs implementation as evidenced by their level of academic achievements. The selected participants in the study were justified as applicably fit to contribute to enhanced understanding of the topic under study. The study justified the selected participants' industry experience with different classes of infrastructure investment and development. The study line of inquiry and the research strategy justified the selection of participants who had extensive experience and knowledge of public and private infrastructure investment and development to answer the research questions asked in this study. Table 15 illustrates the study participants' industry experience.

Table 15. Participants' industry experience

Designation	Interviewee ID	Industry or sector			Infrastructure investment project types & no of projects				Total experience
		Academic	Public	Private	Public Sector Projects	No	Private-Sector Projects	No	No of Years
Director	L	0	1	1	Public	14	Private	48	17
P. Manager	S	0	0	1	--	0	Private	16	10
Manager	M	0	1	0	Public	14	--	0	11
Professor	P	1	1	1	Public	30	Private	23	24
S. Lecturer	W	1	1	1	Public	21	Private	15	14

Source: Author's own compilation (2017)

As shown in Table 15, the participants selected for this study using the snowball approach had various designations ranging from academic to public- and private-sector industry experience. Table 15 shows that the diverse mix of participants' industry experience provided a diverse mix of experiences and opinions concerning the investigated phenomenon. As shown in Table 15, participants implemented public and private infrastructure investment projects ranging from 10 to 24 years. The selected grouping of participants in this study was justified and validated by their extensive experience and knowledge in the implementation of public and private infrastructure investment projects. Using the snowball approach in selection of participants complemented this study research approach as well as the methodological design because of participants' fit to answer the study's primary research question. The thematic analysis of interviews is shown in Table 16.

Table 16. Thematic analysis of interview questions

Questions presented in the interview	Themes that emerged from the responses to each question
What constrains public finance in public infrastructure investment?	5-Environmental factors 6-Economic factors 4-Social factors
How does the impact of limited public finance affect public infrastructure investment?	11-Investment impact 8-Economic impact 5-Social investment impact
How can PPPs be optimised as viable financing instruments in public infrastructure investment?	8-Instrument 5-Contract 4-Method

Questions presented in the interview	Themes that emerged from the responses to each question
What stimulates Public-Private Partnerships as alternative financing instruments?	5-Financing constraints 4-Financing structure 2-Long-term payment methods
What are the important core success factors in Public-Private Partnerships implementation?	9-Risk allocation 6-Good partnerships 6-Legal framework 7-Land acquisition 4-Competition 8-Technical studies 9-Cost benefit analysis 7-Monitoring and evaluation 7-Contract management 6-Project management 5-Political will
Why is it important to use cost-benefit analysis in Public-Private Partnerships?	7-Value for money 8-Affordability 7-Feasibility
How does risk allocation affect Public-Private Partnerships?	9-Fiscal risks 7-Project risks 5-Implementation risks 4-Financing risks
Why is it important to have partners who have the financing capacity in Public-Private Partnerships?	5-Strong markets 6-Preparedness 4-Implementation
Why is it important to have effective policy and regulatory framework when implementing Public-Private Partnerships?	8-Implementation 7-Contract enforcement 5-Arbitration
Why is it important to have a well-organised public sector?	6-Competitiveness 5-Readiness 4-Efficiency
What are the key lessons learnt from failed PPPs projects?	6-Failure 4-Financial 5-Project 7-Costs 9-Legislative

Questions presented in the interview	Themes that emerged from the responses to each question
	5-Methodological
Why is it important to undertake technical feasibility studies in Public-Private Partnerships?	6-Project feasibility 4-Project fit 4-Bankability
What is the importance of project management in Public-Private Partnerships?	6-Costs 7-Schedule 5-Scope
How can contract management in Public-Private Partnerships be improved?	6-Knowledge 6-Monitoring
Why is it important to adequately monitor and evaluate Public-Private Partnership implementation projects?	6-Implementation risks 7-Risks
What is the significance of shared authority in Public-Private Partnership projects?	8-Decision-making 6-Strategy

The findings of the case study and case study stakeholders have been presented in the previous section. In the following section the study presents the findings of experts' interviews.

6.5 Phenomenon 1: Nature of public finance constraining factors

One of the key questions addressed in the empirical study related to the constraints of public finance in public infrastructure investment. As shown in Figure 31, all respondents indicated that the economic factors, fiscal management and social factors constrain public finance in public infrastructure investment. Additionally, respondents explained that the constraining factors jeopardise the long-term construction and development of public infrastructure. The underlying reason for this cause, as explained by participants, was that the country's development constrained economic development goals. Figure 31 shows the factors given by respondents that constrain public finance in public infrastructure investment; these factors were ranged and ranked.

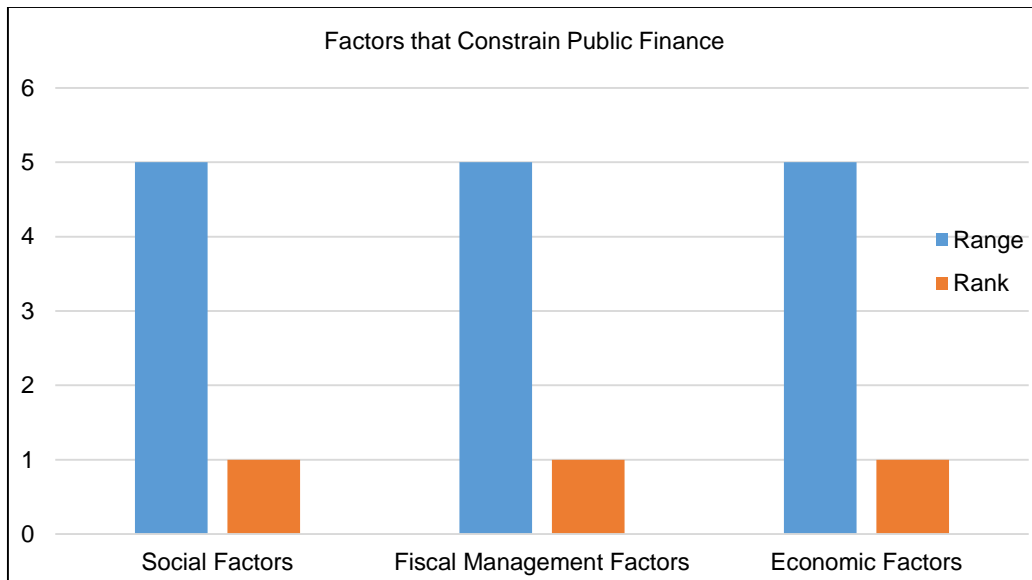


Figure 31. Ranged and ranked nature of factors that constrain public finance.

Source: Author's own compilation (2017)

It was found that many factors constrained public finance, such as social factors, increased educational costs, health care expenses, social pension benefits and unemployment rates. Findings revealed that fiscal management factors that constrain public finance were predominantly accelerating debt, fiscal deficits, strict fiscal management, fiscal restrictions, limited infrastructure finance and the structure of public finance. Economic factors gave rise to competing priority spending programmes, educational requirements, infrastructure deficits, lack of spending in infrastructure, pro-poor development programmes and an uncertain economic climate. Figure 32 gives a generic overview of the nature of public finance constraints affecting the financing of public infrastructure investments.

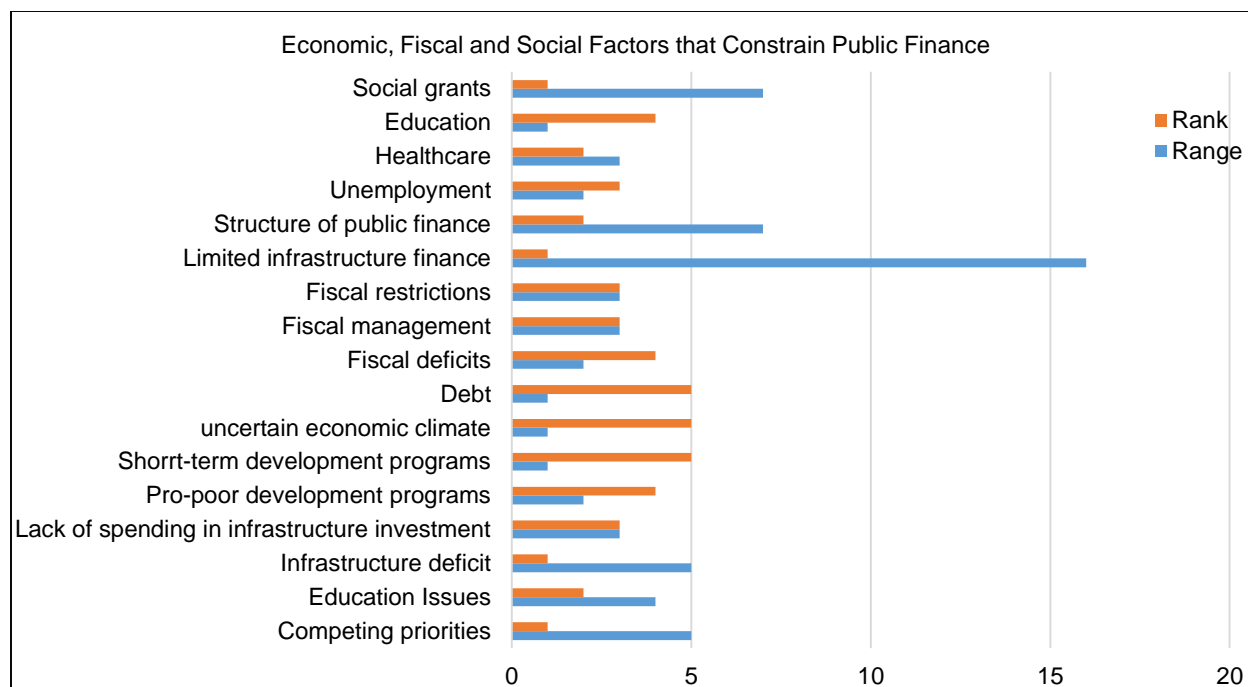


Figure 32. Economic, fiscal management and social factors that constrain public finance.

Source: Author's own compilation (2017)

Figure 32 presents a number of generic factors that constrain public finance in public infrastructure investment. It is necessary to look for alternative financing instruments that are sustainable in the long term. The nature of factors which constrain public finance implies that in the long-term public finance is still going to face some challenges, and limited public finance is a predominant challenge in public infrastructure investment. The following section briefly discusses the social, economic and fiscal factors.

6.5.1 Economic factors

This section discusses the economic factors that constrain public finance in public infrastructure investment. The interviews showed that competing spending, educational issues, infrastructure deficits, lack of spending on infrastructure, short-term development projects and an uncertain economic climate were predominant as indicated by some responses.

“The Czech Republic, Poland and Slovakia need to spend, and it is necessary to see these countries closing their public infrastructure gap” (P). “The economic downturn as well as the uncertain economic climate, limit public finance” (M). “The lack of money available in public infrastructure constrains development” (W).

“It is difficult to maintain the needed quality in public finance and respond to the infrastructure investment needs” (M). “It is difficult or if not impossible for government projects to borrow money from the private sector” (L). “Many public sectors competing priorities limit public finance” (M).

“It is difficult to maintain the needed quality in public finance and respond to the infrastructure investment needs” (M). “It is difficult or if not impossible for government projects to borrow money from the private sector” (L). “Many public sectors competing priorities limit public finance” (M).

“Politicians neglect the urgency of considered investment in public infrastructure investment” (S). “Costs widen up for countries to take care of huge networks developed which were created 100 years ago, the huge inherited heritage in Europe from the predecessors is very large and lack to properly maintain that inherited heritage, because it is a huge undertaking than to properly build” (W).

“Other countries like Germany are considered good with their public infrastructure, their motorway network is considered one of the best over the world; however, they created a huge network over the past and currently cause many problems in motorways” (W). “There are not many ways in which government can access private financing for use in projects directly” (L).

6.5.2 Fiscal management factors

This section presents fiscal management factors that constrain public finance in public infrastructure investment. Respondents indicated that infrastructure finance, structuring of public finance, fiscal restrictions and debt were predominant factors, as is shown by some responses.

“Public finance is limited due to government increased borrowing at national and departmental level due to debt issues” (L). “There is pressure on public deficits” (P), and that public finance is “limited in the financing of public infrastructure” and creates huge deficits” (W).

“There is lack of funding for infrastructure, (sic...) however, there are countries that do not face this problem because they efficiently manage their finances into infrastructure,

countries like Switzerland and Norway are examples of those countries who do not face infrastructure deficits” (W).

“I would say if you are looking at infrastructure deficits, the cause is lack of money available for infrastructure projects around Europe” (W). “I would probably say it is not the problem in all countries” (W). “There are usually restrictions or limitations in public finance” (L). “Some restrictions such as austerity measures limit public finance” (M),

“There is border of public deficit which is a Maastricht criterion” (P) and “there are not many ways in which governments can access private finance for projects directly” (L). “The design in public finance structure limits public finance” (M).

“The limit in public finance is of course the problem of public finance structure” (P). “The quality of public finance is needed” (M). “Infrastructure deficits are a problem in the financing of public infrastructure” (W). “I would say this is more general question of how public finance is structured and managed in the European countries” (W). “Politics are not able to increase public finance (sic.) and don’t want to increase the tax burden” (P).

“In general, there is need to invest more money in public infrastructure and if you compare data in the old EU countries you can see that, the new EU countries spend approximately about 1.5% of GDP in public investment per year, and the new member states such as the Czech Republic spend about 3% of GDP which is two times higher, but of course it is not enough and we need to find alternative money” (P). “Public infrastructure investment and development requires substantial amount of capital” (S).

6.5.3 Social factors

This section presents the social factors that constrain public finance in public infrastructure investment and development. Interviewees revealed that unemployment, social benefits, health care issues, the environment and education were predominant. Some responses include:

“The rising needs in health care, pensions, education as well as the pro-poor agenda programs constrict public finance” (M). “The problem of aging population increases pressure to public finance” (P).

“I would say that many governments speak about infrastructure and how they will invest to improve it, at the same time many infrastructure aspects are not popular and interesting for the electorate” (W).

*“I would say politicians prefer new developments, new schemes that are attention catching of the electorate but are not interested in the maintenance part of it, because it takes too long to maintain huge parts of infrastructure that were developed many years ago” (W).
“Politics instead overstretch the same limited finance” (L).*

*“There are increased health risks due to poor infrastructure as well as lack of access” (S).
“Social problems contribute to growth of the population” (P). “Aging population increases pressure to public finance” (P).*

“There is need to spend more money on pensions” (P), “mandatory expenditures (sic...) increases “social grants” and pension” (M). “Pro-poor agenda programs pressurise public finance” (L).

“Social and the economic impact (sic...) worsen the economic conditions and result to high levels of unemployment” (M). “lack of investment by investors (sic...) result to crime due to unemployment, lack of skills and are needed in the country to curb social problems” (M). “Economic factors contribute to limited investment” (S). “The numerous uncoordinated development programs limit public finance and its impact is felt economically” (P).

6.6 Phenomenon 2: Implications of constrained public finance

As shown in Figure 33, the interviews revealed that economic, financial, investment, and social constraints were predominant implications of constrained public finance. Figure 33 shows the findings on constrained implications in public infrastructure investment ranged according to the number of responses and ranked by the highest order expressed by respondents.

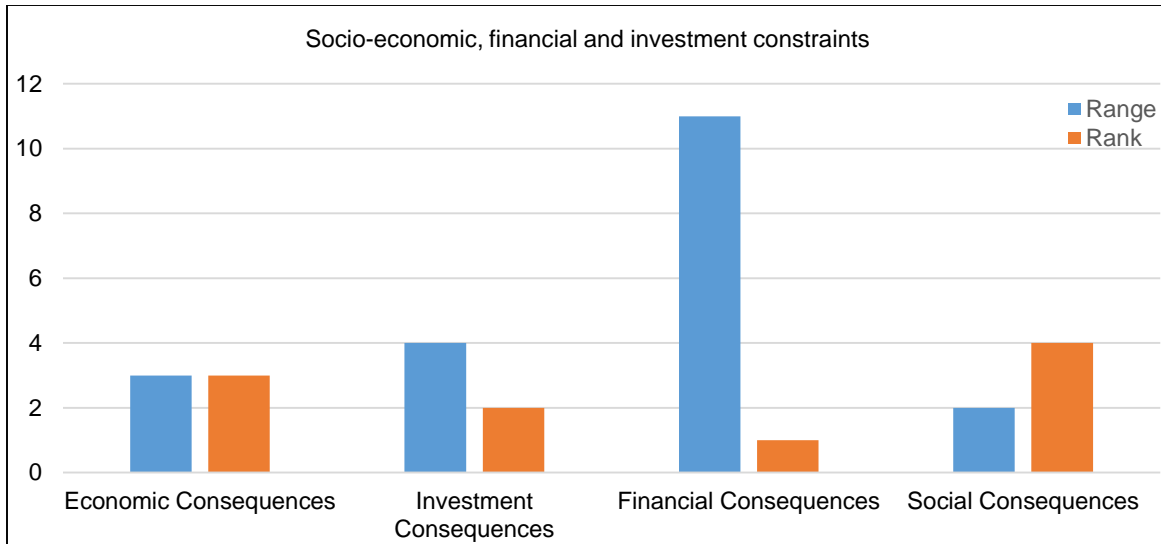


Figure 33. Impact of constrained public finance.

Source: Author's own compilation (2017)

As shown in Figure 33, the first ranked implication found was that limited public finance in public infrastructure investment gives rise to financial consequences, with the highest range. Investment consequences for public infrastructure investment were ranked second. As shown in Figure 33, it was found that economic consequences were ranked the third most highest, while social consequences were ranked fourth. Figure 34 depicts the types of consequences within the economic, financial, social and investment clusters of limited public finance in public infrastructure.

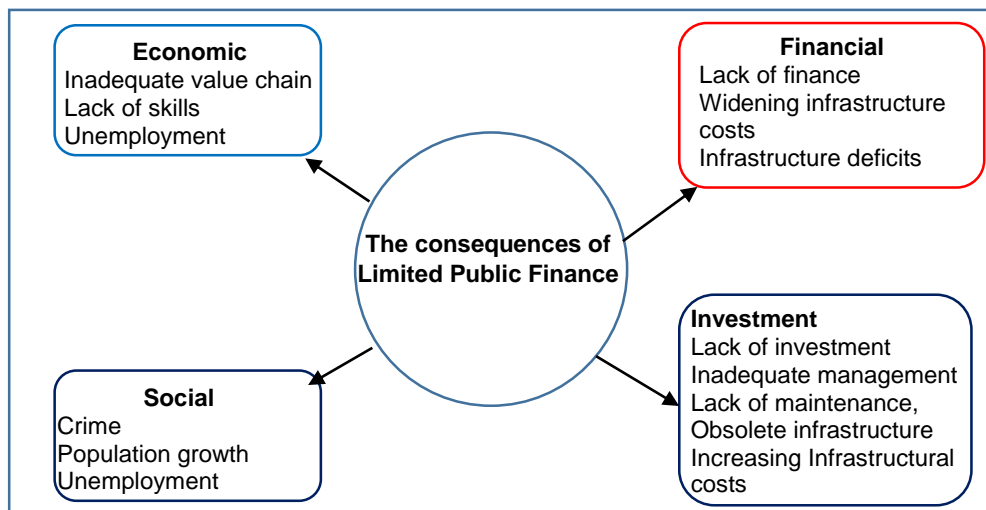


Figure 34. Description of respondents' impact of constrained public finance.

Source: Author's own compilation (2017)

As shown in Figures 33 and 34, the implications of constrained public finance have serious consequences. It was found that constrained public finance gives rise to social problems, investment challenges, financing difficulties and economic hardships, as indicated by some responses. However, as indicated in Figure 33, financial consequences were predominant and have serious implications for public infrastructure investment. Table 17 explains the implications of constrained public finance in public infrastructure investment in detail.

Table 17. Description of limited public finance consequences.

Economic	Financial
<p><i>Constraints result to poor infrastructure (S), to lack of access, lack of skills needed in the country, High levels of unemployment (M). Constraints result to job losses and to closure of construction industry firm's due to lack of government jobs (P). Lack of investment constrains the country's economic development output (L). Constrains are noticeable in small firms whose operations depend on government investment (W).</i></p>	<p><i>The old EU countries spend 1.5% of GDP in public investment per year (P). The costs accelerate and creates a huge problem (W). The decreasing fiscal revenue has huge consequences in infrastructure (S). To repair infrastructure is very expensive (W). This result to deteriorating current balance (L). Highways and environmental infrastructure is affected and there is not enough money to repair the infrastructure (P).</i></p>
Investment	Social
<p><i>Lack of investment by investors (M). There is lack of management because they are unable to create a master plan for the critical parts of the network overtime due to obsolete infrastructure (W). It is real problem to repair infrastructure because it is very expensive (S). The large sections of the network are left unattended and this is a big problem (W). If you neglect the day to day maintenance and only interested in fixing the infrastructure when obsolete is costly (W). The is neglect repair the large sections of infrastructure due to lack of funds (P).</i></p> <p><i>There is lack of management because they are unable to create a masterplan of maintenance and repairs of the critical parts of the network over the time and become obsolete and pose real problems, and to repair is very expensive (W). The infrastructure starts to fall apart and sometimes there are those critical moments such as accidents (W). Politicians and the public sector (sic...) don't do anything in infrastructure and it's a pity we must wait for those accidents to make some fixes (W) Governments owns 87.5% of projects but fund only 4.2% of projects (sic...) and China is the largest funder at 33.3% followed by international DFI (25%) (L). There is need to spend small every year for day to day maintenance to fix infrastructure (S). It cost the quarter of the amount needed to fix those large fixes (W).</i></p>	<p><i>Constrained finance contributes to lack of skills the country needs to increasing social problems (P). Limited public finance affects population growth because people will always find means to access public finance by increasing their birth rates (M). constrained finance increases health risks due to poor infrastructure and lack of access (L). It is most common that people when there are no jobs will commit crime (W). People with adequate skills are often affected and their skills become obsolete</i></p>

Source: Author's own compilation (2017)

6.7 Phenomenon 3: Optimising PPPs in public infrastructure investment.

It was important to ask this question in this empirical study to understand how improved knowledge about PPPs has the potential to optimise PPPs as alternative financing instruments in public infrastructure investment. It was found that the level of PPPs knowledge in public infrastructure investment and development can optimise PPPs selection, methodology and implementation as indicated by the frequency of some responses. Figure 35 shows the factors indicated which optimise PPPs in public infrastructure investment.

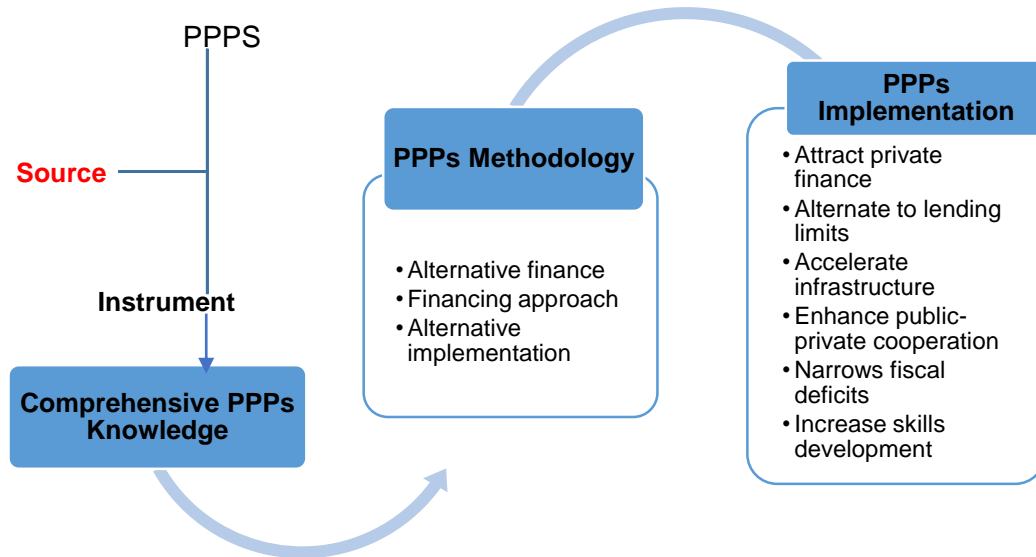


Figure 35. PPPs knowledge level.

Source: Author's own compilation (2017)

The following section presents the findings on optimisation of PPPs in public infrastructure investment by looking at three predominant findings that emerged, namely comprehensive PPPs knowledge, methodology and implementation, as indicated by some responses.

6.7.1 Comprehensive PPPs knowledge

It was found that there was a lack of detailed knowledge of PPPs among people in general. In fact, interviewees highlighted that there is a misconception about what PPPs are.

“Many people still don’t really know what PPPs are, because many PPPs are considered as concessions and joint ventures and it’s complicated to find PPPs boundary and other projects” (W). “The only thing PPPs do, they create a new method or tool that taps

resources" (S), "PPPs in themselves are not new sources or resources of funding, they are just an instrument" (W).

"Not the source of extra resource, they are an instrument to tap resources that maybe not made available to the public" (W). "It is impossible to argue that PPPs are an extra source of resources because of the numerous contracts that are entered between the parties" (M). "And thus, PPPs must be understood as the contractual obligation between the two parties to build public infrastructure investment" (P). "PPPs are not the primary source of money, but are primarily the different ways in which to build public infrastructure, and we should use them in case of efficiency, which is higher than the case of standard procedure through public procurement and is very important to prepare them sufficiently" (P).

"I would not say that PPPs are extra source of resources than being the possibility to bring the new resources of finance in public infrastructure, because they stretch over a long-term and are suited for long-term public infrastructure contracts between the public and the private firms" (M). "Yes, both in term of skills/innovation and funding PPPs are an instrument" (L). "It is misleading to say PPPs are an extra source of money which they are not" (S).

6.7.2 PPPs methodology.

Regarding PPPs methodology, it was found that the optimisation of PPPs requires alternative instruments and alternative implementation. Examples of responses include:

"In case of PPPs you have to pay there are no possibility to postpone because its business contract" (P). Participants expressed that "[PPPs] are not considered as an extra finance to the state" (M), and "there is no need to use PPPs as source of money" (P). PPPs should only be used only when public finance is constrained" (R).

"PPPs are erroneously perceived as additional source" (W). It is costly to view PPPs as an additional money because PPPs require yearly payments and need cautious consideration" (N). "...are an instrument to tap resources that maybe not made available to the public" (W).

"PPPs enhance lending, security and the contract must be defined and be linked to projects" (L). "PPPs require the correct structuring or method in public infrastructure investment" (S).

6.7.3 PPPs implementation

Regarding implementation, it was found that PPPs need to attract private finance, alternate lending limits, accelerate infrastructure, enhance private cooperation, narrow infrastructure deficits and increase skills for successful implementation. Responses included:

“It is difficult or if not impossible for a government project to borrow from the private sector” (L), “various limitations push government to implement PPPs in public infrastructure investment” (S). “limited public finance in the public sector makes PPPs attractive in the sense that there is a need to expand and grow public infrastructure through PPPs due to economic efficiency considerations” (M).

“Public finance is not enough and we need to find additional money, because public finance is limited and limited public finance is a problem” (P). “There is a pressure on public deficit and there is a border that limits public deficits” (P). “PPP’s are an alternative financing instrument but this must be underpinned by efficient allocation of risks between the two involved parties” (M).

“PPP’s leverage the financing capacity of the private sector in the building of public infrastructure” (M). “PPP’s are used to attract the private sector finance in public infrastructure investment through the working partnerships” (R). “Politicians don’t want to increase tax burden so they try to find additional money and one possibility is to implement PPP’s in public infrastructure investment” (P).

6.8 Phenomenon 4: Important core PPPs success actors

It was important to understand the important core success factors which enhance PPPs success in public infrastructure investment. The findings revealed numerous core success factors, as indicated by some responses and shown in the following figure (Figure 36).

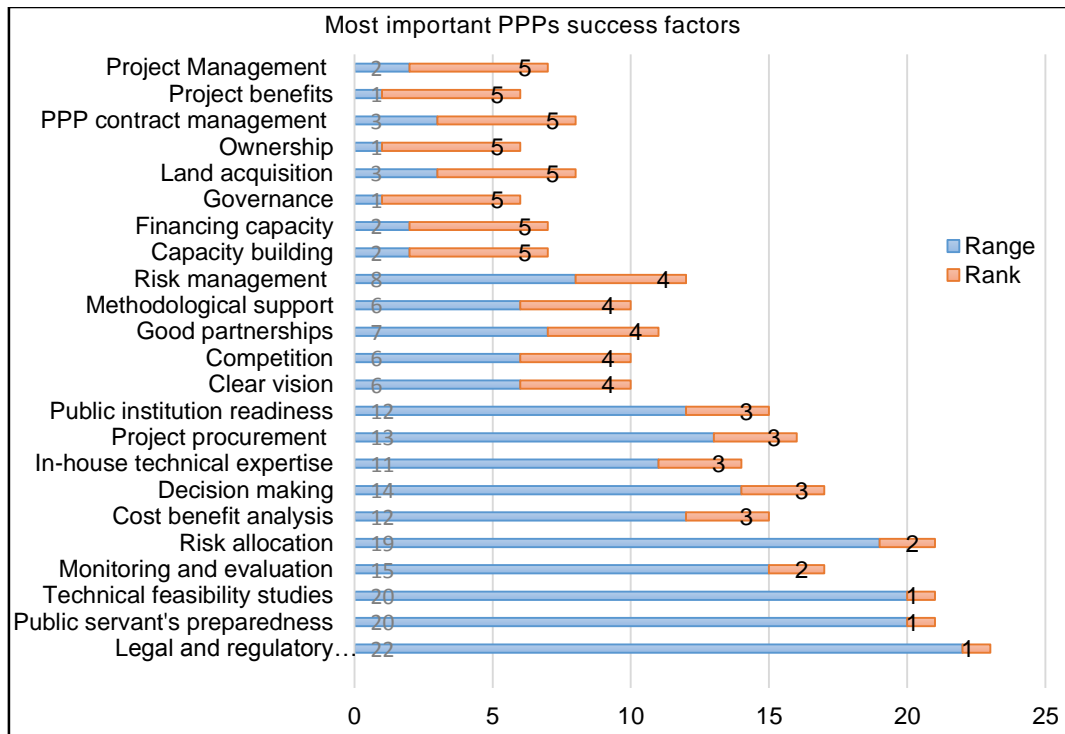


Figure 36. Most important PPPs success factors by range and rank.

Source: Author's own compilation (2017)

As shown in Figure 36, the important core PPPs success factors of implementation were ranged by the frequency of responses and ranked from the highest frequency to lowest. As shown in Figure 36, important core PPPs success factors are ranked from 1 to 5 and the highest coverage of responses on factors is ranked first, while the least coverage is ranked fifth. The ranking order means first ranked core PPPs success factors while fifth rank means the lowest ranking of important core PPPs success factors. The following section presents the findings from the first ranking to the fifth ranking.

6.8.1 First ranked important core PPPs success factor

This section of the study presents the analysis of findings on core PPPs success factors of implementation in public infrastructure investment ranked first. Interviewees were asked about the important core PPPs success factors in public infrastructure investment. Figure 37 illustrates the first ranked important core PPPs success factors in public infrastructure investment that comprise legal and regulatory frameworks, technical feasibility studies and public servants' readiness.

