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SUCCESSFUL DELIVERY OF PUBLIC-PRIVATE PARTNERSHIP (PPP) IN THE CONSTRUCTION PROJECTS OF SRI LANKAN HIGHER EDUCATION SECTOR

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ABSTRACT

To gain economic advantages in the competitive world, governments tend to adopt new financing methods in construction projects. Accordingly, Public-Private Partnership (PPP) projects are a popular choice mainly due to the reduction in transaction cost and innovation. PPP projects have spread from the typical use on infrastructure projects such as airports, roads, railways, ports, and water sanitation to the more recent use for projects in the higher education sector such as universities and colleges. Thus, adopting PPP for the higher education sector related construction projects in Sri Lanka is vital to consider. Accordingly, this research aims to observe the Critical Success Factors (CSF) for the successful delivery of PPP projects in the construction projects of the higher education sector in Sri Lanka.

A comprehensive literature review was first conducted to identify the CSFs of PPP in higher education construction projects and 22 CSFs were identified. The survey method was used under quantitative phenomenon since this research required evaluating the identified CSFs. The identified factors were evaluated through a questionnaire survey, which was conducted among the 30 selected professionals who are aware on PPPs, such as Quantity Surveyors, Project Managers, Government Professionals, and Academic Professionals. As the key findings derived through analysis, "communication between parties", "transparency in the procurement process", financial capability and support", "project technical feasibility" and "appropriate risk allocation and risk-sharing" were determined as the top five CSFs for PPP projects in the higher education sector related construction projects in Sri Lanka. Furthermore, strategies were also proposed to ensure the successful implementation of CSFs in the higher education sector in Sri Lanka.

Keywords: *Critical Success Factors; Higher Education Sector; Public-Private Partnership Projects; Sri Lanka.*

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1. INTRODUCTION

Public-Private Partnership (PPP) is a mechanism for governments to procure and implement infrastructure or services with the help and expertise of the private sector by combining the skills and resources of both sectors by sharing risks and responsibilities (The World Bank, 2021). In a competitive global society, the governments try to adopt new financial methods for development and it has been a popular choice for implementing public sector construction projects. Due to many reasons such as reduction in transaction cost, innovation, benefits to government, etc. PPP is widely used in infrastructure projects such as airports, roads, railways, and ports (Cruz, et al., 2015). Developed countries, such as the United Kingdom, have adopted PPP for the construction of schools and universities. It is found that it has a significant impact on the quality of education such as improving the working conditions of teachers and students (Helmy, et al., 2020). Even though PPP is highly used in infrastructure projects it lacks the speed in the higher education sector.

The successful delivery of a construction project depends upon many success factors. According to Li (2005), there are three key factors, such as strong private consortium, available financial market and appropriate necessary risk allocation emerge as the most important CSFs in the development of successful PPP projects in the UK. Further, many independent CSFs, such as political and economic stability, good financial package, technology transfer, good project identification, etc. in Build Operate Transfer (BOT) projects in China were identified (Qiao, et al., 2001).

Similarly, in Sri Lanka, with its advancement to a lower-middle-income country in 1997 the country's ability to obtain grants and soft loans from multi-lateral banks was gradually decreased (The World Bank, 2021). This made it a necessity in Sri Lanka to find various financial models to serve the development projects in Sri Lanka. Thereby new financial models, such as unsolicited, Swiss challenges, and strategic partnerships, such as PPPs were emerged. Sri Lanka has participated in 73 public-private partnerships (PPPs) for a total of $6 billion between 1990 and 2014 mostly in the sectors such as electricity, telecommunications, and ports. However, United States Agency for International Development (USAID) identified that Sri Lanka still requires a high enabling environment for PPPs (USAID, 2017).

