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Risks Associated with Public Private Partnership (PPP) Housing Projects Delivery in Tanzania

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Abstract Numerous studies have been undertaken to identify risks associated with Public Private Partnership (PPP) projects in both developed and developing countries. The subject of risk has become a significant aspect in PPP projects due to its complex nature. However there are still few studies on risk assessment and management practices in Tanzanian context despite the huge failures experienced in PPP housing projects. Therefore to bridge the knowledge gap, this study aims to firstly, identify the risks associated with PPP housing projects in Tanzania and secondly understand the existing risk management strategies adopted in HPPP projects. A total of 10 semi structured interviews were conducted with practitioners involved in PPP projects in Tanzania. Content analysis was used to analyze the qualitative data. A total of 28 risks were identified. The majority of the interviewees 7 (70%) mentioned that delays have been the most popular risk in these projects triggered by various reasons. The outcomes of this study reveal the relationship between the identified risk and risk strategies adopted. Furthermore, these results may serve as valuable reference for PPP stakeholders to develop effective project and risk management strategies.

Keywords Risks, Public Private Partnership, PPP, Housing, Projects, Risk management, Tanzania

1. Introduction

Tanzania is currently experiencing a very huge housing shortage. The current demand is projected at 3 million houses, which is annually increasing at an average rate of 200,000 houses (NHC, 2010). Consequently, this shortage led to a need to look for alternative ways other than the traditional approaches in order to address the problem and prevent the increasing gap. For that reason, the Government of Tanzania has redirected its public agency to adopt PPP strategies in order to address the growing housing challenge (NHC, 2010). For example both the public housing agencies such as National Housing Corporation (NHC) and the public pension fund organizations such as National Social Security Fund (NSSF) have initiated quite a number of PPPs/Joint Ventures (JVs) projects in Tanzania.

Former studies such as (Tang et al., 2010; Roumboutsos and Macário, 2013) acknowledged PPP to be an appropriate alternative approach for Governments to deliver better public services. Developing countries such as India, South Africa and Malaysia and some other developed countries such as the UK, Canada, the USA, Australia have used the PPP approach successfully in delivering affordable housing (Abdullahi and Aziz, 2011; Moskalyk, 2011; Liu et al., 2014). However, there are numerous issues affecting the success of HPPP projects particularly in developing countries (Sengupta, 2006; Abdul-Aziz and Kassim, 2011; Moskalyk, 2011; Ibem and Aduwo, 2012; Kwofie et al., 2016). Correspondingly, most of Tanzanian PPP housing projects have experienced failures and early termination due to the complexity of PPP (Kavishe, 2010). Similarly according to the World Bank (2016) report 15% of Tanzanian PPP projects have been terminated early. This value compares to the global average of 3.7% for a period between 1990 and 2014 (Ibid). Unfortunately, the high level of early termination portrays an existence of unforeseen risk (World Bank, 2016) or investment risks. Therefore in order to improve the delivery of PPP housing projects in Tanzania there are greater needs of identifying the associated risks and evaluate the risk management strategies. This is supported by World Bank (2016) as it emphasize on Government avoiding the temptation to initiate PPPs to finance infrastructure projects without recording associated risks.

2. Literature Review

The growing PPP trend is related to the benefits demonstrated and attained by various countries such as the UK, Australia, China, India, USA and Malaysia (Li et al., 2005a; Zou et al., 2008; Babatunde et al., 2015). Although PPP projects have various challenges and risks the following aspects appeared most significant. Innovation and

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technology transfer, reducing government's financial burden, on time delivery, risk sharing, resource sharing and enhanced value for money.