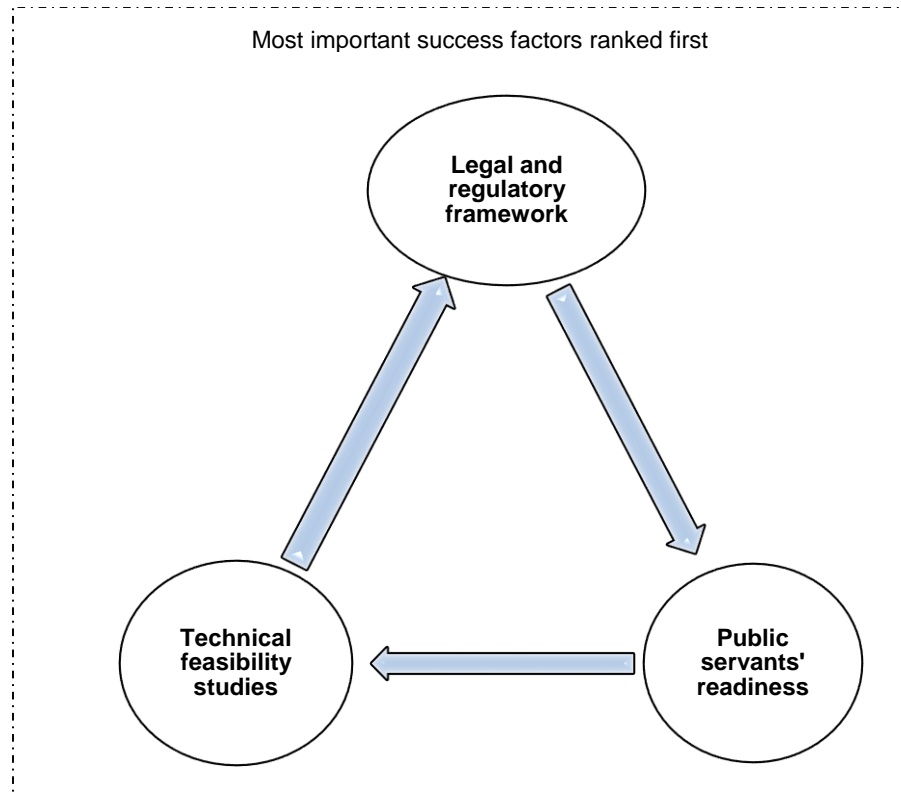


Figure 37. Most important PPPs success factors ranked first

Source: Author's own compilation (2017)

As shown in Figure 37, findings revealed that a strong relationship among adequate legal frameworks, technical feasibility studies, and public servants' readiness in public infrastructure investment via a PPPs framework give rise to increasingly successful PPPs implementation. It was found that PPPs require adequate legal and regulatory frameworks, which improves the technical feasibility studies when PPPs are considered in public infrastructure investment, and enhances the preparedness of public servants.

6.8.1.1 Legal and regulatory framework

This section describes the predominant findings on legal and regulatory frameworks. Some of interviewees' responses are:

"There is a need for general law but its logical that the law must be very general, but of course each PPPs project are different" (P). "The understanding of legal and regulatory framework is important when administering and managing PPPs contracts" (M).

“The law creates certainty of the process and approvals, because ultimately in most jurisdictions the only security the private sector has through the PPPs, is the legal agreements not the underlying assets” (L).

“Whilst the considerable extent of legal framework is important, regulations that clearly support and enforce PPPs need to embody all different forms of PPPs” (M). “Countries have delegated PPPs laws or concession laws, but it is not important to have special laws for PPPs laws, but laws must be comprehensive and understood easily” (W).

“The regulatory and legal framework needs to consider economic growth and the long-term investment priorities to increase competitiveness in PPPs contracts, improve the quality in public infrastructure delivery” (M).

6.8.1.2 Technical feasibility studies

This section describes the predominant findings on technical feasibility studies, as indicated by some interviewees’ responses:

“PPP should be implemented just in case, for more efficient than the classic way, we need good feasibility studies which must analyze and compare PPPs concepts with the classic way” (P).

“Feasibility studies enhance value for money through PPPs, because any process or phase that is not done correctly affect public finance and is costly over the long-term” (M). “Technical aspects of the studies are very important management key models and project teams should have technical expertise” (W).

“Technical and financial side of PPPs are important to understand, full project implications and costs before the procurement process begins” (L). “Technical feasibility study need to be transparent, of course in a good way with good quality” (P).

6.8.1.3 Public servants’ readiness

This section describes the predominant findings on public servants’ readiness, as indicated by some interviewee’s responses:

“It is important that the public sector retains the most knowledgeable, experienced and educated employees and that the public sector must be technically competent to implement complex PPPs contracts through effective administration” (M).

“You need to be sure to have some in-house employees, civil servants who will be present at each individual step” (W). “public institutions must prepare public servants to efficiently undertake effective financial control measures and management of contracts management, that increases public servant’s performance and improves the quality of public service” (M).

“Successful factors in PPPs require the highest quality of people, sufficient competition pressure on the supply side are its two main factors” (P). “It is also important to have bands of expertise not only the financial side of PPPs, but the technical side is very important, and a team of people that understand the technical aspects of PPPs” (W).

“It is always important to involve people from the beginning, and the public sector need to keep those people as part of knowledge bank, as they will become professionals in the PPPs area” (W). “Necessary skills in contract management and administration are necessary because of PPPs complexity and problems that affect their implementation” (P).

6.8.2 Second ranked important core PPPs success factors

This section presents findings on the core PPPs success factors in public infrastructure investment ranked second. Table 18 shows the second ranked important core PPPs success factors in public infrastructure investment and comprises risk allocation, monitoring and evaluation.

Table 18 Risk allocation and monitoring and evaluation.

Factors	P	M	W	L	S
Risk allocation	just in case for efficiency which is higher than the case of standard procedure through public procurement, to prepare very deeply the preliminary analysis, to calculate it and prepare this type of analysis	sharing and allocation of risks between the partners, risks emanate from the planning stage, design stage and construction stage, technical risks and economic to financial risks which affect the implementation of PPPs	very important issue, risks being borne by positioned partner, risk allocation is one factor that contributes to the success	the deciding factor, the probability, allocation and costing of the risks is usually the main element of the VfM decision	Risk allocation is the most important factors that underpins PPPs implementation
Monitoring & evaluation	Define and describe quality, measure quality, develop indicators, monitor the quality, measurable indicators of quality, good system of monitoring quality	Active consultation, negotiation, determine key risk areas, delivery of project scope, systematic monitoring and evaluation, guidelines of monitoring and evaluation.	Familiarity with contract clauses, negotiation of the contract, to step in and the private contractor they are not delivering	Contract management, monitoring of delivery, evaluation of service level being met	Public sector officials need to improve their monitoring and evaluation approaches to improve risks in PPPs

Source: Author's own compilation (2017)

To maintain anonymity of participants, the alphabet letters P, M, W, L, and S were assigned to each expert. The letters represent the responses of respective experts. As shown in Table 18, respondents explained that risk allocation, monitoring and evaluation in PPPs are important and enhance the transfer or allocation of risks to the best partner to improve the successful delivery of projects within scope. Table 18 shows that PPPs projects require adequate risk allocation and effective monitoring and evaluation of the delivery processes that might affect PPPs implementation in public infrastructure investment. It was indicated that a strong correlation between risk allocation and monitoring and evaluation in public infrastructure investment gives rise to success PPPs implementation.

6.8.3 Third ranked important core PPPs success factors

This section presents findings on the important core PPPs success factors in public infrastructure investment ranked third Table 19 presents the third ranked core PPPs success factors in public infrastructure investment comprising decision making, project procurement, cost benefit analysis, public institution readiness and in-house technical expertise.

Table 19. Third most important success factors

Categories				
Decision making	stabilise the goals as well public employees, long-term strategy, long-term opportunity, need for the methodological support (P)	decide on PPPs and decide on contracts that bind success, strategic decisions as to what they really want from the project (W)	make timeous decisions (S) , organisation to make decisions, good advisors, Value for money decision (L)	authority on the realization of the project in practical terms, public sector has key decision players (M)
Project procurement	necessary skills in contract management and to administer them (N) , PPPs need more transparency in transaction costs (P) .	understand how procurement work, and the various types of procurement (W)	Technical and financial are both important to understand the full project implications (L)	the project in terms of costs, management of risks (R) technical specifications of the project (M)
Cost benefit analysis	consistency is needed in the area if you want to create contracts for 30 to 40 years (S) , consistency in the government policy in the field of costs (P) .	cost benefit analysis is one type of analysis that is crucial before you go the PPPs part (S) , Cost benefit analysis is hugely important (W)	PPPs are procurement decisions (S) , Value for money decision, risks associated with that against PPPs and its risks (L)	should not just be implemented in an ad-hoc fashion, consideration of adequate rates social and economic returns (P) , effective costs benefit analysis (W)
Public institution readiness	quality of people in the public sector and public administration (P) , institutional memory, organizational structure (S) , consistency, attitude towards the implementation of PPPs (P)	the public sector to keep those people as part of knowledge transfer, bigger responsibility from the public sector (W)	timeous decisions, the public sector to meet their contractual repayments (S) , champion situated high enough in the organisation (L)	public sector that is technically competent, transparency and accountability and leadership, good management and governance, public institutions prepare public servants (M)
In-house technical expertise	to manage this type of contract, avoiding the risks jeopardizing the quality of implementation (P)	people that understand the whole process of PPPs, capacity building in-house is very important (W)	Technical, procurement process, financial are both important (L)	capacity development of public servants (M) , knowledge and institutional memory, increase of value for money (N)

Source: Author' own compilation (2017)

As shown in Table 19, it was found that the decision-making processes, project procurement, cost benefit analysis, public institution's readiness and in-house technical expertise were predominant. The pattern of relationships between these core factors increase PPPs successful implementation in public infrastructure investment.

6.8.4 Fourth ranked core PPPs success factors

This section of the study presents findings on important core PPPs success factors in public infrastructure investment ranked fourth. Table 20 presents the fourth ranked important core PPPs

success factors and comprises risk management, good partnerships, methodological support, clear vision and competition as predominant factors.

Table 20. Fourth most important success factors

Categories	M	P	L	W	S
Risk Management	Aspects of monitoring and evaluation, meaningful system that the public officials can manage, appropriate transfer of risks, risk allocation	Consistency in the government policy, fiscal risks, quality of people which are working for the state, not clearly established contracts	The element of value for money, understand the full project implications, risks associated with that against a PPP.	Optimal allocation of risks between the partners, brought projects in terms of costs, individual types of risks are borne by the side which is best positioned	Adequate monitoring and evaluation enable officials to manage risks effectively
Good partnerships	Delivers projects per actual scope as agreed by partners, PPPs require adequate partnerships and optimum partnering	Private company must administer projects efficiently, cooperate with next provider through technology transfer	Understanding of both partners	Partners must be sincere from the very beginning about vision, know private partner ideas and concerns	PPPs require willing partners to implement public infrastructure
Methodological support	Realization of project in practical terms, effective communication and consultation, authority to realize PPP projects, methodological support of private firms	Need for methodological support, competent people and methodology support, not necessary to change laws than methodological improved support.	Understanding what is being delivered	Major factor in decision making of politicians, sound institutions to realize various types of infrastructure projects	There is a strong need for an improved support by bureaucratic heads
Clear vision	Quality and pricing of the project, good governance, administration and management of PPP	Long-term strategy is necessary and important to create competitiveness of the private sector	Certainty of the process, and approvals, make timeous decisions	Strategic decisions, exact ideas of technical aspects, to have a clear vision of PPPs projects.	PPPs require clearly developed vision
Competition	Stimulates private-sector investment, private sector needs to be competitive, strong competition of private firms is required	Creating competitiveness of the private sector is very important, need strong competition on the supply side	Needs strong private sector	Developed strong institutions for infrastructure management, to attract the private sector to invest	PPPs require strong private competitive agency

Source: Author's own compilation (2017)

Although these important core PPPs success factors were ranked fourth, it was found that risk management, good partnerships, methodological support, clear vision and competition increase the successful delivery of PPPs projects. Findings revealed that these core factors are interrelated and have a pattern of association, which increases the successful delivery of PPPs in public infrastructure investment.

6.8.5 Fifth ranked important core PPPs success factors

This section of the study presents findings on core PPPs success factors in public infrastructure investment ranked fifth. Figure 38 illustrates the fifth ranked important core PPPs success factors of implementation which comprise contract management, land acquisition, environmental impact analysis, project management, financing capacity, capacity building, governance, ownership, and project benefits as predominant factors.

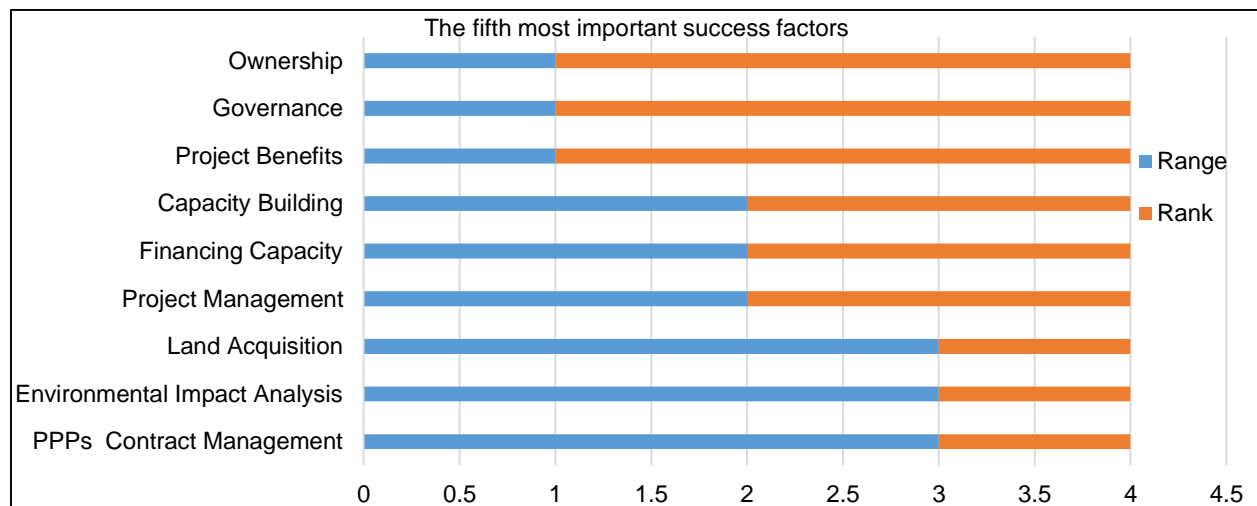


Figure 38. Fifth most important success factors.

Source: Author's own compilation (2017)

As shown in Figure 38, it was found that contract management, land acquisition, environmental impact analysis, project management, financing capacity, capacity building, governance, ownership, and project benefits factors that support successful implementation of PPPs in public infrastructure investment were predominant. Findings revealed that these core factors demonstrate shared relationships and are important, although they are ranked lowest. It was found that the interrelated pattern of importance is shared among all ranked important core factors in making the implementation of PPPs successful in public infrastructure investment.

6.9 Phenomenon 5: Key lessons learnt from failed PPPs projects

One of the questions investigated in this empirical study was about the key lessons learnt from failed PPPs projects. It was important to explore this question to learn the key lessons of failed PPPs projects when delivering public infrastructure investment projects. Several key lessons of failed PPPs projects were identified, as depicted in Figure 39.

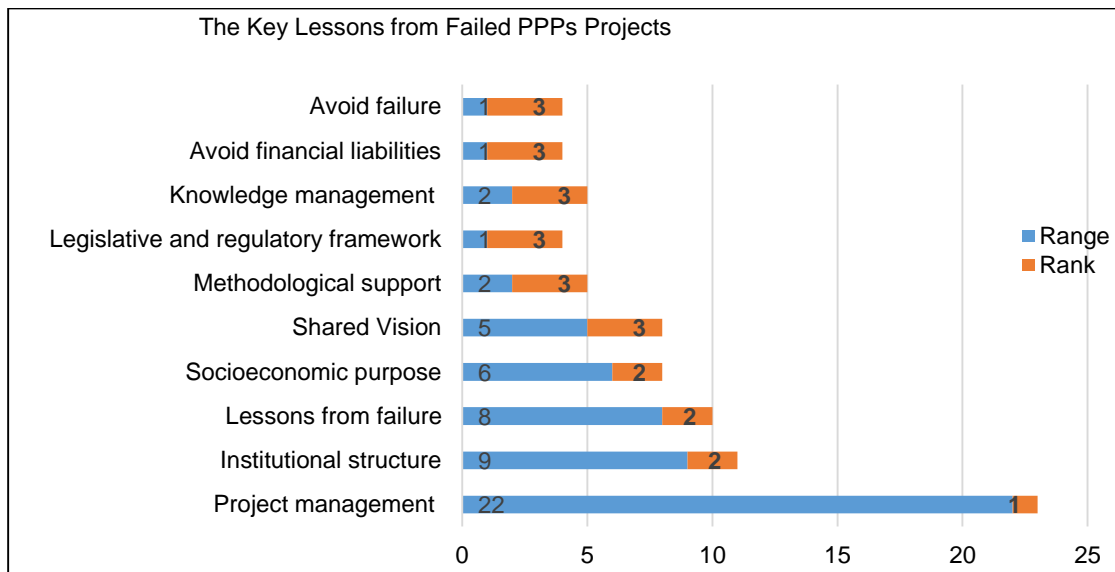


Figure 39. Most important lessons learnt from failed projects.

Source: Author's own compilation

As shown in Figure 39, it was found that key lessons learnt were project management first, while institutional structure and project failures were ranked second as key lessons learnt to improve the implementation of PPPs in public infrastructure investment. Findings revealed that socio-economic purpose and shared vision were ranked third as key lessons learnt that enhance the successful delivery of PPPs in public infrastructure investment. It was found that methodological support and knowledge management ranked fourth as key lessons learnt in making PPPs successful in public infrastructure investment. Findings revealed that legislative and regulatory frameworks, avoidance of financial liabilities and avoidance of failure were key lessons learnt that ranked fifth, and linking the pattern of importance to all the key lessons learnt as requirements for PPPs when they are considered in public infrastructure investment. Figure 40 presents the predominant key lessons learnt from these findings as project management lessons.

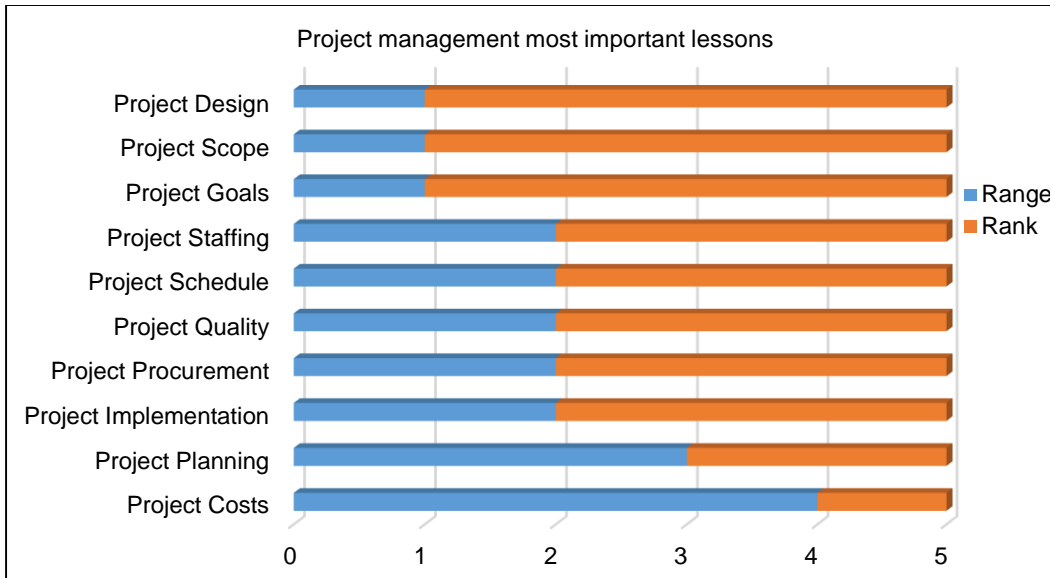


Figure 40. Project management most important lessons.

Source: Author's own compilation (2017)

It was found that the most important key lesson learnt was project management since it cuts across PPPs projects, public-sector projects and private-sector projects. Figure 40 illustrates that project costs lessons are important since PPPs are risky financial instruments and it is useful to consider risks on project costs when delivering PPPs in public infrastructure investment projects. It was found that institutional structure lessons are important to governance and decision-making processes because PPPs require adequate governance and optimal decision making in order to avoid failure. Findings revealed that socio-economic purpose lessons are important because they improve PPPs' strategic vision in implementing PPPs projects and if the socio-economic purpose is adequately set, PPPs improve the realistic targets to realise socio-economic objectives through public infrastructure investment. Findings revealed the need to enhance PPPs' strategic shared vision in order to increase PPPs' successful implementation from the learnt lessons. It was found from the key lessons that methodological support, bureaucratic support and political will and knowledge management play a pivotal role to increase PPPs' success in public infrastructure investment. Findings revealed the key lessons learnt, namely that avoidance of failure, financial liabilities and improved legislative and regulatory frameworks are important to avoid PPPs implementation failure.

6.10 Cross case analysis

The researcher compared the findings from the three datasets, namely the two case studies' documents, case study experts' interviews and the non-case study experts' interviews to determine the consistency of findings with those of the literature review. The researcher generated themes and categories as means to explore qualitative relationships of tabled themes. Table 21 illustrates the relationships between the case document analysis, case study interviews, experts' interviews, documents and literature sources.

Table 21. Cross tabulation of two case studies findings

Research Question	Case Study 1 (DA)	Case Study 2 (DA)	Case Study Interviews	Expert Interviews
SRQ1; How does limited public finance constrain the financing of public infrastructure investment?	<ul style="list-style-type: none"> - Limited budgets - Limited borrowing - Weak microeconomic climate - Economic factors - Social factors 	<ul style="list-style-type: none"> - Public finance constraints - Fiscal consolidations - Maastricht criterion - Economic conditions 	<ul style="list-style-type: none"> - Maastricht restrictions - Austerity measures - Social factors - Economic factors - Environmental factors - Climate change conditions 	<ul style="list-style-type: none"> - Competing priorities - Educational factors - Infrastructure deficits - Lack of spending in infrastructure - Pro-poor development programs - Short-term development programs - Uncertain economic climate
SRQ2; What are the important core PPPs success factors?	<ul style="list-style-type: none"> - Project management knowledge - Technical knowledge and skills - Monitoring and evaluation - Risk allocation - Decision making - Political will - Shared authority - Innovative technology 	<ul style="list-style-type: none"> - Land acquisition - Specialised technical skills - Project management knowledge - Strong financial markets - Partners financing capacity - Competitive bidding and tendering - Economic and social benefits 	<ul style="list-style-type: none"> - Risk allocation - Good partnerships - Shared objectives - Matured legal framework - Land acquisition - Strong private sector presence - Technical feasibility studies - Cost benefit analysis - Affordability - Value for money 	<ul style="list-style-type: none"> - Project management - Project benefits - PPPs contract management - Ownership - Land acquisition - Governance - Financing capacity - Capacity building - Risk management - Methodological support

Research Question	Case Study 1 (DA)	Case Study 2 (DA)	Case Study Interviews	Expert Interviews
	<ul style="list-style-type: none"> - Economic, environment, social and technical benefits - Feasibility studies - Affordability - Cost benefit analysis - Bankability - Legal framework - Methodological support - Presence of financing institutions - Willingness to implement PPPs - Open, transparent and competitive tendering 	<ul style="list-style-type: none"> - Risk allocation - Long-term strategic vision - Cost benefit analysis - Technical feasibility studies 	<ul style="list-style-type: none"> - Contract management - Strong political will 	<ul style="list-style-type: none"> - Good partnerships - Competition - Clear vision - Public institution readiness - Project procurement - In-house technical skills - Decision making - Cost benefit analysis - Risk allocation - Monitoring and evaluation - Technical feasibility studies - Public servants' readiness - Legal and regulatory framework
<p>SRQ3; What are the key lessons learnt from failed PPPs projects?</p>	<ul style="list-style-type: none"> - Improve project management delivery - To realize social, technological, financial and environmental benefits - To improve legislative framework - To enhance shared vision - To improve project management skills - To enhance the transfer of technical skills and knowledge 	<ul style="list-style-type: none"> - Improved project management knowledge - Enhanced methodological support - Improved risk allocation - Improved project management processes - To learn lessons from failure - To gain lessons 	<ul style="list-style-type: none"> - Learn from failure - Improve project delivery - Avoid financial risks - Improve legislative frameworks - Enforce PPPs contracts - Increase political will - Improve bureaucratic support 	<ul style="list-style-type: none"> - Project management - Institutional structure - Lessons from failure - Socio-economic purpose - Shared vision - Methodological support - Legislative and regulatory framework - Knowledge management - Avoid financial liabilities

Research Question	Case Study 1 (DA)	Case Study 2 (DA)	Case Study Interviews	Expert Interviews
	<ul style="list-style-type: none"> -To improve the strategic institutional structure -To enhance methodological support -To increase political will -To improve decision making -To learn from failure -To avoid financial costs -To improve contract management -To avoid failure 			Avoid failure

Source: Author's own compilation (2017)

As shown in Table 21 above, there are similarities and differences presented when the research sub-questions were examined across all the datasets. It was found that there were convergent and divergent responses of findings regarding constraints in public finance, important core PPPs success factors and key lessons learnt from failed PPPs project. The convergence and divergence in findings seem to have emanated from a regional context—which may not be similar in each country—and the approaches used to implement PPPs. Findings generally implied that there are constraints in public finance, core PPPs success factors and key lessons learnt, but these vary and depend on the contexts of the country's condition in which PPPs can be implemented to suit the conditions that satisfy the country's need to deliver public infrastructure investment successfully.

6.11 Chapter summary

The research findings were presented in this chapter. The study purpose was not to test existing theory but to generate theory by using a case study that is qualitative in nature. The presentation of findings mirrors the processes followed in Chapter 5. Findings identified numerous factors that limit public finance in public infrastructure investment and constrain public infrastructure development. Findings highlighted the impact of limited public finance in public infrastructure investment and the need to understand PPPs comprehensively if PPPs are considered in public

infrastructure investment. Findings revealed that PPPs could be optimised as alternative financing instruments by improving PPPs knowledge, methodology and implementation. Findings showed that there is the potential to implement PPPs when successes and benefits are identified in public infrastructure investment. Findings showed the importance to learn lessons from failed projects in order to increase PPPs' success in public infrastructure investment, rather than keeping re-inventing the wheel and getting poor results. The following chapter discusses and interprets the results.

CHAPTER 7: DISCUSSION AND INTERPRETATION OF RESULTS

7.1 Introduction

This study explored optimisation of PPPs as alternative financing approaches in public infrastructure investment and development. The study used the principal agency theory, transaction economic cost theory and institutional theory as multi-disciplinary lens through which to investigate the identified problem. The application of a multi-disciplinary perspective is important to gain a more holistic understanding of the implementation of PPPs in public infrastructure investment. This chapter discusses and interprets the findings presented in Chapter 6 with a focus on answering the following questions:

- Main research question: How can PPPs be optimised as alternative financing instruments in public infrastructure investment?
- Sub-question 1: How does limited public finance constrain the financing of public infrastructure investment?
- Sub-question 2: What are the important core PPPs success factors?
- Sub-question 3: What are the key lessons learnt from failed PPPs projects?

The following section discusses and interprets the main findings presented in the previous chapter.

7.1 Nature of public finance constraints factors

Findings revealed that fiscal management, and economic and social issues were predominant factors that constrain public finance in public infrastructure investment. The following section discusses these three factors.

7.1.1 Economic constraints

The first predominant factor identified that constrains public finance in public infrastructure investment is economic factors. As found in the case study, and discussed in section 6.3.1 and in expert interviews in section 6.5 of this study, interviewees highlighted economic factors as major constraints. It was found in the case study that economic constraints give rise to lessening financing capital expenditure, fiscal restrictions, infrastructure deficits, limited budgets, and strict fiscal restrictions. The interview findings revealed that economic constraints compound expenditure on competing priority spending programmes, increasing educational requirements,

infrastructure deficits, lack of spending in public infrastructure, and pro-poor development programmes, resulting in unclear economic climates. Findings suggested that economic constraints in public finance on public infrastructure investment cause moral-hazard problems, because decision makers are uncertain of which development priority programmes could positively contribute to economic development to lessen pressure on public finance. This finding indicated that information asymmetry contributes to adverse selection of programmes while alienating other development programmes that have the potential to increase economic growth and lessen the pressure on public finance, such as public infrastructure investment and development.

In terms of the agency theory, humans are rational agents, characterised by opportunistic behaviour driven by self-interest to attain rewards and lessen financial punishments (Eisenhardt, 1989). This behaviour is evident when there is a lack of monitoring, or when the agent gives asymmetrical information to the principal (Donaldson and Davis, 1993). To align this theory to the context of this study, it is in the rational self-interest of public-sector decision makers to lessen the social and economic consequences and to attain the best rewards by investing in public infrastructure investment through debt, fiscal deficits and balanced budgets. Public-sector decision makers elect adverse selection strategies such the financing of competing priority spending programmes through debt and deficits, alienating spending in public infrastructure investment that constrain public finance in public infrastructure investment.

The KHI Solar One and the R4 Expressway case study projects revealed that economic constraints impede public infrastructure investment. These PPPs projects did not contravene the contractual agreements which otherwise would have had financial consequences because of injected investment and capital. Thus, the findings suggested that compliance with the contractual agreements were enhanced by the levels of knowledge of PPPs in public infrastructure investment of the participants involved. Inadequate decision-making processes are a result of asymmetrical information that lead to adverse selection of financing approaches in public infrastructure investment. The financing of public infrastructure information through debts and fiscal deficits is a result of a mismatch of the contemporary and the historic roles the public performed in providing public infrastructure investment. The mismatch of information results in inadequate decision-making processes due to gaps in public infrastructure investment demand and this constrains public finance economically. As literature indicates, the changing macro-economic climate makes it difficult to finance public infrastructure investment through debt and fiscal deficits due to fiscal risks and public finance sustainability issues (IMF, 2009). The principal's behaviour that overlooks the competing priorities, increasing infrastructure deficits,

educational financing issues and the uncertain economic climate is a result of asymmetrical information. Findings revealed that *“many public sectors competing priorities limit public finance”* (M), while one respondent expressed that *“many governments speak about infrastructure and how they will invest to improve it; at the same time many infrastructure aspects are not popular and interesting for the electorate”* (W). This suggested that asymmetrical information affects public decision makers when considering programmes that have incentives and benefits of economic development.

The findings further confirmed that economic factors constrain public finance in public infrastructure because of suboptimal choices because of asymmetrical information of public-sector decision makers. The suboptimal choices are premised on the historic development gaps that the public sector remains the provider of public infrastructure investment. Adverse selection strategies occur when government supervised control of PPPs is limited due to inexperienced public-sector officials. The findings revealed *“the economic downturn as well as the uncertain economic climate, limit public finance”* (M). *“The lack of money available in public infrastructure constrains development”* (W). *“It is difficult to maintain the needed quality in public finance and respond to the infrastructure investment needs”* (M). *“It is difficult or if not impossible for government projects to borrow money from the private sector”* (L).

PPPs in public infrastructure investment may mitigate the economic constraints and offer incentives, but the principal (public sector) should possess comprehensive information about PPPs to minimise moral-hazard problems. The asymmetrical information in decision-making processes leads to suboptimal decision-making processes. In line with transactional cost it is important to improve and enforce optimal economic decisions that can compensate moral-hazard problems and enhance investment incentives to mitigate economic constraints and lessen public finance pressure in public infrastructure investment (Laffont and Tirode, 1993). The implications of this finding are that it is necessary to lessen pressure on public finance due to economic constraints, which increases public infrastructure investment holdups, and that it has major implications for economic growth and development. The economic constraints in public infrastructure investment mean that public finance is limited in public infrastructure investment and it is important to identify a sustainable financing approach for public infrastructure investment. Brixi and Shick (2002) demonstrate the importance of evaluating and determining future calculated financing pressure and identify an alternative financing model that enhances public finance sustainability.

7.1.2 Fiscal management constraints

Regarding fiscal management constraints, it was found that these were the second group of predominant constraining factors that hinder public finance in public infrastructure investment. As found from the discussion of the case study in section 6.3.1, and the expert interviews in section 6.5.2, fiscal management constraints included lack of infrastructure finance, structure of public finance, fiscal restrictions and debt. This is in line with institutional theories to adequately manage public finance in a sustainable manner. Lack of infrastructure finance means that there is no finance allocated to public infrastructure investment and development. The lack of infrastructure finance in public infrastructure investment means that public infrastructure investment leads to holdups and has a negative impact on economic growth and development. This also means it will be difficult to realise the country's social and economic development goals.

The structure of public finance affects public infrastructure investment and this means that public finance has to be structured in line with fiscal restriction measures in order to minimise finance in various programmes, including public infrastructure investment. The structuring of public finance means that public infrastructure investment is cut in the long term until the uncertain recovery of the global economic climate, which is currently indefinite. Fiscal restrictions are major constraints in any public-sector agenda because they mean that spending needs to prioritise only essential short-term spending programmes. Public debt increase is a result of inadequate fiscal discipline, because strategic conflicting objectives influence the budget structure and affect the consumption size (Allesina and Perroti, 1994; Roubini and Sachs 1989a). The cutting on spending in other programmes such as public infrastructure is a long-term cut. As Baldaci and Kumar (2010) indicate, public debt and fiscal deficit expansion are causes of concern in numerous countries because of long-term fiscal effects. The current spending on short-term competing programmes through debt means that there is no public finance available in public infrastructure investment, because debt limits the country's opportunity to borrow funds for infrastructure investment. Svaljek (2002) demonstrates that strategic conflicting programmes give rise to public debt increase because of mounting pressure exerted through political decisions.

