

# CHALLENGES FOR PROJECT SELECTION AND EXECUTION OF PUBLIC-PRIVATE PARTNERSHIP PROJECTS IN SRI LANKA

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## ABSTRACT

*Public-Private Partnerships (PPP) have grown in popularity in developing countries as a means of engaging the private sector in the building of public infrastructure. Determining the most suitable PPP model for construction projects in Sri Lanka is challenging due to the unique economic, social, and political context of the country. To identify these challenges, the research adopted a mixed approach, with questionnaire surveys, and expert interviews utilised to obtain data. Six expert interviews with experts who have more than 15 years of expertise in the field were selected for the preliminary survey, and forty-three project managers, engineers, quantity surveyors, and procurement specialists who were involved with PPP projects were subsequently selected for the questionnaire survey. Manual content analysis was used to examine the interview results. Relative Importance Index (RII) and manual content analysis were both applied to evaluate the questionnaires. The results disclosed that selecting a PPP project depends on several factors. Those Selection factors were categorised under economical, technical, legal, financial, and environmental considerations. Additionally, ten challenges were identified with the selection and execution of PPP projects to implement a selection criterion for PPP projects. Overall, a comprehensive assessment of the project's economic, technical, legal, financial, and environmental implications should serve as the foundation for the selection criteria as the recommendation. These findings will aid industry professionals in selecting a PPP project that will promote long-term economic growth in Sri Lanka.*

**Keywords:** *Project Evaluation; Project Selection Criteria; Public-Private Partnership (PPP) Projects.*

## 1. INTRODUCTION

The popularity of PPPs in construction has grown, with PPPs recognised as innovative procurement strategies that offer promising prospects for the global construction industry (Osei-Kyei & Chan, 2017). PPPs are seen as effective institutional mechanisms for addressing market failures by fostering equity and accountability between public and private entities (Sandhu et al., 2018). In Sri Lanka, PPP guidelines were introduced in 1992 (Fernando, 2019). While PPPs have been effective in delivering assets including hospitals and schools, they are considered a valuable method for achieving the best value for money in public infrastructure projects (Bing et al., 2005). However, various PPP models such as BOT, BOOT, and DBOT have different approaches to incorporating

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private sector involvement in traditional public services (Al-sharif & Kaka, 2004). Many developing countries, including Malaysia, have faced challenges in attracting private investment, with obstacles such as lengthy negotiations, lack of clear government guidelines, higher costs for users, political delays, and unclear evaluation criteria (Wang et al., 2019). The top factors affecting PPP project selection include market conditions, financial resources, project environments, time delays, and budget overruns (Issa et al., 2020).

Governments in both developing and developed countries are increasingly turning to the PPP procurement method to fill critical infrastructure gaps rather than building construction (Gunnigan & Rajput, 2010). Furthermore, there are past research studies which prove the importance of the PPP to infra-structure projects (Bing et al., 2005; Cui et al., 2018; Zheng et al., 2018). However, there is a lack of research regarding PPP project selection. According to Appuhami et al. (2016), PPP projects were not initiated, especially in the road, telecommunication, and power sectors, even though there was a necessity to develop the infrastructure facilities as a developing country. Therefore, the selection of the project for PPP in a proper way is essential. Hence, considering the above-mentioned industrial need and the literature gap, it is essential to research the project selection criteria for PPP projects in Sri Lanka context. This study aims to identify suitable project selection criteria for PPP Projects in the Sri Lanka with the established five objectives including reviewing the characteristics of the PPP, and the PPP arrangements/ types, investigating the factors affecting the selection of existing PPP projects in Global Context, recognising challenges with the selection and execution of PPP projects.

## **2. LITERATURE REVIEW**

### **2.1 CONSTRUCTION PROCUREMENT**

Construction procurement involves acquiring goods and services essential for project execution and smooth commercial operations (Masterm et al., 2002). It includes direct and indirect procurement, covering the acquisition of labour and materials necessary for construction (Watermeyer & Director, 2012). The procurement process consists of several steps: creating a procurement management plan, conducting the procurement process, awarding contracts, monitoring construction, and closing contracts (Gunawardhane & Karunasena, 2014). Effective procurement is vital for timely project completion and delivery (Molavi & Barral, 2016).

Procurement systems in construction are categorised into traditional and non-traditional systems (Rameezdeen & de Silva, 2002). Traditional systems including package deals and turnkey projects, involve separate management of design and construction tasks. Non-traditional systems include integrated approaches, such as design and build, where design and construction responsibilities are consolidated, and management-oriented methods that involve a contractor managing subcontractors and design consultants (Utama et al., 2022). The choice of procurement system affects project outcomes: traditional systems may lead to fragmented communication, integrated systems streamline processes yet limit client control, and management-oriented systems offer strong project management hence require extensive contractor coordination (Utama et al., 2022).