Further, higher education is the hub for the creation of a society filled with knowledge that primarily affects the development of a country. Even though there are many economic and social benefits gained from higher education, Sri Lanka is allocating only a 2.1% share of the Gross Domestic Product (GDP) to the development of higher education (The World Bank, 2021). This insufficient allocation has led to severe consequences leading to finding new ways to fund the higher education sector. Thus, adopting PPP as a suitable procurement method in the higher education sector is vital to consider. For a country like Sri Lanka, funding of projects by means, such as treasury funds, foreign loans, and grants is restricted to a certain extent due to the prevailing situation of the country. Therefore, new concepts to face the challenge of funding are needed to be found. Therefore, PPPs, which are used in infrastructure development can also be used in the higher education sector. Thereby many CSFs are affecting the successful project delivery of PPP in higher education. Further, Sri Lankan government has expressed the intend of open up the higher education system to private sector

investment and service provisions which could be achieved by promoting PPP in the construction sector (Aturupane, 2013).

Accordingly, this research is more focused on filling the research gap on identifying CSFs in construction to integration with higher education sector along with PPP for its successful delivery and the scope of the research is to investigate on PPP as a procurement method rather educational aspect. Therefore, the research question is developed as "What are the CSFs for successful delivery of PPP projects in the Sri Lankan higher education sector? This paper is aimed to present the findings relating to the following objectives in answering the research question:

1. To determine CSFs a successful delivery of PPP projects in the Sri Lankan higher education sector, and
2. To propose strategies to ensure successful implementation of the identified CSFs.

Further, the research was limited into construction of higher education sector projects in Sri Lanka.

2. LITERATURE REVIEW

2.1 PUBLIC-PRIVATE PARTNERSHIPS (PPPS) IN HIGHER EDUCATION SECTOR CONSTRUCTION PROJECTS

PPP is a contested concept for many years. It has had to deal with a variety of theoretical and practical challenges from the beginning. However, despite the challenges and concerns, PPPs can be seen in many nations throughout the world. The basic concept of public debt reduction in a country has encouraged their governments to engage with the private sector in economic and social development such as prisons, car parks, schools, etc (Grimsey and Lewis, 2002). According to Spackman (2002), it was the labour government of the United Kingdom that first introduced the PPP concept in the 1990s. But PPP has been in use since the 1970s according to literature (Anderson, 1983). Then, it was spread to parts of the world including the Middle East, Australia, Europe, and Canada. Further, Singapore was the first Asian country to use PPP as a method for project finance. According to Gereffi, et al. (2005), the understanding various definitions is useful to figure out what to believe, analyze, and anticipate. Yescombe and Farquharson (2018) stated that PPP has no legal meaning and can be used to specify the number of different contractual arrangements for the private and public sectors working together. ADB (2016) defined PPP as a variety of feasible connections between public and private enterprises. Private sector participation and privatization are other terms for this type of activity. Even though the three names are frequently used interchangeably, there are some. Therefore, despite the definitional variations, the general idea of a PPP can be concluded as a long-term arrangement between public and private sectors with common intentions. In its adoption, private sector participation in PPPs has become very important in developed and developing countries across the world (ADB, 2014). In developing countries, the overall growth of private sector participation in PPP has been remarkable where it has increased from 58 projects to 288 projects from 1990 to 2007 (Yong, 2010). There has been remarkable private participation in PPP, which is not uniform (Yong, 2010).

The PPP plays a pivotal role in developing/emerging economies where huge investments are required to finance public infrastructure due to fiscal constraints (Fernando and Nanayakkara , 2020). Accordingly, many developing nations including Sri Lanka have

been slow to adopt public-private partnerships including universities, particularly where strong traditions of government engagement in economic activity exist (ADB, 2014). That is basically due to Sri Lankan public universities relying on public funding (ADB, 2016). However, many examples of university partnerships can be seen across the world applying PPP in higher education construction projects. For example, in India, the London School of Economics is collaborating with the Reliance Foundation, a corporate-sponsored foundation in India, to elevate numerous Indian institutions to world-class status. Also, the Singapore University of Technology is partnering with the Massachusetts Institute of Technology in the United States and Zhejiang University in China. Furthermore, the Sampoerna University of Indonesia with Massey University in New Zealand to train students in higher standards (ADB, 2016).