The above finding means that adverse selection in the financing of competing spending programmes contributes to substantial fiscal deficits and debt accumulation, and constrains public finance in public infrastructure investment. The IMF (2011a) demonstrates that large structural deficits and debt are concerns for future fiscal policies. In the light of the market failures, the competition between the public and the private sector within the economy creates conflicts. Findings revealed that *"Public finance is limited due to government increased borrowing at national and departmental level and result to debt issues"* (L). *"There is pressure on public deficits"*

(P), and that public finance is “limited in the financing of public infrastructure” and creates huge deficits” (W). “There are usually restrictions or limitations in public finance” (L). “Some restrictions such as austerity measures limits public finance” (M), “the design in public finance structure limits public finance” (M). “The limit in public finance is of course the problem of public finance structure” (P). “The quality of public finance is needed” (M). “Infrastructure deficits are a problem in the financing of public infrastructure” (W).

Findings also revealed that lack of finance in public infrastructure investment is an acute adverse selection strategy problem which constrains public finance in public infrastructure investment. It was found that adverse selection problems lead to moral-hazard problems of accumulating debt and widening fiscal deficits resulting in lack of infrastructure finance. The IMF (2009) shows the importance of adequate finance management which creates long-term sustainability and lessens fiscal deficits and public debt. Findings implied that public infrastructure investment that is financed through public debt and fiscal deficits, risks public finance sustainability and holds up public infrastructure investment. It was found that inadequate public finance structures give rise to the accumulation of public debt and deficits, and that the public-sector decision makers require symmetrical information that would lead to public infrastructure investment incentives to avoid the moral-hazard problems of financing. Matalik and Slavik (2005) demonstrate that the provision of wholesale guarantees to public entities creates fiscal management moral-hazard problems and constrains public finance due to opportunistic behaviour, which increases public debt and fiscal deficit risks. In the case study it was found that:

“The increasing social and economic challenges constrains public infrastructure investment and development due to fiscal consolidation measures”. “Infrastructure investment is affected because of much needed capital required in infrastructure investment that is channelled to social, economic and environment and less capital is reserved for infrastructure investment” (B).

The behavioural shifts from adequate fiscal management strategies with the symmetrical information principles of VfM and affordability leads to moral-hazard problems because strategic spending objectives are affected by adverse selection and creates opportunistic behaviour that holds up public infrastructure investment strategies. Findings suggested that it is important to implement optimal fiscal management strategies and mitigate fiscal management moral-hazard problems by giving incentives for public infrastructure investment projects to limit and control opportunistic behaviours. The IMF (2009) demonstrates the importance of optimally managing and controlling public finance in a sustainable manner to lessen fiscal risks. Findings suggested

the need to carefully adopt mitigation strategies and obtain symmetrical information to lessen the fiscal management moral-hazard problems in public finance for public infrastructure investment and development. Perry (2007) validates the need to lessen public finance pressure in public infrastructure investment. This finding further raises the importance of understanding the long-term subsidy efficiency measures in public infrastructure investment. Findings suggested that the public sector's adverse selection strategies, which conflict and expand public debt, balanced budgets, and fiscal deficits, need to be mitigated. This will ensure the control and monitoring of opportunistic behaviour with optimal symmetrical information strategies. Such strategies will improve planning, budgeting, forecasting, fiscal risk management and sustainability, improve fiscal management strategies, and lessen pressure on public finance for public infrastructure investment. Findings revealed *"it is difficult to maintain the needed quality in public finance and respond to the infrastructure investment needs"* (M). *"It is difficult or if not impossible for government projects to borrow money from the private sector"* (L). *"In general, there is need to invest more money in public infrastructure"* (W).

These findings also revealed that fiscal management moral-hazard problems in PPPs are challenges that need to be addressed by developing optimal strategies such as possessing all the information, controlling the project delivery, and monitoring and evaluating the entire delivery of the project. Findings implied that the adverse selection approaches escalate opportunistic behaviour and the need arises to control the behaviour. Denzin and Valila (2005) demonstrate that public-sector decision makers are required to lessen the fiscal management constraints in public infrastructure investment. Findings suggested that PPPs are alternative financing strategies that could mitigate the fiscal management moral-hazard problems and offer incentives and benefits when used in public infrastructure investment. Fainboim (2013) and Akitoby (2007) indicate that debt and fiscal deficits are unsustainable. It was found that adverse selection approaches increase fiscal management moral-hazard problems and constrain public finance in public infrastructure investment and development.

7.1.3 Social constraints

The third predominant factor that constrains public finance in public infrastructure investment is social factors. As found in the discussion of the case study in section 6.3.1 and the expert interviews in section 6.5.3 of this study, social factors were highlighted as major constraints in public finance of public infrastructure investment. The case study and expert interviews indicated that social constraints were unemployment, social benefits, health care, environment and education. It was found that these social constraints in public finance aggravate expenditure on

employment, social benefits, health care and education. These findings meant that the public sector is mandated to compensate farmers due to environmental factors and this widens spending on environmental issues, limiting capital in public infrastructure investment.

Findings revealed that education was another predominant factor which constrains public finance in public infrastructure investment. This finding meant that the fast-changing population, with a number of children and youth eligible for enrolment, requires public sector spending on the increasing educational demands with limited resources, which constrains public finance in public infrastructure investment. It was found that social benefits were the predominant factors that widen public sector spending due to the changing population dynamics, which put pressure on public finance and constrain public infrastructure investment. Findings revealed that unemployment issues were the major constraining factors that require the public sector response of providing employment opportunities as a consequence of declining economic growth.

As found in this study, an increase in socially related programmes is a strategic development conflict that contradicts the economic development objective agenda and leads to moral-hazard problems as consequences of adverse selection strategies. Consequently, these social development programmes do not offer public infrastructure investment incentives or lessen pressure on public finance, hence social development programmes, such as child grants and social benefits, consume huge amounts of public finance that could have been used in public infrastructure investment. This finding also means that social constraints, such as child grants and social benefits, result in widening opportunistic behaviour to compensate for the lack of education and lack of jobs, compared to legitimate use by others.

The above findings suggested that government policy strategic direction needs to review social benefits and child-care grants in an optimal manner by possessing adequate information and balancing public infrastructure investment, social benefits and child care grants' sustainability and risks to avoid moral-hazard problems. This implies that, if possible, the billions that are spent every month on social benefits and child grants should be used to develop public infrastructure which can provide employment opportunities for those who are economically active. This strategy could also lessen the pressure on public finance, and improve sustainability of public finance in the long term. The IMF (2015), Winer and Hettich (2008), and Pasquali (2015) demonstrate that the impact of lessening social constraints on public finance due to adverse expenditure increases and alienates public infrastructure investment. Optimal strategic decisions with symmetrical information on social issues have the potential to increase the incentives and benefits in public infrastructure investment, fiscal management, and economic and social development. According

to Della-Croce and Yermo (2014), the social expenditure increases are widening exponentially and are putting more pressure on public finance and sustainability risks.

Findings suggested that public decision makers need to make optimal decisions using symmetrical information and should balance public finance sustainability risks, infrastructure investment and socio-economic development objectives to avoid social moral-hazard problems in the long term. Findings also implied that public-sector decision makers need to possess all the information, and control, monitor, and evaluate the social expenditure programmes. It was found that social issues threaten the sustainability of public finance and risks holdups in public infrastructure investment:

“Aging population increases pressure to public finance” (P). “There is need to spend more money on pensions” (P), “mandatory expenditures, social grants and pension increases”.

7.2 Optimising PPPs as alternative financing instruments in public infrastructure investment

It was important to ask the question: how can PPPs be optimised in public infrastructure investment as alternative financing instruments? Findings revealed that PPPs’ holistic knowledge, methodology and implementation were predominant factors that enhance optimisation of PPPs in public infrastructure investment. These were determined in the case study discussed in section 6.3.3 and the expert interviews discussed in section 6.7 as predominant strategies to optimise PPPs in public infrastructure investment. It was found that PPPs are instruments and long-term contractual obligations. The predominant responses from interviewees expressed that *“it is impossible to argue that PPPs are an extra source of resources because of the numerous contracts that are entered between parties” (M). “And thus, PPPs must be understood as the contractual obligation between the two parties to build public infrastructure investment” (P).* It was further found that *“many people still don’t really know what PPPs are, because many PPPs are considered as concessions and joint ventures and it’s complicated to find PPPs boundary and other projects” (W).* Eisenhardt (1989) demonstrates the importance of optimising PPPs knowledge in public infrastructure investment in order to efficiently monitor and evaluate PPPs methodology and implementation.

The findings about holistic knowledge on PPPs referred to the importance of knowledge in PPPs and its application in public infrastructure investment. It was found that comprehensive knowledge on PPPs increases PPPs project selection, and improves the methodology and implementation. However, holistic knowledge on PPPs in this study refers to a comprehensive

understanding of what PPPs are, the use of PPPs in public investment and development, the generic principles that guide PPPs in public infrastructure investment, reasons for considering PPPs, benefits and risks in implementing PPPs in public infrastructure, challenges and opportunities, and skills needed to implement PPPs, understanding contracts and the management of contracts, public finance risks, financing in PPPs, legal regulatory frameworks guiding PPPs implementation, financial markets, and project management.

It was found in the case study and expert interviews that PPPs methodology simply meant the application or implementation of PPPs in public infrastructure investment. In the context of this study, PPPs methodology means the understanding of a PPP as an instrument in public infrastructure investment. This meaning incorporates the process generic rules, standards and norms that guide PPPs, the structure form, the principles associated with the procedure, procedure and logical plan, the system logic and organisational arrangement, and systematic planning.

Findings revealed that implementation in the context of this study also includes the possession of technical project knowledge, control of the project implementation plan, monitoring and evaluation, reporting, matching project targets to project plans, measuring project outputs against project plans, evaluating project scope against delivered quality, quality indicators, risk management, risk response, scheduling and control, measuring performance and managing costs. In the construction industry, PPPs are predominantly infrastructure investment and financial tools, characterised by conflicts due to relationships between the principal and the agent. The agents (construction firms conferred this) may want to maximise their profits at the expense of the principal (public-sector client) through opportunistic behaviour. Asymmetrical information about PPPs in public infrastructure investment leads to inconclusive contracts because of irregular information when defining the terms and scope of the contract. The manner in which contracts are concluded based on asymmetrical information, gives rise to opportunistic behaviour of agents' post-contract closure and benefits agents through renegotiation of contracts. The renegotiation of contracts by agents does not benefit the principal because principals do not possess the overall information. This results in moral-hazard problems, and these problems hold principals to agreeing to renegotiated terms of contracts. This finding suggests that public-sector decision makers need to have complete information about the project and agents in order to make optimal decisions, control the agent, and monitor and evaluate the agent's performance.

The findings implied the need to be aware that knowledge improves PPPs when decision makers consider PPPs in public infrastructure investment. The decision makers in the public sector need to be aware that PPPs are characterised by conflicts, which result in moral-hazard

problems, such as inflation of the PPPs price, inadequate implementation and poor quality as a consequence of opportunistic behaviour to maximise profits. Meicnecke (2007) demonstrates that PPPs have moral-hazard problems because of opportunistic agents who seek to maximise profits. This finding suggested that the optimisation of knowledge of PPPs is an optimal strategy to improve PPPs' successful implementation in public infrastructure investment. It is further suggested that the monitoring of specific PPPs project outcomes should be the best strategic practice to manage and control agents' shirking of responsibilities and moral-hazard problems.

According to Meicnecke (2007), Ondráčka (2007), and Kamenickova (2011), it is important to have comprehensive knowledge of PPPs in public infrastructure to control the agent's opportunistic behaviour, avoid moral-hazard problems and effectively monitor the agent's performance outputs against the contract. Findings suggested that when principals are less informed about project processes, procedures, systems, methods and implementation, they are less empowered, while agents, who exhibit opportunistic behaviour to maximise profits, are empowered. The OECD (2012) demonstrates that the principal's possession of PPPs knowledge empowers, informs, advises and enables the principal to manage and control the project and agent optimally. Findings suggested that the principal is empowered to incentivise the agents' performances. This finding means that an appropriate selection of a PPP method depends on comprehensive knowledge and is required by decision makers when considering implementation of projects.

The findings implied that when principals are less informed about agents' activities as a consequence of asymmetrical information, agents show self-interest to maximise profits by adversely selecting approaches resulting in moral-hazard problems and holdup challenges. Findings further implied that agents break the honesty and reliability entrusted to them by the contracts and get away with the consequences, which affects the successful implementation of PPPs in public infrastructure.

Findings revealed that moral-hazard problems in PPPs are common challenges that are the results of public sectors' inefficiency to monitor PPPs project implementation. It is important to mitigate moral-hazard problems in PPPs by having comprehensive knowledge regarding PPPs, as well as applicable methods suitable to PPPs implementation to succeed in implementing public infrastructure investment. These strategies include an understanding of clearly articulated bid documentation, clear performance and measurement standards, negotiating with clearly defined robust mechanisms and monitoring compliance. Findings suggested that optimising PPPs strategies should be part of the broader comprehensive knowledge transfer to optimise PPPs knowledge, methodology and implementation strategies. Findings suggested that, with improved

PPPs knowledge public decision makers need to avert asymmetric information tendencies which tend to jeopardize PPPs successful implementation, when PPPs are considered in public infrastructure investment,. Ehrenberger (2014) demonstrates the fundamental importance to holistically understand PPPs in a manner that shows complete efficiency when considered in public infrastructure investment. Findings illustrated the fundamental need to explain and describe the PPPs’ purpose in public infrastructure investment. These findings implied that adverse selection strategies subsequent to asymmetrical information lead to moral-hazard problems and are costly to manage and control.

7.3 Core PPPs success factors

Findings revealed that there were five ranked predominant core success factors of PPPs implementation. These were ranked first core factors, second core factors, third core factors, fourth core factors, and fifth core factors respectively, as indicated in Figure 41. The motive for asking this question was to understand the important core factors that enhance PPPs as alternative financing instruments in public infrastructure investment.

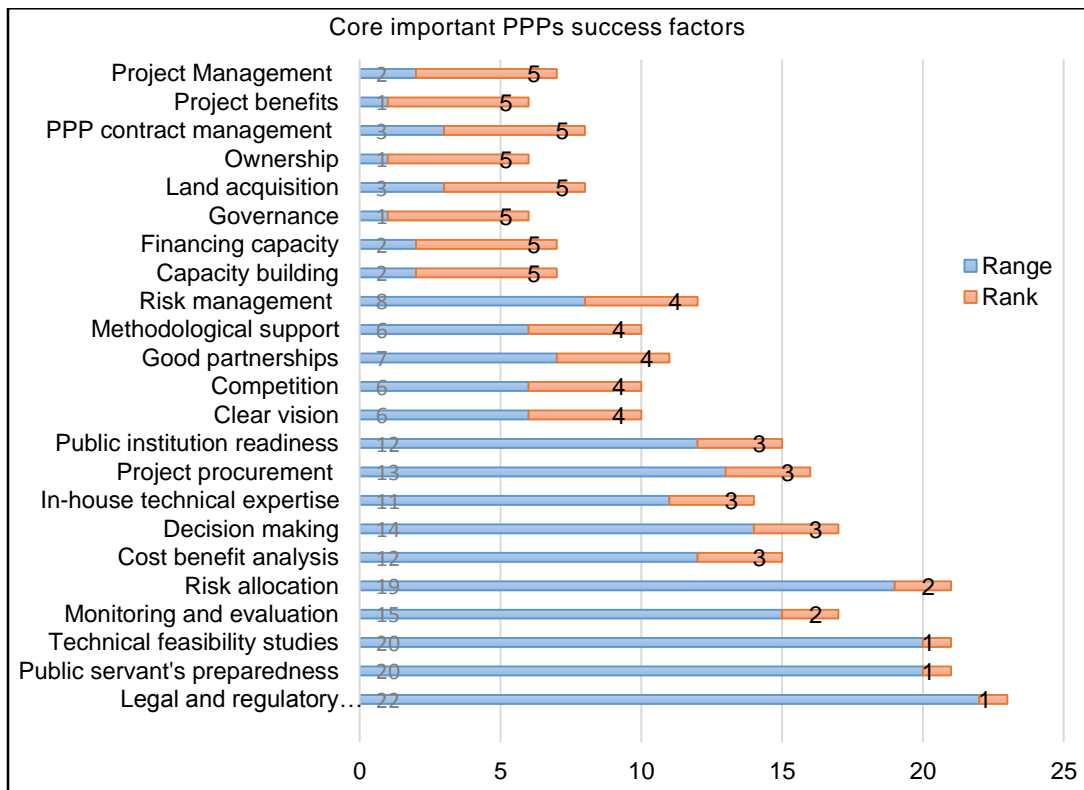


Figure 41. Important core PPPs success factors

Source: Author's own compilation (2017)

The second rationale was to develop core factors that would enhance successful implementation of PPPs in public infrastructure investment. As found in the discussion of the case study in section 6.3.4 and in the experts' interviews discussed in section 6.8, the predominantly important core PPPs success factors are shown in Figure 41, ranked from 1 to 5.

As shown in Figure 41, the ranking of the important core PPPs success factors is illustrated from 1 to 5 as predominantly expressed by respondents with the first ranking order revealing the highest coverage of responses by respondents. The fifth ranking order illustrates the lowest coverage of responses provided by respondents revealing the same core importance in PPPs successful implementation in public infrastructure investment. The following section discusses and interprets these findings

❖ The first ranked important core PPPs success factors

It is important to identify that the first ranked important core PPPs success factors symbolise the first core requirements that PPPs need to meet to realise the successful implementation in public infrastructure investment. It was found that the legal and regulatory frameworks were major predominant factors that PPPs require in terms of institutional theory and transaction cost theory to have stable institutions that adequately manage and control PPP transactions effectively. This meaning is also explained by the complexity of PPPs, because they are long-term contracts and any dispute that arises out of contracts is remedied through the courts of law. It is also important that the countries in which PPPs are implemented have legal and regulatory frameworks that enable the functioning of PPPs. Tadmalla (2015), Li and Akintoye (2013), and Tang et al. (2010) demonstrate the importance of improved legal and regulatory frameworks in PPPs implementation to improve their success in public infrastructure investment. As found in the study, other first ranked core factors include technical feasibility studies and preparedness of public servants. The study's reference to technical feasibility studies refers to public servants having the technical skills to perform cost benefit analysis studies and determine the costs of PPPs projects into fiscus. Findings further demonstrated the importance of feasibility studies as core to realize PPPs projects.

It was also found that it is important to identify PPPs projects that fit the PPPs scheme, to determine the PPPs projects' viability and affordability, and to demonstrate that public servants have the necessary technical, legal and project management skills to implement PPPs projects. Findings revealed that successful implementation of PPPs in public infrastructure investment lies in public servants' ability to understand the appropriate legislative and regulatory framework that

guides PPPs implementation. Findings suggested that it is impossible to realize PPPs' success without these first ranked important core PPPs success factors as foundation to successful realisation of PPPs projects. Suhaiza (2013) highlights the strong necessity to have well-defined legal and regulatory frameworks that will ensure harmonised PPPs implementation with existing legislative and regulatory frameworks.

The first ranked important core PPPs success factors symbolise the foundation of interaction and cooperation between partners that are bound by regulations. Findings revealed that these legal views serve to control the opportunistic behaviour of agents to implement projects according to agreed terms of contract. Findings also demonstrated that PPPs are long-term contracts which require legal and regulatory prescripts that serve to avoid moral-hazard problems when PPPs are in place. Findings demonstrated the enforcement of contracts by the courts of law as binding documents between the principal and the agent. This implies that since PPPs in public infrastructure investment are characterised by conflicts and opportunistic behaviours, legal regulations serve to avert holdups when PPPs are implemented. Findings indicated that the legal principles state the requirements of technical feasibility studies to be conducted to demonstrate the feasibility of PPPs projects in public infrastructure investment. This process involves the possession of all project information so that the public decision makers get symmetrical information to avoid adverse selection problems that leads to moral-hazard problems at a later stage. In line with the institutional and transaction cost theory, public-sector officials need to have all the project information and select agents on the basis of better information to avoid increases in transactional costs. Findings revealed the significance to understand the legislative and regulatory frameworks in PPPs, as indicated by some responses that there is a *“need of general law, but it is logical that the law must be very general, but of course each PPPs project are different” (P)*. *“The understanding of legal and regulatory framework is important when administering and managing PPPs contracts” (M)*.

❖ The second ranked important core PPPs success factors

The second ranked important core PPPs success factors symbolise the second core requirements that PPPs are required to meet in order to improve the successful implementation in public infrastructure investment. It was found that monitoring and evaluation, and risk allocation were the predominant factors identified and ranked as second factors important to PPPs successful implementation. The meaning of these second ranked core factors in this study indicates the need to adequately allocate risks to the best partner within the PPP framework. This also means that the private partner must be prepared and able to manage the allocated risks

while the public sector manages the risks that can be best managed by them. This finding further suggests that it is not necessary to allocate and transfer all the risks to the private partner but only those that the public sector is unable to manage. It was also found that monitoring and evaluation are important core PPPs success factors because PPPs projects require efficient and effective monitoring and evaluation to enhance the successful delivery of PPPs projects. These findings implied that the lack of risk allocation, monitoring and evaluation risks the failure of PPPs projects in public infrastructure investment. Findings further demonstrated that risk allocation should be understood as a primary requirement when PPPs are considered during the planning stage, design stage, construction stage, and during the implementation stage. Mbele (2010) demonstrates that it is important to allocate and manage technical risks, economic risks, financial risks, and implementation risks and is critical for PPPs implementation. Findings indicated that the consideration of risks in PPPs is supported by the extent of conflict between the principal and the agent. The public-sector decision makers are bound to understand risks that would create conflict by averting any financial, implementation, project, environmental, performance and technical risks to improve PPPs projects' success. Findings revealed that asymmetrical information may give rise to risks in project delivery when unchecked. It was found that it is important to understand the role of monitoring and evaluation and to undertake effective monitoring and evaluation practices that lessen or control the risks in order to avert opportunistic behaviour that leads to moral-hazard problems. Findings suggested that the monitoring and evaluation practice should describe and define quality, measure and monitor quality. As Akintoye et al. (2014) state, continuously checking quality is consistent with monitoring and evaluation practices and a requirement that enhances the control and monitoring of risks in PPPs.

❖ The third ranked important core PPPs success factors

It is important to identify the third ranked important core PPPs success factors as they symbolise the third core requirements that PPPs are required meet in order to improve the successful implementation in public infrastructure investment. It was found that cost benefit analysis, decision making, in-house technical skills, project procurement, and public institutional readiness were predominant factors identified and ranked third core factors which are important in PPPs successful implementation. The meaning of these third ranked important core PPPs success factors in public infrastructure investment is that during the initial PPPs stages, decision makers are required to undertake costs benefit analysis studies. Leahy (2005) asserts that it is important to quantify PPPs cost savings in public infrastructure investment projects, due to numerous increases in PPPs project implementation. These studies tend to demonstrate the return on

investment and affordability, and should meet value for money principles as important implementation requirements.

Furthermore, findings indicated that public-sector decision makers need to make appropriate decisions about the implementation of PPPs in public infrastructure investment projects. Adequate institutions with competent and technical savvy public servants make optimal decisions that reduce the transaction costs in PPPs implementation. Strategic decision making does not only affect public sector implementation capability, but also affects the private sector's agency. Public servants are required to possess basic technical skills in finance, project management, contract management, procurement management, and public-sector infrastructure delivery of projects as these in-house technical skills enhance the successful delivery of PPPs when considered in public infrastructure investment. Findings indicated the understanding, knowledge and public servants' experience with the delivery of in-house infrastructure projects enhance the PPPs successful delivery in public infrastructure investment.

It is important to highlight that knowledgeable and experienced public servants have the potential to mitigate opportunistic behaviour of agents when tasked with the delivery of public infrastructure investment projects. The IMF (2009) demonstrates that the private construction firms' delivery outputs need to conform to expected terms of contracts with throughput quantity, specific benchmarks, and timing, while government controls the private construction firms' performance. Findings suggested that public servants with knowledge and experience should be involved in PPPs projects and identify gaps in information the agent may withhold from public-sector decision makers, and mitigate the application of asymmetrical information when contracts are undertaken. Dudkin and Valila (2005) indicate that "production efficiency" in PPPs through public infrastructure investment and development is well established in theoretically incomplete contract frameworks. Findings identified that this process will ensure the readiness of public-sector institutions which possess full information of projects and control the opportunistic behaviour of agents. Findings further suggested that public servants in institutions which are ready to roll out PPPs in public infrastructure investment should be incentivised to stimulate extra performance by monitoring and evaluating the activities of the agents with project delivery. Yin (2013) demonstrates the importance of in-house technical skills and project control that avert any opportunistic behaviour of agents.

❖ The fourth ranked important core PPPs success factors

It was found that the identification of the fourth ranked important core PPPs success factors added value and symbolic meaning to the core requirements that PPPs need to meet in order to improve

the successful implementation and realisation in public infrastructure investment. It was found that clear vision, competitiveness, good partnerships, methodological support and risk management were predominant factors identified and ranked fourth core factors important in PPPs' successful implementation. The meaning of these fourth ranked important core PPPs success factors in public infrastructure investment is that the successful PPPs implementation in public infrastructure investment is increased by a long-term, clear vision which details the clear purpose for the necessary PPPs in public infrastructure investment. A long-term, clear strategic vision gives direction to the private sector's agency to organise, plan, and prepare to implement public infrastructure investment. Findings revealed that a long-term, clear strategic vision increases private sector competition, enhances good partnerships and prepares the private sector to manage the risks effectively.

Findings suggested that a long-term strategic vision should be used as a benchmark to organise and encourage the private sector to provide symmetrical information on planned public infrastructure investments via PPPs. Findings indicated that symmetrical information should contribute to adequate selection of agencies who have the experience, skills, capacity and resources to implement public infrastructure projects. Findings implied that adequate methodological support should ensure that PPPs are implemented through good partners and with a private sector that is willing to develop good partnerships and effectively manage risks. These strategies should ensure that moral-hazard problems are managed and controlled, hence good partnerships will promote reliability and honesty in partners who are willing to partner. Ho and Tsui (2009) demonstrate that good partnerships in PPPs contracts are informed by information symmetry and underpinned by trust and honesty to evade adverse selection problems. It was found that good partnerships, and methodological and political support are necessary, while competition is important to avert any opportunistic behaviour of partners.

❖ The fifth ranked important core PPPs success factors

The significance of identifying the fifth ranked important core PPPs success factors symbolises the core requirements that PPPs are required to meet in order to improve the successful implementation and successful realisation in public infrastructure investment. It was found that project management, project benefits, PPPs contracts management, ownership, land acquisition, governance financing capacity, and capacity building were predominant factors identified and ranked fifth important core factors in PPPs implementation. The meaning of these fifth ranked core factors in this study highlighted that although these core factors were ranked last, they had specific core significance in PPPs implementation in public infrastructure investment. These

factors mean that PPPs implementation could cause holdups/delays if these factors are not properly considered in public infrastructure investment.

Findings revealed that PPPs infrastructure investment requires partners with financing capacity and this meant that a consortium without financing capacity is not adequate to implement PPPs. It was demonstrated in the case studies that the consortiums responsible for construction demonstrated financing capacity through multi-lateral and domestic financial institutions, which is consistent with statements in the literature (Trebilcock and Rosenstock, 2013). These findings also meant that the public sector should have good governance of PPPs projects to ensure that every process, phase, and stage is systematically undertaken in a logical sequence in order to manage PPPs contracts optimally. It was also found that effective project management should ensure effective realisation of project benefits with good governance ownership and shared authority. Das and Teng (2000) demonstrate the importance of realising PPPs project benefits because it is impossible to achieve “value creation” when resources are not pooled together. Findings revealed that land ownership is the predominant factor that hold up and stifle projects. Findings suggested that in PPPs projects, the land ownership factors should be considered as promptly as possible since land acquisition requires speedy resolutions because it has the potential to cause projects to fail if it remains unattended.

7.4 Key lessons learnt from failed PPPs projects

As demonstrated in this study, it was important to ask this question which related to the key lessons learnt from failed PPPs projects in order to learn key important lessons in delivering public infrastructure investment projects. Findings revealed that there were three predominant key lessons learnt from failed PPPs projects which were ranked first, second and third key lessons learnt. The motive to ask this question was to identify the key lessons that could be learnt from failed PPPs projects and to learn lessons which are important in PPPs’ successful implementation in public infrastructure. As found in the discussion of the case study in section 6.3.5 and in the the experts’ interviews in section 6.9, these predominant key lessons learnt from failed PPPs projects improve and enhance PPPs’ success in public infrastructure investment as shown in Figure 42.

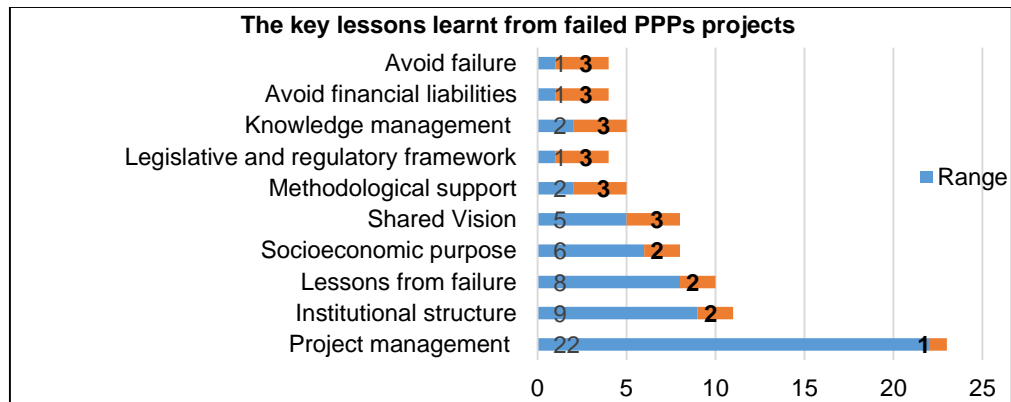


Figure 42. Key lessons learnt from failed PPPs projects

Source: Author's own compilation (2017)

As shown in Figure 42, project management lessons learnt recorded the highest coverage of responses as the first ranked key lessons learnt from failed PPPs projects that public-sector decision makers and public officials need to consider. Findings indicated that institutional structure lessons learnt from failure of socio-economic factors, were the second ranked important key lessons to learn from. It was revealed that a shared vision, methodological support, legislative and regulatory frameworks, knowledge management to avoid financial liabilities, and avoidance of failure were third ranked predominant key lessons learnt from failed PPPs projects. The following section discusses and interprets these findings.

❖ First ranked key lessons learnt from failed PPP projects.

It was important to indicate the key lessons learnt from failed PPPs projects as these lessons symbolise the first ranked important key lessons that should be learnt to improve PPPs success in public infrastructure investment projects. It was predominantly found that project management key lessons were the first ranked important lessons that emerged. The meaning of these first ranked key lessons in this study indicates the importance of project management in public infrastructure investment via the PPPs framework. Findings revealed that project management lessons are important in PPPs in public infrastructure investment. It was found that failed PPPs projects provide essential lessons to learn in order to improve future PPPs projects. It was found that the key first ranked important lessons that public officials should learn when considering PPPs in public infrastructure investment projects are project management lessons. Findings revealed project management lessons as the most fundamental lessons important to improve the delivery of public infrastructure investment via PPPs. Hardy (2016) and Gonenc and Walkenhorst (2004) demonstrate that lessons from failed PPPs projects encompass key improvements in

project design, planning and project management. Findings revealed that it is important to improve project management processes in order to realise projects in time, within costs, while achieving the highest quality.

PPPs projects are characterised by conflicts that lead to moral-hazard problems. Findings suggested that when public-sector officials are provided with asymmetrical information when considering the implementation of public infrastructure investment projects, agents (private firms) tend to provide irregular information that result in adverse selection of firms who do not have experience, capacity, resources and financing ability to implement PPPs in public infrastructure investment. Findings revealed that the adverse selection of firms that do not have the capacity leads to moral-hazard problems that are costly to mitigate at a later stage. This represents the opportunistic behaviour of construction firms and results in holdup or collapse of public infrastructure projects. It is important to improve project management delivery processes such as initiation, planning, execution, control and closure of public infrastructure projects within the time limits, budgets and to the agreed quality. It was found as important that when construction firms perform adequately, the public-sector decision makers should incentivise the firms for extra performance and limit opportunistic behaviour.

