

Evaluating Critical Success Factors of Public-Private Partnership for Sustainable Performance: A Systematic Literature Review

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Abstract

The main aim of the current article/ study is to provide a detailed review of critical success factors (CSFs) of public-private partnership projects (PPP) and sustainable PPP performance. In the current study, we (researchers) systematically reviewed the selected and relevant articles in various fields of PPP and sustainability to specify the problem, gap, application, theories, models, definitions, factors, authors, and locations in these fields. PRISMA (preferred items reporting and systematic meta-analysis) was used as a method for the selection of articles/ papers for review. The findings of this review study revealed that several authors have provided numbers of CSFs according to their own country's dynamics, demands, and requirements. The main latent variables identified in this study are ninety-two (92) with having 693 constructs/indicators. Among all those researchers have chosen 8 latent variables with 27 indicators of critical success factors for a public-private partnership to obtain sustainable performance on basis of citations. Different theories for PPP and sustainable performance and models of PPP have been identified but the most cited theories were agency theory and principal-agent theory in the realm of PPP have been identified in the current study.

Keywords: Public-Private Partnership, Critical Success factors, Sustainable performance.

1. Introduction

Public-Private Partnership (PPP) is an arrangement between public and private sectors formulated to undertake a project with the cooperation that usually falls under the realm of the public sector (Wang et. al., 2018). Governments around the globe are using PPP arrangements according to their requirement for the delivery of different services and products. The phenomenon of PPP has gained enormous popularity over the

last two decades (Osei-Kyei, Chan, & Dansoh, 2019). The PPP performance is considered as the actual outcome of the PPP project relative to proposed achievement, e.g. attainment of the government's goal and objectives established at the time of partnership. The efficacy of any PPP project can be ascertained by comparing the recognized goals and objectives with the

outcome (Hodge, Greve, & Boardman, 2010).

Sustainability is a matter of great priority for local, national, international administrations and enterprises (Traverso et. al., 2012). Sustainability is also represented as sustainable development, Brundtland Commission defines as: “sustainable development is a development, which meets the requirement of the current scenario without the compromising the capacity of the future generations to meet the needs at that time” (WCED 1987, Chapter 2, from A742/427). Considering the definition of sustainable development, it seems quite commendable but it also appears difficult to implement this definition operationally. As to implement sustainable development considerations to obtain sustainability, companies/ organizations need to understand what is important in each facet of consideration involved in the process of sustainability (Miralles-Quiros et. al., 2017).

Several researchers have mentioned about lack of strong and specific theories explaining the concept of PPP and sustainability. However, researchers argued that theories have remained a great source of knowledge production, therefore there is an immense need to pay consideration to the way they are developed and applied in evaluating any academic arena. Hence, the aim of this study to recognize and plot the usage of theories especially in the field of PPP and sustainability. The second aim of this paper is to provide researchers with productive ways for developing research. To obtain the desired outcome this study has tried to answer following listed research questions.

RQ1: What are the suitable CSFs for PPP for developing countries, which can lead to successful PPP projects?

RQ 2: What are the existing prevailing theories used by researchers in the field of PPP and sustainability?

RQ 3: How PPP can be conceptualized along with its definition; what are the different dimensions and models used in PPP?

RQ 4: What are the best opportunities for PPP and sustainability to be addressed in the future?

Researchers need to evaluate the literature systematically and comprehensively to investigate the theoretical perspective and theories that are most dominant in the field of public-private partnership (PPP) and sustainability. The theoretical mapping can lead to development and assessment about the refined level of the research field by exploring its scope, significance, and concerns.

The theoretical perspective is not the primary purpose of the current study rather a subsection, which has provided a glance of proposed and applied theories in the PPP and sustainability field. The invigorating novelty of the current study is revealed in critically analyzed theories in PPP and sustainability. The current study has contributed to the body of knowledge in several aspects. First, it provides a link between the CSFs of PPP and sustainability. Secondly, this study provided a comprehensive and systematic review of the literature of theories used in PPP and sustainability. Third, it provides a map of all theories in PPP and sustainability

and helps researchers to develop propositions. This article also gave effective future directions and recommendations.

2. An Overview of PPP: A Brief History

Public-Private Partnership is not a new phenomenon; it remained in practice in different forms for ages. Concession is one of the most common forms of PPP, which had been used in maintaining the infrastructure project thousands of years back. In the Roman Empire, the concession has been used for the construction of roads, public baths, and managing the markets. Similarly, in the fourteenth century, French nobleman Luis de Bernam was involved in public-private partnership projects by contracting on concession for goods transportation on Rhine (Cassis, Luca & Florio, 2016). Although the practices of joint business had been around the ages, yet the Public-Private Partnership (PPP) got coined and gained popularity in 1970. At that time, neo-liberal ideas began questioning poor economic performance. The question of poor performance and inefficiency of government raised the concept of New Public Management (NPM). In this background, PPP was often considered as an alternative to bureaucratic public services and some extent to inefficient state-owned enterprises. PPP had been the main source to reduce the state's role, to enhance the efficiency of the administration and service provision in the public domain (Jomo et. al., 2016).

According to Hodge, Greve, & Biygautane (2018), Public-private Partnership has been through different scenarios since its

development, concept, and policy context as following since 1992:-

- **1992-2001.** The period from 1992-2001 was a period of policy breakthrough. In this period, PPP policy and projects occurred first in the UK as Private Finance Initiative (PFI) and then in Australia. This time is considered as expansionary time due to the infrastructure boom regarding PPP.
- **2002-2007.** This era marked the expansion of PPP policy/ idea to other countries especially Spain and other European countries. In this period, infrastructure projects continue as part of the economic boom (Flinders, 2010).
- **2008-2012.** This time bracket remained very challenging for PPP as the global financial crisis (GFC) halted the PPP development. The GFC puts a brake on the development of PPP as banks stopped financing the projects. Therefore, governments had to step forward to rescue PPP by taking over the ownership of the PPP projects. (Willems & Dooren, 2016).
- **2013-2017.** The time marked the emerging phase for PPP projects. PPP continues in developed as

well as in developing countries around the globe though at a slow pace. (Boardman, Greve, & Hodge, 2015). PPP started appearing as global public policy agenda (Biygautane, Gerber & Hodge, 2017). Infrastructure governance and PPP working framework started developing to obtain maximum benefit from this arrangement (Hodge, Greve, & Biygautane, 2018).