2.2 ADOPTING PUBLIC-PRIVATE PARTNERSHIPS IN THE HIGHER EDUCATION SECTOR CONSTRUCTION PROJECTS IN SRI LANKA

Sri Lanka has tried to engage in a variety of (PPP) initiatives during the 1990s but the results have been less than acceptable. Sri Lanka lags behind India and Pakistan in terms of financial investment in project implementation when compared to other countries in the region (Weththasinghe, Gajendran, and Brewer, 2016). Sri Lanka has participated in 73 PPPs with a total investment of over $1 billion between 1990 and 2014 (ADB, 2014). These projects were mostly from the sectors of electricity, telecommunication, and ports (United States Agency for International Development, 2017). However, 90% of the total indicated investment is in the telecommunication sector. As Asian Development Bank (ADB, 2014) stated, the construction projects in the higher education sector of Sri Lanka have faced many challenges in long term, such as cost of construction, cost of the transaction, and maintenance. Public universities are largely reliant on state money, making them responsible to both the state and the broader public. 90% of total public university income is from the government and the rest is from sources such as interest, rent, etc. (ADB, 2014).

The higher education sector in Sri Lanka is divided into three kinds which are universities under the Ministry of higher education, other government ministries' institutes, as well as private universities, and higher education institutions (Aturupane, 2013). The majority of higher education in Sri Lanka is ownership of the government sector (Aturupane, 2013). Furthermore, there are foreign university degree programs that are registered under the Companies Act of 1982, which are independent and function without the intervention from the University Grants Commission (UGC). UGC under MOHE is the main body responsible for the regulation of higher education in Sri Lanka (ADB, 2014). Sri Lanka's government has said expressly that it intends to open up the higher education system to private sector investment and service provision. This could be achieved by promoting PPPs in the higher education sector (The World Bank, 2020).

2.3 CRITICAL SUCCESS FACTORS OF PUBLIC-PRIVATE PARTNERSHIPS IN HIGHER EDUCATION SECTOR CONSTRUCTION PROJECTS

The concept of CSFs is not specifically a concept related to construction. CSF refers to the generally small number of critically significant concerns on which a given industry should concentrate its efforts to succeed. They indicate the factors which are essential to the industry's success (Rockart, 1982). Further to the author, the CSFs are related to certain conditions of an industry. It will differ from nation to nation, based on the working environment, norms, and legal restrictions in existence. Therefore, it is vital to recognize

that CSFs aren't a universally applicable collection of measurements or important indications. On the other hand, CSFs are a set of factors which has major importance to a certain industry. According to Cooke-Davies (2002), CSFs are elements that are required for project stakeholders to meet their objectives. In the construction business, project performance, productivity, and success have long been a major concern. The success of a construction project is the ultimate goal for every project. There is no standard definition of project success in construction since each situation is diverse and unique (Pheng and Chuan, 2006), but it has been widely accepted that time, cost, and quality are the major concerned factors in the performance measurements of a construction project (Leong et al., 2014).

Different CSFs regarding construction were identified by many researchers. Chua, et al. (1999) brought out four (04) aspects of CSFs in construction, namely: (i) characteristics of the project, (ii) contractual agreements, (iii) participants in the project, and (iv) interactive processes. Morledge and Owen (1998) identified 14 factors, such as well-defined purpose, early identification of consortium and integration of design, etc., which are critical in Private Finance Initiative (PFI) projects. Chua, et al. (1999) identified eight CSFs in BOT projects in China as appropriate project identification, a stable political and economic climate, an appealing financial package, an acceptable toll, fair risk distribution, subcontractor selection, and management control, and technology transfer. 18 critical factors have been identified by Li, et al. (2005), such as good governance, political support, social support, etc.