Zhao et al. (2013) claimed that in developing countries, construction industries are prone to uncertainties. Nevertheless, a recent empirical study by Chileshe and Kikwasi (2014a) reported that there are still few studies on risk assessment and management practices in these developing countries including Tanzania. Furthermore, according to Bowers and Khorakian (2014) there is limited indication of effective uses of risk management within construction projects in developing countries. A fundamental reason for this observation appears to be the lack of risk management knowledge and capacity (Serpell et al., 2017). Incapacity to identify and manage project risks by many countries has slowed down the success of PPPs (Zhang, 2005) despite the identified benefits. For example Tanzania has experienced many PPP failures (World Bank, 2016) due to lack of awareness on risk management processes; inexperience; and absence of information (Chileshe and Kikwasi, 2014b; Kavishe and An, 2016).

Tang et al. (2010) argued that the political risks, financial risks and market risks have been claimed to be the most substantial risks in PPP financing strategy. In addition, a Delphi survey study undertaken in China by Xu et al. (2010) ranked six most critical risk groups as: (1) Government Intervention (2) Government Maturity Risk (3) Economic Viability Risk (4) Market Environment Risk (5) Construction and Operation Risk and (6) Macroeconomic Risk. For instance in Nigeria unstable government, inadequate experience in PPP and availability of finance are the three most significant PPP risk factors identified in a quantitative study (Ibrahim et al., 2006). These findings agree with (Zhao et al., 2013).

However, Grimsey and Lewis (2004) argued that, PPP arrangement has improved project risks awareness to a larger extent in comparison to the public procurement simply because risk identification, risk allocation and risk management has become an important part of PPP processes (Ibid). Table 1 below shows a summary of risk associated with PPP projects. But, it was observed on Table 1 the majority of these studies have been done in the Asian region. So far no PPP risk study has been undertaken in the countries such as Tanzania. Therefore, it is relevant and there is great need of exploring the issue of PPP risk in the context of developing countries such as Tanzania in order to enhance PPP project performance and bridge the infrastructure gap.

3. Methodology

A qualitative data collection approach was used to gather data, whereby semi structured interview was the preferred method. This study is part of an ongoing PhD research project. Part of the methodology section particularly the profile, selection criteria, data analysis method etc) have been previously reported in (Kavishe *et al.*, 2018). Purposive sampling was used to select the interviewees considering the fact that not all construction participants implement PPP projects, likewise PPP is still a new approach in Tanzania. The key selection criterion used was that, respondents needed to have participated in the housing PPP projects. So far a total 10 semi-structured interviews were undertaken between July and August 2016 in Dar-es-Salaam, Tanzania. Considering that it was a qualitative survey, the response rate can be considered adequate in relation to the total population and inadequate research done within the Tanzanian context to-date. Furthermore, according to Patton (2002), the sample size can be considered sufficient in the threshold of between 5 and 50 interviews once it achieves saturation. The semi-structured interviews' duration was between 45 –100 minutes. Table 2 presents the interviewees profile. As can be seen from Table 2, fifty percent of interviewees fell within the "more than 15 years" category whereas twenty percent fell on between"11-15 years" categories whereas twenty percent fell "less than five" years and ten percent was in the "six to ten years" category. The extra information on interviewees 'designation', 'educational level' and 'PPP housing experience' as demonstrated in Table 2 justifies the selection criteria for the interviewees. Comparable to previous PPP studies for instance Zawawi *et al.* (2016), the qualitative data was analysed through content analysis.

Table 1. Risk identified based on PPP project lifecycle

Risk Category	Risk factors	Reference
Feasibility study	Political risk (government intervention)	(Kumaraswamy and Zhang, 2001; Grimsey and Lewis, 2002; Li *et al.*, 2005; Zou *et al.*, 2008)
	Land acquisition risks	(Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Social and public acceptance risks	(Grimsey and Lewis, 2002; Bing *et al.*, 2005; Zou *et al.*, 2008)
	Government leadership risks	(Kumaraswamy and Zhang, 2001; Shen *et al.*, 2006)
	Pre investment risks	(Singh and Kalidindi, 2006)
	Environment risks	(Grimsey and Lewis, 2002; Bing *et al.*, 2005)
	Market risks	(Kumaraswamy and Zhang, 2001; Grimsey and Lewis, 2002; Medda, 2007; Zou *et al.*, 2008)
	Poor public decision making process	(Grimsey and Lewis, 2002; Bing *et al.*, 2005)