Findings revealed that public officials need to obtain project management knowledge and learn from failed projects to limit moral-hazard problems, which are prevalent when agents provide asymmetrical information to maximise profits. Nordtveit (2005) asserts that public organisations should monitor agents effectively so that agents do not divert, evade responsibility or divert resources to other tasks for purposes of maximised profits. It was found that improvements in project management in public infrastructure investment through PPPs lessen the agents' opportunistic behaviour and self-interested pursuit of maximised profits. Gonenc and Walkenhorst (2004) and Hardy (2016) indicate that improved project management knowledge enhances project costing, scope, schedule, quality and staffing. These findings implied that public officials need to improve project management knowledge, experience of project management practice and processes to successfully realise public infrastructure development through PPPs.

Other key lessons learnt from failed PPPs projects include the importance of institutional structure, which is regarded as a strong foundation for PPPs successful implementation and is an institutional theory tenet in public institutions. These key lessons provide important indications that the public-sector institutions should retain competent technical staff who have comprehensive knowledge of PPPs in public infrastructure and development and project management, understand the methods and processes and are consistent (EBRD, 2011; Trebilcock and

Rosenstock, 2013). As highlighted in the literature, the agency theory tenets advocate the avoidance of moral-hazard problems.

Findings suggested that public-sector decision makers should possess complete knowledge of the agents and the projects that are implemented. Findings highlighted that technical staff should be competent and have balanced information in order to avoid asymmetrical information, because agents may exhibit opportunistic behaviour to maximise profits. Findings also indicated that public officials should avoid any moral-hazard problems when dealing with PPPs due to inherent risks that are embedded in PPPs implementation. Wentworth, (2012) underlines the importance of optimising PPPs in public infrastructure investment by learning key lessons which are important for successful PPPs project implementation. This study implies that the failure to learn from these key lessons in PPPs projects will increase public finance sustainability risks and jeopardise socio-economic development objectives. This is in line with the views of Merrifield (1999) and Chan et al., (2009).

Other important findings that were predominant emphasised the importance of learning, a shared vision, methodological support, legislative and regulatory frameworks, knowledge management, avoidance of financial liabilities, and avoiding failure when PPPs are considered. Findings also suggested the need to understand that PPPs are characterised by existing conflicts and these conflicts should be mitigated to avoid moral-hazard problems. Findings implied that the key lessons learnt from failed PPPs projects also serve to mitigate the inherent moral-hazard problems which feature in PPPs and is consistent with what is reported in the reviewed literature (EPEC, 2014; Gonenc and Walkenhorst, 2004).

7.5 Optimising PPPs in public infrastructure investment

The researcher set to optimise PPPs in public infrastructure investment and development by identifying the factors that constrain public finance in public infrastructure investment. The researcher developed the core PPPs success factors predominantly from the case studies and experts' interviews and identified the key lessons learnt from failed PPPs projects. The present study findings revealed significant deductions and suggested important considerations which are important for PPPs in public infrastructure investment. The following section discusses these important deductions from these findings, such as PPPs' suitability

7.5.1 Strategies that optimise PPPs in public infrastructure investment

Findings revealed that conflict between principals and agents affects the implementation of PPPs in public infrastructure investment. Findings revealed that opportunistic behaviour of agents who exhibit self-interest decisions to maximise profits creates relationship and partnership moral-hazard problems. Soudry (2007) indicates that the PPPs' nature of relationships between the agents and principals leads to conflicts. Hajjej et al. (2017) postulate that conflicts in PPPs are the results of the public sectors' inability to monitor the contractual implementation of public sectors' decisions on agents. Findings revealed asymmetrical information in PPPs as the cause of moral-hazard problems contributes to failure of projects. Findings revealed that agents exhibit opportunistic behaviour to maximise profits as a consequence of asymmetrical information which leads to adverse selective decision making. It is acknowledged that agents often get away unpunished when they divert their responsibilities from contracts (Eisenhardt, 1989). Literature reviewed shows some good international PPPs implementation programmes and projects (Ehlers, 2014; Dheret et al., 2012; Akintoye et al., 2007). However, despite these challenges that were found with PPPs in public infrastructure investment, findings affirmed that PPPs could be optimised in public infrastructure development. One of the principles which increases the optimisation of PPPs in public infrastructure is suitability and long-term payment approach as suitable instruments.

Findings showed that the first strategy to optimise PPPs is to mitigate moral-hazard problems by developing mitigation plans which lessen its effects in PPPs implementation. The second strategy is to avoid moral-hazard problems by empowering the public sector with the necessary skills to monitor the activities of agents effectively. Empowerment in the public sector should consist of developed technical skills, knowledge management and transfer, in-house technical skills, retaining of the most experienced public servants, incentivising public servants in public infrastructure investment, provide the necessary resources, tools, and exposure to major infrastructure projects, record lessons learnt from previous failed projects, and keeping public servants who worked on failed projects. Improved project management knowledge and experience through continuous learning processes and methods will ensure that public servants obtain the appropriate knowledge and skills to monitor agents effectively.

The third strategy is to improve knowledge sharing in order to enhance the balance between knowledge and experience. This strategy will ensure that successful and failed experiences and lessons learnt are shared amongst the team members. This improves the reading and identification of asymmetrical information during the early stages of the project when agents are tasked to do so. As found in this study, having all the information is the best tool to

manage, control, monitor and evaluate the agents' activities in public infrastructure investment because moral-hazard problems and opportunistic behaviour of agents do not only affect the projects when considered through PPPs, but have wider quantifiable implications economically, socially, financially and environmentally due to fiscal risks.

Findings revealed that the successful implementation of PPPs in public infrastructure investment require prepared institutions. This means that public institutions, which are prepared and ready to implement PPPs, have more chances of success than those who are not ready. This also means that institutions should be prepared, the institutional structure should be consistent, they should have positive PPPs attitudes, institutional memory, knowledge transfer, should make timeous decisions, contractual repayments, be technically competent, be transparent, have accountable leadership and management and prepare public servants. Ho and Tsui (2009) emphasise the importance of governance design structures and adequate institutional settings to the successful implementation of PPPs in public infrastructure investment. This study found that PPPs should be quantified technically and economically to determine its value in public infrastructure investment. This is to ensure how best PPPs could fit in public infrastructure investment projects to avoid mismatching problems and detect a suitability fit to avoid mismatch and failure. Eisenhardt (1989) states that it is important to avoid mismatch and misinformation because this affects project success.

7.5.2 PPPs and public infrastructure investment

It was found that PPPs are not sources of extra resources in public infrastructure investment but are long-term financing instruments used over time to increase investment in public infrastructure. Findings revealed that PPPs implementation in various public infrastructure investment and development projects may not be uniform as illustrated by the two selected case study projects. It was found in the two case studies that the consideration of risks in PPPs implementation is the core foundation of success and the consideration of risks underpins PPPs' inherent risks that are caused by asymmetrical information, adverse decision making, moral-hazard problems and holdups. PPPs in public infrastructure investment exist as important financing approaches that need to be structured according to the country's needs, despite the inherent risks, and need to be carefully managed to realise public infrastructure investment benefits.

Findings revealed that one of the fundamental steps to ensure PPPs' adequate fit in public infrastructure investment is technical feasibility studies and cost benefit analyses. This is to ensure that PPPs are technically and economically fit. Ho (2006) indicates the need to manage and control transaction costs in public infrastructure investment when PPPs are considered. The conflict between agents and principals in PPPs in public infrastructure investment tends to increase transaction costs. Findings suggested the importance of possessing knowledge regarding all issues that might lead to increasing transaction costs in order to improve decision making processes and to avoid moral-hazard problems. It was found that when PPPs are considered in public infrastructure investment, comprehensive technical feasibility and cost benefit studies should be undertaken to avoid the agency problem. It is acknowledged that an adequate governance structure, where all decisions are jointly taken, improves interaction, and screens and enhances strategies that control opportunistic agent behaviour (Ho and Tsui, 2009). In line with institutional theoretical perspectives, public-sector institutions need to have competent public servants who are adequately skilled to screen optimal strategies of managing agents to avoid moral-hazard problems in PPPs implementation.

7.5.3 Balancing PPPs in public infrastructure investment

It was found that conflicts in PPPs are major obstacles, which make them risky financing techniques in public infrastructure investment. However, PPPs need to be balanced with risks in public infrastructure investment to successfully realise the delivery of infrastructure. Findings inferred that public officials should have knowledge of contracts, administration and management. Parker and Hartley (2003) elucidate that complex contractual agreements require adequate

administration and management. Findings showed that the case study project balanced PPPs risks with infrastructure development risks by improving the administration, management and leadership. Findings revealed that good governance and adequate structure, where decisions are jointly considered, translate to good partnerships and improved development objectives, as suggested by Ho and Tsui, (2009). Findings revealed that the relationships between the principals and agents should be underpinned by partnerships, which are founded on honesty and reliability. Hefetz (2004) and Eisenhardt, (1998) both emphasise symmetrical information should form the core of partnerships, in order to avoid moral-hazard problems and opportunist behaviour.

Findings showed that despite risks being inherent in PPPs, they can be adequately managed, controlled and lessened to avoid moral-hazard problems and holdups. Case study findings revealed that risk allocation concerns were allocated to the private partner who adequately managed risks effectively. Findings, according to experts, showed that it is important to allocate risks and monitor the delivery of the project against the risks. Akintoye et al. (2007) and Holstrom (1979) demonstrate that risks are costly or impossible to monitor; however, in principle public decision makers should monitor risks in a contract and the entire project. It was found that the transfer of knowledge and skills are key factors that improve the management of risks. Literature reviews highlight that risk allocation and risk structuring are best strategies to balance risks in PPPs and public infrastructure investment (Engel et al., 2007).

The predominant balancing strategy in managing risks in PPPs is to have a generic understanding of risks, identify where risks are located, identify the impact of risks, develop a tool to manage risks, and control the risks. Findings indicated that inadequate understanding of risks in public infrastructure investment results in adverse selection of risk response strategies and lead to moral-hazard problems. Findings from the case studies revealed that while risks were predominant elements in the KHI One Solar and R4 Expressway projects, risk allocation was the major element of managing risks. The OECD (2008) demonstrates that PPPs are predominantly characterised by risks in public infrastructure investment projects. Some of the predominant responses from the interview showed that *“risk allocation in PPPs is the main success important factor which increase the success of public infrastructure investment project” (B)*. However, findings in the case studies found that inherent risks in PPPs lessen project benefits. These findings suggested that decision makers in the public sector need to infuse incentives to manage risks optimally considering the PPPs’ costs and subsidies.

Findings inferred that the lessening of risks on PPPs in public infrastructure investment projects, as in the case studies, should be driven cautiously by the balance to implement PPPs successfully in public infrastructure investment. The balancing of risks in PPPs for public

infrastructure investment should give rise to mitigation of any moral-hazard problems by possessing comprehensive risk information. Ehlers (2014) demonstrates that total information about risks include design risks, construction risks, availability risks, demand risks, operate and maintain risks, residual value risks and financing risks.

7.6 Chapter summary

This chapter presented a discussion of findings according to the conceptual framework developed in Chapter 4. The constraints of public finance in public infrastructure investment were found to be the driving force to implement PPPs in public infrastructure investment. This researcher suggested that PPPs can be optimised in public infrastructure investment through enhanced PPPs knowledge, methodology and implementation. The predominant important core PPPs success framework enhances PPPs success implementation in public infrastructure investment. The researcher found it important to learn key lessons from projects that failed, in order to increase PPPs successful implementation. The following chapter presents the conclusions and recommendations of this study.

CHAPTER 8: CONCLUSIONS AND RECOMMENDATIONS

8.0 Introduction

This chapter provides an overview of the problem, aim, research objectives, conceptual, theoretical and methodological issues and provides a summary of the key findings and conclusions. The chapter also highlights the key research contributions to knowledge, recommendations, limitations and areas for further research.

8.1 Restating the research context and problem

Public finance is limited and thereby constrains public infrastructure investment and development. While infrastructure is important to economic and social development, one problem identified was that there is no consensus on how public infrastructure should be funded, given the large capital outlay often required. On the other hand, PPPs have been espoused as alternative financing instruments for application in public infrastructure development. However, it was identified that PPPs implementation is not optimised, especially in developing countries—a key problem the present study sought to address.

The literature also indicated that PPPs have many benefits and challenges. The researcher argues that while PPPs can be appropriate financing instruments, they are not optimised largely because of lack of comprehensive knowledge of what PPPs entail and how implementation can be better achieved. The key assumptions underpinning this research were that PPPs can be optimised as alternative financing instruments in public infrastructure investment. Limited public finance impedes the financing of public infrastructure investment and development, and the widening financing gap constrains public infrastructure investment and jeopardises public infrastructure development. Thus, understanding the nature of constrained infrastructure financing, core success factors of PPPs and key lessons learnt from failed PPPs projects and how these provide insights into improving PPPs implementation in infrastructure development, form the primary purpose of this study and the nature of its main contribution to knowledge.

8.2 Restating the research aims and objectives

The aim of this study, as formulated in Chapter 1, was to *“optimise PPPs as alternative financing instruments in public infrastructure investment and development by enhancing knowledge*

through developing core success factors and establishing key lessons learnt from failed PPPs projects” The objectives as stated in Chapter 1 were to:

- a) identify and examine the causes for limited public finance;
- b) develop important core PPPs success factors; and
- c) determine the key lessons learnt from failed PPPs projects.

8.3 Restating the research questions

To give direction to the study, the following research questions were formulated:

8.3.1 Main research question

How can PPPs be optimised as alternative financing instruments in public infrastructure investment and development?

8.3.2 Research sub-questions

- i. How does limited public finance constrain the financing of public infrastructure investment and development?
- ii. What are the important core PPPs success factors?
- iii. What are the key lessons learnt from failed PPPs projects?

8.4 Revisiting the conceptual and theoretical issues

As highlighted in Chapters 1, 2, 3, and 4 in this study, numerous theoretical and conceptual issues were explored relating to the research problem. The following sections present a summary.

8.4.1 Theoretical issues raised in Chapter 1

Chapter 1 highlighted that the public sector is mandated to provide public infrastructure investment primarily as means to intervene in market failures. However, public-sector functions relating to provision of public infrastructure investment are constrained by numerous factors which impede the financing of public infrastructure financing through public finance. This contributes to widening financing gaps since public debt and fiscal deficits are the current primary financing instruments in public infrastructure investment. Against this background, the importance of optimising and improving PPPs as alternative financing instruments in public infrastructure investment and development was brought to the fore.

Chapter 1 argued that PPPs can be optimised in public infrastructure investment, and the global implementation experiences of some PPPs demonstrate this potential to implement in public infrastructure investment. It highlighted that PPPs stimulate global governments' interest in public infrastructure investment as global economic issues give rise to risks in public finance. The chapter is justified to understand this study because of the significance of PPPs in public infrastructure investment, the negligence to optimise knowledge of PPPs anticipated relevance and implications of the research findings.

8.4.2 Theoretical issues raised in Chapter 2

Chapter 2 focused on issues around the significance of public finance in infrastructure investment and development. Various viewpoints and theories were discussed. The chapter presented a basic understanding of public finance issues and public infrastructure investment globally as well as in South Africa, and the Czech and Slovak Republics. In particular, the reviewed literature in Chapter 2 established that public finance issues in public infrastructure investment are challenges that constrain public infrastructure investment.

8.4.3 Conceptual issues raised in Chapter 3

In Chapter 3, an understanding of PPPs was gained from a global perspective after being contextualised to Central Eastern Europe, focusing on the Czech and Slovak Republics and also on South Africa, including experiences, opportunities and challenges in PPPs implementation and lessons learnt. Chapter 3 established that PPPs are implemented globally and there are benefits and embedded risks that need careful consideration in public infrastructure investment. Chapter 3 further identified important core implementation lessons learnt from South Africa and the Czech and Slovak Republics. The reviewed literature established that numerous policies and regulations affect and restrict public finance in public infrastructure investment and development. Policies primarily focused on public finance and not on PPPs as alternative financing instruments because of implied public sectors' functions in market failures. Chapter 3 identified key important lessons learnt where PPPs were considered in public infrastructure investment due to public finance issues. Therefore, Chapters 2 and 3 of this study underpinned the identification of gaps and bias in existing knowledge. The review of the literature in Chapters 2 and 3 did not find a comprehensive or single theoretical framework; thus, the development of a multi-disciplinary analytical framework was justified as appropriate for this research.

8.4.4 Revisiting the development of an analytical framework in Chapter 4

This research justified a multi-disciplinary approach as analytical framework, because this approach provided an appropriate framework that generated questions for investigating the research problem. The multi-disciplinary analytical framework intersection focused on principal agency theory, transaction cost economics theory and institutional theory as means to conceptually and empirically explore the research problem. The following sections summarise these theories as applied to the present study.

8.4.4.1 Principal agency theory

The principal agency theory shows that agents are associated with better information while the principals have knowledge gaps resulting in adverse selection of options (Weihua, 2014). PPPs, as alternative financing instruments in public infrastructure investment projects, are centred around the principals' strategic behaviour and agents' opportunistic behaviour when PPPs are considered in public infrastructure investment (Laffont and Tirole, 1993). Therefore, agency theory explains that the relationship of principals and agents is centred on information provided by agents when considering PPPs in public infrastructure investment. The predominant issue is how the behaviour of agents promotes opportunism as a consequence of adverse selection which later leads to moral-hazard problems when PPPs are considered in public infrastructure investment. Principal agent theorists argue that the principals need to acquire comprehensive information that the agent has in order to make optimal decisions to avoid moral-hazard problems.

The incentive theory argument reveals that incentives in public infrastructure investment projects improve the delivery of public infrastructure investment concerning time and qualitative performance. However, incentive mechanisms in public infrastructure investment are characterised by public structure complexity and incentives are part of inclusive management challenges. The theory shows that it is difficult to incentivise public-sector officials, but there is need to incentivise public officials in order to monitor agents efficiently because lacking incentives affect public official's performance (Leontescu and Svilane, 2012; Beauty and Zajack 1994). Incentive theories highlight that incentives mechanisms should be mutually beneficial to principals and agents; hence they are part of contractual strategy to address performance challenges (Gallagher, 2011). Incentive theories highlight that principals should optimally devise incentives in a simplistic manner to improve project benefits, control and manage agents' behaviours, avoid increased transaction costs and moral-hazard problems.

8.4.4.2 Transaction cost economics theory

The transaction cost economics theory determines the costs of conducting business and maintaining the partnerships. In PPPs, these costs include legal, financial and the technical advisory transaction costs during the procurement and operational processes. Thus, the agents tend to use transactional costs to maximise their profits because of principal governance related issues. The transactional cost economic theorists argue that it is possible to quantify the PPPs costs savings and to reduce the transaction costs in public infrastructure investment projects. This is only possible by constantly monitoring the performance of the agent and possessing all the information the agent has in order to make optimal decisions (Leahy, 2005). Thus, the transaction cost economic theory underpins the importance of the organisational structure as the critical factor that determines the extent of transaction costs increases with adequate development of governance structures (Ho and Tsui, 2009). The transaction cost economics theories emphasise the importance of lessening the transaction costs in PPPs when considered in order to realise the economic, financial and social benefits when PPPs are considered.

8.4.4.3 Institutional theory

Institutional theory involves the structure of institutions and its effects on decision-making processes. Institutional theorists argue that within an institution, rules and norms must be developed to guide behaviours. It is also important that when implementing PPPs in public infrastructure investment these norms and rules should be prioritised to control and limit the agents' opportunistic behaviours. In order to realise the effectiveness of rules, institutions should have adequate structure, good governance with clear legal frameworks that enhance transparency, risks sharing and sustainable development when PPPs are considered in public infrastructure investment.

8.4.5 Revisiting the research philosophical and methodological orientation

As discussed in Chapter 5, the identified research methodology was justified in order to make clear philosophical underpinnings. The primary qualitative research approach in this study was justified.

8.4.5.1 Restating the ontological and epistemological stance

At the level of the nature of reality, the study aligned with the subjective ontological viewpoint. The social constructionist stance underpinned this study at the epistemological level. The social

constructionist standpoint adopted, influenced the multiplicity of interpretation of the phenomena through social actors. This research justified the interpretivist stance, particularly phenomenology, as its theoretical research perspective.

8.4.5.2 Case study methodology and qualitative method of data analysis

The study justified a case study design because of the research questions and nature of the problem. The case study methodology was justified to understand the phenomenon of PPPs implementation in context. The study used purposive sampling, in particular snowballing, to identify participants. The study used semi-structured interviews with experts and two case study project participants as appropriate methods for data collection. Document analysis was also used as a method of collecting data and using qualitative techniques such as content analysis, coding and theme building techniques.

8.5 Summary of key research findings and achievement of objectives

The key findings of the study were presented in Chapter 6 and discussed in Chapter 7.

8.5.1 Objective 1

Phenomenon 1: Factors that constrain public finance in public infrastructure

- It was found that there were predominant factors which constrain public finance in public infrastructure investment and development.
- Findings revealed that the three predominant factors included economic, fiscal management and social factors. Findings addressed the research question of how limited public finance constrains the financing of public infrastructure investment and development.

Economic factors: competing spending priorities, educational issues, infrastructure deficits, lack of spending on infrastructure, short-term development projects and uncertain economic climate.

Fiscal factors: infrastructure finance, structuring of public finance, fiscal restrictions and debt.

Social factors: unemployment, social benefits, health care issues, environment and education.

Phenomenon 2: Implications of constrained public finance in public infrastructure investment

- It was found that the implications of limited public finance in public infrastructure investment were substantial.
- Findings revealed the predominant economic, investment, financial and social implications of constrained public finance in public infrastructure investment. Findings addressed the research question related to limited public finance constraining the financing of public infrastructure investment and development.
- This research demonstrated how phenomenon 1 constrains public finance in public infrastructure investment while phenomenon 2 showed implications of constrained public finance in public infrastructure investment.

Economic implications: inadequate value chain, lack of skills and unemployment

Social implications: crime, population growth and unemployment

Financial implications: lack of finance, widening infrastructure costs, infrastructure deficits

Investment implications: lack of investment, inadequate management, lack of maintenance, obsolete infrastructure, increasing infrastructural costs

8.5.2 Objective 2

Phenomenon 3: Important Core PPPs success factors

- Findings revealed five important core PPPs success factors of implementation.
- The first ranked important core PPPs success factors included legal and regulatory frameworks, technical feasibility studies and public servants' readiness.
- The second ranked important core PPPs success factors included risk allocation, monitoring and evaluation.
- The third ranked important core PPPs success factors comprised decision making, project procurement, cost benefit analysis, public institution readiness and in-house technical expertise.
- The fourth ranked important core PPPs success factors encompassed risk management, good partnerships, methodological support, clear vision, and competition.

- The fifth ranked important core PPPs success factors included project management, project benefits, PPPs contract management, ownership, land acquisition, governance, environmental impact assessment, financing capacity and capacity building.
- The research demonstrated how phenomenon 4 can improve and optimise PPPs in public infrastructure investment and increase the success of PPPs in public infrastructure investment.
- It was found that numerous important core PPPs success factors can be used to improve PPPs implementation in public infrastructure investment and development.

8.5.4 Objective 3

Phenomenon 4: Key lessons learnt from failed PPPs projects

- It was found that there are key lessons to be learnt from failed PPPs projects in order to improve the delivery of PPPs in public infrastructure investment.
- Findings revealed that predominant key lessons learnt from failed PPPs projects centred around
 - project management,
 - shared vision,
 - socio-economic purpose,
 - methodological support,
 - lessons from failure,
 - legislative and regulatory framework knowledge management,
 - institutional structure,
 avoiding failure and lessons to avoid the financial liabilities as lessons that are important.
- Findings addressed the research question related to what the key lessons to be learnt from failed PPPs projects are.
- It was found that the key lessons to be learnt from failed PPPs projects have the potential to improve the delivery of PPPs in public infrastructure investment projects.
- Findings related to phenomenon 4 confirmed the results described in the literature, e.g. consistent with the findings of Della-Croce and Yermo (2014) who identified that key lessons to be learnt from failed projects provided insights and improved the delivery of public infrastructure investment when PPPs are considered.

- The findings demonstrated how phenomenon 4 could improve success in PPPs implementation in public infrastructure investment projects.

The generated theoretical knowledge highlights the importance for principals to improve governance structures in order to lessen transaction costs, minimise moral-hazard problems and agents' opportunistic behaviours through effective monitoring and evaluation. Results demonstrated that the monitoring of agent's opportunistic behaviours need to be standardised through adequate management of contracts to limit post-contractual opportunistic behaviour of agents. The results further showed the extent to which the objectives of this research were achieved. Findings revealed that PPPs can be optimised by improving PPPs knowledge, methodology and implementation in public infrastructure investment. Findings therefore addressed the main research question, namely: How can PPPs be optimised as alternative financing instruments in public infrastructure investment and development?

8.6 General conclusions and implications

The findings demonstrated that PPPs are alternative financing instruments in public infrastructure investment and development. This study established that PPPs have benefits over constrained public finance but require careful consideration when PPPs are considered in public infrastructure investment. It indicates that economic, investment, fiscal, technological and environmental benefits can accrue when decision makers take optimally informed decisions.

The study concludes that despite the potential of PPPs, there are inherent behavioural and administrative moral-hazard problems that jeopardise PPPs in public infrastructure investment. The findings revealed that although public financing strategies via PPPs are derived from policy directives, the design of institutional structures and governance better explains the implementation processes which PPPs require. This interface is characterised by conflicts between the agents and the principals due to the competitive nature of delivering public infrastructure investment. The conflicts are caused by diverse delivery objectives whereby the agents want to maximise profits while the principal requires effective delivery of public infrastructure investment to achieve the socio-economic development objectives. Asymmetrical information is at the centre of adverse selection and suboptimal decision-making processes because the agents hold up critical information that may be used against the principal to maximise profits, and this leads to moral-hazard problems.

The study further concludes that PPPs implementation in public infrastructure investment is affected by asymmetrical information and that appropriate strategies should be investigated and employed to mitigate this problem. The behavioural practices that manifest through agents undermine PPPs' significance in public infrastructure investment and development.

8.7 Contribution to knowledge

The study contributes to the body of knowledge in public financing of public infrastructure and in particular PPPs and construction management in general. The main contributions relate to the following new insights:

- The study extends knowledge on ways to optimise PPPs in public infrastructure investment by developing important core PPPs success factors and identifying key lessons to be learnt from failed PPPs projects in public infrastructure investment.
- The study conceptualised and unpacked PPPs' analytical constructs implementing agency theory, as well as transactional cost economic theory and institutional theory, in order to enhance the understanding of PPP dynamics in public infrastructure development. Part of the originality of this study lies in the development and utilisation of a multiple conceptual framework of these three theories to interrogate the identified problem.
- The study developed comprehensive understanding of PPPs to improve knowledge, methodology and implementation, in order to better understand, manage, and control, agents' behaviours to successfully realise PPPs projects, balance risks and avoid moral-hazard problems.
- The study demonstrates that the financing of public infrastructure investment through PPPs should be managed through adequate institutional structure, good governance, managing and lessening transaction costs within the context of agency theoretical perspectives and realising PPPs projects benefits.
- The study extends the body of knowledge in public finance, public infrastructure investment and PPPs, the broader built environment management body of knowledge, and construction management in general.
- The study addressed the neglected aspects of PPPs knowledge, including enhancing the understanding of factors that constrain public finance and its implications for public infrastructure investment.

- The study linked the economic, financial and social dimensions of public finance constraints and the need to invest in public infrastructure investment.
- This study serves as a basis for further research in the area of financing of public infrastructure investment, especially from a construction management perspective. There is limited published work in PPPs as alternative financing instruments in public infrastructure investment, especially in developing countries.
- This study is among the foremost works on PPPs as alternative financing instruments in public infrastructure investment applied to the fields of public finance and public infrastructure investment with regards to the built environment literature.
- The study adds knowledge to the generic built environment management body of knowledge and practice and provides comprehensive critical knowledge in the financing of public infrastructure investment through a PPPs framework.
- This study demonstrates that PPPs have several benefits and the potential to contribute positively to public finance sustainability and public infrastructure investment.

8.8 Recommendations

This study recommends the following:

- Decision makers and policy makers in the public sector need to assess the public sectors' holistic understanding of PPPs when these are considered in public infrastructure investment.
- Policy makers need to determine the PPPs' purpose and value in public infrastructure investment and development.
- Public-sector officials need to structure an appropriate PPPs scheme that fit in with public infrastructure investment.
- Public officials need to identify key success and failure lessons when implementing PPPs in public infrastructure investment projects.
- The public sector should learn key lessons from failed PPPs projects to increase successful implementation of PPPs.
- Public-sector officials need to stimulate political, bureaucratic, and methodological support and increase political will by delivering projects successfully by improving project management practices.
- The public sector needs to improve the long-term strategic vision and purpose of PPPs to stimulate private-sector interest.

- Public-sector institutions should develop and implement appropriate policies on risk management strategies, monitoring and evaluation and project management.
- Public decision makers should ready public institutions and technically prepare public servants to implement PPPs in public infrastructure investment.

The above proposals may further improve PPPs knowledge and its importance in public infrastructure investment projects to realise socio-economic objectives.

8.9 Areas for further research

Further research studies in this field could benefit from and confirm the ideas this study presents. The following are proposed:

- Measure the scale of public debt and fiscal deficits as a consequence of PPPs interventions.
- Investigate the PPPs appraisal system in public infrastructure investment projects.
- Examine the level of PPPs knowledge of public sector decision and policy makers tasked to implement PPPs in public infrastructure investment.
- Determine whether and to what extent improved PPPs knowledge can increase PPPs successful implementation in public infrastructure investment projects.
- Determine whether public financed infrastructure investment projects increase socio-economic development and fiscal sustainability objectives.
- Examine the extent to which identified important core success PPPs factors can increase successful implementation in public infrastructure investment.
- Investigate the extent to which identified key lessons learnt from failed PPPs projects can increase the success of PPPs in public infrastructure.
- Develop a model utilising the identified key success factors and lessons learnt from failed PPPs to drive successful PPPs implementation.

8.10 Generalizability

Lastly, the study acknowledges that the findings presented may not be generalised and that the implementation of public-private partnerships differs across countries as the nature and characteristics of these arrangements are not homogenous. Experiences and conditions are unique and therefore the implementation of PPPs in public infrastructural development projects

should always endeavour to consider the specific conditions of the country and indeed the region. To this extent, a public-private partnership remains a 'tailored' practice, but one which can learn from previous experiences and various success factors, such as the ones established in this study, to improve successful implementation.