Despite a lot of previous research that has been investigated on the CSFs of PPP projects, studies on PPP in the higher education sector remain scarce. 18 CSFs were identified by Boye and Mannan (2014) good governance, public and private sector commitment and accountability, a favorable legislative framework, competent economic policies, and a viable financial market identified as the five top most critical factors under the factors identified such as managerial and operational factors, legal factors, political factors, economic and financial factors. Further, it has been determined that management and operational factors are the most important influencing factors for successful implementation of PPPs in higher educational sector related construction projects in Egypt (Boye and Mannan, 2014). Although political factors are important, they were not ranked first as policy as the benefits of a strategy that supports and encourages public-private partnerships in all areas of the economy were clear in Egypt (Helmy, et al., 2020).

Through the review of key literature, 22 CSFs were identified as presented in Table 1 by focusing on main three construction project constraints which are time, cost and quality.

Table 1: CSFs identified through literature

#	CSFs	Source of Reference				
		(1)	(2)	(3)	(4)	(5)
1	Competitive procurement process	X		X		X
2	Transparency in the procurement process	X		X		X
3	Project technical feasibility	X		X	X	X
4	Strong private consortium	X		X		X
5	Appropriate risk allocation and risk-sharing	X				X
6	Good governance	X				X

#	CSFs	Source of Reference				
		(1)	(2)	(3)	(4)	(5)
7	Social support	X		X		X
8	Communication between parties		X			X
9	Approval and negotiation process			X		
10	Favourable legal framework	X		X		
11	Existence of alternative dispute resolution methods	X				
12	Existence of PPP law		X			
13	Political support	X		X		
14	Commitment/responsibility of public/ private sectors					
15	Stable macro-economic environment					X
16	Sound economic policy	X		X		X
17	Available financial market	X				X
18	Financial capability and support					
19	Existence of explicit policy documents for PPPs	X				
20	Existence of Procedures for PPP appraisal and prioritization		X			
21	Well organized and committed public agency		X			X
22	Developing a culture of partnership		X			

References: [1] Helmy, et al., 2020; [2] Zhang, 2005; [3] Jefferies and Cook, 2001; [4] Tiong, 1996; [5] Li, et al., 2005

Accordingly, the identified factors were considered in developing the questionnaire to get the specific views relating to the Sri Lankan context.

3. RESEARCH METHODOLOGY

Research approaches can mainly be classified into Quantitative and Qualitative approaches (Yin, 2009). According to Fellow, et al. (2003), quantitative approach tends to seek and collect factual data, as well as investigate links between facts and theories that have been tested. In this research, identified CSFs in a successful delivery of PPP construction projects through the comprehensive literature review were tested by focusing on the Sri Lankan higher education sector. Therefore, quantitative research approach is utilized in this research to assess and indicate the importance of CSFs to the successful delivery of the PPP construction projects in the higher education sector. This research has covered a study of CSFs relating to construction and PPPs. To meet the objectives, the researcher has validated and prioritized the CSFs that were found during the literature study in the Sri Lankan context. Therefore, survey research was adopted under quantitative phenomenon as the most effective and appropriate strategy for this research.

Data collection is the process of transferring data from the responder to the researcher, which includes data collecting and compilation (Fellows, et al., 2003). To carry out the objectives, a questionnaire survey was to identify the most important success elements for adopting PPP in the higher education sector in Sri Lanka. The questionnaire prepared to collect the data consists three sections. The first section collected the respondent's

demographical data such as their profession and their years of experience in the construction industry. In the second section, the respondents were provided with CSFs, which were identified through literature to assess and indicate their importance. Five-point Likert scale was used to appraise the importance of identified factors (1=Not important, 2=Slightly important, 3=Moderately important, 4=Important, 5=Very important). The third section two semi-structured questions requesting to state the challenges and to propose strategies to ensure a successful implementation of the identified CSFs.