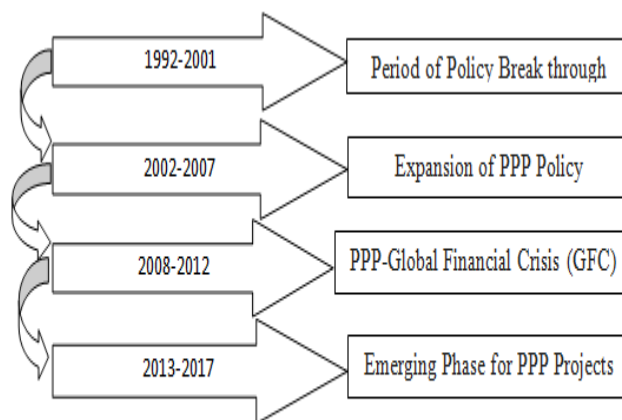


Figure1: History and Phases of PPP

3. Conceptualization of PPPs

The basic concept of PPP revolves around the possible relationship pattern established between public and private sectors to execute the primary purpose of the infrastructural project or any other services (Jamali, 2004). In a PPP context, the concept is dependent more on practical use as compared to scientific use (Klijn, 2012). Classically, PPP is considered a long-term formal arrangement among public and

private actors to obtain various purposes. As there are varied explanations for PPP due to diverse features and different activities involved in the PPP arrangements, therefore people do not accept one globally accepted unified concept and there is wide debate about the concept of PPP (Khanom, 2010). We can obtain the comprehension of the PPP considering it as a tool and then a form of responsibility or collaboration.

3.2 Conceptual Dimensions Considering PPP as a Tool

PPP is an arrangement of cooperation, where the public sector describes the task to the private sector to get public services. (Olatunji, Olawumi, & Ogunsemi, 2016). Conceptual arrangement of PPP take it as a tool to get some benefit from an arrangement and the utilization of this tool can be as following:-

3.2.1 PPP – A Tool of Governance or Management

A public-private partnership is an arrangement, in which products and services are developed to share the resources, cost, and risk connected with these products. So in this type of relationship, PPP is used as a tool for management or governance (Van Ham and Koppenjan, 2001).

3.2.2 PPP – A Tool of Financial Arrangement

PPP is considered as a tool of financial arrangement that focuses on sharing of risk, profit and utilities between the partners (Collin, 1998). Mostly this arrangement figures in the BOT (Build-Operate-Transfer), BOOT (Build-Own-Operate-Transfer), and BOO (Build-Own-Operate). Public-Private Partnership as a financial arrangement involves more than one partner

and sometimes international organizations as well (Khanom, 2010).

3.2.3 PPP – A Tool of Development Process

In the development process arrangement, the public and private sectors both provide their resources including human, technical, finance, and intangibles (i.e. information or political support). They also involve themselves in the decision-making process (Khanom, 2010). Therefore, PPP is an important tool for development. This development goes as per the defined objectives by the partners. (Mendel & Brudney, 2012).

3.2.4 PPP – A Language Game

A language game is another aspect of the PPP concept, as the Public-private partnership is a terminology, which is designed to interpret as privatization or contracting out. PPP is considered a language game that has been changing its connotation as per the nature of partnership, arrangement, or cooperation (Jomo et. al., 2016).

3.3 Conceptual Dimensions Considering Responsibility and Collaboration of PPP

In the conceptual dimension of PPP considering it as a tool to obtain governance, financial arrangement, development process, and a word game, it seems insufficient to explain the diverging delineation practices of PPP. Therefore, more clarity can be obtained by placing focus on a different dimension. In this regard, Stelling (2014) had highlighted a few more dimensions basing on co-responsibility and collaboration dimensions.

3.3.1 Co-Responsibility Dimension of PPP

In the co-responsibility dimension of PPP, the sharing of responsibilities is considered between public and private partners. The shared responsibilities may be risks, ownership, the involvement of tasks, and financial revenue (Bettignies & Ross, 2004). The co-responsibility concept is attributable to designed tasks of PPP that are mostly dependent on the government's resources. When the private sector comes forward to shoulder the responsibilities basing on the created market for an efficient solution then it is termed as "**Marketization Approach**". Contrary to this arrangement, when the private sector is unable to fulfill the requirement of the PPP project then inter-governmental organizations intervene to contravene the market failure. Then, this arrangement is called as "**Interventionist Approach**" (Stelling, 2014).

Regardless of the chosen approach (i.e. marketization or interventionist), both the public and private sectors will assume some kind of responsibility to regulate, implement, and execute the public task.

3.3.2 The Relational Governance Dimension of PPP

This governance dimension focuses on the actual interaction concerning the degree of collaboration in PPP (Teisman & Klijn, 2002). This arrangement brings into notice horizontal power relations (Miraftab, 2004), joint governance (Börzel & Risse, 2005), and trust (Wettenhall, 2010). Thus, in this arrangement system, PPP creates a joint and interactive relationship, which forms a mode of governance with networks (Lowndes &

Skelcher, 1998). This PPP is mostly referred to as the organizational form of PPP.

In this collaboration arrangement, the “**Structural Approach**” emphasized institutional structure with the consideration that joint organizations will yield better results than separate offices (Greve & Hodge, 2005; Klijn & Teisman, 2005). Whereas, the “**Managerial approach**” focuses on the joint managerial strategies and interaction to obtain the desired result from the mutual PPP (Skelcher, 2010). So we can say that the structural approach focus on the correlation of the organizational structure whereas the managerial approach focus on the correlation between management and PPP.

The conceptual dimension of PPP is described in figure- 2 below:-

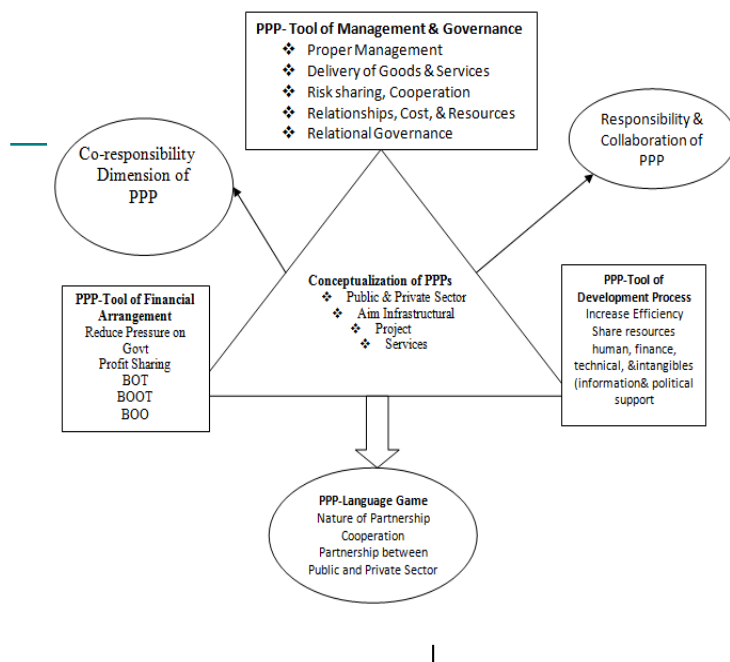


Figure2: Conceptual Dimension of PPP as a Tool

4. Research Methods

For a systematic review of literature, the current study has used PRISMA (preferred reporting items for systematic review and