Financing	Interest rate fluctuation	(Kumaraswamy and Zhang, 2001; Bing *et al.*, 2005)
	Economical risks(inflation, foreign exchange)	(Kumaraswamy and Zhang, 2001; Grimsey and Lewis, 2002; Bing *et al.*, 2005; Medda, 2007; Zou *et al.*, 2008)
	Legislation change	(Kumaraswamy and Zhang, 2001; Grimsey and Lewis, 2002; Bing *et al.*, 2005)
	High finance cost	(Grimsey and Lewis, 2002; Bing *et al.*, 2005)
	Poor financial market	(Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Poor financial attraction of project to investors	(Grimsey and Lewis, 2002; Bing *et al.*, 2005; Singh and Kalidindi, 2006)
Procurement and Design	Design deficiency	(Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Unproven engineering technics	(Grimsey and Lewis, 2002; Bing *et al.*, 2005)
	Government Corruption risks	(Kumaraswamy and Zhang, 2001; Zou *et al.*, 2008)
	Contract risks	(Bing *et al.*, 2005; Shen *et al.*, 2006)
	Inadequate competition for tender	(Maslyukivska and Sohail, 2007)
	Inability of concessionaire	(Ng and Loosemore, 2007)
	Too many design changes	(Grimsey and Lewis, 2002; Bing *et al.*, 2005; Singh and Kalidindi, 2006)
Construction	Construction cost overrun	(Grimsey and Lewis, 2002; Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Delays	(Bing *et al.*, 2005; Shen *et al.*, 2006)
	Technical risks	(Bing *et al.*, 2005)
	Material/labour non availability	(Kumaraswamy and Zhang, 2001; Bing *et al.*, 2005; Shen *et al.*, 2006; Ng and Loosemore, 2007)
	Too many late design changes	(Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Geological risks	(Bing *et al.*, 2005)
	Weather risks	(Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Environmental pollution risks	(Grimsey and Lewis, 2002; Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Completion risk	(Ng and Loosemore, 2007)
	Construction force majeure events	(Kumaraswamy and Zhang, 2001; Grimsey and Lewis, 2002; Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Poor quality workmanship	(Bing *et al.*, 2005)
	Difficulties in land acquisition	(Bing et al., 2005, Singh and Kalidindi, 2006
	Infrastructure risks	(Shen *et al.*, 2006)
Operation	Revenues below expectation	(Grimsey and Lewis, 2002; Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Interest rate volatility	(Grimsey and Lewis, 2002; Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Inflation rate volatility	(Grimsey and Lewis, 2002; Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Legislation change	(Grimsey and Lewis, 2002; Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Market demand change	(Grimsey and Lewis, 2002; Bing *et al.*, 2005; Singh and Kalidindi, 2006)
	Operational risks	(Grimsey and Lewis, 2002; Bing *et al.*, 2005; Shen *et al.*, 2006)

Source: Adapted from Li and Zou (2012)

Table 2. Interviewee Profile

Interviewee	Designation of Respondents	Experience in Current Position	Educational Level	Implementing PPP Housing Projects	Experience with PPP Housing Projects
A	Managing director	11~15years	Master's degree	Yes	Over 10 projects
B	Senior Legal officer	< 5 years (4yrs)	Master's degree	Yes	Over 10 projects
C	Assistant legal officer	< 5 years (1yr)	Master's degree	Yes	1-2 projects
D	CEO	11~15yrs (12yrs)	Master's degree	Yes	1-2 projects
E	Project manager	> 15 years (20yrs)	Master's degree	Yes	Over 10 projects
F	PPP clerk of works	> 15 years	Master's degree	Yes	1-2 projects
G	Managing director	> 15 years	PhD in Economics	Yes	1-2 projects
H	Project manager	> 15 years	Master's degree	Yes	Over 10 projects
I	Associate Professor	> 15 years (>20yrs)	Associate Professor	NO	No, but PPPs in waste collection
J	Acting Director	6-10 years	Master's degree	NO	N/A