References

- Abdullatif Amani, E.M.A. 2006. Crowding-out and crowding-in effects of government bonds market on private sector investment: A Japanese case study. *Institute of Developing Economics. Discussion Paper, 74*: 1-36. Available at https://www.researchgate.net/profile/Emad_Abdullatif/publication/5141242_Crowding-out_and_Crowding-in_Effects_of_Government_Bonds_Market_on_Private_Sector_Investment_Japanese_Case_Study/links/5578680e08aeacff20028304.pdf. Accessed 14 December 2016.
- Abengoa Solar South Africa, 2014. Nersa KHI Solar One Licence Application-Public Hearing
- Abengoa Solar South Africa, 2016. *Kkil Solar One near Upington achieves a technological milestone*. Available at www.khi_solar_one_near_upington_achieves_a_technological_milestone.html. Accessed 19 November 2017.
- Abiad, A., Furceri, D. and Topalova, P. 2014. The macroeconomic effects of public investment: Evidence from advanced economies. *IMF Working Paper, 15/95*, pp. 1-25. <https://www.imf.org/en/Publications/WP/Issues/2016/12/31/The-Macroeconomic-Effects-of-Public-Investment-Evidence-from-Advanced-Economies-42892>
- Abiad, A., Almansour, A., Furceri, D., Granados, C.M. and Topalova, P. 2014. Is it time for an infrastructure push? The macroeconomic effects of public investment. *International Monetary Fund*, pp. 75-114. <http://www.imf.org/external/pubs/ft/weo/2014/02/pdf/c3.pdf>
- Adam, C. and Bevan, D. 2014. Public investment, Public Finance, and Growth: The Impact of Distortionary Taxation, Recurrent Costs, and Incomplete Appropriability. *International Monetary Fund Working Papers, 14(73)*, pp. 1-143.
- Afonso, A. and Sousa, R.M. 2011. What are the Effects of Fiscal Policy on Asset Markets?.. *Economic Modelling, 28(4)*: 1871-1890.
- Afonso, A., Ebert, W., Schuknecht, L. and Thone, M. 2005. Quality of public finance and growth" *European Central Bank Working Paper Series, 438*. Available at <https://ssrn.com/abstract=663965>
- African Development Bank. 2011. *AFDB approves USD 34 Million for Nigeria's PPP infrastructure capacity development*. Available at www.afdb.org/en/news-and-events/article/afdbapproves- Accessed 08 March 2016.
- African National Congress (ANC). 1994. *The reconstruction and development programme: A policy framework*. Johannesburg: Umunyamo Publications.
- Ahmed, H. and Miller, S.M. 1999. Crowding-out and crowding-in of the components of government expenditure. Department of Economics. University of Connecticut. Working Paper No 1999-02: *Contemporary Economic Policy, 18(1)*: 124-133 <https://doi.org/10.1111/j.1465-7287.2000.tb00011.x>

- Airoldi, M., Chua, J., Gerbert, P., Justus, J. and Rilo, R. 2013. Bridging the Gap. Meeting the Infrastructure Challenge with Public-Private Partnerships. *The Boston Consulting Group*, pp. 1-30. Available at <https://www.bcg.com/documents/file128534.pdf>. Accessed 12 February 2017.
- Akitoby, B., Hemmin, R. and Schwartz, G. 2007. *Public investment and public-private partnerships*. Washington, DC: International Monetary Fund.
- Aldasoro, I. and Seiferling, M. 2014. Vertical imbalances and the accumulation of government debt. *International Monetary Fund Working Paper, 14/209*, pp. 1-39. Available at <https://www.imf.org/external/pubs/ft/wp/2014/wp14209.pdf>.
- Alesina, A. and Perotti, R. 1994. The political economy and budget deficit. *NBER Working Paper 94/85*, pp. 1-35. Available at <http://www.nber.org/papers/w4637>
- Alfen, H.W., Jan, Y.C.A., Satyanarayana, N.K. and Singh, B. 2009. An introduction to PPP concept. In: H.W. Alfen, (ed.). *Public private partnerships in infrastructure development case studies from Asia and Europe*. Weimar: Bauhaus-Universität Weimar. Pp 1-40.
- Algarni, A.M., Arditi, D. and Polat, G. 2007. Build-operate-transfer in infrastructure]rojects in the United States. *Journal of Construction Engineering and Management*, 133(10): 728-735.
- Anderson, S. 2012. Public, private, neither, both? Publicness theory and the analysis of healthcare organisations. *Journal of Social Sciences and Medicine*, 74(3)::pp. 313-322.
- Andrés, L.A., Biller, D. and Schwartz, J. 2016. The infrastructure gap and decentralization. In: J. Frank and J. Martinez-Vazquez (eds.). *Decentralization and infrastructure in the global economy: From gaps to solutions*. London: Routledge. Pp. 33-54.
- Angelache, G.V., Jakova, S. and Oanea, D.C. 2016. Fiscal policy and capital market performance: Evidence from EU countries from central and eastern Europe. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 6(2): 34-43.
- Araújo, S. and Sutherland, D. 2010. Public private partnerships and investment in Infrastructure. *OECD Economics Department Working Papers*, 803. <http://dx.doi.org/10.1787/5km7jf6q8f0t-en>
- Arcadis, E. 2016. Third global infrastructure investment index 2016: Bridging the investment gap: *Design and onsultancy for Natural and Business Assets*, :1-28. Available at https://www.arcadis.com/media/3/7/E/%7B37E96DF6-82D5-45A6-87D8-5427637E736D%7DAG1015_GIII%202016_ONLINE%20FINAL_SINGLE%20PAGES.pdf. Accessed 10 December 2016.
- Ardagna, S., Caselli, F. and Lane, T. 2007. Fiscal discipline and the cost of public debt service: Some estimates for OECD Countries. *Journal of Macroeconomics*, 7(1). (DOI):10.3386/w10788
- Armstrong, A. 2005. Integrity, transparency and accountability in the public administration: Recent trends, regional and international development and emerging issues. *United Nations Economic and Social Affairs*. Available at www.unpan1.un.org/intradoc/groups/public/documents//un/unpan020955.pdf. Accessed 10 March 2016.

Aseidu, D. 2004. *Experts meet to discuss state of PPP in the Czech Republic*. Available at www.radio.cz/en/section/curraffrs/experts-meet-to-discuss-state-of-ppp-in-the-czech-republic, Accessed 18 May 2016.

Asian Development Bank Institute. 2011. *Appropriate financial Instruments for public private partnership to boost Cross Border infrastructure development: EU Experience*, Tokyo: ADBI. <http://hdl.handle.net/11540/3869>

Asilo, .F.A.V. 2014. Phillipine PPP experience: Lessons learned mid-stream. *Financier World*, June. Available at www.financierworldwide.com/philippine-ppp-experience-lessons-learned-mid-stream/#.VuEOo_I97IU, Accessed 10 March 2016.

Aslam, A., Beidas-Strom, S., Terrones, M. and Albornoz, J.Y. 2014. Are global imbalances at a turning point? In *World Economic Outlook October 2014: Legacies, Clouds, Uncertainties*. Washington, DC: International Monetary Fund. Pp. 115-154.

Atkinson, A.B. 2012. Public finance and the role of the state: International perspective. *Institute for New Economic Thinking, Oxford Martin School*, pp. 1-44.

Axis Consulting. 2013. *PPP Country Paper. South Africa. Submitted to SADC-DFRC3P Network Public Private Partnerships Working Group*, Wehrhem: Axis Consulting. Available at www.sadcpppnetwork.org/wp-content/uploads/2015/02/south_africa_27012014.pdf Azaino, E.U. 2012. Project finance protection system: Can this shield effectively cover lenders' exposure in time of default? *CEPMLP Annual Review-CAR*, 16: 1-20.

Aziz, A., Karthkeyan, D., Chatri, A.K. and Shah, S.K. 2012. Public private partnerships in India: Lessons from experiences. *Athena Infonomics*, pp. 1-80. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/186989/Report-PPPLessonsFromExperiences270812.pdf. Accessed 12 January 2017.

Babbie, E.R 1990. *Survey research methods*. (2nd ed). Belmont, CA: Wardworth.

Badu, E., Owusu-Manu, D.G., Edwards, D.J. and Holt, G.D. 2013. Analysis of strategic issues underpinning the innovative financing of infrastructure within developing countries. *Journal of Construction Engineering and Management*, 139(6): 726-736.

Bahan, D., Montelpare, A. and Savard, L. 2012. An analysis of the impact of public infrastructure spending in Quebec. *Gredi Groupe de Recherche en Economie et Developement International Working Paper*, 11/07, pp. 1-27.

Balaz, V. 2006. Political economy of the Slovak capitalism from perspective of the institutional and evolutionary economics. *Politická Economie*, 54(5): 610-631.

Baldacci, E. and Kumar, M. S. 2010. Fiscal deficits, public debt, and sovereign bond yields. *International Monetary Fund Working Paper*, 10/184. IMF. pp. 1-29.

Balkenborg, D., Kaplan, T.R. and Miller, T. 2010. *A simple economic teaching experiment on the hold-up problem*. Munich Personal RePEc Archive. Available at www.mpra.ub.uni-muenchen.de/24772/ Accessed 29 January 2018.

- Banda, I.N. 2013. Institutional mechanisms for water supply to informal settlements in Zambia: a grounded approach. (PhD thesis). Cape Town: University of Cape Town.
- Barbiero, F. and Darvas, Z. 2014. *In sickness and in health: Protecting and supporting public investment in Europe*. Bruegel Policy Contribution 02/2014. Available at <http://bruegel.org/2014/02/in-sickness-and-in-health-protecting-and-supporting-public-investment-in-europe/>
- Baron, D.P. and Myerson, R.B. 1982. Regulating a monopolist with unknown costs. *Econometrica*, 50(4): 911-930.
- Bárta, V. 1993. *Macroeconomic stabilization of economies in transition: Recent experiences, preliminary results and some lessons*. [e-book]. Laxenburg, Austria: WP-93-075 1993-12.
- Bárta, V. and Benacek, V. 1997. Standardní kapitalismus se Nepovedl: Zpět k tržním fundamentům [Standard capitalism did not succeed: Back to fundamentals]. Available at <http://www1.ceses.cuni.cz/benacek/Ben-Barta.pdf>. Accessed 16 September 2016.
- Battaglia, M.P. 2008. Nonprobability sampling. In *Encyclopedia of survey research methods*. Thousand Oaks, CA: Sage. Available at <http://dx.doi.org/10.4135/9781412963947.n337>. Accessed 10 August 2016.
- Bayliss, K. and Hall, D. 2000. *Independent power producers: A review of the issues: A PSIRU report for PSI*. Available at www.psiru.org/reports/2000-11-E-IPPs.doc. Accessed 14 March 2016.
- Bazeley, P. 2009. Analysing qualitative data: More than identifying themes. *Malaysian Journal of Qualitative Research*, 2: 6-22.
- Barzelay, N. 2001. *The new public management: Improving research and policy dialogue*. New York: Russel Sage Foundation.
- Beatty, R.P. and Zajac, E.J. 1994. Managerial incentives, monitoring and risk bearing: A study of executive compensation, ownership, and board structure in initial public offerings. *Administrative and Science Quarterly*, 39(2): 13-335.
- Beblavy, M. 2002. Understanding the waves of agencification and the government problems they have raised in Central and Eastern Europe. *OECD Journal on Budgeting*, 2(2):121-139.
- Benbasat, I., Goldstein, D.K. and Mead, M. 1987. The case research strategy in studies of information systems. *MIS Quarterly*, 11(3): 369-386.
- Bender, P. and Gibson, S. 2010. *Case study for the 10 years of Mbombela (Nelspruit) water and sanitation concession*. Available at <http://www.ppp.gov.za/Legal%20Aspects/Case%20Studies/Nelspruit%20Case%20Study%20Final%2029%20May%202010.pdf>. Accessed 18 October 2017.
- Benoliel, J.Q. 1996. Grounded theory and nursing knowledge. *Qualitative Health Research*, 6(3): 406-428.
- Berg, J. 1995. Evaluation of a self management program for adults with asthma. (PhD thesis) Pittsburg: University of Pittsburg.

- Berg, B.L. 2001. *Qualitative research methods for social sciences*. Boston: Allyn and Bacon.
- Berg, B.L. 2007. *Qualitative research methods for the social sciences*. (6th ed.). San Francisco: Pearson Education.
- Bernheim, D.B. 1989. A neoclassical perspective on budget deficit. *Journal of Economic Perspectives*, 3(2): 55-75.
- Bianchi, R.J. and Drew, M.E. 2013. Financing infrastructure investment: Old roads and new paths? Think 20 Papers 2014 Policy Recommendations for the Brisbane G20 Summit, 11th December 2013, 19, pp. 126-134. Lowy Institute for International Policy. Sidney. Available at https://www.lowyinstitute.org/.../bianchi_and_drew_financing_infrastructure_investment_old_roads_and_new_paths.pdf.
- Bini-Smaghi, L. 2008. *The financial crisis and global imbalances: Two sides of the same coin*. Available at www.bis.org/review/r081212d.pdf. Accessed 23 December 2015.
- Black, I. 2006. The presentation of interpretivist research. *Qualitative Market Research, An International Journal*, 9(4): 313-324.
- Blaikie, N. 2010. *Designing social research: The logic of anticipation*. (2nd ed.) Cambridge: Polity Press.
- Blumer, H.G. 1969. *Symbolic interactionism: Perspective and method*. Englewood Cliffs, NJ: Prentice-Hall.
- Boeuf, P. 2003. Public private partnerships for transport infrastructure projects. Paper at *Transport Infrastructure Development for a Wider Europe* (European Union/UNECE/European Investment Bank joint seminar), Paris.
- Bogetic, Z. and Fedderke, J.W. 2006. International benchmarking of South Africa's infrastructure performance. *World Bank Policy Research Working Paper Series 3830*, pp. 1-19. Available at <https://ssrn.com/abstract=922956>
- Bohm, A. 2004. Theoretical coding: Text analysis in grounded theory. In: U. Flick, E. Kadorff, and I. Steinke (eds.). *A companion to qualitative research*. London: Sage. pp. 270-275.
- Bohn, H. 1998. The behaviour of US debt and deficits. *The Quarterly Journal of Economics*, 113(3): 949-963.
- Bohn, F. 2010. The trade-off between monetary and fiscal stability: International lenders and political instability. *NICE Working Papers, 10-107*, pp. 1-25. Available at <https://pdfs.semanticscholar.org/a098/8d21857aaace666b31bc4c444e9bf1bca9cf.pdf>
- Bornhorst, F. and Ruiz-Arranz, M. 2013. Indebtedness and deleveraging in the Euro area. International Monetary Fund. *2013 Article IV. Consultation on Euro Area Policies: Selected Issues Paper, Country Report, 13/206*:46-72. Available at <https://www.imf.org/external/pubs/ft/scr/2013/cr13232.pdf>
- Bovino, B.A. 2015. Special report: Global infrastructure investment: Timing is everything (and now is the time). *Credit Week-The Global Authority on Credit Quality*, 35(3). Available at <http://aii-infra.info/members-only/wp-content/uploads/2015/02/CreditWeek-Jan-21-2015Global-Infrastructure-Investment.pdf>. Accessed 16 July 2016.

- Bowen, G.A. 2009. Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2): 27-40.
- Bower, D., Ashby, G., Gerald, K. and Smyk, W. 2002. Incentive mechanisms for project success. *Journal of Management in Engineering*, 18(1): 37-43.
- Braconier, H., Nicoletti, G. and Westmore, B. 2014. Policy challenges for the next 50 years. *OECD Economic Paper*, 9 : 1-67. Available at <http://dx.doi.org/10.1787/5jz18gs5fckf-en>
- Brenck, A., Beckers, T., Heinrich, M. and Von Hirschhausen, C. 2005. Public private partnerships in new EU member countries of Central and Eastern Europe: An economic analysis with case studies from the highway sector. Public Sector Management and Regulation Working Papers, WP-PSM-08. Available at https://ideas.repec.org/p/ris/eibpap/2005_010.html
- Brix, P.H. and Shick, A. 2002. *Government at risk: Contingent liabilities and fiscal risk*. Washington DC: World Bank.
- Broadway, R. 2001. The role of public choice considerations in normative public economics. Available at https://www.google.co.za/search?ei=HckLW9rUKoeXgAaX4r-YCg&q=broadway+the+role+of+public+choice+considerations+in+normative+public+economics.&dq=broadway+the+role+of+public+choice+considerations+in+normative+public+economics.&gs_l=psy-ab.12...2176.2176.0.4185.1.1.0.0.0.403.403.4-1.1.0...0...1c.1.64.psy-ab..0.0.0...0.4hftbq086jc
Accessed 09 February 2016.
- Bryman, A. 1988. *Quantity and quality in social research*. London: Unwin Hyman.
- Bryman, A. 2012. *Social research methods*. (4th ed.). Oxford: Oxford University Press.
- Buchanan, J.M. 1975. Public finance and public choice. *National Tax Journal*, 28(4)} 383-394.
- Burrell, G. and Morgan, G. 1979. Sociological and paradigms and organisational analysis: Elements of the sociology of corporate life. London: Hienemann Educational Books.
- Burger, P., Bergval, D. and Jacobzone, D.S. 2008. *Public private partnerships in pursuit of risk sharing and value for money*. Paris: Organisation for Economic Co-operation and Development.
- Calitz, E. and Fourie, J. 2007. Infrastructure in South Africa: Who is to finance and who is to pay? *Development Southern Africa*, 27(2), 177-191, DOI: 10.1080/03768351003740449
- Calitz, E., Sebrits, K. and Stuart, I. 2013. The accuracy of fiscal projections in South Africa. *South African Journal of Economic and Management Sciences*, 19(3): a 1142 DOI: <https://doi.org/10.4102/sajems.v19i3.1142>.
- Calverson, S. and Perera, O. 2012. *Harnessing the power of public private partnerships: The role of hybrid financing strategies in sustainable development*. Available at www.iisd.org/pdf/2012/harnessing_ppp.pdf. Accessed 05 May 2016.
- Campbell, J. and Lindberg, L. 1990. Property rights and the organisation of economic activity by the state. *American Sociological Review*, 55(5): 634-647.

- Cangiano, M., Curristine, T. and Lazare, M. (eds.). 2013. *Public financial management and Its emerging architecture*. Washington, DC: International Monetary Fund.
- Carbajo, J. 2007. The experience of the ERBD. *EBRD Conference on Knowledge Sharing and Capacity Building on Promoting Successful Public Private Partnerships in the UNECE Region*. 06 June 2007. Tel Aviv, pp. 1-16.
- Carson, D., Gilmore, A., Perry, C. and Gronhaug, K. 2001. *Qualitative marketing research*. London: Sage.
- Carty, A. 2012. *How to Ensure Successful PPP Procurement*. Available at https://www.google.co.za/search?ei=EgYMW-eRApPXgQbf_aW4BA&q=carty+How+to+Ensure+Successful+PPP+Procurement%2C&oq=carty+How+to+Ensure+Successful+PPP+Procurement%2C&gs_l=psy-ab.12..33i160k1.233276.234601.0.236198.2.2.0.0.0.363.363.3-1.2.0....0...1c.1.64.psy-ab..0.2.767.6..35i39k1.404.eqbAQnrZ4U8. Accessed 16 April 2016.
- Catlin, P. 2009. *Deputy Executive Director at Colorado Department of Transportation [Interview]* (13 August 2009).
- CEEC Research. 2014. *Quarter analysis of Slovak construction Q4/2014*. Available at www.informa.sk/plochy/galeria/ceec-research/kvartalna-analyza-slovenskeho-stavebnictva-Q4-2014.pdf. Accessed 18 January 2018.
- CEE Bankwatch Network. 2008. *Annual report*. Available at https://bankwatch.org/wp-content/uploads/1970/01/annual_report_2008_web.pdf.
- Charmaz, K. 2003. Grounded theory: Objectivist and constructionist methods, In: N.K. Denzin and Y.S. Lincoln (eds). *Strategies for qualitative inquiry*. (2nd ed.). Thousand Oaks, CA: Sage. pp. 249-291).
- Chan, C., Forwood, D., Roper, H., and Sayers, C. 2009. Public infrastructure: An international perspective. *Australian Government Productivity Commission. Productivity Commission Staff Working Paper, March 2009*, : 1-269.
- Chand, S.N. 2008. *Public finance. Vol 1*. New Delhi: Atlantic Publishers and Distributors.
- Chand, S. 2015. *Public finance: Subject matter and scope of public finance*. Available at www.yourarticlelibrary.com/finance/public-finance-subject-matter-and-scope-of-public-finance/26373/. Accessed 11 December 2015.
- Chege, L. 2001. *Recent trends in private financing of public infrastructure projects in South Africa*. Available at <https://www.semanticscholar.org/paper/Recent-Trends-in-Private-Financing-of-Public-in-Chege/5c2f5e435d4c12a6eeaa247c01dfc9647fdf8c27>.
- Chong, S. and Poole, E. 2013. Financing infrastructure: A spectrum of country approaches. *Reserve Bank of Australia Quarterly Bulletin*, September : 65-76.
- Chren, M. 2006. The Slovakian tax system: Key features and lessons for policy makers. *Prosperitas: A Policy Analysis Center for Freedom and Prosperity Foundation*, VI(VI): 1-25.
- Chukwuemeka, A., Nyewe, A.N. and Ugondah, N.C. 2013. Public spending on transport infrastructure and economic growth in Nigeria, 1981-2010. *Journal of Sociological Research*, 4(2): 438-446.

- Clayton, J.L. 2000. *The global death bomb*. London: ME Sharpe.
- Clont, J.G. 1992. The concept of reliability as it pertains to data from qualitative studies. Paper presented at the *Annual Meeting of the South West Educational Research Association, Houston, TX* .
- Čoček, T. 2015. The Czech PPP kickoff in transport infrastructure: Possibility to implement PPP on R4 and R7 expressways. Available at <http://www.ceskainfrastruktura.cz/wp-content/uploads/2015/03/ARI-PPP-Kickoff-2015-Program-150416-en1.pdf> Accessed 10 January 2016.
- Cochran, W.G. 1953. *Sampling techniques*. New York: John Wiley and Sons.
- Coeure, B. 2014. Structural reforms: Learning the right lessons from the crisis. *Keynote s speech at Economic Conference, Latvijas Banka. Riga. 17 October 2014*.
- Collier, P. and Mayer, C. 2014. *Unlocking private finance for African infrastructure*. Available at novafrica.org/wp-content/uploads/2015/06/Paul-Collier.pdf
- Collier, P. and O'Connell, S. 2007. African growth: Opportunities and choices, In: B. Ndulu, R. Bates, P. Collier and S. O'Connell (eds). 2007. *The political economy of African economic growth, 1960-2000*. Cambridge: Cambridge University Press.
- Collins, H.M. 1983. *An empirical relativist programme in the sociology of power and symbolism*. London: Routledge and Kegan Paul.
- Colverson, S. and Perera, O. 2012. *Harnessing the power of public private partnerships: The role of hybrid financing strategies in sustainable development*. Winnipeg, MN: International Institute for Sustainable Development.
- Comaniciu, C. and Bunescu, L. 2010. Systematic approach to the functions of public finances: A necessity for the Romanian economy. *The Anals of the Stefan Cel Mare University of Suceava. Fascicle of the Faculty of Economics and Public Administration*, 10(2):228-234.
- Coombes, D. and Verheijen, T. (eds.). 1997. *Public management reform: Comparative experiences from East and West*. Brussels: European Commission.
- Copley, P. 2001. *South African experience in PPPs*. Presentation to the SADC session of ATC. 18 July 2001. Development Bank of Southern Africa.
- Corbin, J. and Strauss, A. 2008. *Basics of qualitative research: Techniques for developing grounded theory*. Thousand Oaks, CA: Sage.
- Cost Action TU1001. 2013. Public private partnerships in transport: Trends and theory P3T3: 2013 Discussion papers Part 1 Country profiles. In: K. Verhoest, N. Carbonara, V. Lember, O. Helby Petersen, W Scherrer, M. (eds). *Public private partnerships in transport: Trends and theory P3T3*. Bari, Italy: Arti Grafiche Favia srl
- Craig, O.O., Brenet, A.C. and Dinter, F. 2017. Concentrated solar power (CSP) innovation analysis in South Africa. *South African Journal of Industrial Engineering*, 28(2): 14-27.
- Crampton, N. 2016. *SWOT analysis of the construction sector in South Africa. Sector News. Standard Bank Financial Data*. Available at <https://bizconnect.standardbank.co.za/sector->

news/construction/swot-analysis-of-the-construction-sector-in-south-africa.aspx. Accessed 17 January 2018.

Creamer Media. 2017. *Construction 2017: A review of South Africa's construction sector*. Available at www.creamermedia.co.za/article/construction-2017-a-review-of-south-africas-construction-sector-pdf-report-2017-02-03. Accessed 17 January 2018.

Creswell, J.W. 2002. *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Upper Saddle River, NJ: Merrill-Prentice Hall.

Creswell, J.W. 2003. *Research design: Qualitative, quantitative and mixed methods approaches*. (2nd ed.). Thousand Oaks, CA: Sage.

Creswell, J.W. 2005. *Educational research, planning: Conducting and evaluating quantitative and qualitative research*. Uppersaddle River, NJ: Merrill.

Creswell, J.W. 2014. *Research design: Qualitative, quantitative, and mixed methods approaches*. (4th ed.). Los Angeles, CA: Sage Publications.

Creswell, J.W. and Plano Clark, V.L. 2007. *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.

Crotty, M. 1998. *The foundations of social research meaning and perspective in the research process*. Thousand Oaks, CA: Sage.

Crotty, M. 2003. *The foundations of social research meaning and perspective in the research process*. Thousand Oaks, CA: Sage.

Cruiz, C.O. and Marques, R.C. 2013. *Infrastructure public private partnerships: Decision, management and development*. Berlin: Springer.

CspWorld.org. 2015. *Khi Solar One, CSP MAP*. Available at www.khi.solarone-cspworldmap-cspworld.html. Accessed 19 November 2018.

Cuttaree, V. and Mandri-Perrott, C. 2011. *Public private partnerships in Europe and Central Asia: Designing crisis resilient strategies and bankable projects*. Washington DC: IBRD and World Bank.

Czech National Bank. 2016. *Public procurement data as a leading indicator of public investment*. Prague: Czech National Bank.

Czech Republic. Ministry of Finance in the Czech Republic (MFCR). 1999. *Czech taxation in 1999 (Ref.No 111/1700/2000)*. Prague: Ministry of Finance in the Czech Republic.

Czech Republic . Ministry of Finance in the Czech Republic (MFCR). 2015. *Czech public finance deficit to drop by two-thirds by 2018*. Prague: Ministry of Finance in the Czech Republic.

Daniels, J.D. and Cannice, M.V. 2004. Interview studies in international business research. In: R. Marschan-Piekkari and C. Welch (eds.). *Handbook of qualitative research methods for international business*. Cheltenham, UK: Edward Elgar. pp. 185-206.

- Das, T.K., Teng, B.S. 2000. A resource based theory of strategic alliances. *Journal of Management*, 26(1): 31-61.
- Das, U.S., Papaioannou, M.G. and Trebesh, C. 2012. *Restructuring sovereign debt: Lessons from recent history*. Available at www.imf.org/external/np/seminars/eng/2012/fincrisis/pdf/ch19.pdf. Accessed 10 June 2016.
- Dachs, W. 2010. In Holman, J. Are partnerships the answer to South Africa's ailing public hospitals? *Engineering News*. Available at <http://www.engineeringnews.co.za/article/are-partnerships-the-answer-to-south-africas-ailing-public-hospitals-2010-06-04>. Accessed 19 October 2016.
- Davies, H.A. 2003. *Project finance: Practical case studies :Resources and infrastructure*. (2nd ed.). London: Euromoney Books.
- Dawson, C. 2002. *Practical research methods; A user- friendly guide to mastering research: Techniques and projects*. Oxford: HowtoBooks.
- Deau, T. and Touati, J. 2014. Using PPPs to fund critical greenfields infrastructure projects: Rethinking infrastructure. *Voices from the Global Infrastructure Initiative, May 2014*. London: McKinsey .
- Delhi, V.S.K., Palukuri, S. and Mahalingam, A. 2010. *Governance issues in public private partnerships in infrastructure projects in India*. Paper presented at the Engineering Project Organizations Conference. South Lake Tahoe, CA. Available at http://www.academiceventplanner.com/EPOC2010/Papers/EPOC_2010_DelhiPalukuriMahalingam.pdf
- Della Croce, R. and Yermo, J. 2013. *Institutional investors and infrastructure financing, OECD Working Papers on Finance, Insurance and Private Pensions, 36*, OECD Publishing. Available at http://www.oecd.org/daf/fin/private-pensions/WP_36_InstitutionalInvestorsAndInfrastructureFinancing.pdf
- Della-Croce, R. and Gatti, S. 2014. Financing Infrastructure. International Trends. *OECD Journal of Financial Market Trends*, 1: 123-138. DOI <http://dx.doi.org/10.1787/fmt-2014-5jxvpb4jfrf1>.
- Denzin, N.K. 1970. *The research act: A theoretical introduction to sociological methods*. New York: Aldine.
- Denzin, N.K. and Lincoln, Y.S. 2005. *The Sage handbook of qualitative research*. (3rd ed.). Thousand Oaks, CA: Sage.
- Dewatripont, M. and Legros, P. 2005. Public private partnerships: Contract design and risk transfer. *European Investment Bank Papers*, 10(1): 120-145.
- Dheret, C., Martens, H. and Zuleeg, F. 2012. Can public private partnerships (PPP) lever investment to get Europe out of economic crisis? *European Policy Center Issue Paper*, 71: 1-25.
- Dixit, A. 1997. Power of incentives in private versus public organizations. *The American Economic Review*, 87(2): 378-382.
- Djankov, S. and Murrell, P. 2000. *The determinants of enterprise restructuring in transition: An assessment of evidence*. Washington DC: World Bank.

- Dobbs, R., Pohl, H., Lin, D.Y., Mischke, J., Garemo, N., Hexter, J., Matzinger, S., Palter, R., and Nanavatty, R. 2013. *Infrastructure productivity: How to save \$1 trillion a year: The infrastructure challenge*. Washington, DC: McKinsey Global Institute.
- Domingues, S. and Zlatkovic, D. 2014. Contractual Flexibility in Transport Infrastructure PPP. *AET European Transport Conference*, pp. 1-18.
- Douglas, D. 2003. Inductive theory generation: A grounded approach to business inquiry. *Electronic Journal of Business Research Methods*, 2(1): 47-54.
- Dromel, L.N. 1997. *Stabilizing fiscal policy with capital market imperfections Working paper*. Available at www2.toulouse.inra.fr/lerna/congres/adres/Papiers/dromel.pdf. Accessed 08 June 2016.
- Dudkin, G. and Valila, T. 2005. *Transaction costs in public-private partnerships: A first look at the evidence*, Brussels: European Investment Bank.
- Dudovskiy, J. 2016. The ultimate guide to writing a dissertation in business studies. A step-by-step assistance. Available at <https://research-methodology.net/about-us/ebook>.
- Dziobek, C., Gutierrez, M.C. and Kufa, P. 2011. Measuring fiscal decentralization: Exploring the IMF's databases, *International Monetary Fund Working Paper*, 11/126. IMF
- Easterby-Smith, M., Thorpe, R. and Lowe, A. 2002. *Management research: An introduction*. (2nd ed.) London: Sage.
- Economist Intelligent Unit (EIU). 2015. The 2015 global microscope on financial inclusion. Intelligence Unit. The Economist Group.
- Edame, G.E. and Fonta, W.M. 2014. The impact of government expenditure on infrastructure in Nigeria: A co-integration and error correction specification. *International Journal of African and Asian Studies*, 3: 50-63.
- Edirisingha, P. 2012. Interpretivism and positivism: Ontological and epistemological perspectives. *Research Paradigms and Approaches*. Available at <https://prabash78.wordpress.com/2012/03/14/interpretivism-and-positivism-ontological-and-epistemological-perspectives/>. Accessed on 13 March 2017.
- Edwards, C. 2013. Infrastructure investment: A state, local and private responsibility. *Tax and Budget Bulletin*, 76: 1-7.
- Edwards, P. and Shaoul, J. 2003. Partnerships for better, for worse? *Journal of Accounting, Auditing and Accountability*, 16(3): 397-421.
- Ègert, B., Kozluk, T. and Sutherland, D. 2009. Infrastructure and growth: Empirical evidence. *Economics Department Working Papers*, 685, OECD Publishing. <http://dx.doi.org/10.1787/225682848268>
- Eggertsson, T. 1996. *A note on the economics of institutions*. Cambridge: Cambridge University Press.
- Ehlers, T. 2014. Understanding the challenges for infrastructure finance. *BIS Working Papers*, 454. *Monetary and Economic Department*. Bank for International Settlements:1-23. Available at <https://ideas.repec.org/p/bis/biswps/454.html>

- Ehrenberger, M. 2014. Cost planning of PPP projects in the Czech Republic. (Masters thesis). Prague: Charles University.
- Eisner, E.W. 1991. *The enlightened eye: Qualitative inquiry and the enhancement of educational practice*. Toronto: Collier Macmillan Canada.
- Eisenhardt, K.M. 1989a. Agency theory: An assessment and review. *Academy of Management Review*, 14(1): 57-74.
- Eisenhardt, K.M. 1989b. Building theories from case study research. *Academy of Management Review*, 14(4): 532-550.
- Eisenhardt, K.M. and Graebner, M. E. 2007. Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50(1); 25-32.
- Eldrup, A. and Schutze, P. 2013. *Organisation and financing of public infrastructure projects. A path to economic growth and development of the Danish welfare model*. Copenhagen: Public Private Partnerships.
- El-Erian, M. 2012. Stable disequilibrium. *Journal of Finance and Development*, 49(2): 27-29.
- Elson, A. 2013. *Globalization and development: Why East Asia surged ahead and Latin America fell behind*. New York: Palgrave Macmillan.
- Emirullah, C. and Azam, M. 2014. Examining public private partnerships in ASEAN countries: The role of investment climate. *Journal of Theoretical and Applied Economics*, XXI(2): 67-76.
- Engel, E., Galetovic, A. and Fischer, R. 2013. The basic public finance of public private partnership. *Journal of European Economic Association*, 11(1): 83-111.
- Engel, E., Fischer, R. and Galetovic, A. 2009. Soft budgets and renegotiations in public private partnerships. *National Bureau of Economic Research Working Paper Series, 15300*. Available at <https://ideas.repec.org/p/udc/wpaper/wp408.html>
- Erden, L. and Holcombe, R.G. 2005. The effects of public investment on private investment in developing economies. *Public Finance Review*, 33(5): 575-602.
- Essey, J. 2010. In Holman, J. Are partnerships the answer to South Africa's ailing public hospitals? *Engineering News*. Available at <http://www.engineeringnews.co.za/article/are-partnerships-the-answer-to-south-africas-ailing-public-hospitals-2010-06-04>. Accessed 18 July 2016.
- Estache, A., Serebrisky, T. and Wren-Lewis, 2015. Financing infrastructure in developing countries. 2015. *Oxford Review of Economic Policy, Forthcoming*. Available at <https://ssrn.com/abstract=2654287>
- Esty, B.C. and Sesia, A. 2010. An Overview of Project Finance and Infrastructure Finance 2009 Update. *Harvard Business Review*, June. <https://hbr.org/product/an-overview-of-project-finance-and-infrastructure-finance-2009-update/210061-PDF-ENG>
- European Bank for Reconstruction and Development (EBRD). 2011. *Assessment of the quality of the PPP legislation and of the effectiveness of its implementation*, Bratislava: EBRD.
- European Bank for Reconstruction and Development. (EBRD). 1996. *Transition report: Infrastructure and savings*, London: EBRD.