meta-analysis given by Moher et. al., (2009). PRISMA aims to provide a clear picture of past studies in a specific area. Furthermore, the systematic evaluation also provides a complete overview of the study in a particular field until the current time. Likewise, Phillips and Newton (2002) illustrated that results in Meta-analyses are presented in mathematical form using different statistical methods to determine the already published article. In the same way, Liberati et. al., (2009) argued that PRISMA also provides an advantage to researchers, literature, and scholars by providing a comprehensive review of systematic literature.

Recently, several studies have used PRISMA (Luhnen et. al., 2018; Peters et. al., 2015). The current study has used PRISMA in three main phases as current literature search, selecting related published articles, and extracting information and summarization.

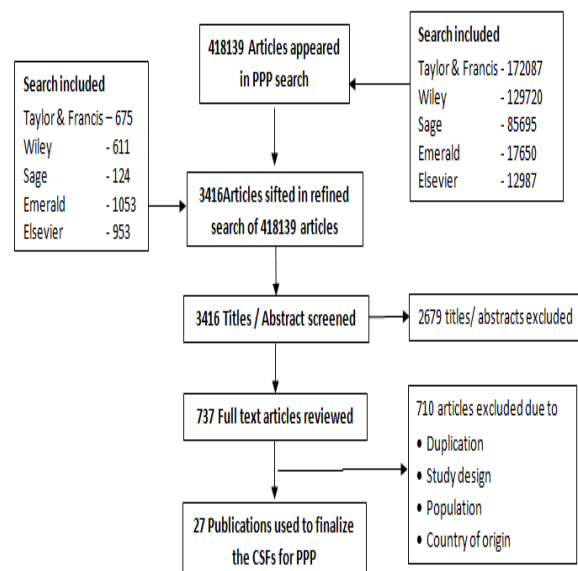


Figure-3: PRISMA picture of literature review

5. Literature Searching

For the current study two databases Web of Science (WOS) and Scopus with an online index such as Science Citation Index Expanded (SCIE), Social Science Citation Index (SSCI), Arts and Humanities Citation Index (AHCI), Emerging Science Citation Index (ESCI). The researcher has used several keywords to extract related articles such as public-private partnerships, critical success factors, sustainability, sustainable performance, uncertainty, trust. Different publishing databases that are indexed in renowned databases were also used during searching related articles. Details of the publishing databases are provided in table-1.

Table1

Summary of Articles Published on PPP and CSF for PPP

Journal Publisher	PPP	CSF for PPP	%
Taylor & Francis	172087	675	0.39
Wiley	129720	611	0.47
Sage	85695	124	0.14
Emerald	17650	1053	5.96
Elsevier	12987	953	7.3

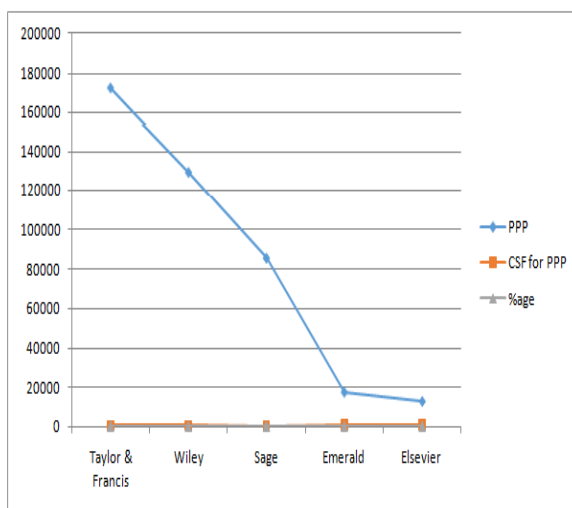


Figure-4: Summary of Articles Published on PPP & CSF of PPP based on PRISMA statement

6. Records Eligibility

In this step, researchers have carefully read every article one by one, and Ph.D. thesis, dissertations, unpublished articles, working papers, chapters of books, were excluded. Articles discussing a public-private partnership, sustainable performance, or CSFs for PPP were chosen and included in the current study. Literature has plenty of factors, which have been termed or used as CSFs for PPP. In order to select the CSFs for this study, a detailed literature review has been conducted. The literature was searched primarily through academic databases available on the internet. The search includes the websites/ online library access to stuff of famous publishers around the world including Taylor and Francis, Sage, Wiley, Elsevier, and Emerald. The keywords searched were a public-private partnership and a critical success factor. Initially, the only public-private partnership was searched, and then as a Boolean search “public-private partnership” and “critical success factors” were searched. The articles, which were, appeared under the search of public-private partnership, were 172087 by Taylor & Francis, 12987 by Wiley, 85695 by Sage, 17650 by Emerald, and 12987 by Elsevier. Once the search refined later, then the article appeared 675 making it 0.39 %, 611 i-e 0.47%, 124 i-e 0.14%, 1053 i-e 5.96% and 953 i-e 7.3% by Taylor & Francis, Wiley, Sage, Emerald and Elsevier respectively.

7. Public-Private Partnership

Public-Private Partnership does not have any universally accepted definition due to inbuilt complexities, changeability of concept, and its multidimensionality. There are numerous

definitions around the globe, which embrace the form of collaboration amid the public and private sectors.

7.1 Definition by International Organizations

PPP covers hundreds of different types of a contract spanning over long-term with the financial arrangement, transparency arrangement, and risk allocation, thus has a variety of definitions as per the scenario of its usage. Different international organizations have defined PPP as per their context.

United Nations defined PPP as a “Voluntary and collaborative relationship between various parties including state and no state, in which all participants agree to work together to achieve a common purpose or to undertake a specific task and to share risks and responsibilities, resources and benefits” (Jomo et al., 2016).

The World Bank has defined as “PPP is a joint initiative of the public sector in combination with the private sector for-profit and not-for-profit. In this partnership, both actors contribute resources including human, finance, technical, and intangibles (i-e information or political support). Both partners participate in the decision-making process as well (Khanom, 2010).