4. Findings

4.1. Risks Associated with HPPP Projects

When the interviewees were asked; "what major risks did their organizations encounter in the course of implementing PPP housing project?" A total of 28 risks were identified as shown in Table 3. The majority of the interviewees (70%) mentioned that delays have been the most popular risk in these projects triggered by various reasons. For example Interviewee C explained that, a delay caused by disputes is a major risk in these partnership projects whereas Interviewee E, F and G described risk of delays resulting from inadequate funds. Additionally, it was noted that 60% of respondents also mentioned that 'private partner inadequate financial capacity' and 'poor quality end product/work' were the second and third ranked risk respectively. However Interviewee F further explained that;

"Private partner inadequate finance is a serious risk in PPP project, and can easily occur if adequate financial examination is not undertaken to ascertain his capacity. For example our project has been delayed and stopped its construction process for a couple of months since April 2016 because the private partner lacks funds to continue financing the project. This has resulted into numerous problems such as theft at the project site due to workers not being paid their salary, conflicts and disputes between the contractor and workers because of failure to pay them on time and higher maintenance cost in terms of electricity and security to protect the completed structures".

Table 3. Summary of risks associated with Housing PPP projects

Responses	Interviewees										
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**No**
Delays	✓	✓	✓		✓	✓	✓	✓			7
Private partner inadequate financial capacity	✓	✓	✓		✓	✓		✓			6
Poor quality product/work	✓	✓	✓	✓			✓	✓			6
Uncompleted projects	✓					✓			✓		3
Government interference									✓		1
Disputes and conflicts between parties		✓	✓		✓			✓	✓		5
Adverse weather conditions						✓					1
Inadequate contract			✓								1
Risk to buy the shares back in case of financial incapacity by the public sector		✓	✓		✓			✓			4
Contractor risks				✓							1
Mistrust /Uncertainty				✓					✓	✓	3
Theft and vandalism				✓		✓					2
Variation				✓							1
Management risks, because the first batch of all partnership projects were managed by private partners					✓						1
Inexperienced Private partners					✓						1
Loss of revenue due to delays					✓						1
Public partner putting itself into competition with the private developers		✓			✓						2
High rent charged by private partners					✓						1
Unfair contract since land did not have monetary value					✓						1
Political changes/ change in government leadership						✓					1
Cost overruns										✓	1
Currency fluctuation						✓				✓	2
Market risk						✓	✓			✓	3
High financing cost							✓			✓	2
Land ownership risks				✓							1
Inadequate feasibility study						✓					1
Poor surrounding infrastructure						✓					1
Higher maintenance cost						✓					1

Based on Table 3 the second mentioned risk 'private partner inadequate financial capacity' and 'poor quality end product' both were mentioned 6 times each signifying their prevalence. 'Disputes and conflicts between parties' (5 times) and 'risk to buy the shares back in case of financial incapacity by the public sector' (4 times). The majorities of the identified risks were more or less similar to the literature findings as listed on Table 1. During the literature review, it was observed that risk is among the subjects in PPP studies which have largely been researched as evidenced on Table 1. However it was discovered that, barely any research has been conducted that focuses on risk in PPP projects within the Tanzania context. This result agrees with (Chileshe and Kikwasi, 2014b). Therefore the identification of risk in this study shed light to preconceived knowledge in PPP, besides it increases awareness of the risks that can erode or lessen potential benefits of PPPs in the housing sector.

4.2. Risks Management Strategies in HPPP Projects

Subsequent to identifying the associated risks in HPPP projects (see Table 3) it was deemed important to understand the existing risk management strategies adopted in HPPP projects considering the huge failures experienced along the way. Interviewees were asked how they managed these risks in order to achieve project goals. Table 4 shows the risk management strategies as identified by the interviewee respondents.