- European Investment Bank (EIB). 2017. Backing South Africa's first solar tower projects. Available at www.eib.org. Accessed 19 November 2018.
- European Commission (EC). 2003. *Guidelines for successful public private partnership*. Directorate General Regional Policy, Brussels: European Commission.
- European Commission (EC). 2014a. Report on public finance in EMU. *European Economy*, 9/2014. Available at http://ec.europa.eu/economy_finance/publications/.
- European Commission (EC). 2014b. *Report on public finances in EMU*. Belgium: European Union.
- European Commission (EC). 2015. *Commission staff Working Paper. Country Report: Slovakia 2015*. Brussels: EU.
- European Commission (EC). 2016. *Macroeconomic development in the Eastern and Central Europe. EC Institutional Paper, 20*. Brussels: EU.
- European PPP Expertise Centre (EPEC). 2014a. *Market update: Review of European PPP market in 2013*. Luxembourg: EPEC. Available at www.eib.org/attachments/epec/epec_market_update_2013_en.pdf
- European PPP Expertise Centre (EPEC). 2014. *Establishing and reforming PPP units: Analysis of EPEC member PPP units and lessons learnt*. EPEC. Available at <https://ppp.worldbank.org/public-private-partnership/library/establishing-and-reforming-ppp-units-analysis-epec-member-ppp-units-and-lessons-learnt>
- Eyraud, L. and Lusinyan, L. 2013. Vertical fiscal imbalances and fiscal performance in advanced economies. *Journal of Monetary Economics*, 60(5): 571-587.
- Fainboim, I., Last, D. and Tandberg, E. 2013. Managing Public Investment. In: M. Cangiano, T. Curristine and M. Lazare (eds.). *Public financial management and its emerging architecture*. Washington, DC: International Monetary Fund pp. 311-337.
- Farlam, P. 2005. *Working together: Assessing public private partnerships in Africa*. [Braamfontein, South Africa]: South African Institute of International Affairs.
- Farlam, P. 2005. Assessing public private partnerships in Africa. In: R. Herbet and S. Cruzd, (eds.). *Nepad policy focus report, 2*. Pretoria: The South African Institute of International Affairs. pp. 1-70.
- Fedderke, J.W., Perkins, P. and Luiz, J.M. 2005. Infrastructural investment in long-run growth: South Africa, 1875-2001. *World Development*, 34 (6): 1037-1059.
- Feldstein, M. 2009. Rethinking the role of fiscal policy. *American Economic Review, Papers and Proceedings*, 99(2): 559-559
- Feremo, G. 2015. *United Nations Department of Economic and Social Affairs*. Available at www.un.org/esa/ffd/ffd3/blog/money-is-not-the-issue-access-to-investable-projects-is.html., Accessed 21 September 2015.
- Ferrarini, B., Jha, R. and Ramayandi, A. (eds.). 2012. *Public debt sustainability in developing Asia*. London: Asian Development Bank and Routledge.

Ferreira, D. and Khatami, K. 1996. *Financing private infrastructure in developing countries*. World Bank Discussion Paper, 343, Washington DC: World Bank.

Ferreiro, J., Garcia-Del-Valle, M.T., and Gomez, C. 2009. Is the composition of public expenditures converging in EMU countries? *Journal of Post Keynesian Economics*, 31(3): 459-484.

Feyzioglu, T. 2009. *International experience in public private partnerships*. Chongqing: International Monetary Fund.

Fic, T. and Portes, J. 2013. *Macroeconomic impacts of infrastructure spending: Report to trade union congress*. Available at https://www.tuc.org.uk/sites/default/files/tucfiles/infrastructure_spending.pdf

Fidrmuc, J., Klein, C., Price, C. and Wörgötter, A. 2013. Slovakia: A catching up Euro Area member in and out of the crisis. *IZA Policy Paper Series*, 55, pp. 1-24. Available at <https://www.iza.org/publications/pp/55/slovakia-a-catching-up-euro-area-member-in-and-out-of-the-crisis>.

Fisk, R. 2009. A customer liberation manifesto. *Service Science*, 1(3), pp. 135-141. In: A. Giddens, (ed.). *The constitution of society: Outline of the theory of structuration*. Cambridge, UK: Polity Press.

Flyvbjerg, B. 2006. Five misunderstandings about case study research. *Qualitative Inquiry*, 12(2): 219-245.

Fombad, M.C. 2013. Accountability challenges in public private partnerships from a South African perspective. *African Journal of Business Ethics*, 7(1): 11-25.

Forrer, J., Kee, J.E., Newcomer, J. E. and Boyer, E. 2010. Public private partnerships and the public accountability question. *Public Administration Review*, 70(3): 475-484.

Forster, V., Butterfield, W., Chuan, C. and Nataliya, P. 2009. *Building bridges: China's growing role as infrastructure financier for sub-Saharan Africa*. Washington, DC: The World Bank: Public-Private Infrastructure Advisory Facility. (Trends and Policy Options, 5).

Fossey, E., Harvey, C., McDermott, F. and Davidson, L. 2002. Understanding and evaluating qualitative research. *Australian and New Zealand Journal of Psychiatry*, 36(6): 717-732.

Fourie, J. 2006. Some policy proposals for the future infrastructure investment in South Africa. *Stellenbosch Economic Working Papers*, 05/06, pp. 1-32. Available at <https://www.ekon.sun.ac.za/wpapers/2006/wp052006/wp-05-2006.pdf>

Frey, L.R., Carl, H.B. and Gary, L.K. 2000. *Investigating communication: An introduction to research methods*. (2nd ed).. Boston: Allyn and Bacon.

Furnas, A. 2005. *Transparency Case Study: Public procurement in the Slovak Republic*. Available at <https://sunlightfoundation.com/2013/08/12/case-study-public-procurement-in-the-slovak-republic/>

Fussell, A. and Reresford, E. 2009. *Public private partnerships: Understanding the challenge*. (2nd ed.). [Vancouver, British Columbia: Columbia Institute Center for Civic Governance. Available at www.civicgovernance.ca/files/uploads/columbia3_eng_v8-web.pdf., Accessed 10 March 2016.

- Garvin, M.J. 2003. Role of project delivery systems in infrastructure improvement. In: K.R. Molenaar, and P.S. Chinowsky (eds). *Proceedings of the 2003 Construction Research Congress, March 19-21*. Honolulu: HI, ASCE, CD ROM.
- Garvin, M., and Bosso, D. 2008. Assessing the effectiveness of infrastructure public private partnerships programs and projects. *Public Works Management Policy* 13(2): 162-174.
- Gemson, J., Gautami, K.V. and Rajan. A.T. 2012. Impact of private equity investments in infrastructure projects. *Journal of Utilities Policy*, 12:59-65.
- Gill, P., Stewart, K., Treasure, E. and Chadwick, B. 2008. Methods of data collection in qualitative research: Interviews and focus groups. *British Dental Journal*, 204: 291-295.
- Glaser, B.G. 1978. *Theoretical sensitivity: Advances in the methodology of grounded theory*. Mill Valley, CA: Sociology Press.
- Glaser, B.G. and Strauss, A.L. 1967. *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.
- Glesne, C. 1999. *Becoming qualitative researchers: An introduction*. (2nd ed.). Ontario: Longman
- Gönenç, R. and Walkenhorst, P. 2004. Rationalising public expenditure in the Slovak Republic. *OECD Economics Department Working Papers*, 384(6),: 1-37.
- Goulding, C. 1999. Grounded theory: Some reflections on paradigms, procedures and misconceptions. *University of Wolverhampton Business School. Working Paper Series*. WP006/99,
- Gqoli, S. 2005. *Public private partnerships in South Africa*. Pretoria: National Treasury PPP Unit.
- Gray, D.E. 2004. *Doing research in the real world*. London: Sage.
- Greve, N. 2015. R274 billion earmarked for infrastructure development in 2015//16: MTEF spend cut. *Engineering News*. Available at http://www.engineeringnews.co.za/article/nene-earmarks-r274bn-for-infrastructure-development-in-201516-but-cuts-mtef-spend-2015-02-25/rep_id:4136
- Grimsey, D. and Lewis, M.K. 2004. *Public private partnerships: The worldwide revolution in infrastructure provision and project finance*. Cheltenham, UK: Edward Elgar.
- Grogoli, F. Public Expenditure in the Slovak Republic: Composition and technical efficiency, *International Monetary Fund Working Paper*, 12/173. IMF.
- Grooves, H.M. 1958. *Financing government*. (5th ed.). New York: Henry Holt.
- Group of Twenty (G20). 2014. *Comprehensive growth strategy: South Africa*. Melbourne: G20 Australia.
- Groves, T. 1973. Incentives in teams. *Econometrica*, 41(4): 617-631.
- Guba, E.G. and Lincoln, S.Y. 1994. Competing paradigms in qualitative research. In N.K Denzin & Y.S. Lincoln (eds.). *Handbook of qualitative research*. London: Sage. pp 15-117.

- Gummesson, E. 2005. Qualitative research in marketing: Road-map for a wilderness of complexity and unpredictability. *European Journal of Marketing*, 39(3/4): 307-237.
- Gupta, O. and Biswas, N. 2010. Public private partnerships: Indian economy. *SCMS Journal of Indian Management*, 7 : 44-53.
- Gutman, J., Sy, A. and Chattopadhyay, S. 2015. *Financing African infrastructure: Can the world deliver?* Washington, DC: Global Economy and Development at Brookings.
- Hagerman, E. 2012. *Challenges to regional infrastructure development*. Johannesburg: Development Bank of Southern Africa.
- Haidar, H. and Bartel-Radic, A. 2017. Success factors of interorganizational collaboration with non-profit-organizations: The case of the renewable energy sector. *XXVIe Conference Internationale de Management Strategique, AIMS*. Lyon, 7-9 June 2017
- Hajjej, I., Hillairet, C., Mnif, M. and Pontier, M. 2017. *Optimal contract with moral hazard for public private partnerships*. Available at arXiv:1703.01754v1 [math.OC] Accessed 06 March 2017.
- Hall, D. 2014. *Why we need public spending: a report for EPSU et PSI*. London: Public Services International Research Unit (London).
- Hallebone, E. and Priest, J. 2009. *Business and management research: Paradigms and practices*. London: Palgrave Macmillan.
- Hammami, M., Ruhashyankiko, J.F. and Yehoue, E.B. 2006. Determinants of public private partnerships in infrastructure. *International Monetary Fund Working Paper, 06/99*, April.
- Hammersley, M. and Forster, P. and Gomm, R.(eds.). 2000. *Case study method: A comprehensive introduction*. London: Sage.
- Hanousek, J. and Kocenda, E. 2011. Public investment and growth in the EU new member states: An overview. In: M. Florio (ed.). *Public investment, growth and fiscal constraints: Challenges for the EU new member states*. Cheltenham, UK: Edward Elgar. pp. 155-228.
- Hanton-Fardad, A., Wilkins, M., Six, J.M., Lysenko, T. and Tahiri, S. 2015. Special report: Global infrastructure investment. Time is everything. Building for Growth. Can the UK Close its Infrastructure Investment Deficit? *McGraw Hill Financial. Creditweek. 21 January 2015*, 35(3):pp. 1-5.
- Harding, J., Bodarwe, H. and Cadez, I. 2010. *Evaluation of availability and service performance based payment mechanism for PPP road traffic infrastructure projects*, Washington DC: Transportation Research Board 88th Annual Meeting.
- Harris, C. 2003. *Private participation in infrastructure in developing countries: trends, impact, and policy lessons*, Washington DC: World Bank.
- Harris, J., Hughes, R., Lyjungman, G. and Sateriale, C. 2013. Designing and building public finance management innovations and reforms: Medium term budget frameworks in advanced economies: Objective, design, and performances. In: M. Cangiano, T. Curristine, and M. Lazare, (eds). *Public financial management and its emerging architecture*. Washington DC: International Monetary Fund. pp. 137-165.

- Harvey, R.S. 2002. Public finance: Essay for the Encyclopedia of Public Finance. *CEPS Working Paper, 80*. March 2002, pp. 1-33.
- Hatheway, L. 2009. Outlook for global infrastructure. *UBS Global Asset Management*, October :1-13.
- Havlicek, P., Pilat, P., Svoboda, M. and Tok, D. 2014. Panel: Dopravní Infrastruktura Strategie-Prostředí-Finance-Lidé [Panel: Transport Infrastructure Strategy-Resources-Finance-People.]. Panel discussion at *The Czech National Infrastructure Conference*. Prague
- Heakal, L.R. 2018. What is the quantity theory of money?. Investopedia. Available at www.investopedia.com/insights/what_is_the_quantity_theory_of_money/ Accessed 28 January 2018.
- Hefetz, A. and Warner, M. 2004. Privatization and its reserves: Explaining the dynamics of the government contracting process. *Journal of Public Administration Research and Theory*, 14(2):171-190.
- Heller, P. 2005. Understanding fiscal space. *International Monetary Fund Policy Discussion Paper, 05/04*. IMF.
- Heller, P. 2005. Back to basics: Fiscal space: What it is and how to get it. *Finance and Development, IMF Quarterly Magazine*, 42(2). Available at <http://www.imf.org/external/pubs/ft/fandd/2005/06/basics.htm>. Accessed on 17 October 2016.
- Henchkel, T. and McKibbin, W. 2010. *The economics of infrastructure in a globalised world: issues, lessons and future challenges*. Lowy Institute for International Policy, pp. 1-114. Available at https://www.brookings.edu/wp-content/uploads/2016/06/0604_infrastructure_economics_mckibbin.pdf. Accessed on 14 March 2016
- Henisz, W.J, Levitt, R.E. and Scott, W.R. 2012. Toward a unified theory of project governance: Economic, sociological and psychological supports for relational contracting. *Engineering Project Organizational Journal*, 2: 37-55.
- Henk, G.G. 1998. Privatization and public/private partnerships projects and its policy implications: Game theoretic view. *Journal of Construction Engineering and Management* , 14(4): 28.
- Herten, H.J. and Peeters, W.A.R. 1986. Incentive contracting as a project management tool. *International Journal of Project Management*, 4(1): 34-39.
- Heymans, C. and Schur, M. 1999. National and provincial PPPs: Issues of supervision and accountability. *Development Southern Africa*, 16(4):607-622.
- Hirschhausen, C. 2002. *Modernizing infrastructure in transformation economics*. Cheltenham. UK: Edward Elgar.
- Hirschman, E.C. 1985. Primitive aspects of consumption in modern American society. *Journal of Consumer Research*,12: 237-249.
- HM Treasury. 2004. *Value for money, assessment guidance*, London: The Treasury.
- HM. Treasury. 2013. *Public private partnerships: Signed project list*. Available at www.hm-treasury.gov.uk/ppp_pfi_stats.htm. Accessed 09 March 2016.

- Ho, P.S. and Tsui, C.W. 2009. The transaction costs of public private partnerships: Implications on PPP governance. Paper presented at Conference: *Global Governance in Project Organizations*, South Lake Tahoe, CA. DOI: 10.13140/2.1.3298.8962
- Ho, S.P. 2006. Model for financial renegotiation in public private partnership project and its policy implications: Game theoretic view. *Journal of Construction Engineering and Management*, 132(7): 678-688.
- Hodge, G. and Greve, C. 2008. The PPP debate: Taking stock of the issues and renewing the research agenda, Paper presented at *International Research Society for Public Management Annual Conference*. Brisbane, Australia 26-28, March 2008.
- Holcombe, R.G. 1998. The foundations of normative public finance. In: F. Thompson and M.T. Green (eds.). *Handbook of public finance*. New York: Marcel Dekker. pp. 1-2.
- Holloway, W. and Jefferson, T. 2000. *Doing qualitative research differently: Free association, narrative and the interview method*. London: Sage Publications.
- Holman, J. 2010. Are partnerships the answer to South Africa's ailing public hospitals?. *Engineering News*. <http://www.engineeringnews.co.za/article/are-partnerships-the-answer-to-south-africas-ailing-public-hospitals-2010-06-04>
- Holstein, J.A. and Gubrium, J.F. 1997. Active interviewing. In: D. Silverman (ed.). *Qualitative research: Theory, methods and practice*. London: Sage.
- Hrncir, R. 2009. Delivering infrastructure through PPP: PPP projects in the Czech Republic. *The PPP Journal*, 66: 70-85.
- Hudson, L. and Ozanne, J. 1988. Alternative ways of seeking knowledge in consumer research. *Journal of Consumer Research*, 14(4): 508-521.
- Hussein, M.E.L., Hirst, S., Salyers, V. and Osuji, J. 2014. Using grounded theory as a method of inquiry: Advantages and disadvantages. *Journal of Qualitative Report*, 19(13): -15.
- Infrastructure Consortium for Africa, 2006. *The user guide for project preparation*. Available online www.icafrica.org/. Accessed 14 October 2015.
- Infrastructure Dialogues. 2015. *South African conversations on infrastructure*. Johannesburg: Infrastructure Dialogue Partners.
- International Monetary Fund (IMF). 1996. Confronting budget deficits. *Economic Issues*, 3: 1-20.
- International Monetary Fund (IMF). 1998. *World Economic Outlook*. October 1998. Ch 1.
- International Monetary Fund (IMF). 2003. Public debt in emerging markets. *World Economic Outlook*. Washington DC: IMF.
- International Monetary Fund (IMF). 2005. *Public investment and fiscal policy: Lessons from the pilot country studies, SM/05//118*, Washington DC: IMF.

- International Monetary Fund (IMF). 2007. *Staff report on the multilateral consultation on global imbalances with China, the Euro Area, Japan, Saudi Arabia and the United States*, Washington DC: IMF.
- International Monetary Fund (IMF). 2009. Towards a principal-agent based typology of risks in public private partnerships. *IMF Working Papers 9/177*, pp. 1-24.
- International Monetary Fund (IMF). 2011. Addressing fiscal challenges to reduce economic risks. *World Economic and Financial Surveys. Fiscal monitor* . Washington DC: IMF.
- International Monetary Fund (IMF). 2012. *Fiscal transparency, accountability and risk*. Washington. DC: IMF.
- International Monetary Fund (IMF). 2013. Fiscal adjustments in an uncertain world. *World Economic and Financial Surveys. Fiscal Monitor*, April 2013: 1-83.
- International Monetary Fund (IMF). 2014. *South Africa. Consultation staff report, Informational Annex, Debt sustainability Analysis, Staff statement, Press release, and the Statement by the Executive Director*. Washington DC: IMF.
- International Monetary Fund (IMF). 2014. *Currency composition of official foreign exchange reserves (COFER)*. Available at www.imf.org/external/np/sta/cofer//eng/cofer.pdf. Accessed 14 December 2015.
- International Monetary Fund (IMF). 2014. *Czech Republic: Consultation staff report, Press release, and statements by the Executive Director for the Czech Republic. IMF Country Report No 14/256*, Prague: IMF.
- Iossa, E. and Martimort, D. 2008. The simple micro-economics of public private partnerships. *CEIS Research Papers*, 6(12). Available at <http://ideas.repec.org/p/rtv/ceisrp/139.html>
- Irene, D. 2014. The ontological and epistemological foundations of qualitative and quantitative approaches to research, with particular reference to content and discourse analysis of textbooks. *International Journal of Economics, Commerce and Management* , II(10): 1-17.
- Ishmael, S. and Ajija, S.R. 2013. Critical success factors of public private partnership (PPP) implementation in Malaysia. *Asia Pacific Journal of Business Administration*, 5(1): 6-19.
- Izák, V. 2004. Public debt service, interest rates and fiscal variables in transition countries. *Prague Economic Papers*, (1):3-15.
- Jain, T.R. and Kaur, S.J. 2009. *Public finance and international trade*. (10th ed.) New Delhi: VK Publications.
- Janeba, T. 2014. Executive director at PWC-Prague. Discussion about PPP. [Interview] 14 September 2014.
- Jeneralova, I. 2011. *Development of Czech economy: Business and economic facts*. Available at www.czech.cz/en/Business/Economic-facts/Development-of-Czech-economy. Accessed 15 May 2016.
- Jensen, M. and Meckling, W. 1976. Theory of the firm: Managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics*, 3: 305-360.

Jerome, A. and Ariyo, A. 2004. *Infrastructure reform and poverty reduction in Africa: TIPS/DPRU Forum. African Development and Poverty Reduction: The Macro-Micro Linkages*. Available at www.tips.org.za/events/forum2004/Papers/Infrastructure_Reform_Jerome.pdf, Accessed 28 March 2016.

Johnston, J. and Kouzmin, A. 2010. Addressing governance accountability and performance monitoring issues in partnerships: Can "Infrastructure Australia" provide a strategic response? *Public Administration Quarterly*, 34(4): 513-551.

Jooste, S.F., Levitt, R.E. and Scott, W.R. 2011. Beyond "One size fits all": How local conditions shape PPP enabled field development. *Engineering Project Organization Journal*, 1: 11-25.

Joyce, P. 2011. *The Congressional Budget Office: Honest numbers, power and policymaking*. Washington, DC: Georgetown University Press.

Kahwajian, A., Baba,S., Amudi,O. and Wanos, M. 2014. Identification of critical success factors (CSF) for public private partnership construction projects in Syria. *Jordan Journal of Civil Engineering*, 8(4): 393-405.

Kaizer Associates. 2005. *Public private partnerships benchmarking study*, Pietermaritzburg: KZN Department of Economic Development.

Kajimo-Shakantu. K. 2007. An investigation into the responses of the construction Industry to preferential procurement in South Africa. (Unpublished PhD thesis). Cape Town: University of Cape Town.

Kamenickova, L. 2011. *Slovak PPP Forum 2011. 9 November 2011. Bratislava*. Available at www.bids.cz/en/archiv/konference/Slovak_PPP_Forum_2011/151. Accessed 18 May 2016.

Kamenickova, L. 2011. *Czech PPP Forum 2011, 8th Rocnik Mezinarodni Konference*, Prague: BID Services.

Kamenicky, J. 2014. Selected aspects of performance of the government sector in the Czech Republic in the context of EU countries. *Statistika. Czech Statistical Office*, 94(3): 5-31.

Kennedy, M.M.J. 2012. *Public Finance*. New Delhi: PHI Learning.

Kessides, C. 1993. *The contributions of infrastructure economic development: A review of experience and policy implications*. Washington DC: World Bank.

Khan, A. 2005. Achieving the millenium development goals: The public mix. Available at <http://unpan1.un.org/intradoc/groups/public/documents/un/unpan021364.pdf>

Khatleli, N. 2009. Utilizing principal agent and principal steward theories to assess the Eefficacy of public private partnerships in delivering Black economic empowerment. (Unpublished PhD thesis). Cape Town: University of Cape Town.

Khi Solar One (Pty) Ltd. 2017. Entrepreneurial Development Bank. Available at www.khisolarone\projectdetail-khi_solar_one_pty_ltd-fmo.html. Accessed 19 November 2017.

- Khumalo, B. 2015. *Financial and fiscal commission briefing on the 2015 fiscal framework and revenue proposals*, Johannesburg: Financial and Fiscal Commission. Kings, N. and Homocks, C. 2010. *Interviews in qualitative research*. London: Sage.
- Kirsten, M. and Davies, G. 2008. *ASGISA—Is the bar set high enough: Will the accelerated infrastructure speed assist in meeting the targets?* Cape Town: Development Bank of Southern Africa.
- Klee, L. 2014. Panel: Zvyšení Efektivit Investičního Cyklu Dopravní Infrastruktury [Improving the efficiency of the investment cycle of transport infrastructure]. *The Czech National Infrastructure Conference .Prague*
- Kogut, B. and Spicer, A. 2002. Capital market development and mass privatisation are logical contradictions: Lessons from Russia and the Czech Republic. *Journal of Industrial and Market Change*, 11(1): 37.
- Kolev, A. and Phillip-Bastian, B. 2015. Investment finance: Recent developments in investment finance. In: A. Kolev, and T. Tanayama (eds). *Investment and investment finance in Europe: Investing in competitiveness*. Brussels: European Investment Bank; Economics Department. pp 77-96.
- Kolev, A. and Tanayama, T. 2015. *Investment and Investment in Europe: Investing in competitiveness*. Brussels: European Investment Bank; Economics Department.
- Kornai, J., Maskin, E. and Roland, G. 2003. Understanding the soft budget constraints. *Journal of Economic Literature*, 41(4): 1096-1136.
- Kosovo. Ministry of Finance and Economy. Nd. *Public private partnerships: Bridging Kosovo's infrastructure gap*. Pristina: USAID.
- Kovalcik, J. 2010. *Transport ministry ex-management faked facts about PPPs*. Slovak Center, Slovak News. Bratislava. Available at www.slovenskecentrum.sk/en/news/read/16236/kovalcik-transport-ministry-ex-management-faked-facts-about-ppps. Accessed 25 May 2016.
- Kripa, E. and Xhafa, H. 2013. Project finance and projects in the energy sector in the developing countries. *European Academic Research*, 1(1): 169-184.
- Kubina, P. 2015. *The future of PPP and infrastructure projects in Slovakia*. CEE Legal Matters. Bratislava. Available at www.ceelm.com/index.php/legal-analysis-infrastructure-ppp/121-ppp-infrastructure/3679-the-future-of-ppp-and-infrastructure-projects-in-slovakia. Accessed 28 June 2016.
- Kulasingam, R. 2012. *Developing Nigerian PPP industry*. Nigeria Development and Finance Forum Policy. Available at www.myndff.com/policyDialogue/Dialogue.acpx?Edition. Accessed 08 March 2016.
- Kumaraswamy, M.M., and Zhang, X.Q. 2001. Governmental role in BOT-led infrastructure development. *International Journal of Project Management*, 19(4): 195-205.
- Kumhof, M. and Laxton, D. 2013. Fiscal deficits and current account deficits. *Journal of Economic Dynamics and Control*, 37: 2062-2082.
- Kumo, W.L., Reilander, J. and Omilola, B. 2014. *African economic outlook: South Africa 2014*. Available at www.africaneconomicoutlook.org/fileadmin/uploads/aeo/2014/PDF/CN_Long_EN/Afrique_du_Sud_EN.pdf. Accessed 02 March 2016.

- Kupers, W.M. 2009. The status and relevance of phenomenology for integral research: Or why phenomenology is more and different than an "Upper Left or "Zone #1" affair. *Integral Review*, 5(1): 51-96.
- Kvale, S. 1996. *Interviews: An introduction to qualitative research interviewing*. Thousand Oaks, CA: Sage.
- Kvale, S. and Brinkmann, S. 2009. *Interviews: Learning the craft of qualitative research interviewing*. (2nd ed.). Thousand Oaks. CA: Sage.
- Kwak, Y.H., Chih, Y. and Ibbs, C.W. 2009. Towards a comprehensive understanding of public private partnerships for infrastructure development. *California Management Review*, 51: 51-78.
- Laffont, J.J. and Tirole, J. 1993. *A theory of incentives in procurement and regulation*. Cambridge, MA: MIT Press.
- Lane, P.R. and Milesi-Ferretti, G.M. 2014. Global imbalances and external adjustment after the crisis. *IMF Working Paper WP/4/151*.: 1-53. Available at: <https://www.imf.org/external/pubs/ft/wp/2014/wp14151.pdf>
- Lane, D. and Myant, M. 2006. The 'varieties of capitalism' paradigm and post-communist countries. In: D. Lane. and M. Myant, M. (eds.). *Varieties of capitalism in post-communist countries*. London: Palgrave McMillan.
- Leahy, P. 2005. Lessons from the private finance initiative in the United Kingdom. *EIB Papers*, 10(2): 58-71.
- Leedy, P.D. and Ormrod, J.E. 2001. *Practical research: Planning and design*. (7th ed.). Upper Saddle River, NJ: Merrill-Prentice Hall.
- Leedy, P.D. and Ormrod, J.E. 2010. *Practical research planning and design*. (9th ed.). New York: Pearson.
- Leigland, S. Is a new version of philosophical pragmatism necessary? A reply to Barnes-Holmes. *The Behavior Analyst*, 26(2):297-304. Available at <https://doi.org/10.1007/BF03392083>, Accessed 28 August 2016.
- Leontescu, M. and Svilane, E. 2012. Incentive mechanisms for large public private partnerships: Empirical evidence from SESAR. (*Masters Thesis in Business Administration*). Jönköping, Sweden: University of Jönköping.
- Lester, S. 1999. *An introduction to phenomenological research*. London: Stan Lester Development.
- Lethlakanyane, V. 2010. In Holman, J. Are partnerships the answer to South Africa's ailing public hospitals? *Engineering News*. Available at <http://www.engineeringnews.co.za/article/are-partnerships-the-answer-to-south-africas-ailing-public-hospitals-2010-06-04>. Accessed 16 May 2016.
- Levers, M.J.D. 2013. Philosophical paradigms, grounded theory, and perspectives on emergence. *Sage Open Journal, October-December 2013*, 1(6). Available at <https://doi.org/10.1177/2158244013517243>
- Levine, R., Loayza, N. Beck, T., and 2000. Financial intermediation and growth, causality and causes. *Journal of Monetary Economics*, 46: 31-77.