Asian Development Bank defines the term PPP, as “It is a range of possible relationships between public and private sectors to fulfill the infrastructure needs and other services. Strong PPP relationship allocates the risks, tasks, and obligations amongst the partners”.(Felsinger, 2008).

International Monetary Fund refers to PPP as “an arrangement where the private sector is responsible for the provision of

infrastructure and services which were supposed to provide by the public sector traditionally”. (Hemming et. al., 2006).

OECD (Organization for Economic Cooperation and Development) defines PPP as “a contract between the government and one or more partner to deliver services with aligned profits and risk transfer objectives” (Melchor, 2008).

“European commission does not describe the PPP at the community level rather it explains it as a form of cooperation between public authorities and the business world which ensures funding for infrastructure projects and services”(Commission of the European Communities, 2004).

European Investment Bank delineates the PPP as “a relationship between public and private sector mainly to introduce the resources and expertise of private sector to help public sector for assets and service delivery” (Ke et. al., 2009).

The cardinal aspects of the described definitions are as follows:-

- Public-private partnership is the arrangement between the private and public sectors, which share the risk, resources to provide public services.
- The private sector is mainly used to provide resources and expertise whereas the public sector is more focused on the delivery of services.
- The private sector may involve one organization or more as well as it can be some international organization.
- The main emphasis of partnership is on the delivery of services or infrastructure projects instead of asset creation.

- All international organizations talk about the agreement/ cooperation between the public and private sector but no organization describes the nature of the agreement or the remuneration type to the private sector.

7.2 Definition by Developed Countries

Different countries have their connotations to define PPP as per their perspective to use the arrangement as per respective context and objective.

United States Department's report to Congress on Public-private partnership in 2004 defines PPP as "a contractual arrangement between the public and private sector to encourage the private sector to participate more than traditional. The contract revolves around a consideration to renovate, construct, operate, and maintain a system or facility. The public sector normally retains the ownership whereas the private partner is given the additional decision right about the completion of the project. The type of contract can vary from a simple contract to a development agreement." (Sabol&Puentes, 2014).

In the United Kingdom, PPP is characterized by joint working between the public and

Table 2

Definitions & Dimensions of PPP

private sector, collaboration across all types of an interface between partners to deliver policies, services, and infrastructure. (Eadie, Millar& Toner, 2013).

In Canada, Public-private partnership defines according to the Canadian Council as "a cooperative project between public and private sector depending on the proficiency of each sector which can meet the prescribed objective by the provision of appropriate resources including reward and risks" (Clark, Cordes& Roberts, 2006).

In Singapore, PPP is considered a "long-term relationship between public and private sector to provide some public services. It is a new style of government, which is adapted to increase the involvement of the private sector in the delivery of public services with the cooperation of government" (Roehrich, Lewis& George, 2014).

7.3 PPP Definitions along with its Dimensional Contours

Different authors have tried to comprehend the concept and then have defined it. Few eminent PPP definitions along with their conceptual dimensions (Jomo et. al., 2016) are explained in table-2.

Definition	Dimensions
"An arrangement between two or more entities that allows them to work cooperatively towards mutual or compatible objectives and in which there is some degree of common authority and responsibility, shared risk-taking, a joint investment of resources, and mutual benefit" (HM Treasury, 1998)	<ul style="list-style-type: none"> ▪ Inter-organizational relationship ▪ Cooperation ▪ Shared objectives ▪ Joint investments ▪ Risk sharing

“Public-private partnership is an ongoing arrangement amid private and government segment in which the private organization adds in the decision-making and production of a public good/ service that has usually been provided by the public sector and in which the private sector shares the risk of that production” (Forrer et al. 2010).

- Participation of the private sector in decision making
- Risk sharing
- Inter-organizational relationship

“A legally binding contract between government and business for the delivery of assets and services that deals responsibilities and business risks amongst the various partners” (Partnerships British Columbia, 2003)

- Contractual governance
- Risk allocation

“The main characteristic of a PPP, compared with the traditional approach to the provision of infrastructure, is that it bundles investment and service provision in a single long-term contract. For the duration of the contract, the concessionaire will manage and control the assets, usually in exchange for user fees, which are compensation for the investment and other costs” (Engel et al., 2008)

- Bundling
- Service provision
- Long-term contract

“Partnership comprises contractual events, associations, cooperative agreements, and cooperative events used for policy development, program support, and delivery of government programs and services” (Osborne, 2000)

- Contractual governance
- Inter-organizational relationship

“A relationship that involves shared and/or compatible objectives and an acknowledged distribution of precise roles and responsibilities among the contributors, which can be formal or informal, contractual, or voluntary, between two or more parties. The inference is that there is a cooperative investment of resources and therefore sharing of authority, joint risk-taking, and benefits for all partners” (Lewis, 2002)

- Inter-organizational relationship
- Shared objectives
- Mutual investments
- Risk sharing
- Benefit-sharing

“A relationship concerning the work, sharing of power, support, and/or information which others for the attainments of joint goals and/or mutual benefits” (Kernaghan, 1993)

- Inter-organizational relationship
- Cooperation
- Power and information sharing
- Shared objectives

The above-mentioned PPP definitions provide a shred of evidence that the inter-organizational relationship of public and private partners is dependent on mechanisms dealing with the dimensions encompassing risk sharing, cooperation, benefit-sharing basing on mutual trust, shared objective, power, and information sharing, mutual investment, and contractual governance, etc.

7.4 Models of PPP

Public-Private Partnership is an arrangement to deliver some services by the cooperation amid public and private sector, so its model for working gets the shape attributable to partnership goals and objectives (i-e dimensions as appeared in different definitions) of PPP. Few authors have

concluded in their work that public-private partnership can only be considered as such if it is observed as pooling contributions, benefit-sharing, and sharing risks between the partners, etc. (Shevchuk et. al., 2021). There are different models for PPP around the globe for PPP functioning in developed/ developing countries. There are different types of PPP models operatives in different parts of the world depending upon the type of project, investment level, level of risk transfer, and anticipated result. The models of PPP adopted also impact the sustainability of the project. (Anwar et. al., 2017). Different PPP models are listed in Table 3.