Construction professionals who were having more than 5 years of experience in the field of PPP, such as Project Managers, Civil Engineers, and Quantity Surveyors, to name a few were selected as the targeted population to distribute the questionnaire. Furthermore, 7 academic professionals who were having a sound knowledge on PPPs and having more than 5 years of experience in the higher education sector were also selected. According to Chan, et al. (2001), the sample size should be anywhere from 10 to 50 participants. Therefore, sample of 40 professionals were decided to be considered in this research. Accordingly, 40 questionnaires were distributed to the selected professionals, 30 were returned as shown in Table 2. As stated by Richardson (2005 as cited Nulty, 2008) response rate of 50% is regarded as an acceptable response rate in social research surveys. Hence, the overall response rate of the respondents was 75% in this research, which is an acceptable value.

Table 2: Response rate

Designation	Distributed	Returned	Response rate
Academic professionals	7	5	71.42 %
Professors	4	2	50 %
Quantity surveyors	22	18	81.81 %
Directors	3	2	66.6 %
Government professionals	2	1	50 %
Project managers	2	2	100 %
Total	**40**	**30**	**75%**

The collected data were analysed by using Weighted Mean Average (WMA) and Relative Importance Index (RII) techniques as given in Eq. 01 and Eq. 02. For each factor, WMA and RII values were calculated and ranked to indicate their level of importance.

$$MWR = \frac{\sum(V_i x F_i)}{n} \qquad \textit{(Eq. 01)}$$

Where, Vi=Rating of each Performance indicator, Fi=Frequency of Responses.

$$RII = \frac{\sum(Wn)}{AN} \qquad \textit{(Eq. 02)}$$

Where, W= The weighting of each response is expressed by a constant, A= The highest weighting, n= The frequency of responses, and N= Total Number of the Responses.

Data analysis and key findings are described below.

4. DATA ANALYSIS AND FINDINGS

4.1 ASSESSMENT OF CSFS FOR PPP IN THE HIGHER EDUCATION SECTOR IN SRI LANKA

The 22 CSFs identified through the literature review were appraised by using MWA and RII. The related MWA and RII values along with the respective ranking of each factor are shown in Table 3.

Table 3: Assessment of CSFs

Factors	MWR	RII	Rank
Transparency in the procurement process	4.367	0.873	1
Communication between parties	4.333	0.867	2
Appropriate risk allocation and risk-sharing	4.200	0.840	3
Project technical feasibility	4.133	0.827	4
Approval and negotiation process	4.067	0.813	5
Good governance	4.000	0.800	6
Social support	3.967	0.793	7
Favourable legal framework	3.967	0.793	7
Financial capability and support	3.967	0.793	7
Available financial market	3.867	0.773	10
Existence of alternative dispute resolution methods	3.833	0.767	11
Commitment/responsibility of public/ private sectors	3.800	0.760	12
Strong private consortium	3.767	0.753	13
Existence of PPP law	3.733	0.747	14
Existence of procedures for PPP appraisal and prioritization	3.667	0.733	15
Competitive procurement process	3.633	0.727	16
Sound economic policy	3.600	0.720	17
Existence of explicit policy documents for PPPs	3.600	0.720	17
Well organized and committed public agency	3.567	0.713	19
Stable macro-economic environment	3.533	0.707	20
Developing a culture of partnership	3.500	0.700	21
Political support	3.367	0.673	22

According to the data analysis, transparency in the procurement process (WMR=4.367; RII=0.873) was ranked first as a necessary factor to ensure the successful implementation and delivery of PPPs in the higher education sector in Sri Lanka. This states that the respondents have a greater concern regarding the transparency of a project. Effective procurement process through transparency enhances the value for money of a project. Communication between different parties (WMR=4.333; RII=0.867) was the second most important CSF as rated by the overall respondents. Appropriate risk allocation and risk-sharing (WMR=4.200; RII=0.840) ranked as the third most important factor. One of the main characteristics of a PPP is its high level of risk, which is mostly due to the contract's extended duration and the multiple partners involved. Thereby procedures to

ensure risk allocation amongst PPP stakeholders by transferring the risk to the party capable of controlling them and risks out of control to be shared among the parties are critical to its success.