## **2.2 SIGNIFICANCE OF PPP OVER OTHER PROCUREMENT SYSTEMS**

PPPs are diverse contractual arrangements enabling collaboration between the public and private sectors. Although no single global definition exists, PPPs generally involve agreements where a government agency or public organisation partners with a private sector entity to provide public assets and services. These arrangements include substantial risk-sharing and performance-linked payments to the private sector (Dabarera et al., 2019; Reeves et al., 2014).

PPPs offer mutual benefits: the private sector's technology and innovation can enhance public service efficiency, while the public sector provides incentives to ensure projects are completed on time and within budget. PPPs are increasingly used to finance large infrastructure projects, offering higher private-sector involvement compared to traditional procurement methods. This approach aims to improve project efficiency and effectiveness throughout its lifecycle and allows for cost distribution over a longer period. Consequently, it helps free public funds for other investments and contributes to a country's economic stability (Liu & Wilkinson, 2011).

## **2.3 USAGES OF PPP**

PPPs are gaining recognition for their potential to improve health systems by combining the strengths of both sectors to enhance effectiveness, quality, and innovation (Sovacool, 2013). Governments are increasingly using PPPs to reduce healthcare costs and boost investment. Successful examples include Brazil, where private operators increased patient treatment by 30% in new government-built hospitals, and St. Goran's Hospital in Sweden (Zhou et al., 2013). PPPs are applied in sectors including energy and infrastructure, leveraging private sector resources and expertise to enhance public services and asset management (Sovacool, 2013).

Since the late 1990s, Sri Lanka has promoted PPPs for infrastructure development to enhance funding, management, and cost efficiency. Despite early efforts, the results were disappointing. In the past 15 years, Sri Lanka has executed 15 PPP projects with a \$1.65 billion investment, falling behind India, Pakistan, and Bangladesh in both investment and project count (Weththasinghe et al., 2016). The Colombo Port City Project (CPCP), a major PPP with China Harbour Engineering Corporation, is the largest and most ambitious project in Sri Lanka. However, it faced delays and controversy due to alleged mismanagement (Thoradeniya, 2016).

## **2.4 DIFFERENT PROCUREMENT MODELS IN PPP**

Many different models can be made for public-private partnerships. Recognising that effective risk sharing, or transfer is essential for a PPP model's success is crucial (Lee & Choi, 2015). There are six models, ranging from low to high levels of privatisation: BT, DBFO, BOOT, BTO, BOT, and BOO. According to various contract agreements, BOT, in this sense, includes DBFO, BOOT, and BTO. The Canadian PPP Committee ordered the sequence of the five PPP modes from low to high, resembling a ladder, based on the extent of private sector participation and risk (Hu et al., 2010). Table 1 provides a summary of the PPP types, and detailed descriptions, enabling a clearer understanding of their respective roles and characteristics.

Table 1: Different types of procurement models in PPP

Type	Description
Build Transfer (BT) [1]	Design and Build (DB) involves the public sector contracting a private partner for design and construction while managing operations and maintenance.
Build Transfer Operate (BTO) [2]	Design Build Operate (DBO) involves a private partner designing, building, and operating a facility, while the public sector retains ownership.
Build Operate Transfer (BOT) [1]	Design Build Operate Maintain (DBOM) involves a private partner handling design, construction, operation, and maintenance, with asset ownership transferring after the contract.
Build Own Operate Transfer (BOOT) [2,3]	Private partners will be awarded grants for designing and building the facility. The private sector will own the asset and operate it. The asset will transfer ownership once the contract period is completed.
Build Own Operate (BOO) [2]	A private entity designs, builds, operates, and maintains the facility with ownership retained, similar to BOT but without transfer obligation.
Design Build Finance Operate/Maintain (DBFO) [4]	The private partner is responsible for designing, constructing, operating, and maintaining the facility. This is considered as a long-term agreement. The asset will transfer ownership once the contract period is completed.

Source: [1; (Opawole & Jagboro, 2018), 2; (Akomea-Frimpong et al., 2020), 3; (Almeile et al., 2024), 4; (Dabarera et al., 2019)

## 2.5 EXISTING PROJECT SELECTION FACTORS IN GLOBAL CONTEXT

The general project selection criteria are divided into two categories by Mohanty (2014): intrinsic and extrinsic. Okpala (2012) conducted a study on the Nigerian selection criteria and identified ten factors that have an impact on project selection. Table 2 illustrates factors for project selection in different types of projects.