Table3

A contractual arrangement under the principle of the PPP method

Synonym	Full Name	Public Agencies	
		Op	Ow
DBT	Design-build-transfer	✓	✓
BLT [1]	Build-lease-transfer	✓	✓
DOT [25]	Design-operate-transfer	✓	✓
BOT	Build-operate-transfer	✓	✓
BOR [1]	Build-operate-renewal	✓	✓
ROT [23]	Refurbish-operate-transfer	✓	✓
DBOM [4]	Design-build-operate-maintain	✓	✓
DBFO [4]	Design-build-finance-operate	✓	✓
DBO [4]	Design-build-operate	✓	✓
BTO [1]	Build-transfer-operate	✓	✓
BOOTT [23]	Built-own-operate-train-transfer	✓	✓
BOOT [24]	Built-own-operate-transfer	✓	✓
BLO [1]	Built-lease-own	✓	
BOOM [23]	Built-own-operate-maintain		
ROO [25]	Rehabilitate-own-operate		
BOO [1]	Built-own-operate		

Note: B-Built; D-Design; Ec-Economic; En-Environment; F-Finance; L-Lease; M-Maintain; Op-Operate; Ow-own; Pr-Private; Pu-Public; S-Social; T-Train

Source: Anwar, B., Xiao, Z., Akter, S., & Rehman, R. U. (2017).

7.5 Theories Used in PPP

According to Cui et. al., (2018), different researchers have used various theoretical perspectives to discover PPP phenomena in different disciplines. It was seen that a very critical role has been played by classical theories like organizational theory, contract theory, and complex system theory in PPP context related to different disciplines. It was seen with concern that classical theories played a very critical role in disciplines regarding PPP practice and research like

contract theory, organizational theory, and complex system theory. From the main theoretical foundation dashboard, principal-agent theory, stakeholder theory, and contract theory were mostly used. According to principal-agent theory, maximum benefit can be obtained by the agent on management and technology in PPP projects. Different theories used in different PPPs are shown in the figure-4.

Source: Cui, C., Liu, Y., Hope, A., & Wang, J. (2018)

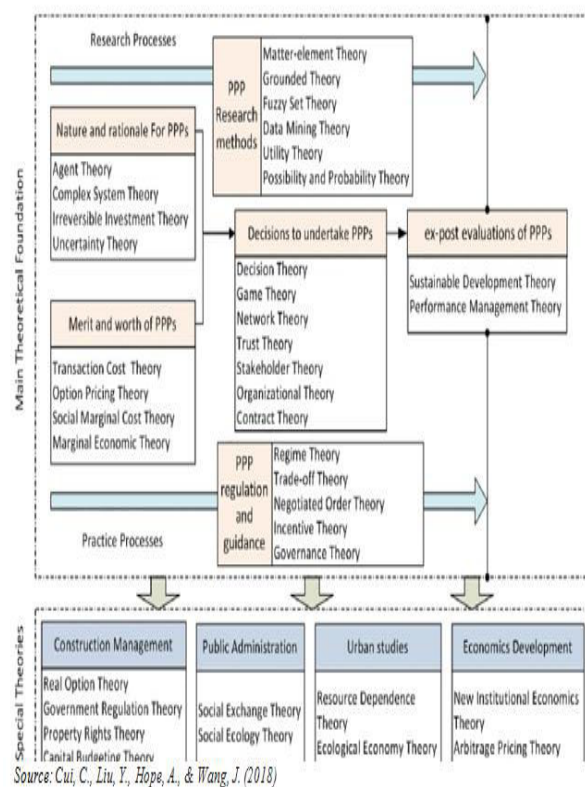


Figure-5: Theories used in PPP

7.6 Public-Private Partnership Project's Performance

PPP projects play a very important role in the quality and standard of living in society. As there is enough evidence about the direct relationship between the launched PPP projects and GDP growth i-e more PPP projects lead to a higher rate of GDP

growth. Such PPP projects bring large capital to the market and create long-term employment in a country (Link & Scott, 2019).

Brinkerhoff & Brinkerhoff (2011) stated different aspects, which stresses Public-private partnership as an organizational solution for societal problems worldwide. The popularity of PPP projects has the following contributory factors towards its popularity.

- PPP fosters service expansion.
- PPP operates with greater efficiency.
- PPP delivers in less time.
- PPP offers more choices and modern services.

The performance of the PPP project is critical to business success specifically at the project level (Roumboutsos et. al., 2013). Therefore, monitoring and evaluating PPP projects is a core activity and a must part of most countries (Chinyio & Gameson, 2009). Developed countries have a much sophisticated and mature PPP system but they remain unable to obtain requisite success even being established. Primarily, performance measurement is applied to "assess the success of an organization" (Gunasekaran & Kobu, 2007)

8. Critical Success Factors for PPP Performance

Critical success factors (CSFs) are those key areas, whose existence will guarantee the success of a project and absence will lead to project failure (Muhammad&Johar, 2019). Correct identification and utilization of success factors in any project will certainly

lead to effective and efficient project management (Liu, Wang, & Wilkinson, 2016). Therefore, the identification of CSFs is the first step towards the development of a practical and proficient PPP framework, which is key to achieve success in PPP projects (Tabish&Jha, 2011).

8.1 Identification of CSFs for PPP

Critical Success Factors (CSFs) identification in PPP has grown into major areas and has received significant attention from researchers. A large number of articles have defined and discussed CSFs for PPP extracted from case studies and research surveys (Osei-Kyei& Chan, 2015). According to Khang and Moe (2008), CSF varies by project type, industry, lifecycle phase, nationality, individual, and organization.

Identification of CSFs for PPP is very important to have an idea about the success/failure of the PPP projects. Literature has pointed out that failure in meeting the set

objective and failure to meet minimum delivery output is a reason for PPP project failure (McCann et. al., 2015). Failure of the PPP project has led the authors to streamline the performance measurement system for PPP depending upon the CSFs. As in the project management domain, success factors are the basic construct that can enhance the probability of a project's success. Critical Success Factors (CSFs) are the main enabler for the development of any project. Owing to the increase in the number of PPPs around the globe, the identification of critical success factors has become subject to investigation (Al-Saadi&Abdou, 2016). There is an abundance of studies on CSFs influencing project success, which focuses on project delivery. (Zhang, 2005; Raisbeck et. al., 2010; Robinson & Scott, 2009; Yuan et. al., 2009; Pangeran et. al., 2012; Liu et. al., 2013; Babatunde et. al., 2016).