- Lewis, J. 2003. Design Issues. In: J. Ritchie and J. Lewis(eds.). *Qualitative research practice A guide for social science students and researchers*. London: Sage.
- Li, B. and Akintoye, A. 2003. An overview of public private partnership. In: A. Akintoye, M. Becker, and C. Hardcastle (eds). *Public private partnerships: Managing risks and opportunities*. London: Blackwell Sciences.
- Lincoln, Y.S. and Guba, E.G. 1985. *Naturalistic inquiry*. Beverly Hills, CA: Sage.
- Loeb, M. and Magat, W.A. 1979. A decentralized method of utility regulation. *Journal of Law and Economics*, 22: 399-404.
- Lund, S. 2004. *Public Private Partnerships*, Pretoria: National Treasury PPP Unit.
- Luus, C. n.d. *Third cycle asset management*. Available at <http://financialmarketsjournal.co.za/oldsite/15thedition/printed%20articles/publicdebt.htm>. Accessed 31 October 2015.
- Mabugu, R. 2015. Responding to South Africa's infrastructure challenge. *Policy Brief. Financial and Fiscal Commission 1/2015*. Johannesburg: Financial and Fiscal Commission.
- Mabugu, R., Maisonnave, H., Chitiga, M. and Decaluwe, B. 2014. Real effects of public debt on national development. In: R. Mabugu (ed.). *2015/2016 Technical Report: Submission for the Division of Revenue*. Johannesburg: Financial and Fiscal Commission, pp. 25-75.
- Mahabir, J. and Mabena, N. 2014. Identifying the Funding Constraints in Municipal Capital Investments. In: R. Mabugu, (ed.). *Technical Report: Submission for the Division of Revenue 2015/2016*. Johannesburg: Financial And Fiscal Commission, pp. 245-270.
- Mahalingam, A., T. Rajan, J. Seddon, V. Santosh, and S. Srinivasan. 2011. Creating an enabling environment for PPPs. Chennai: IIT-Madras and Centre for Development Finance. Available at [www/http.onlinelibrary.wiley.com/doi/10.1111/1467-8500.12060/pdf](http://www.onlinelibrary.wiley.com/doi/10.1111/1467-8500.12060/pdf).
- Mahoney, J.T., McGahan, A. and Pitelis, C. 2009. The interdependence of private and public interests. *Journal of Organisational Sciences*, 20: 1034-1052.
- Malao, M. 2011. Delivery of infrastructure development through public private partnerships: Managing PPP procurement more efficiently. (MBA thesis). Stellenbosch: University of Stellenbosch.
- Manchidi, T.E. and Merrifield, A. 2001. Public-private partnerships: Public infrastructure investment and prospects for economic growth in South Africa. In: M.M. Khosa, (ed.). *Empowerment through economic transformation*. Durban: African Millenium Press, pp. 409-422.
- Marshall, A. 2013. *Principles of economics*. (8th ed.) London: Macmillan.
- Marshall, C. and Rossman, G.B. 1999. *Designing qualitative research*. (3rd ed).. Thousand Oaks, CA: Sage.
- Mårtensson, P., Fors, U., Sven-Bertil, W. and Zander, U. and Nilsson, G.H, 2016. Evaluating research: A multidisciplinary approach to assessing research practice and quality. *Research Policy*, 45(3): 593-603. <https://doi.org/10.1016/j.respol.2015.11.009>

- Martimort, D. and Pouyet, J. 2008. Build it or not: Normative and positive theories of public private partnerships. *International Journal of Industrial Organization*, 26: 393-411.
- Martins, J.O. 2015. The OECD instrument on the governance of public investment across levels of government. *OECD Local Finance Management 7-8 May 2015. Lombok. Indonesia*.
- Maseko, M. 2014. Analysis of critical success factors for public private partnerships in infrastructure development in South Africa. Proceedings of *The 6th International Platinum Conference "Platinum Metal for the Future", 20 -22 October 2014, Sun City, SA :129-142*. Available at www.platinum.org.za/Pt2014/Papers/129-Maseko.pdf
- Matalik, I. and Slavik, M. 2005. Debt management in the Czech Republic: Formation in the 1990s and the current state. *Prague Economic Papers*, 1: 33-50.
- Matos-Castano, J., Dewulf, G. and Mahalingam, A. 2012. *The complex interplay between the institutional context and PPP project outcomes. Engineering Project Organizations Conference, Rheden. The Netherlands, July 10-12, 2012*.
- Maxwell, J.A. 2005. *Qualitative research design: An interactive approach*. (2nd ed.) Thousand Oaks, CA: Sage.
- Maynard, A. 1986. Public and private sector interactions: An economic perspective. *Journal of Social Sciences and Medicine*, 22: 1161-1166.
- Maynard, M. 1994. Methods, practice and epistemology: The debate about feminism and research. In: M. Maynard and J. Curvis (eds). *Researching women's lives from a feminist perspective*. London: Taylor and Francis. pp. 10-27.
- Mayring, P. 2000. *Qualitative content analysis forum. Qualitative Social Research 1(2)*. Available at http://217.160.35.246/fqs-texte/2-00/2-_ Accessed 10 October 2016.
- Mbele, T. 2010. In Holman, J. Are partnerships the answer to South Africa's ailing public hospitals? *Engineering News*. Available at <http://www.engineeringnews.co.za/article/are-partnerships-the-answer-to-south-africas-ailing-public-hospitals-2010-06-04>. Accessed 08 August 2016.
- McNeill, P. and Chapman, S. 2005. *Research methods*. (3rd ed.). New York: Routledge.
- McQuaid, R.W. and Scherrer, W. 2005. Public private partnerships: Comparative issues in the UK, Germany and Austria. *Paper for the 11th International Public Private Partnership Conference*, University of Iași, Iași, Romania, 25-27th May 2005.
- Meinecke, C. 2007. Jethro W. Meek im Ruhestand. *Bautechnik*, 84:219. Available at doi:10.1002/bate.200790051,. Accessed 20 October 2016.
- Melecky, A. and Melecky, M. 2014. *The cecks and Czechs: Optimizing the debt portfolio of the Czech government*. Available at https://mpra.ub.uni-muenchen.de/57604/1/MPRA_paper_57604.pdf. Accessed 31 May 2016.
- Mendelski, M. 2008. The varieties of capitalism approach goes East: Institutional Complementarities and law enforcement during post communist transition. *What Capitalism? Socio-Economic Change in Central Eastern Europe. Proceedings of the Workshop*, 29-30 October, pp. 8-44.

- Meng, X. and Gallagher, B. 2011. The impact of incentive mechanisms on project performance. *International Journal of Project Management*, 30(2012): 352-362.
- Merriam, S.B. 1998. *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.
- Merleau-Ponty, M. 1962. *Phenomenology of Perceptions (Orig. 1945. Phenomenologie de la Perception)*. London: Routledge.
- Mesik, J. 2010. 'Enfant terrible' of the Eurozone: Why did Slovakia refuse to bail out Greece?. Available at <https://cz.boell.org/en/2014/03/24/enfant-terrible-eurozone-why-did-slovakia-refuse-bail-out-greece>. Accessed 09 June 2016.
- Meyer, M. (ed.). 2012. *The state of South Africa's economic infrastructure: Opportunities and challenges 2012*. Johannesburg: Development Bank of Southern Africa, pp. 1-168. Available at <https://www.dbsa.org/EN/.../State%20of%20economic%20infrastructure%202012.pdf>
- Mierlo, V. 1997. The experience of OECD countries and its relevance to CEE. In: D. Coombes and T. Verheien (eds). *Public management reform: comparative experiences from East and West*. Brussels: European Commission, pp. 350-390./
- Miler, J. and Glassner, B. 1997. The inside and outside: Finding realities in interviews. In: D. Silverman (ed.). *Qualitative research: Theory, methods and practice*. London: Sage.
- Miles, M.B. and Huberman, A.M. 1994. *Qualitative data analysis: An expanded sourcebook*. (2nd ed.), Thousand Oaks, CA: Sage.
- Mitchell, D. 2007. *Capacity development for partnerships in South Africa: Increasing service delivery through partnerships between private and public sector*, Johannesburg: International Business Leaders Forum GTZ.
- Mlčoch, L. 2000. Lessons and challenges in the transition. *Conference: Ten Lessons from the 10 Years of the Czech Way*, Prague, 22 September.
- Mojtahed, R., Baptista, N.M., Tiago, M.J. and Peng, A. 2014. Interviews and decision making maps. *The Electronic Journal of Business Research Methods*, 12(2): 87-95.
- Mokgabudi, T. 2013. *Planned infrastructure expenditure and the NDP: Mind the gap*, Johannesburg: KPMG. Available at <http://www.mondaq.com/southafrica/x/266734/government+policy+public+finance/Planned+Infrastructure+Expenditure+And+The+NDP+Mind+The+Gap>.
- Moore, D. 2004. Slovakia's 2004 tax and welfare reforms. *International Monetary Fund Working Paper*, 05/133. Available at <https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Slovakias-2004-Tax-and-Welfare-Reforms-18298>
- Moreno-Dodson, B. and Wodon, Q. 2008. Public finance for poverty reduction: An overview. In: B. Moreno-Dodson, and Q. Wodon (eds). *Public finance for poverty reduction*. Washington DC: World Bank. pp. 1-17.
- Morse, J.M. 1991. *Qualitative nursing research: A contemporary dialogue*. Rockville, MD: Aspen.

- Morvay, K. 2005. Economic transition: Lessons from Slovakia. *Conference: Ten Lessons from the 10 Years of the Czech Way*, Prague, 22 September
- Moynihan, D.P. 2006. Ambiguity in policy lessons: The agencification experience. *Journal of Public Administration*, 84(4): 1029-1050.
- Mu, D.J.R. and Heuvelhof, E.T. 2010. Public private partnerships for expressways in China: An agency theory approach. *European Journal of Transport and Infrastructure Research*, 10(1): 42-62.
- Muhammed, A. 2014. A critical analysis of public financial management reform in Ethiopia and Tanzania. *Developing Country Studies*, 4(9): 130-141.
- Mühleisen, M. and Faruqee, H. 2001. Japan: Population aging and the fiscal challenge. *Finance and Development. International Monetary Fund*, 38(1). Available at <http://www.imf.org/external/pubs/ft/fandd/2001/03/muhleise.htm>. Accessed 12 February 2016.
- Murray, L. 2014. The Britannica guide to countries of the European Union. In: L. Murray (ed.). *Bulgaria, Hungary, Romania, the Czech Republic and Slovakia*. New York: Britannica Education Publishing and Rosen Services. pp. 1-258.
- Musgrave, R. 1959. *The Theory of public finance*. New York: McGraw-Hill.
- Mutandwa, H. 2015. An analysis of the potential use of public private partnerships in water infrastructural development in Zimbabwe: The case of Harare City Council. *Journal of Public Administration and Governance*, 5(1): 110-136.
- Muthui, J.N., Kosimbei, G., Maingi, J. and Thuku, G.K. 2013. The impact of public expenditure components on economic growth in Kenya 1964 -2011. *International Journal of Business and Social Sciences*, 4(4): 233-253.
- Myers, M.D. 2009. *Qualitative research in business and management*. Thousand Oaks, CA: Sage.
- Nataraj, G. 2007. Infrastructure challenges in South Asia: The role of public-private-partnerships. *ADB Discussion Paper, No 80*. Tokyo: Asian Development Bank Institute.
- Natarajan, G. 2015. The adverse selection problem with PPPs. Available at www.urbanomics_The_adverse_selection_problem_with_PPPs.html. Accessed 28 January 2018.
- Nejedly, T. 2015. Dlhy v stavebnictve spustaju obce-HNOnline.sk. Available at <http://dennik.hmonline.sk/ekonomika-a-firmy/554369-dlhy-v-stavebnictve-spustaju-obce.>, Accessed 17 January 2018.
- Nel, M. and Associates (Pty) Ltd. 2007. *Key challenges to public private partnerships in South Africa: Summary of key findings*. Pretoria: Castalia.
- Nemcová, E. 1998. Industrial policy in the European Union [Priemyselna Politika v Krajinach Európskej Unie]. *Prognosticky Ustav SAV*, pp. 131.
- Nemec, J., Mikusova-Merickova, B.M. and Vozarova, Z. 2011. Agencification in Slovakia: The current situation and lessons learned. *Transylvanian Review of Administrative Sciences, Special Issues*, December: 140-59.

- Nemec, J., Wright, G. and Stillman, R. J. 2002. *Public management in the Central and Eastern European transition: Concepts and cases*. [Bratislava]: The Network of Institutes and Schools of Public Administration in Central and Eastern Europe
- Neuman, L.W. 2000. *Social research methods: Qualitative and quantitative approaches*. (4th ed.). New York: Allyn and Bacon.
- Ngowi, A.B., Pienaar, E., Akindele, O. and Iwisi, D. 2006. Globalisation of the construction industry: A review of infrastructure financing. *Journal of Financial Management and Property Finance*, 11(1): 45-58.
- Nickolas, S. 2017. What is the difference between moral-hazard and adverse selection? Available at http://www.What_is_the_difference_between_moralhazard_and_adverse_selection_investopedia.html Accessed 28 January 2018.
- Niedermayer, L. and Bárta, V. 2008. The Czech experience with capital flows: Challenges for monetary policy. *BIS Paper, No 44. December*, pp. 185-205. Available at <https://www.bis.org/publ/bppdf/bispap44j.pdf>. Accessed date
- Novackova, D. and Saxunova, D. 2015. The public-private partnership projects legislation and PPP project experience in Slovakia, Management International Conference, 28-30 May 2015. Available at www.researchgate.net/publication/309125999, Accessed 15 December 2017.
- Obstfeld, M. and Rogoff, K. 2009. Global imbalances and the financial crisis: Products of common causes. *Asia Economic Policy Conference. Santa Barbara, CA. 18-20 October 2009*.
- Ogunbiyi, C. 2004. PPPs: Fad or good for SADC? SADC PPP Pathway. *SADC Banking Association PPP Capacity Building Program, Newsletter 1, July*
- Ogunlana, S. and Abednego, M.P. 2009. Case Study II: Governance issues in the Yen Lenh Bridge BOT Project. In: H.W. Alfen (ed.). *Public-private partnerships in infrastructure development*. Weimar: Bauhaus Universität Weimar. pp 63-86.
- Ogunsanmi, O.E. 2013. Critical success factors (CSF) determining the implementation of public private partnership projects. *Covenant Journal of Research in the Built Environment (CJRBE)*, 1(2): 41-66.
- O'Leahy, Z. 2014. *The essential guide to doing your research project*. (2nd ed.) Thousand Oaks. CA: Sage.
- Oliveira, J.D.C. and Martinez-Vazquez, J. 2001. Czech Republic. Intergovernmental fiscal relations in the transition. *World Bank Technical Paper, No 517*. (Europe and Central Asia Poverty Reduction and Economic Management Series.) <http://hdl.handle.net/10986/14027>
- O'Looney, J.A. 1998. *Outsourcing state and local government services*. Westport, CT: Quorum Books.
- Ondráčka, D. 2007. *Why study PPP (Public Private Partnerships) with caution? PPP in the Czech Republic: Implementation and risks*, Prague: Transparency International.
- Oreskovic, R. 2012. Economic transition in the Czech Republic and Hungary: Twenty years later. *New York University Seminar*, New York, January 2012, pp. 1-26.
- Organisation for Economic Cooperation and Development (OECD). 2001. *OECD Economic sSurveys 2000-2001. Czech Republic*, Paris: OECD.

Organisation for Economic Cooperation and Development (OECD). 2003. *OECD Economic Surveys 2002-2003: Czech Republic*, Paris: OECD.

Organisation for Economic Cooperation and Development (OECD). 2005. *OECD Economic Surveys, 16/2005: Slovak Republic*. Paris: OECD.

Organisation for Economic Cooperation and Development (OECD). 2005. Investment for African development: Making it happen: Background information in support of Session 5 of the Roundtable: Encouraging Public Private Partnerships in the Utilities Sector. The Role of Development Assistance, 25-27 May 2005. *NEPAD/OECD Initiative*.

Organisation for Economic Cooperation and Development (OECD). 2010. Regulatory reforms for recovery: Lessons from implementation during crisis. *OECD Reviews of Regulatory Reforms*, pp. 1-258. Paris: OECD.

Organisation for Economic Cooperation and Development (OECD). 2011. *Government at a glance*. OECD Publishing. Available at <http://www.oecd.org/gov/governmentataglance2011.htm>. Accessed 16 May 2017.

Organisation for Economic Cooperation and Development (OECD). 2011. Tackling current account imbalances: Is there a role for structural policies? Chapter 5. *Economic Policy Reforms 2011. Going for Growth*. Paris: OECD. Available at <http://dx.doi.org/10.1787/growth-2011-47-en>

Organisation for Economic Cooperation and Development (OECD). 2012. *OECD Economic Surveys. Slovak Republic 2012. Improving the fiscal framework to enhance growth in an era of fiscal consolidation*. Bratislava: OECD.

Organisation for Economic Cooperation and Development (OECD). 2012. *Restoring public finances, 2012 update*. Paris: OECD.

Organisation for Economic and Cooperative Development (OECD). 2014. *Private financing and government support to promote long-term investment in infrastructure*. September 2014. Paris: OECD.

Organisation for Economic Cooperation and Development (OECD). 2014. *Are institutional investors the answer for long-term development financing*. In *Development Co-operation Report 2014: Mobilising Resources For Sustainable Development*, Paris: OECD.

Organisation for Economic Cooperation and Development (OECD). 2014. *OECD Economic Review. Slovak Republic 2014*. Bratislava: OECD.

Organisation for Economic Cooperation and Development, (OECD). 2014. *OECD Economic Surveys Slovak Republic*. Bratislava: OECD.

Organisation for Economic Cooperation and Development (OECD). 2015. *Czech Republic. government at a glance 2015. Country fact sheet*. Available at <https://www.oecd.org/gov/Czech-Republic.pdf>. Accessed 31 May 2016.

Organisation for Economic Cooperation and Development, (OECD). 2015. *Effective public investment across levels of government: Principles for action*. Paris: OECD.

Organisation for Economic Cooperation and Development, (OECD). 2016. Making the most of public investment in the Eastern Slovak Republic. *OECD Multi-Level Governance Studies*, Paris: OECD.

Organisation for Economic Cooperation and Development (OECD). 2016. *Total current account balance for Slovak Republic*. Available at <https://research.stlouisfed.org/fred2/series/BPBLTT01SKA188S>. Accessed 19 May 2016.

Page, S.N., Ankner, D.W. and Jones, C. 2008. The risks and rewards of private equity. *Public Works Management Policy*, 13(2): pp 100-113.

Parker, D. and Hartley, K. 2003. Transaction costs, relational contracting and public private partnerships: A case study of defence. *Journal of Purchasing and Supply Management*, 9(3): 79-108.

Parry, T. 2007. The role of fiscal transparency in sustaining growth and stability in Latin America. *International Monetary Fund Working Paper, 07/220*, pp. 1-40. Available at <https://www.imf.org/external/pubs/ft/wp/2007/wp07220.pdf>

Pasquali, V. 2015. *Global finance: Percentage of public debt in GDP around the world. October 2015*. Available at www.gfmag.com/global-data/economic-data/public-debt-percentage-gdp?page=3. Accessed 24 December 2015.

Pathirage, C.P., Amaratunga, R.D.G. and Haigh, R.P. 2008. The role of philosophical context in the development of theory: Towards methodological pluralism. *The Built and Human Environment Review*, 1(1): 1-10.

Patton, M.Q. 1990. *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage.

Patton, M.Q. 2001. *Qualitative evaluation and research methods* .(3rd ed). Newbury Park, CA: Sage.

Patton, M.Q. 2002. *Qualitative evaluation and research methods*. (3rd ed.). Thousand Oaks, CA: Sage.

Patton, M.Q. and Cochran, M. 2002. *Qualitative research and evaluation*. Thousand Oaks, CA: Sage.

Pavel, J. 2009. *Efektivnost fungovani kontrolnich systemu verejnynch zakazek v Ceske Republice*. [Effectiveness of the public procurement control system in the Czech Republic] Available at http://www.transparency.cz/doc/vz5_efektivnost_fungovani_kontroly_vz.pdf. Accessed 15 June 2016.

Peková, J. 2005. *Veřejné finance: úvod do problematiky* [Public finance, Introduction to problems]. Praha: ASPI.

Perkins, P., Fedderke, J.W. and Luiz, J.M. 2005. An analysis of economic infrastructure investment in South Africa. *South African Journal of Economics*, 73(2): 211-228.

Perry, N. 2014. *Debt and deficits: Economic and political issues. A GDAE Teaching Module on Social and Environmental Issues in Economics*. Medford, MA. Turfs University. Global Development and Environment Institute.

Pessoa, A. 2008. Public private partnerships in developing countries: Are infrastructures responding to the new ODA strategy? *Journal of International Development*, 20: 311-325.

Pettinger, T. 2010. *Helping to simplify economics: Monetary policy vs fiscal policy*. Available at www.economicshelp.org/blog/2253/economics/monetary-policy-vs-fiscal-policy/, Accessed 06 January 2016.

Phillips, M.E. and Sandall, R. 2009. Linking business tax reform with governance: How to measure success. In. World Bank Group 2, Investment Climate Department. *Practice Note Series, Business Taxation*. Washington DC: World Bank

Pillay, K. 2014. Public private partnerships: The South African experience. *Conference Proceedings*. Accra, SADAC PPP Network. 19th August 2014.

Plehn, C.C. 1900. *Introduction to public finance*. New York: Macmillan.

Plummer, K. 1983. *Documents of life: An introduction to the problems and literature of a humanistic method*. London: Unwin Hyman.

Pontuch, P. 2014. Private sector deliveraging: Where do we stand?. *Quartely Report on the Euro Area*, 13(3): 7-19.

PricewaterhouseCoopers (PWC). 2008. Building new Europe's infrastructure: Public private partnerships in Central and Eastern Europe. *Engineering and Construction*. Pwc Publishing. Available at pwc.blogs.com/files/building-new-europe39s-infrastructure---full-publication.pdf

PricewaterhouseCoopers 2014. *Trends, challenges and future outlook: Capital projects and infrastructure in East Africa, Southern Africa, and West Africa*. PriceWaterhouseCoopers. Available at <https://www.pwc.co.za/en/assets/pdf/capital-projects-and-infrastructure.pdf> PricewaterhouseCoopers (PWC). 2010. *PricewaterhouseCoopers, Build and Beyond: The Revolution of Healthcare PPPs*. Available online www.pwc.com/us/en/health-industries/publications/build-and-beyond.html. Accessed 09 March 2016.

Public Private Infrastructure Advisory Facility (PPIAF). 2011. *How to build a successful public private partnership (PPP): Lessons from the Third African PPP Conference on 02 December 2011*. Nairobi, Public Private Infrastructure Advisory Facility.

Punch, F.K. 1998. *Introduction to social research: Quantitative and qualitative approaches*, London: Sage.

Quiggin, J. 1996. Private sector involvement in infrastructure projects. *Australian Economic Review*, 96(1): 51-64.

Quiralte, D.C., Magro, V. J. M. and Solino, S. A. 2007. Aplicación de indicadores de calidad en concesiones de carreteras en Espana [Application of quality indicators in road concessions in Spain]. *Carreteras*, 151: 53-66.

Rajan, E. and Zingales, H. 1996. Financial Dependency on Growth. *NBER Paper Series*, 5758. Available at <https://ssrn.com/abstract=7872>

Rajan, R.G. 2010. *Fault lines: How hidden fractures still threaten the world economy*. Princeton, NJ: Princeton University Press.

Rapley, T. 2007. *Doing conversation, discourse and document analysis*. London: Sage.

- Reeves, E. 2011. The only game in town: Public private partnerships in the Irish water services sector. *The Economic and Social Review*, 42(1): 95-111.
- Regan, M. 2014. Project finance: Transactional evidence from Australia. *Public Infrastructure Bulletin*, 1(9): 1-17.
- Reihart, C. and Rogoff, K. 2008. *This time is different: Eight centuries of financial folly*. Princeton: Princeton University Press.
- ReindeBach, M. 1997. The privatization of urban services in Germany. In: D. Lorraine, and G. Stoker (edsp. *The privatization of urban services in Europe*. London: Pinter.
- Reiss, A. 2008. The economic cost of public funds in infrastructure investment. *EIB Papers*, 13(1): 82-113.
- Reungsri, T. 2010. The impact of public infrastructure investment on economic growth in Thailand. (PhD thesis). Melbourne, Vic: Victoria University.
- Riascos, A. and Vegh, C. 2003. *Procyclical government spending in developing countries: The role of capital market imperfections*. Available at: <http://www.alvaroriascos.com/researchDocuments/riascosVegh.pdf>. Accessed 15 October 2016.
- Riley, J. and Chote, R. 2014. Crisis and consolidation in the public finances. *Office for Budget Responsibility Working Paper no 7. September 2009*, pp. 1-137. Available at obr.uk/pubs/WorkingPaper7a.pdf
- Ritchie, J. and Lewis, J. 2003. Editorial matter: Qualitative research practice: A guide for social science students and researchers. In: J. Ritchie, and J. Lewis (eds.). *Qualitative research practice: A guide for social science students and researchers*. London: Sage. pp. 19
- Ritchie, J., Spencer, L. and O'Connor, W. 2003. Carrying out qualitative analysis. In: J. Ritchie, and J. Lewis (eds.). *Qualitative research practice: A guide for social science students and researchers*. London: Sage. pp. 219-262.
- Robson, C. 2002. *Real world research: A resource for social scientists and practitioner-researchers*. (2nd ed). Oxford: Blackwell.
- Rod, A. 2015. *Public finance consolidation in the Czech Republic*. Available at www.ineko.sk/file_download/861. Accessed 14 September 2016.
- Rodden, J., Eskelund, G. and Litvack, E. 2003. *Fiscal decentralisation and the challenge of hard budget constraints*. Cambridge, MA: MIT Press.
- Roehrich, J.K., Lewis, M.A. and George, G. 2014. Are public-private-partnerships a healthy option? A systematic literature review. *Journal of Social Sciences and Medicine*, 113: 10-119.
- Rodriguez, J. 2017. Public-private partnerships pros and cons: Public-private partnership (P3) Benefits and disadvantages. Available at www.thebalance.com/public.html., Accessed 14 December 2017.
- Romero, M.J. 2015. *What lies beneath? A critical assessment of PPPs and their impact on sustainable development*. Brussels: Eurodad.

- Rose, S., Spinks, N. and Canhoto, A.I. 2015. *Management research: Applying the principles*. London: Routledge.
- Roubini, N. and Sachs, J.D. 1989. Government spending and budget deficits in the industrial countries. *Economic Policy*, 4(8): 99-133.
- Rozhlas, C. *Czech construction industry posts growth after seven years of falling output*. Available at www.czech.cz/en/Business/Czech-construction-industry-posts-growth-after-sev., Accessed 18 January 2018.
- Rubianes, A.C. 2011. Patterns and trends of public investment in the new member states of the European Union. In: M. Florio (ed.). *Public investment, growth and fiscal constraints: Challenges for the EU new member states*. Cheltenham. UK: Edward Elgar. pp. 113-135.
- Rubio, E., Rinaldi, D., Pellerin-Carlin, T., and Letta, E.. 2016. *Investment in Europe: Making the best of the Juncker Plan: With case studies on digital infrastructure and energy efficiency*. Paris: Notre Europe-Institut Jacques Delors.
- Rubin, H.J. and Rubin, I.S. 1995. *Qualitative interviewing: The art of hearing data*. Thousand Oaks, CA: Sage.
- Russell, G.M. and Kelly, N.H. 2002. *Research as an interacting dialogic process: Implications on reflexivity: Forum: Qualitative Social Research 3(3)* . Available at <http://www.qualitative-research.net/fqstexte/>, Accessed 09 October 2016.
- Rybarova, D., Braunova, M. and Jantosova, L. 2016. Analysis of the construction industry in the Slovak Republic by Bankruptcy Model. *3rd International Conference on New Challenges in Management and Organization: Organization and Leadership*, Dubai, UAE.
- Slovak Association of Consulting Engineers (SACE). 2010. *Slovak Association of Consulting Engineers*. Available online www.sace.sk/?a=rozhod&set_lang=en. Accessed 15 June 2016.
- Saunders, M., Lewis, P. and Thornhill, A. 2003. *Research methods for business students*. (3rd ed.). New York: Prentice Hall.
- Saxegaard, M. 2013. Safe debt and uncertainty in emerging markets: An application to South Africa. *International Monetary Fund Working Paper, 14/231*. Available at <https://www.imf.org/external/pubs/ft/wp/2014/wp14231.pdf>
- Schaffer, M.E. 1989. The credible commitment problem in the center enterprise relationships. *Journal of Comparative Economics*, 13(3): 359-382.
- Schoeman, M. and Creamer, K. 2014. Public debt in post crisis South Africa. *Working Paper Series. University of Witwatersrand, School of Economic and Business Sciences* pp. 1-23. Available at 2015.essa.org.za/fullpaper/essa_2813.pdf
- Schutt, R.K. 2006. *Investigating the social world*. (5th ed.) London: Sage.
- Schwartz, G., Corbacho, A., Cui, Q., Ganelli, G. and Manasse, P. 2007. Macro-fiscal policy and public investment in new EU member states. *EIB Papers*, 13(1): 114-149. <http://hdl.handle.net/10419/44897>

- Sciulli, N. 2010. Building a framework for public private partnership research. *International Review of Business Research Papers*, 6: 367-381.
- Scott, R. 1995. *Institutions and organisations*. Thousand Oaks, CA: Sage.
- Scott, W.R. 2004. Institutional theory. In G. Ritzer (ed.). *Encyclopedia of social theory*. Thousand aks, CA: Sage.
- Seale, C. 1999. Quality in qualitative research. *Journal of Qualitative Inquiry*, 5(4): 465-478.
- Seale, C. 1999. *The quality of qualitative research*. Oxford: Blackwell.
- Selmanaj, B. 2015. Public money is being misused. Prishtina.
- Geyer, M. 2014. Constructing CSP Plants in the Kalahari Desert. *Second STERG SolarPACES Symposium*. Stellenbosch. 17 July 2014.
- Shaw, R.L. 2010. Embedding reflexivity within experiential qualitative psychology. *Journal of Qualitative Research in Psychology*, 7(3): 233-243.
- Shaykin, L. 2010. *Public-private partnerships: The US perspective*. Washington DC: PricewaterhouseCoopers.
- Shehu, Y.J. 2015. Public finances: The case of Kosovo. *European Journal of Business, Economics and Accountancy*, 3(4): 29-34.
- Shen, L.Y., Platten, A. and Deng, X.P. 2006. The role of public rivate partnerships to manage risks in public sector projects in Hong Kong. *International Journal of Project Management*, 24(7): 587-594.
- Shick, A. 2013. An overview of contemporary public financial management reforms: Reflections of two decades of public financial management reforms. In: M. Cangiano, T. Curristine, and M. Lazare (eds). *Public financial management and its emerging architecture*. Washington, DC: IMF.
- Shuping, S. and Kabane, S. 2000. *Public private partnerships: A case study of the Pelonomi and Universitas Hospital co-location project*. Bloemfontein: Free State Department of Health.
- Siddiquee, N. 2011. Rhetoric and reality of public private partnerships: Learning points from Australian experience. *Asian Journal of Political Science*, 29 129-148.
- SIGMA. 2002. *Slovakia: Public service and the administration framework, Assessment 2012*. Paris: OECD.
- Sikulova, I. and Frank, K. 2013. The Slovak experience with transition to market economy. *EUSAV. Institute of Economic Research SAS Working Paper*, 49, pp. 1-47.
- Singer, M. 2011. *The Czech Republic outside EMU: A success story born from painful lessons: A Czech view on resolving the Euro crisis*. Czech National Bank. Available at https://www.cnb.cz/en/public/media_service/conferences/speeches/singer_20110628_omfif.html
- Sip, E. 2014. How to get public investment from the stalemate? Analysis. *Leaders Magazine*, III: 87.
- Slovak Investment and Trade Development Agency, SAIRO. 2012. *Invest in Slovakia*, Bratislava: SAIRO.

Slovak Republic. Ministry of Finance in the Slovak Republic (MFSR). 2012. *Stability program of the Slovak Republic for 2012-2015*. Bratislava: MFSR.

Slovak Republic. Ministry of Finance in the Slovak Republic (MFSR). 2013. *Stability program of the Slovak Republic for 2013-2016*, Bratislava: MFRS

Slovak Republic. Office of the Plenipotentiary for Knowledge Economy (ROPKE). 2011. Slovakia to the First League. Available at unctad.org/Sections/un_cstd/docs/cstd2011p01_Slovakia_EN.pdf

Slovak Republic. Statistical Office. 2015a. *Number of actual orders and financial indicators of construction companies in the SR for Q3/2015*. Available at www.statistika.sk/PortalTraffic/fileservlet?dokument=d_and7924d-d056-47c8-9837-2bea950d193b. Accessed 18 January 2018.

Slovak Republic. Statistical Office. 2015b. *Yearbook of construction in SR 2015*. Available Online [www7.Statistics.sk/PortalTraffic/fileservlet?Dokument=0e4c3716-3595-4400-805a-39c490d5455](http://www7.statistics.sk/PortalTraffic/fileservlet?Dokument=0e4c3716-3595-4400-805a-39c490d5455). Accessed 18 January 2018.

Smith, J. 1983. Qualitative versus quantitative research: An attempt to clarify the issue. *Educational Researcher Journal*, 12(3): 6-13.

Smyth, D.H. and Pryke, S. 2008. *Collaborative relationships in construction: Developing frameworks and networks*. Oxford: Wiley-Blackwell.

Snape, D. and Spencer, D. 2003. The foundations of qualitative research. In: J. Ritchie, and J. Lewis. (eds.). *Qualitative research practice: A guide for social science students and researchers*. London: Sage.

Snelson, P. 2005. Update on best international practices in public private partnership with regards to regional policy issues. Available at https://stuff.mit.edu/afs/athena/course/11/11.951/oldstuff/albacete/Other_Documents/Europe%20Transport%20Conference/innovative_transport_i/update_on_best_int1338.html

Sobel R.S. 2005. Welfare economics and public finance. In: J.G. Backhaus and R.E. Wagner (eds). *Handbook of public finance*. Boston, MA: Springer. pp 19-51

Sorge, M. 2004. *The nature of credit risk in project finance*, London: Banking Information Sector.

Solanska, M. 2011. Comparison and analysis of public debt development in the Czech and Slovakian Republics in 1999-2010. (Bachelor's thesis). European Polytechnic Institute Ltd, Kunovice. Finance and Taxation.

Solino, A.S. 2013. Application of the agency theory for the analysis of performance based mechanisms in road management. *13th World Conference on Transport Research*. Madrid Available at www.wctrs-society.com/wp-content/uploads/abstracts/rio/selected/863.pdf

Soudry, O. 2007. A principal agent analysis of accountability in public infrastructure procurement. In: Piga P., and Thai, K.V. (eds). *Advancing public procurement: Practices, innovation and knowledge-sharing*. London: PR Academic Press.