Table 2: Factors for project selection in different types of projects

General Project Selection (Mohanty, 2014)	Construction Project Selection (Okpala, 2012)	Infrastructure Project Selection (World Bank Group 2022)
<b>Intrinsic Factors</b>	1. Availability of capital	1. Project development objective
1. Project-identification ability	2. Economic situation	2. Strategic context
2. Resources requirements and availabilities	3. Profitability	3. Project description
3. Past experiences of the organization in managing projects	4. Political situation	4. Project rationale
4. Management attitudes	5. Benefit	5. Project analysis
5. The time horizon of the project	6. Management	6. Sustainability and risks
<b>Extrinsic Factors</b>	7. Competitive activities	7. Main conditions
1. The risk/return ratio	8. Viability	8. Readiness for implementation
2. The market environment	9. Uncertainty and risk level	9. Compliance with bank policies
3. Government policies and regulations	10. Project competitiveness	
4. The socio-economic climate		
5. Legal and technological implications		

Furthermore, other selection factors were discovered after academic and institutional literature reviews were conducted to develop relevant standards for assessing PPP project selection (Osei-Kyei et al., 2020). Table 3 illustrates the list of selection factors for PPP projects.

Table 3: List of selection factors for PPP projects

Selection factors for PPP projects	Sources / Authors
Conformity of proposal with sector/national policy	Hodges & Dellacha (2007); PPIAF (2024);
Whole life value for money	
Outstanding creativity and innovative technological solutions	PPIAF (2024); World Bank Group (2022)
Affordability of user tariffs	
Appropriateness of risk-sharing mechanism	PPIAF (2024)
Financial capabilities of private sector proponent	Hodges & Dellacha (2007)
Environmental safety of proposed solutions	
Cost-effectiveness of service delivery mechanism	PPIAF (2024); World Bank Group (2022)
Climate change and sustainability impacts of proposal	

## 2.6 APPLICABILITY OF PPP TO SRI LANKAN CONTEXT

When there is no systematic or practical method available to choose the procurement system appropriate for a building project, Ratnasabapathy and Rameezdeen (2007) state that in the Sri Lankan context, the identification of procurement selection factors and development of a model appropriate for a realistic selection process are essential to the effectiveness and success of the project (Dabarera et al., 2019).

The novelty of this research lies in its focus on developing specific project selection criteria tailored for PPP projects in Sri Lanka, a topic with limited exploration in both local and global contexts. While previous studies (Gunnigan & Rajput, 2010; Bing et al., 2005; Cui et al., 2018; Osei-Kyei & Chan, 2017) have highlighted the general importance of PPPs in infrastructure, this research addresses a critical gap by examining the unique factors influencing project selection and execution in the Sri Lankan setting. By reviewing existing PPP characteristics, arrangements, and global selection factors, the study aims to identify and propose criteria that can improve the effectiveness and success rates of PPP projects in Sri Lanka, particularly in sectors like road, telecommunication, and power (Appuhami et al., 2016; Fernando, 2019; Weththasinghe et al., 2016).

## 3. RESEARCH METHOD

The study utilised a mixed approach, integrating qualitative and quantitative methods to thoroughly investigate the challenges in project selection and execution of PPP projects in Sri Lanka. Expert interviews with PPP professionals with over 15 years of experience were conducted to gather in-depth insights, as suggested by Prescott and Conger (1995) and Johnson and Onwuegbuzie (2004). The manual content analysis of these interviews provided qualitative data. Additionally, a questionnaire survey, based on Roopa and Rani (2012), was employed to collect quantitative data, using purposive sampling (Mishra & Alok, 2017). Table 4 illustrates the respondents of expert interviews.

Table 4: Details of expert interviews

Interviewee	Type of Organisation	Respondent Details
R1	Consultant	Senior Legal Advisor - 18 years of work experience
R2	Consultant	Lawyer - 16 years of work experience

Interviewee	Type of Organisation	Respondent Details
R3	Contractor	Claim Consultant - 17 years of work experience
R4	Contractor	Senior Quantity Surveyor - 25 years of work experience
R5	Consultant	Contract & Claims Engineer - 22 years of work experience
R6	Consultant	Chief Quantity Surveyor - 16 years of work experience

Six interviewees with more than 15 years of experience participated in the expert interviews. The interviewees were all highly qualified, successful in the Sri Lankan and international construction industries, and knowledgeable about different project selection criteria and PPP in Sri Lanka. The questionnaire survey was structured using the outcomes of expert interviews. During the questionnaire study, 65 questionnaires were issued to industry professionals in the construction sector, and 43 of those professionals responded and they were asked to rank the findings in expert interviews. Table 5 summarises the details of the questionnaire participants.