It was observed that the majorities of the identified strategies (see Table 4) complements the identified risks shown in Table 3. For instance 50% of the respondents identified "*thorough financial assessment to proof partners' financial capacity*" which appeared to be the most important strategy aiming to address the risk of partners' inadequate financial capacity which too was identified by 60% of respondents as shown in Table 3. Furthermore, the revealed strategies appeared to be more project management related hence indicating the need for adequate project management skills. Moreover the identified strategies highly support and compliment the identified CSF and further agree with the existing literature (Abdul-Aziz and Kassim, 2011; Moskalyk, 2011; Abdul-Aziz, 2012; Babatunde *et al.*, 2012; Dairu and Muhammad, 2015; Kwofie *et al.*, 2016). This study demonstrates that the majorities of the interviewees are aware of both the existing risks and ways of managing these risks in PPP housing project. The question lies on weather these practitioners have the right skills to manage these risks or the risk management is not applied before, during and after the project execution. Because having the knowledge/awareness/skills is one this but applying the knowledge/skills is another thing.

Table 4. Summary of risk management strategies in Housing PPP projects

Responses	Interviewees										
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**No**
Undertaking quality control and assurances of the materials				✓							1
Private partners required to submit proof of their financial capacity	✓		✓								2
Submit a collateral support in terms of money in an Escrow account.	✓				✓						2
Team of professionals to manage and monitor the projects from both parties	✓	✓			✓						3
Readjustment of the payback period		✓									1
Careful risk identification and analysis		✓									1
Contract revision					✓						1
Carefully examination of the project proposals			✓					✓	✓	✓	4
A thorough financial assessment to proof partners financial capacity.			✓				✓	✓	✓	✓	5
On site supervision throughout the construction period				✓							1
Any variation or alteration had to be brought to clients attention for approval				✓							1
No payment was made until quality check was done on weekly basis				✓							1
Amendments were made to the joint venture Policy					✓						1
Introducing new investment policy which allows NHC to inject capital					✓						1
Adequate supervision and report writing on daily basis							✓				1

5. Conclusions

The purpose of this study was to investigate the perception of PPP risks in housing construction projects in Tanzania alongside the existing risk management strategies adopted in HPPP projects. A total of 28 and 15 risks and risk management strategies were identified as shown in Table 3 and 4 respectively. Delays, private partner financial incapacity, poor workmanship and conflicts were the top four identified risks. These results may serve as valuable reference for PPP stakeholders to further develop effective project and risk management strategies.

Furthermore, through this study a contribution to knowledge emerge. Firstly, to the best of knowledge, this empirical study is among the first that identifies PPP risks in housing construction projects in Tanzania. Secondly, existing risk management strategies adopted in HPPP projects were identified. Hence the outcomes of this study bridged the knowledge gap and revealed the relationship between the identified risk and risk strategies adopted. There is a positive relationship observed between the identified risks and the risk management strategies. However the positive relationship and demonstrated awareness does not reflect in the success of the project. So many projects fail mainly because of poor project management skills as demonstrated in previous similar studies. (Kavishe and An, 2016; Kavishe *et al.*, 2018). Since PPP projects are considered prone to so many uncertainties due to their complex nature. Risk management strategy is inevitable and a key feature of managing PPP projects as an attempt to deal effectively with uncertainties in order to achieve project success. Likewise in the attempt of tackling the housing shortage in Tanzania through PPP approach, effective risk management strategies will be one of the significant aspect and solution towards the success of HPPP projects hence improving the supply of houses.

Therefore this study calls for the need to strengthen the implementation of risk management strategies throughout the life cycle of PPP housing projects. Additionally, this study respond to the PPP research agenda promoted by Akintoye and Kumaraswamy (2016) regarding the need for undertaking more research on the subject of PPP.

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