Table 4

Identified CSFs for PPP

Authors & Years	# Factors
Tiong (1996);Zhang (2005)	6
Jefferies, Gameson, &Rowlinson(2002);	5
Jamali, D. (2004)	4
Saqib et al. (2008); Cheung, et al (2012). Khan (2013); Khan, Turner&Maqsod(2013)	7 (77) sub factors.
Saqib, Farooqui, & Lodi, (2008). Abdul Aziz (2010)	15
Gupta, Gupta, & Agrawal, (2013)	45
Wai, Yusof, Ismail& Ng, (2013)	41
Al-Saadi, &Abdou, (2016)	13
Osei-Kyei (2016); Osei-Kyei& Chan, (2017)	5
Sanni (2016)	13
Almarri&Boussabaine (2017)	18
Ullah & Thaheem (2018).	38

Cui, Liu, Hope, & Wang (2018)	5
Kavishe et al. (2019)	17
Muhammad & Johar (2019)	18
Osei-Kyei et al. (2019)	32
Opawole et al. (2019)	8 (28) subfactors
Ahenkan (2019)	40
Debela (2019)	26
Sehgal et al., (2019)	17

Detailed literature review of various studies along with identified CSFs has been deliberated keeping in view the country dynamics whether developed or developing. Later, the most cited and most suitable

(developing country) CSFs have been shortlisted. The list of identified CSFs with a literature summary is mentioned in Table-5. However, the CSFs for this study are given in Table-6.

Table-5 : List of Selected Critical Success Factors

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Technical factor																											
1. Effectiveness of arbitration process					✓																						
2. Existence of well-organized economic regulatory authority			✓																								✓
3. Availability of labor			✓																								
4. Availability and efficiency of supporting infrastructure			✓																								
5. Level of transparency and corruption										✓			✓						✓					✓			
6. Availability of indigenous technology (Tech feasibility)	✓		✓	✓			✓	✓	✓	✓				✓	✓				✓		✓	✓	✓				
Legal factor																											
1. Extent of compliance to international conventions and enforcement							✓	✓																			
2. Status of domestication and implementation of international laws/codes																											
3. Predictability in legal regime and enforcement			✓	✓																			✓	✓		✓	
Political factor																											
1. Consistency in government policies									✓												✓						
2. Political stability and support	✓	✓		✓			✓	✓				✓		✓	✓						✓		✓	✓	✓		
3. Provisions for reversion of policies												✓															
4. Clear contract stating responsibilities and liabilities												✓															
Finance factor																											
1. Availability of risk sharing framework	✓	✓	✓	✓	✓				✓	✓	✓		✓	✓	✓		✓	✓		✓		✓	✓	✓	✓	✓	✓
2. Availability and stability of financial market		✓							✓	✓	✓		✓	✓	✓		✓	✓		✓		✓	✓	✓	✓	✓	✓
3. Availability and stability of consumer market																											
4. Access to foreign finance & Avail of F Mkt							✓	✓							✓		✓					✓	✓		✓		✓
Market maturity																											
1. Stability of inflation rate					✓																						
2. PPP human capacity index																											
3. Tariff control policy and availability of tariff framework												✓											✓	✓			
Economic factor																											
Economic Policy			✓	✓			✓			✓			✓	✓	✓					✓	✓	✓				✓	✓
2. Stability of interest rate							✓			✓			✓	✓	✓					✓	✓	✓			✓	✓	✓
Procurement factor (Transparent procurement process)			✓	✓					✓	✓	✓			✓	✓						✓		✓			✓	✓
1. Level of understanding of public-private alliance transactions										✓	✓																
2. Competitiveness of bidding process										✓	✓							✓	✓								
Performance Guarantee																											
1. Political will by the public sector								✓								✓					✓						
2. Availability of guarantee and stand-by financing							✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Regulation factor																											
1. Existence of clear investment laws																											
2. Delay in land acquisition																											
3. Existence and adequacy of legal framework for concession					✓	✓				✓	✓				✓			✓		✓		✓	✓	✓	✓	✓	✓
Good Governance																											
Stable & Transparent Pol/Social Sit																											
Macroeconomic Indicator																											
Strong Private Consortium																											

- (1) Osei-Kyei, R., Chan, A. P., & Dansoh, A. (2019) (2) Ahenkan, A. (2019) (3) Sehgal, R., & Dubey, A. M. (2019) (4) Debela, G. Y. (2019) (5) Wang, L., Zhang, P., Zhang, P., Li, R., Zhang, Y., & Wu, Y. (2019)
- (6) Kavishe, N., & Chilenge, N. (2019) (7) Osei-Kyei, R., & Chan, A. P. (2019) (8) Muhammad, Z., & Johar, F. (2019) (9) Opawole, A., Jagboro, G. O., Kallimo-Shakantu, K., & Ojojele, B. O. (2019) (10) Mahamad, R., Ismail, S., & Said, J. M. (2018)
- (11) Osei-Kyei, R., & Chan, A. P. (2017) (12) Almarri, K., & Boussabine, H. (2017) (13) Osei-Kyei, R., Chan, A. P., & Ameyaw, E. E. (2017) (14) Wang, H., Xiong, W., Wu, G., & Zhu, D. (2018) (15) Osei-Kyei, R., Chan, A. P., Javed, A. A., & Ameyaw, E. E. (2017)
- (16) Osei-Kyei, R., & Chan, A. P. (2017) (17) Osei-Kyei, R., & Chan, A. P. (2017) (18) Almarri, K., & Boussabine, H. (2017) (19) Al-Saidi, R., & Abdou, A. (2018) (20) Osei-Kyei, R., & Chan, A. P. (2017) (21) Ameyaw, E. E., & Chan, A. P. (2016)
- (22) Sanni, A. O. (2016) (23) Ismail, S. (2013) (24) Wai, S. H., Yusoff, A. M., Ismail, S., & Ng, C. A. (2013) (25) Zhang, X., Cheung, E., Chan, A. P., Lam, P. T., Chan, D. W., & Ke, Y. (2012) (26) Jefferies, M. (2006) (27) Zhang, X. (2005)

Table 6

CSFs of PPP adopted for the current study

Construct	Component
Technical Factor	<ul style="list-style-type: none"> • Effectiveness of arbitration process • Existence of well-organized economic regulatory authority • Availability of labor • Availability and efficiency of supporting infrastructure level of transparency and corruption.
Legal Factor	<ul style="list-style-type: none"> • Availability of indigenous technology(12) • Extent of compliance to international conventions and enforcement status of domestication and implementation of international laws/codes • Predictability in legal regime and enforcement
Political factor	<ul style="list-style-type: none"> • Consistency in government policies • Political stability and support(14) • Provisions for reversion of policies • Clear contract stating responsibilities and liabilities
Finance factor	<ul style="list-style-type: none"> • Availability of risk sharing framework (19) • Availability and stability of financial market(17) • Availability and stability of consumer market • Access of foreign finance
Market maturity	<ul style="list-style-type: none"> • Stability of exchange inflation rate • PPP human capacity index • Tariff control policy and availability of tariff framework
Economic factor	<ul style="list-style-type: none"> • Stability of exchange rate • Stability of interest rate
Procurement factor	<ul style="list-style-type: none"> • Level of understanding of public-private alliance transaction • Competitiveness of the bidding process • Performance Guarantee • Political will by the public sector • Availability of guarantee and stand by financing(11)