Table 5: Questionnaire participants

	Project Managers	Engineers	Quantity Surveyors	Procurement Specialists	Contract Managers	Total
0-5 Years	-	-	2	-	-	2
6-10 Years	-	1	8	-	-	9
11-15 Years	2	3	8	3	2	18
16-20 Years	2	3	2	2	1	10
> 20 Years	1	1	2	-	-	4
Total	5	8	22	5	3	43

The project selection factors for PPP projects are ranked according to their specific consideration using the Relative Importance Index (RII). RII is computed by multiplying the highest weighting by the total number of respondents and dividing the sum of weightings.

$$\text{Relative Important Index (RII)} = \frac{\sum(Wn)}{A \times N} \quad (\text{Eq. 01})$$

Where; RII= Relative Importance Index, W=Weighting given to each factor by the respondents, n=Frequency of responses, A=Highest weight, and N=Total number of respondents

## 4. FINDINGS

### 4.1 CHARACTERISTICS OF THE PPP, AND THE PPP ARRANGEMENTS/TYPES

Compared to traditional procured projects, PPP projects are a special type of project. The public sector invites the private sector to finance its own money to build the project. The operational and managing rights are transferred to the private sector to recover the cost-plus profit. However, this question is examined the opinion of each respondent whether they agree or disagree with the special characteristics which were identified from literature compared to traditional procured projects. Table 6 illustrates opinions on the special characteristics of PPP projects compared to traditional procured projects.

Table 6: Characteristics of the PPP

Characteristic	Special Characteristics of PPP ([A]gree / [D]isagree)					
	R1	R2	R3	R4	R5	R6
Private sector participation	A	A	A	A	A	A
Value for Money	D	A	D	A	A	A
Certainty of Outcomes	D	A	A	A	A	A
Innovation	A	D	D	A	A	D
Work Planning and Organizing	D	D	D	D	D	D
Optimization of Life Cycle cost	D	A	D	A	A	D
Risk sharing	A	A	A	A	A	A
Responsibility sharing	A	A	A	A	A	A
Resource sharing	A	A	A	A	A	A
Improve level of Delivery	D	D	A	A	A	A
Transparency	A	D	D	A	A	A
Long term projects	A	D	D	A	A	A
Viability Gap Funding	D	A	D	A	A	A

According to Table 7, all of the respondents agreed that private sector participation, risk sharing, responsibility sharing, and resource sharing can be identified as special characteristics of PPP projects compared to traditional procured projects.

#### 4.2 FACTORS AFFECTING THE SELECTION OF PPP PROJECTS

The questionnaire was conducted to determine the importance of selection factors regarding economic, technical, legal, financial and environmental considerations for PPP projects.

##### 4.2.1 Economical Consideration

According to the findings of the questionnaire survey, as indicated in Table 7, favourable inflation, exchange, and interest rates have the highest RII value (0.888) as a PPP project selection factor regarding economic consideration. Favourable exchange, inflation, and interest rates may favourably affect PPP projects' economic concerns. Better financial returns, higher profitability, and fewer costs are all possible outcomes.

Table 7: RII values for selection factors regarding economic consideration

PPP Project Selection Factors: Economical Consideration	RII	Rank
Socio economic climate	0.700	6
Project scale and amount of investment relative to GDP	0.775	3
Appropriate risk sharing mechanism	0.738	4
Affordability of user tariff	0.656	9
Saving operational costs	0.663	8
Avoiding delays and cost overruns	0.244	10
Favourable inflation, exchange, and interest rates	0.888	1
Early completion of projects	0.700	6
Preconstruction risks	0.713	5
Value for money assessment	0.788	2

#### 4.2.2 Technical Consideration

According to Table 8, Innovation in technology, management, operation, and maintenance in the public and private sectors has the highest RII value (0.788) as a PPP project selection factor regarding technical consideration. In general, choosing PPP projects that make use of cutting-edge technology, management strategies, and practices for operation and maintenance can offer significant technological advantages.

Table 8: RII values for selection factors regarding technical consideration

PPP project selection factors regarding technical consideration	RII	Rank
Management attitudes	0.256	5
Innovation in technology, management, operation and maintenance in public and private sector	0.788	1
Project design and construction complexity	0.744	2
Integration of design/construction and operation	0.675	4
Facility performance criteria	0.744	2

#### 4.2.3 Legal Consideration

As indicated in Table 9, the stable politics and government system has the highest RII value (0.881) as a PPP project selection factor regarding Legal consideration. Political instability or an untrustworthy government can result in a lack of legal protections and uncertainty for private sector investment, making political and governmental stability an essential legal factor. A stable political and governmental structure increases the likelihood that PPP project-related contracts and agreements will be upheld.