- South Africa. Department of Finance. 1996. *GEAR: Growth, employment, and redistribution: A macro-economic strategy*. Pretoria: Department of Finance South Africa.
- South Africa. National Treasury. 2004. National Treasury PPP Manual, *South African National Treasury*, Pretoria, Available at www.ppp.gov.za.
- South Africa. National Treasury PPP Unit. 2009. *PPP Quarterly February*, 28(6).
- South Africa. National Treasury 2012. 2012 Budget Review. Pretoria: National Treasury Communications Directorate.
- South Africa. National Treasury. 2015. 2015 Medium Term Budget Statement. Pretoria: National Treasury Communications Directorate.
- Spackman, M. 2004. Time discounting and the cost of capital in government. *Journal of Fiscal Studies*, 25(4): 467-518.
- Sprinkel, B.W. 1963. *Role of monetary fiscal policies: Increasing understanding of public and problems and polices*. Chicago, Ill.: Farm Foundation
- Stake, R. 1995. *The art of case study research*. Thousand Oaks: Sage.
- Stanley, L. and Wise, S. 1993. *Breaking out again: Feminist ontology and epistemology*. (2nd ed.). London: Routledge.
- Statistics South Africa. 2015. SA Economy Added 7000 Formal Jobs in Quarter 3 of 2015. Statistics South Africa. Available at www.statssa.gov.za/
- Stiglitz, J. E. 2002. New perspectives on public finance: Recent achievements and future challenges. *Journal of Public Economics*, 86: 341-360.
- Stiglitz, J. 1999. Wither reform? Ten years of the transition. *Keynote Address, Annual Bank Conference on Development Economics, 28-30 April. Washington DC: World Bank*.
- Strauss, A. and Corbin, J. 1998. *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.
- Sullivan, G.B. 2002. Reflexivity and subjectivity in qualitative research: The utility of a Wittgensteinian framework. *Forum: Qualitative Social Research* 3.3 Art 20. Available at <http://www.nbn-resolving.de/urn:nbn:de:0114-fqs0203204>., Accessed 13 October 2016.
- Sumpikova, M., Krbova, J., Pavel, J. and Nemeč, J. 2004. Selected problems of public expenditure programs on regional level in the Czech Republic. *Prague Economic Papers*, 4, pp. 323-338.
- Svaljek, S. 2002. Public debt boundaries: A review of the theories and methods of the assessment of public debt sustainability. *Institute of Economics; Croatian Survey 1996-1999*, pp. 55-84.
- Szarowská, I. 2014. Quality of public finance and government in the Czech Republic. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 64(4):1373-1381.
- Tadimalla, S.R. 2010. *Overview of PPP experiences in South Asia: Focus on Indian PPP story*. Colombo: World Bank.

- Tang, L., Shen, Q. and Cheng, E.W.L. 2010. A review of studies on public private partnership projects in the construction industry. *International Journal of Project Management*, 28 683-694.
- Tanzi, V. 1993. *The Budget deficits in transition*, Washington DC: IMF.
- TASR. 2015. Government approved the D4 and R7 construction project. *The Slovak Spectator*, 18 September 2016, pp. 1-2.
- Taylor, P.E. 1970. *The economics of public finance*. New Delhi: Oxford University Press.
- Tesic, A., Ilic, D. and Delic, A.T. 2014. Consequences of fiscal deficits and public debt in financing the public sector. *Economics of Agriculture Journal*, 61(1): 177-194.
- Thad 3. 2016. Research Methodology in Education. Introduction to Document Analysis.
- Thomas, D.R. 2003. *A general inductive approach for qualitative data analysis*. Auckland: University of New Zealand, School of Population Health.
- Thompson, P. 2000. *The voice of the past: Oral history*. (2nd ed.). Oxford: Oxford University Press.
- Tolmie, C.J. 2014. *The tolling of existing roads: The South African experience*, Prague: IBBTA.
- Trebilcock, M. and Rosenstock, M. 2013. Infrastructure PPPs in the developing world: Lessons from recent experiences. *Journal of Development Studies*, 51(4):335-354.
- Tresch, R.W. 2015. *Public finance: A normative theory*. (3rd ed.). Amsterdam: Elsevier.
- Trojak, J. 2013. Director at the Czech Ministry of Transport. Financing of PPP Projects [Interview]. CSOB: Prague. 20 March 2013.
- Truger, A. 2015. Implementing the golden rule for public investment in Europe: Safeguarding public investment and supporting the recovery. *Berlin and Macroeconomic Policy Institute Policy Paper*, 22, pp. 1-66.
- Tshombe, L.M. and Malokwane, T. 2016. An analysis of public-private partnerships in sub-Saharan Africa. *Africa Journal of Public Affairs*, 9(2): 72-86.
- United Nations Economic Commission for Europe (UNECE). 2007. *A guide to promoting good governance in public private partnerships: United Nations Economic Commission for Europe*. Washington DC: United Nations Economic Research Commission.
- United Nations (UN). 2002. *Globalization and new challenges of public finance: Financial management, transparency and accountability. Report of the Meeting of the Group of Experts, Rome, 28-30 November 2001*, New York: United Nations.
- United Nations(UN). 2008. *Guidebook on promoting good governance in public private partnerships*. New York: United Nations. United Nations Economic Commission for Europe,
- United Nations (UN). 2015. *World economic situation and prospects 2015*. New York: United Nations.
- United Nations Development Program (UNDP). 2004. *UNDP Anti-corruption practice note*. Available online

www.uneca.org/itca/governance//Documents/Anti%20Corruption%20Note%20Final%20Version%20031704.pdf. Accessed 10 March 2016.

Uppenberg, K., Strauss, H. and Wagenvoort, R. 2011. *Financing infrastructure: A review of the 2010 EIB Conference in Economics and Finance*, Luxembourg: European Investment Bank.

Urban Land Institute and Ernst and Young. 2011. *Infrastructure 2011: A strategic priority*, Washington DC: ULI and Ernst and Young.

Valentine, J. 2008. *Public private partnerships in infrastructure. Best practice from the international experience and application for Thailand*. Available at www.nesdb.go.th/ewt_w3c/ewt_dl_link.php?nid=2658 . Accessed 19 June 2016.

Valila, T. 2005. How expensive are cost savings? On the economics of public private partnerships, *European Investment Bank Papers*, 10(1): 94-119.

Valila, T., Kozluk, T. and Mehrotra, A. 2005. Roads on a downhill? Trends in EU infrastructure Investment. *EIB Paper*, 10(1): 19-38.

Van Herpen, G.W.E.B. 2002. *Public private partnerships: The advantages and disadvantages examined*. Rotterdam: Association of European Transport.

Vander Ploeg, C.G. and Holden, M. 2013. At the intersection: The case for sustained and strategic public infrastructure investment. *Cana da West Foundation Public Policy Brief, February 2013*: 1-26.

Veech, J. 2003. Managing director at Morgan Stanley Infrastructure Partners [Interview], 4 November 2003. Prague.

Vezure, O.S. 2011. Public finance functions. *Annals - Economy Series, Constantin Brancusi University, Faculty of Economics*, vol. 3: 221-231. International Monetary Fund. Monetary and Capital Markets Department. 2015. *Global financial stability report 2015: vulnerabilities, legacies and policy changes: Risk rotating to emerging markets*. Washington, DC: International Monetary Fund.

Vinuela, L. 2016. Trends and quality of decentralized public investment. In: J. Frank, and J. Martinez-Vazquez (eds.). *Decentralization and infrastructure in the global economy*. London: Routledge. pp. 54-98.

Voss, C., Tsiriktsis, N., and Frohlich, M. 2002. Case research in operations management. *International Journal of Operations and Production Management*, 22(2): 195-219.

Vsechny Zakazaky. 2014. *Overview of public procurement contracts*. Available at www.vsechnyzakazky.cz/. Accessed 15 June 2016.

Vissak, T. 2010. Recommendations for using the case study method in international business research. *The Qualitative Research Report*, 15(2): 370-388

Wagner, N. and Iakova, D. 2001. Financial sector evolution in the Central European economies: Challenges in supporting macroeconomic stability and sustainable growth. *International Monetary Fund Working Paper, 01/141*: 1-67.

Walker, R.G. 2003. Public private partnership: from over substance. *Australian Accounting Review*, 13: 5-59.

- Wang, S.Q., Tiong, R.L.K., Ting, S.K. and Ashley, D. 1999. Risk management framework for BOT projects in China. *Journal of Project Finance*, 4(4): 56-67.
- Weihs-Raabl, W. 2012. *Group infrastructure finance*. Vienna: Erste Group Bank: AG.
- Weihua, L. 2014. Analysis of moral risk in the construction projects based on information asymmetry. *Journal of Chemical and Pharmaceutical Research*, 6(6): 933-937.
- Welman, J.C. and Kruger, S.J. 2001. *Research methodology for the business and administrative sciences*. (2nd ed.). Cape Town: Oxford University Press.
- Wentworth, L. 2012. South Africa's investment landscape: Mapping economic incentives. *Economic Diplomacy Programme. South African Institute of International Affairs, Occasional Paper, 105* : 1-38. Available at https://www.africaportal.org/documents/.../saia_sop_105_wentworth_20120202.pdf
- Williams, C. 2007. Research methods. *Journal of Business and Economic Research*, 5(3): 1-8.
- Williams, J.D. and Henderson, G.R. 2012. Discrimination and injustice in the marketplace: they come in all sizes, shape and colors, In: D. Mick, S. Pettigrew, C. Pechmann, and J. Ozzane, (eds.). *Transformative consumer research for personal and collective well being: Reviews and frontiers*. Boca Raton, FL: Taylor and Francis. pp. 171-190.
- Willoughby, I. 2016. *Construction industry looking forward to 2017 after downturn this year*. Available at www.radio.cz/en/section/business/construction-industry-looking-forward-to-2017-after-downturn-this-year. Accessed 18 January 2018.
- Wilson, M. 2015. *Morgan Stanley. Three trends that could power economic growth*. Available online <http://www.morganstanley.com/ideas/power-of-three>. Accessed 06 January 2016.
- Winer, S.L. and Hettich, W. 2008. Structure and coherence in the political economy of public finance. In D.A. Wittman and B.R. Weingast (eds). *Oxford Handbook of Political Economy*. pp. 1-24.
- Winning, A. *Monetary fund cuts South Africa's growth forecasts as politics take its toll*. Available at www.iol.co.za/business-report/monetary-fund-cuts-south-africa-s-growth-forecasts-as-politics-take-its-toll-11540420. Accessed 17 January 2018.
- Woicke, P. 1999. *Lessons of experience: Project finance in developing countries*. Washington, DC: International Finance Corporation.
- World Bank. 1994. *Slovakia: Restructuring for recovery. A World Bank Country Study*, Washington DC: World Bank.
- World Bank. 2002. *Transition: The first ten years: Analysis and lessons for Eastern Europe and the former Soviet Union*, Washington DC: World Bank.
- World Bank. 2009. *Attracting investors to African public private partnerships: A project preparation guide*, Washington DC: World Bank.
- World Bank. 2013. *Sportlight 6. Building resilience to global economic shocks in the Czech Republic, Peru and Kenya*. Available at

http://siteresources.worldbank.org/EXTNWDR2013/Resources/82580241352909193861/8936935-1356011448215/8986901-1380046989056/06a--Spotlight_6.pdf, Accessed 31 May 2016.

World Bank. 2015. *The World Bank Group: An overview*. Available at <http://www.worldbank.org/en/country/southafrica/overview>, Accessed 28 February 2016.

World Bank Development Committee. 2015. *From billions to trillions: Transforming development finance post 2015 financing for development: Multilateral development finance*. Report, WBDCR. London: World Bank.

World Bank Group. 2015. *Global economic prospects: Having fiscal space and using it: A World Bank Flagship Report*. Washington DC: World Bank Group.

World Bank Group. 2015. *Slovak Republic: PPP knowledge lab*. Available at <https://pppknowledgelab.org/countries/slovak-republic>. Accessed 13 June 2016.

World Economic Forum, WEF. 2013. *Strategic infrastructure steps to prepare and accelerate public-private partnerships*, Geneva: World Economic Forum.

World Highways.com. 2015. *Czech highway projects attracting Chinese contractors*. Available Online. www.czech_R4_Expressway/worldhighways.html. Accessed 10 November 2017.

Wu, Y. 2014. Estimating South Africa's potential growth. *South Africa 2014 Article IV Selected Issues*.

Wyplosz, C. 2012. Fiscal Rules: Theoretical issues and historical experiences. In: A. Alesina, and F. Giavazzi (eds.). *Fiscal policy after the financial crisis*. Chicago: University of Chicago Press.

Yamout, G. and Jamali, D. 2007. A critical assessment of a proposed public private partnership (PPP) for the management of water services in Lebanon. *Journal of Water Resource Management*, 21(3): 611-634.

Yescombe, E.R. 2007. *Public-private partnerships: Principles of policy and finance*. London: Butterworth-Heinemann.

Yin, R. 1984. *The case study method: An annotated bibliography* (1983-1984 ed.). Washington, DC: COSMOS Corporation.

Yin, R.K. 1994. *Case study research: Design and methods*. (2nd ed.) Thousand Oaks, CA: Sage.

Yin, R.K. 1998. The abridged version of Case study research: Design and method. In: Bickman, L. and Rog, D.J. (eds.) *Handbook of applied social research methods*. Thousand Oaks, CA: Sage.

Yin, R.K. 2009. *Doing case study research*. (4th ed.). Thousand Oaks, CA: Sage.

Zhang, X.Q. and Kumaraswamy, M.M. 2001. BOT-based infrastructure development in China. *Journal of Infrastructure Systems*, 7(1): 18-25.

Zhang, X. 2005. Critical success factors for publicprivate partnerships in infrastructure development. *Journal of Construction Engineering and Management*, 131(1): 3-14.

Zheng, J., Roehrich, J. and Lewis, M. 2008. The dynamics of contractual and relational governance: Evidence from long term public private procurement arrangements. *Journal of Purchasing and Supply Management*, 14(1): 43-54.

Zhou, G. 2012. Fiscal management in Zimbabwe. *International Journal of Economics and Business Modeling*, 3(1): 152-161.

APPENDIX 1: RESEARCH PERMISSION LETTER

UNIVERSITY OF THE
FREE STATE
UNIVERSITEIT VAN DIE
VRYSTAAT
YUNIVESITHI YA
FREISTATA



**Faculty of Natural and Agricultural Sciences
Department of Quantity Surveying and
Construction Management
Landbouwetenskappe, P.O. BOX/ Posbus 339
Bloemfontein 9300, Republic of South Africa
Tel: 051 401 2248**

To whom it may concern

RE: Field Study by Ncedo Cameron Xhala, Doctoral Student in Construction Management

This letter serves to inform you that the above student is currently doing fieldwork for his research as part of his doctoral thesis. You may be requested to complete a short interview and your cooperation will be highly appreciated. Thank you for your willingness to talk to our student. Please contact me should you have any feedback about the research or the student.

Yours sincerely

Prof Kahilu Kajimo-Shakantu
Head of Department
Quantity Surveying and Construction Management
Email address; KajimoShakantuK@ufs.ac.za

APPENDIX 2: PARTICIPANT’S CONSENT FORM



Faculty of Economics and Administration
Department of Public Economics.
Masaryk University
Lepova 41a, 602 00, Brno-Pisárky
Brno, Czech Republic

Dear Sir/ Madam

Re- Addressing Ethical Issues on Research Participation

Ncedo Cameron Xhala has received approval from the University of Economics in Prague to undertake his research project entitled:

Challenges and lessons learnt in the financing of public infrastructure in South Africa, Czech and Slovak Republics: A Comparative Study.

The information will be obtained by conducting Individual interviews. We will appreciate your willingness to participate in the study. All information obtained will be kept confidential and no participant will be identified in the research report. You are at liberty to withdraw from this project at any stage should you feel not comfortable with the information which we are requesting from you.

I have read the above and agree to participate in this study on the understanding that:

All the information will be kept confidential

I am free to withdraw at any stage without jeopardy to Masaryk University or myself.

Signed

Date.....

APPENDIX 3: PARTICIPANT’S CONSENT FORM LETTER



**Faculty of Natural and Agricultural Sciences
Department of Quantity Surveying and
Construction Management
Landbouwetenskappe, P.O. BOX/ Posbus 339
Bloemfontein 9300, Republic of South Africa
Tel: 051 401 2248**

Dear Sir/ Madam

Re- Addressing Ethical Issues on Research Participation

Ncedo Cameron Xhala has received approval from the University of Economics in Prague to undertake his research project entitled:

Challenges and lessons learnt in the financing of public infrastructure in South Africa, Czech and Slovak Republics: A Comparative Study.

The information will be obtained by conducting Individual interviews. We will appreciate your willingness to participate in the study. All information obtained will be kept confidential and no participant will be identified in the research report. You are at liberty to withdraw from this project at any stage should you feel not comfortable with the information which we are requesting from you.

I have read the above and agree to participate in this study on the understanding that:

All the information will be kept confidential

I am free to withdraw at any stage without jeopardy to Masaryk University or myself.

Signed

Date.....

APPENDIX 4: INTERVIEW GUIDE; SEMI-STRUCTURED INTERVIEW QUESTIONS

1. What constrains public finance in public infrastructure investment?
2. How does the impact of limited public finance affect public infrastructure investment?
3. How can PPPs be optimized as an alternative financing instrument in public infrastructure investment?
4. What stimulates Public-Private Partnerships as an alternative financing instrument?
5. What are the most important success factors in Public-Private Partnerships implementation?
6. Why is it important to use cost-benefit analysis in Public-Private Partnerships?
7. How does risk allocation affect Public-Private Partnerships?
8. Why is it important to have partners who have the financing capacity in Public-Private Partnerships?
9. Why and how is it important to have effective policy and regulatory framework when implementing PPPs?
10. Why is it important to have well organized public sector?
11. What are the key lessons of failed projects?
12. Why is it important to undertake technical feasibility studies in Public-Private Partnerships?
13. What is the importance of project management in Public-Private Partnership?
14. How can contract management in Public-Private Partnerships be improved?
15. How important is it to adequately monitor and evaluate Public-Private Partnership implementation projects?
16. Why it is important to have shared authority when implementing Public-Private Partnership projects?

APPENDIX 5: TWO SAMPLES OF INTERVIEW TRANSCRIPTS

SAMPLE 1.	:	The Expert Interview Sample
Time of Interview	:	10H00
Date	:	25 October 2016
Place	:	University of Economics, Prague
Interviewee ID	:	(P)
Position of the Interviewee	:	Professor
Industry Experience	:	Public & Private (24 years)
Gender	:	Male
Race	:	White

Interviewer; What is your role in the University?

Interviewee; I teach public finance and in one part of my lectures, I speak about PPPs concepts and their role in public infrastructure investment and the PPPs risks. About four years ago, I was the advisor of the prime minister in the field of public finance and how to use PPPs.

Interviewer; What constrains public finance in public infrastructure investment?

Interviewee; There are two points which are necessary to discuss and in case of the Czech, Poland and Slovak republics it is necessary that these countries close the infrastructure gap. The difference between these countries and the old EU countries is that the highways and public infrastructure investment is not the same compared with the old EU countries, there is need to invest more money in public infrastructure investment.

If you compare the data you can see that old EU countries spend approximately about 1.5% of GDP in public infrastructure investment per year while the new member states such as Czech Republic spend about 3% of GDP which is two times higher, but of course it is not enough and we need to find alternative money. The limit of public finance, why public finance is limited is of course caused by the structure of public finance, and especially the problem of aging population and increases the pressure in public finance.

There is need to spend more money on pension, health care etc. There is pressure on public deficit and on the other hand there is border of the public deficit that is caused by the Maastricht criteria. Public finance is further constrained by the politics which do not want to increase tax burden, it is important to find additional money and the one possible approach is through PPPs in public infrastructure investment.

Interviewer; How does the impact of limited public finance affect public infrastructure investment?

Interviewee; Of course, the impact is felt because the highways and environmental infrastructure is still not at the same level when comparing between the new EU countries and the old EU countries, and the Czech do not have enough money to repair its infrastructure investment. The old EU countries spend 1.5% of GDP in public infrastructure per year.

Interviewer; How can PPPs be optimized as a viable financing instrument in public infrastructure investment?

Interviewee; The first importance is to understand PPPs and have the holistic knowledge about them in order to implement PPPs adequately. PPPs are not the primary source of money, but are primarily the different ways in which to build public infrastructure and we should use them in the case of efficiency, which is higher than the case of standard procedure through public procurement and is very important to prepare them sufficiently.

Interviewer; Would you consider PPPs as an extra source of resources?

Interviewee; PPPs are not considered as an extra source of resources and there is no need to use PPPs as source of money. However, public finance is not enough and we need to find additional money, because public finance is limited and being limited is a problem and there is pressure on public deficits and on the other hand, there is a border that limits public deficits. It is important to understand PPPs because politicians do not want to increase tax burden so they try to find additional money and one possible source is to view PPPs as additional money.

Interviewer; What stimulates Public-Private Partnerships as an alternative financing instrument?

Interviewee; PPPs are increasingly being preferred over the public procurement because are long-term contracts that are prolonged over 40 years, PPPs projects are contracts may take between 20, 30 and 40 years. If you have a private company that builds and maintain state infrastructure for forty years there is no problem because the money is guaranteed.

For instance, the majority of projects implemented in Great Britain and Netherlands are prolonged for ten years, but other contracts extend to 20 and 30 years and are long-term contracts that are based on the system that the public sector must pay the company for its services each year and

is mandatory. In case of PPPs you must pay there is no possibility to postpone but you must pay because its business contracts.

Interviewer; What are the most important success factors in Public-Private Partnerships implementation?

Interviewee; Well of course the most success factors in PPPs implementation require project management knowledge; cost benefit analysis, risk allocation, monitoring and evaluation, matured legislative framework, organized public sector, skilled public personnel, transparent economic policy, long-term economic strategy, competitive private sector agency, technical feasibility studies, contract management and methodological support.

Interviewer; Why is it important to use cost-benefit analysis in Public-Private Partnerships?

Interviewee; Cost benefit analysis studies are very important because they provide the preliminary analysis of the projects economic value, and are used to compare the fiscal burden to the fiscal budgets. The cost benefit analysis studies are also important to calculate the costs of projects to determine their economic and financial feasibility.

Interviewer; How does risk allocation affect Public-Private Partnerships?

Interviewee; The government policy inconsistency creates risks, and the contrasting ideas between the right wing and the left-wing system of politicking increases the risks on policy. Just in case of efficiency, it is important to improve the risk allocation because the risks in PPPs are higher than the case of standard procedure through public procurement, there is a need to prepare the cost benefits analysis studies and technical studies to lessen the risks and to allocate risks. It is also important to calculate the risks.

Interviewer; Why is it important to have partners who have the financing capacity in Public-Private Partnerships?

Interviewee; It is of course important to have partners who have the financing capacity and private companies who must administer the agreed contracts, this is because PPPs require adequate partnerships and must be optimum partnerships.

Interviewer; Why is it important to have effective policy and regulatory framework when implementing Public-Private Partnerships?

Interviewee; Of course, it is important there is a need for general law but its logical that the law must be very general, but of course each PPPs project are different”

Interviewer; Why is it important to have a well organized public sector?

Interviewee; It is important to have the quality of people in the public sector and public administration. It is also important to have a well-organized public sector in order to enhance the institutional memory and improve the organizational structure. The consistent organizational structure in the public sector nurtures the skills development and is critical when implementing PPPs. There is also a need to promote a positive attitude towards the implementation of PPPs in the public sector.

Interviewer; What are the most important lessons of failed projects?

Interviewee; The important purpose of failed projects provides lessons of experiences which help to avoid the mistakes for the future. The problem that characterized the Czech is that we were not able to learn from the mistakes and inconsistencies. There is no consistency, the people who are responsible for implementation of failed projects are completely different than people who are working on new projects. There is no institutional memory.

There is a need to stabilize the goals as well public employees who are responsible for the implementation, because if you work on the same problem for 10 years you can learn from your mistakes. It's quite normal that for example, that the department which is responsible for PPPs projects is now filled by new people who do not have experience, it is because of the changes of the organizational structure during the 20 years.

The logic is if you have government which says ok we need PPPs projects so we establish a department with 10 people who are responsible, however, the next government does not want PPPs and scraps the department creating inconsistencies.

Interviewer; Why is it important to undertake technical feasibility studies in Public-Private Partnerships?

Interviewee; It is important to acknowledge that PPPs should be implemented just in case, for more efficient than the classic way, we need good feasibility studies which must analyze and compare PPPs concepts with the classic way. The technical feasibility studies need to be transparent, of course in a good way with good quality.

Interviewer; What is the importance of project management in Public-Private Partnership?

Interviewee; Like in any other traditional project undertaken either by the public or the private sector it is important to adhere to project management issues such as we need to plan for the projects, there is also a need to have the detailed project costs, we need to outline the implementation framework and set the goals that we need to achieve with the project. It is also important that we detail down the procurement plan since there are a lot of contractors and subcontractors in order to deliver the end quality required in terms of the set goals. As a project management official, you need to describe your schedule of activities that plan to deliver per phase or stage and have the project scope in mind. And of course, you need individual staff with skills who are going to fit in your designed project.

Interviewer; How can contract management in Public-Private Partnerships be improved?

Interviewee; And of course, contract management is seen as a problem in the public sector because of lack of necessary skills in contract management and to administer them is complex for the public officials and with PPPs is problematic to effectively implement contracts. It is important to mentor staff members, be sent to institutions to improve their understanding and be exposed to implementation of contracts in order to improve their implementation in PPPs.

Interviewer; How important is to adequately monitor and evaluate Public-Private Partnership implementation projects?

Interviewee; It is important to emphasize that monitoring and evaluation in PPPs is very critical when implementing projects. of PPPs, in case of PPPs, you don't buy infrastructure but you buy the services, so you don't buy the highway but the possibility to travel on the highway and if you want to contract the services you need to define the quality of the service, develop measurable indicators of quality and define the quality of highway you intend to end up with. For instance, one contract from Spain defined 60 indicators which described the quality such as, how long the people must wait before the toll gate, how clean are the rest places, and how much can be the peak in the highway (60) indicators.

You must remember all the aspects of the quality and to measure indicators is costly. You must define the correct measurable indicators of quality. You must monitor it and that is costly. You cannot forget some important aspect of the quality; it is complicated for example how to define

the quality of cleaning the rest places it is measured by the weight of waste in some specific area which makes it complicated. But of course, if you must establish a good system of monitoring of quality, you need people who are able to prepare it and monitor,

Interviewer; Why it is important to have shared authority when implementing Public-Private Partnership projects?

Interviewee; The public sector should have clear vision on why it implements these projects via the PPPs framework because this stabilizes the long-term goals and the security of public sector employees. The public sector long-term strategic goals result to the increasing methodological support politically and bureaucratically and to the shared decision making between the partners within the PPPs framework.

SAMPLE 2.	:	The Case Study Participant Interview Sample
Time of Interview	:	14H00
Date	:	05 October 2017
Place	:	KHI Solar One Plant, Uppington
Interviewee ID	:	(A)
Position of the Interviewee	:	Infrastructure Specialist
Industry Experience	:	Public & Private (16 Years)
Gender	:	Male
Race	:	White

Interviewer; What is your occupation?

Interviewee; I am an infrastructural specialist and I provide advice in public infrastructure investment and development for the public sector and I have also worked in the private sector as an infrastructure manager responsible for decision making in the financing of infrastructure and overseeing the deal making processes of projects through the PPPs framework.

Interviewer; What constrains public finance in public infrastructure investment?

Interviewee; public finance is restricted by the fiscal consolidation measures and the numerous austerity measures in public infrastructure investment. The current environmental issues demand that governments invest in programs that reduce environmental catastrophes because of the changing climate

Interviewer; How does the impact of limited public finance affect public infrastructure investment?

Interviewee; Of course, while it is important to comply with fiscal regulations the people on the ground feel the pain because there is lack of social infrastructure investment and lack of job opportunities. The current economic climate requires that the public sector invest more in public infrastructure because of the increasing unemployment rates, inflation and economic downgrades. There is need to access more money, because the country is limited to borrow, the fiscal deficits are rising, public debt is ballooning and the private sector is seen as able to build the infrastructure.

Interviewer; How can PPPs be optimized as a viable financing instrument in public infrastructure investment?

Interviewee; It is important to acknowledge that there is often a misconception to think that PPPs are a source of extra money in the public sector, but PPPs are contracts between the public and

the private sector where the private sector finance the infrastructure and the public sector is required to pay in terms of the contractual agreement.

Interviewer; What stimulates Public-Private Partnerships as an alternative financing instrument?

Interviewee; The PPPs in the public sector are driven by the long-term contractual terms whereby the public sector is required to pay the private sector over the long term than increasing the debt and the loan book resulting to fiscal risks. PPPs are perceived as much convenient approach to finance public infrastructure investment than the fiscal deficits and declining account balances. The current macroeconomic development requires that the public look for optimal investment approaches because of the impending risks to public finance.

Interviewer; What are the most important success factors in Public-Private Partnerships implementation?

Interviewee; In my experience, in general PPPs require good partnerships with shared objectives to implement public infrastructure investment projects. Often than not, PPPs require matured and adequate legal framework to enforce the public infrastructure investment contracts. It is important to remember that, PPPs require good private sector agency that can compete in public infrastructure investment and development. It is important that technical studies are undertaken to explore the practical implementation of PPPs. It is important to adequately manage contracts of PPPs in public infrastructure investment because of implementation risks.

Interviewer; Why is it important to use cost-benefit analysis in Public-Private Partnerships?

Interviewee; The cost benefit analysis is important to determine the affordability of the PPPs and the value for money in PPPs implementation.

Interviewer; How does risk allocation affect Public-Private Partnerships?

Interviewee; It is important to adequately manage contracts of PPPs in public infrastructure investment because of implementation risks.

Interviewer; Why is it important to have partners who have the financing capacity in Public-Private Partnerships?

Interviewee; In PPPs, is imperative to realize that the critical importance is to have partners that are both able to finance the constructed infrastructure, because public infrastructure investment through the PPPs require massive financial capital, and the public sector also needs to be able to pay as per the contract over the long-term.

Interviewer; How does policy and regulatory framework affect the Public-Private Partnerships?

Interviewee; The most fundamental requirement to the implementation of PPPs is that, PPPs require matured and adequate legal framework to enforce the public infrastructure investment contracts. It is also important to realize that PPPs are contracts and require the law and regulations.

Interviewer; Why is it important to have well organized public sector?

Interviewee; It is important to understand that PPPs require good private sector agency that can compete in public infrastructure investment and development and the well-organized public sector to monitor and manage the risks they are able to manage with competitive public-sector personnel.

Interviewer; Why is it important to undertake technical feasibility studies in Public-Private Partnerships?

Interviewee; as in any other major projects, it is important that technical studies are undertaken to explore the practical implementation of PPPs, because PPPs are characterized by risks and the unforeseen risks.

Interviewer; What is the importance of project management in Public-Private Partnership?

Interviewee; As in any other projects whether small or big, project management in PPPs is critically important because the implementation of public infrastructure investment through PPPs follows the same project management processes and practices.

Interviewer; How can contract management in Public-Private Partnerships be improved?

Interviewee; It is important to adequately manage contracts of PPPs in public infrastructure investment because of implementation risks.

Interviewer; How is it important to adequately monitor and evaluate Public-Private Partnership implementation projects?

Interviewee; PPPs implementation require constant and frequent monitoring and evaluation because of the inherent risks that are a challenge in PPPs, and the public sector is required to constantly monitor those risks that are in PPPs.

Interviewer; Why is shared authority important in Public-Private Partnership projects?

Interviewee; shared authority in PPPs plays an important role in that it ensures that both partners shares the same goals, objectives and are both prepared to implement PPPs in public infrastructure investment and able to solve the PPPs persistent challenges.

Interviewer; What are the key lessons of failed PPPs projects?

Interviewee; The failed projects provide critical project management lessons to improve the processes when developing PPPs infrastructure investment projects. There are financial risks attached to the failure of projects and they are so huge in that it is important to avoid these financial risks. There is a need for increased political will to realize the success delivery of PPPs contracts, and there are many examples where PPPs have failed because of lack of political will and inadequate bureaucratic support.

Interviewer; How can the lessons of failed projects improve PPPs investment?

Interviewee; The lessons from the failed projects should improve project management processes, lessened the implementation failure and improve the project costs, schedule and the quality of projects in order to avoid the increasing failure in projects.

Interviewer; Why is it significant to learn from failed PPPs projects?

Interviewee; The importance of lessons from the failed projects often improve the institutional structure, improve the delivery of project with essential knowledge, enhance the need for political and bureaucratic support and improve the objectives of why projects are being implemented.