As the WMR ranges from 3.367 to 4.367 show that respondents consider all 22 CSFs to be either "moderately important" or "important" in ensuring the success of PPP project implementation and delivery in the higher education sector in Sri Lanka. Among the CSFs listed in Table 3, 6 factors recorded RII values that exceed 0.800, which are identified as highly important. These highly important CSF have RII values ranging from 0.873 to 0.800 as highlighted in Table 3.

4.2 STRATEGIES PROPOSED TO ENSURE A SUCCESSFUL IMPLEMENTATION OF THE IDENTIFIED CSFS

The challenges to successful delivery of CSFs were identified through a questionnaire survey and the selected experts were asked to propose strategies to ensure a successful implementation of the identified important CSFs as shown in Table 4.

Table 4: Proposed strategies

CSFs	Challenges	Proposed strategies
Transparency in the procurement process	Lack of trust for the government	Clearly defining the project requirements Using digital technology to transform the transparency in public procurement
Communication between parties	Lengthy delays and long time for starting the projects Lack of social awareness on PPP projects in Sri Lanka	Creating awareness among the general public and students stating the difference between privatization and PPPs Initiating extended discussion and negotiations before the start of the project. organizing public awareness programs about the project
Appropriate risk allocation and risk-sharing	Conflicts of interest between different parties	Facilitate a common ground regarding duties, obligations, and benefits of parties engaged Understanding other parties' objectives and priorities
Project technical feasibility	Lack of funds for government to invest in higher education projects	Selecting experienced parties to the project
Approval and negotiation process	Complications in procurement projects ang high negotiations	Making a proper hierarchy for decision making
Good governance	Lack of proper policy with regards to the higher education sector	Introducing a new policy or enhancing the existing policies of PPPs with the participation of professionals from different sectors

CSFs	Challenges	Proposed strategies
	Lack of regulatory and legal framework to back up PPP	Creating a National Educational Policy that supports PPP. Ensuring work regardless of political opinions Considering legislation changes to be addressed in the earlier stages

As stated by many respondents, working with a true determination of enhancing private education is a strategy proposed to ensure successful delivery of PPP in the higher education sector in Sri Lanka. Further, creating a National Educational Policy that supports public-private partnerships to benefit from the synergies between the two parties is proposed. Most of the respondents highlighted that awareness among the general public from lower levels to higher levels is important in achieving success. In addition, improving communication between parties, and selecting experienced parties were stated by quantity surveyors. Further, many respondents stated that communication between different parties could highly ensure the successful delivery of PPP projects in Sri Lanka. Furthermore, cultural change within public and private sectors can be identified as another strategy.

5. CONCLUSIONS

Higher education is the hub for the creation of a society as it primarily affects the development of a country. Hence, the higher education sector needs to be obtained a high priority in any nation. However, many developing nations including Sri Lanka have been slow down to adopt PPPs in the higher education sector, particularly where strong traditions of government engagement in economic activity exist. Hence, it lacks speed in the higher education sector. With a timely need of promoting PPPs in the higher education sector, this research identified many CSFs, which are highly important to ensure successful delivery of PPPs in the higher education sector in Sri Lanka. The outcomes of this research can be used as a basis to evaluate the status of PPPs in the higher education sector to ensure their successful delivery. Further, the proposed strategies can be used in implementing the identified CSFs, which will call for actions from industry professionals and policymakers towards successful delivery of PPPs in the higher education sector in Sri Lanka. Since this research is limited to a quantitative evaluation, the next step will be to carry out the research qualitatively to investigate the identified CSFs with a sufficient depth.

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