Regulation factor	<ul style="list-style-type: none"> • Existence of clear investment laws • Delay in land acquisition • Existence and adequacy of the legal framework for concession
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9. Sustainability or Sustainable Development

Sustainability is a matter of great priority for local, national, international administrations, and enterprises (Traverso et. al., 2012). Sustainability is also represented as sustainable development, which is defined by the Brundtland Commission: “A development that meets the requirement of the current scenario without the compromising the capacity of the future generations to meet their needs at that time” (WCED 1987, Chapter 2, from A742/427). Considering the definition of sustainable development, it seems quite commendable but it also appears difficult to implement this definition operationally. As to implement sustainable development considerations to obtain sustainability, companies/ organizations need to understand what is important in each facet of consideration involved in the process of sustainability (Miralles-Quiros et. al., 2017).

The fact to comprehend the sustainability or sustainable development has been discussed in literature by different definitions and even divergence of definitions. Dovers and Handmer (1992) explain two important pieces of evidence in literature: (1) Sustainable development is a means to achieve sustainability. (2) Sustainable development is a goal and sustainability is a means to achieve that goal. Thus, we can conclude sustainability is objective, distant, and difficult, and sustainable development is

to be taken as a process that takes towards that goal (Lazaretti et. al., 2019).

In the last two decades, a lot has been written on sustainable development, its principles, and the need for any organization to formulate sustainable practices that radically change the way to conduct any business (Linnenluecke & Griffiths, 2013), thus creating a great positive effect on the company’s performance (Yusuf et al. 2013). The concept of sustainability is related to the three pillars model encompassing environmental, social, and economic aspects, which need to be considered for sustainable development. To obtain more sustainable production and consumption, the involvement of industries and consumers is mandatory for sustainable development (Traverso et al., 2012). It has been deduced from the literature that organizations are facing a lot of pressure from the transition of industries and businesses towards sustainable development (Garza-Reyes, 2015). Adams, Hoque, and Muir (2014) have focused that more consideration of managers, consultants, and academics towards performance evaluation is a reflection of pressure increase on organizations to obtain sustainable development.

Organization for Economic Co-operation and Development (2017) has defined sustainable development in a very comprehensive way and this definition is most widespread. As per this definition, the

need for the current generation needs to be met without compromising the capacity of the future generation and their supply. The definition is all-inclusive and surely provides the guidelines to evolve sustainability practices in general terms for any organization. Contrary to this aspect, this definition lacks wisdom when we take this definition to evolve sustainable practices and attributable applications for the business sector. Therefore, many authors have tried to fill this gap by bringing closer different definitions and approaches on the subject i.e sustainability (Ritala et. al., 2018). Although we have seen that despite consensus about the overall definition of sustainability yet sustainability drivers have obtained footholds along with the performance of organizations (van de Wetering, 2018).

9.1 Importance of Sustainability

Sustainability is important to achieve for the success of any business and it is only possible with a comprehensive framework to have continuous improvement across the organization. The designed or adopted framework must be seen in a broader perspective and must include the relationship of stakeholders and society (Radziwill & Benton, 2017). Sustainability awareness and pressure to respond in a responsible way to sustainable practices the organizations have been under great pressure to meet the performance pace at the same (Epstein & Rejc-Buhovac, 2010). Sustainability is not only the novelty in technology but also the business processes, thinking, and systems, which can lead to obtaining sustainable goals. Researchers

from different disciplines have tried to explain sustainability with different business perspectives (Evans et. al., 2017).

Sustainable development is a multifaceted notion that includes the “triple bottom line” i.e social, environmental, and economic factors. These factors influence the capacity of an organization to live and nurture. With the increased pressure to respond to sustainability strategies numerous principles, tools, indicators, and formats have emerged and many organizations are working with them to show their commitment to sustainable development. Similarly, organizations are held back from creating their sustainability strategies due to the amorphous nature of the idea (Beloff et. al., 2004).

Sustainability has diverse connotations as per the perception of stakeholders; it can be understood differently by academicians and different by the practitioner. Business sustainability can be considered as environmental preservation to create a better environment for upcoming generations. It can also have the shape of fulfilling the company's CSR (Corporate Social Responsibilities) responsibilities beyond the mandate. The financial perspective of sustainability can focus on short, medium, and long-term financial performance to enhance financial value for all stakeholders. Sustainability is also termed as conducting business activities ethically with active corporate governance to guarantee continuity of the business by incorporating concerns of stakeholders (Rezaee et.al., 2019).

Sustainability, Business sustainability, corporate sustainability, triple bottom line

focusing on environmental, social, and governance (ESG) have been used interchangeably in the literature, and authoritative reports. Although business sustainability is considered wider-ranging than ESG or even CSR yet sustainability can be regarded as box marking compliance and risk moderation drills (Rezaee et.al., 2019). Sustainability has become a mantra in the present-day world with substantial gaps in assurances connected to reduce environmental effects and usage of resources in a balanced way. Uncertainty can affect to obtain sustainable performance of any project. (Elkington, 2013). Sustainability in any business focuses on the attainment of long-term goals and enhance the performance in longer terms instead of targeting periodic or short-term financial objectives. Asia has seen significant progress in the field of sustainability as business organizations in Asia face a lot of pressure from the sustainability regulatory authorities. This aspect usually deals with three areas including economic, social, and environmental responsibility (Benn, Edwards & Williams, 2014).

9.2 Sustainability Performance Measurement System

Current performance measurement frameworks are not adequate for organizational performance improvement. The main review is that it inspires optimism at the local level, it doesn't deal with issues other than the financial performance, it doesn't reveal the fact about the organization's pluralistic goals and same time does not explain that any organization

is working in complex external and internal environment (Roca & Searcy, 2012). Veleva and Ellenbecker (2000) have stated that previously only financial indicators have been utilized by the organizations to define business success. Recently, many firms have started using social, health and safety, and environmental indicators. In this regard, like other measurement systems, the sustainability measurement system is also based on the principle of business improvement and business success (Grunfeld, 2014).