Table 9: RII values for selection factors regarding legal consideration

PPP Project Selection Factors regarding Legal Consideration	RII	Rank
Government policies and Legal regulations	0.775	2
Stable politics and government system	0.881	1
Saving capital costs	0.713	7
Getting private financing	0.750	4
Commitment of partners	0.763	3
Insurance requirement for disaster risk	0.713	7
Early termination conditions	0.244	10
Public and political approvals	0.725	6
Dispute resolution process	0.738	5
Land acquisition procedure	0.644	9

#### 4.2.4 Financial Consideration

According to Table 10, the financial capabilities of the private sector proponent have the highest RII value (0.881) as a PPP project selection factor regarding financial consideration. PPP initiatives require substantial monetary investments, and the private partner must possess the financial capacity to complete the project and manage the risks involved. It is crucial to consider several aspects, including a private sector proponent's financial capacity, creditworthiness, track record, and financial plan.

Table 10: RII values for selection factors regarding financial consideration

PPP Project Selection Factors: Financial Consideration	RII	Rank
Availability of capital and other resources	0.800	2
Financial capabilities of private sector proponent	0.881	1
Asset valuation, tariff demand and revenue risks	0.656	4
Currency volatility risk	0.319	5
Risk/Return ratio	0.756	3

#### 4.2.5 Environmental Consideration

As indicated in Table 11, Environmental impact assessment has the highest RII value (0.744) as a PPP project selection factor regarding environmental Consideration. An EIA is a procedure that assesses a project's possible environmental effects and identifies steps to lessen such consequences. When choosing a PPP project, an EIA is crucial since it aids in identifying potential environmental risks and countermeasures.

Table 11: RII values for selection factors regarding environmental consideration

PPP project selection factors: Environmental consideration	RII	Rank
Business/external environment	0.619	3
Environmental impact assessment	0.744	1
Disaster risk management	0.575	4
Climate change commitments in PPP guidelines	0.206	5
Sustainable use of land and other resources	0.638	2

#### 4.2.6 Challenges with the Selection and Execution of PPP Projects

According to Table 12, the biggest challenge in PPP projects is improper analysis of proposals, with a high RII value of 0.806, which can lead to poor outcomes, financial losses, and legal issues. In contrast, short-term government policies, with a low RII value of 0.263, are less impactful but still problematic by creating uncertainty for private partners. Consistent and predictable policies are essential to support successful long-term PPP initiatives.

Table 12: RII values for challenges

Challenges	RII	Rank
Lack of knowledge and prior experience in the selection and execution of PPP	0.744	3
Poor Commitment and unwillingness to work on projects from the public sector	0.694	7
Improper analysis of project proposals before selection of PPP	0.806	1
Economic and political instability	0.725	5
Less focus on architectural design development	0.694	7
Short-term government policies	0.263	10
Weaknesses of legal and regulatory framework	0.781	2
Over-reliance on unsolicited proposals	0.738	4
Land valuation and acquisition issues	0.681	9
Multiple agencies with overlapping functions	0.700	6

## 5. CONCLUSIONS

The research identifies five critical factors for selecting PPP projects in Sri Lanka: economic, technical, legal, financial, and environmental. Prioritising these factors using the RII is essential to develop effective project selection criteria. The study highlights that past unsuccessful PPP projects and ineffective unsolicited proposals have hindered the adoption of PPP procurement methods in Sri Lanka. Current PPP guidelines are insufficient in addressing infrastructure and construction gaps comprehensively. To overcome these challenges, the research recommends developing detailed PPP guidelines incorporating the five key considerations and using the RII methodology for prioritisation. Strengthening the legal and regulatory framework is crucial for ensuring transparency and accountability, which are vital for building stakeholder trust. Enhancing stakeholder engagement, including private sector partners and public representatives, is important for gathering diverse perspectives and fostering collaboration. Improving the evaluation of unsolicited proposals through a systematic approach ensures they meet selection criteria and offer value for money. Implementing a competitive bidding process can further enhance transparency and fairness. Additionally, investing in capacity building and continuous professional development for public sector officials is crucial to improving their understanding of PPP procurement and management. The study emphasises the importance of clear plans for sustainable operations, performance monitoring, and evaluation mechanisms to track progress and make necessary adjustments. Encouraging innovation and technology adoption can enhance efficiency, reduce costs, and improve project outcomes, supporting research and development to advance PPP practices.

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