Sustainability performance management system can be defined as, "the management and measurement of the collaboration between society, business, and environment" (Schaltegger & Wagner, 2006). According to Henri and Journeault (2008), Organizations have been labeled responsible for the environmental impact due to the increased number of rules and regulations, penalties, and restrictions in this area. Therefore, Sustainability performance management in all its spheres requires a comprehensive management outline. Measuring and managing sustainability performance is an issue of extensive research in the present day environment (Maletič, 2018). It has also been observed that firms focusing more on non-financial performance including environmental and social performance are sustainable than other firms (Rezaee et.al 2019).

9.3 Sustainability Measurement System and PPP Projects

Sustainability has been discussed as an ability to exist constantly/ continuously and its management is quite challenging. Sustainability management requires a

thorough management framework (Sebhatu, 2008). Sustainable performance measurement for Public-Private Partnership projects (PPP) must be effective for a longer duration of time considering the complexity and longevity of PPP project features. Therefore, projects require to evaluate the sustainable performance keeping in view their long duration because such projects will develop uncertainties and risks in the overall mutual agreement of the partners (Liang & Wang, 2019).

Public-Private Partnership is an excellent arrangement, being used to develop infrastructure projects i.e social (social housing, hospitals, and prison) and economic (bridges, highways, and motorways) around the globe (Mukhopadhyay, 2018). Public-Private Partnership gains success when public and private sector both cooperate because of mutual trust and interest besides the hierarchical relationship (Naoum, S. (2003). In the last few decades, the growing numbers of PPP projects have grasped the attention of scholars in the field (Zheng et. al., 2020)

The maintenance of sustainable performance is a very serious challenge for our future generations (Wu et. al., 2017). Infrastructure projects obtained by the government through PPPs can be observed by all segments of society and considered as public projects thus enhance the value of sustainable development (Hueskes, Verhoest & Block, 2017). We also know that sustainable development principles are divided into triple bottom lines namely; a social, environmental, and economic framework to address the activities at the individual,

corporations, and regional level (Zheng et. al., 2018).

According to Silva, Nuzum, and Schaltegger (2019), various sustainability performance measurement systems, as well as sustainability assessment tools, have been developed (Devuyst, 2000; Maas et. al., 2016; Sala et. al., 2015) and the interest in them has grown for the last two decades (e.g. Beske-Janssen et. al., 2015; Hansen & Schaltegger, 2016). It is thus not astonishing that numerous articles have addressed measurement, assessment, and management of sustainability performance (e.g. Epstein and Widener, 2010; Gadenne et al., 2012; Morioka and Carvalho, 2016).

9.4 Stakeholders and their interest

In social infrastructure, projects the stakeholders can be end users, the private sectors (real estate developers, banks, contractors, subcontractors, etc.) and the public sectors (government planning department, environmental protection department, transportation department, etc.) Each stakeholder has different goals as per their interest as if the private sector is more concerned about profit from that project, forthcoming prospects, and business proficiencies (Atmo & Duffield, 2014). Whereas, the public sector will be more concerned about the benefits in regards to social outcomes including maximizing the social effects and diminishing the negative ones (Zhang et. al., 2016).

Freeman (1984) identifies that different stakeholders have a different role to play in partnership relations and thus have different expectations of a company (Polonsky, 1995; Freeman, 2010b; Mitchell et al., 1997). According to (Wiswede, 2007), no single

theory exist in the PPP domain, rather a multitude of theories present on conflicts, action, and strong stress related to different roles (Silva, Nuzum & Schaltegger, 2019). In relative terms, we can say that the public sectors have long-sighted goals insights while the private sector has shortsighted objectives. This difference of objectives needs to be coordinated throughout the projects with the help of a refined system (Liang & Wang, 2019).

9.5 Dimensions of Sustainable Performance Measurement System

The sustainable performance measurement system is being discussed in different theoretical-empirical studies in different contexts, according to different sectors, geographical areas and the firm sizes under consideration. In this regard, literature has highlighted the contributions of different researchers about sustainability focusing on different industries including textile (Butnariu and Avasilcai, 2015), plastic (Ocampo et al., 2016), combustion engine (Jiang et al., 2018), satellite television dishes (Huang and Badurdeen, 2018), automotive (Madanchi et al., 2019) and food (Ahmad et al., 2019). Literature also explains the sustainability measurement system according to different geographical regions including India (Singh et al., 2014), Oman (Garbie, 2014), Philippines (Ocampo et al., 2016), Brazil (Helleno et al., 2017), China (Jiang et al., 2018), USA (Huang and Badurdeen, 2018) and South Africa (Du Plessis and Bam, 2018). Discussion about sustainability measurement system has also adopted different research methods including interviews (Medini et al., 2015), surveys (Kocmanov_a et al., 2017;

Sureeyatanapas et al., 2015), historical data (Barbosa and Gomes, 2015), case studies (Li et al., 2012; Watanabe et al., 2016), the combined use of surveys and case studies (Do_cekalov_a and Kocmanov_a, 2016; Long et al., 2016) and secondary data (Madanchi et al., 2019).

Different researchers have proposed different indicators for sustainability performance which varies from 9 (Amrina & Yusof, 2012) to the maximum number of 140 (Ruiz-Mercado et. al., 2012) and an average of 44. It has also been viewed that mostly the sustainability indicators fall in the domain of environment followed by the economic and then social aspects.

Liang & Wang(2019) has proposed five dimensions of the sustainable performance measurement system to measure the sustainable performance of PPP projects. The dimension of the measurement system is (1) Meeting design goals (2) Benefits to the end-user (3) Benefits to the private-sector (4) Benefits to the public sectors (5) Preparing for the future. Government initiate PPP projects with the obligation to uplift social welfare. Therefore, the system of sustainable project performance measurement must lead to the principles of sustainable development.

10. Challenges faced by the sustainable PPP Performance

The sustainability of business/ industrial activities has appeared as an important topic of discussion amongst academicians and practitioners (Cagno et. al., 2019). Sustainability has been affected by many factors and researchers around the globe have been investigating these factors as well as measures to reduce the effect of these

challenges. Presently, sustainability practices are tackling challenges by risk mitigation and compliance approaches as well as people has started seeking the prospects and sources of competitive advantages from these challenges (Aray et. al. 2020). According to Zhao, Feng and Shi (2018) uncertainty has emerged as an important paradigm in new product development research (Cadeaux & Ng, 2012; Chen, Ellinger, & Tian, 2011). This consideration denotes the failure to the perceived future outcome and happenings (Beckman, Haunschild, & Phillips, 2004). Therefore, uncertainty is likely to affect the sustainable performance of PPP projects. Thus, stakeholders involved in PPP need to tackle this threat by adopting suitable measures.

11. Discussion and Future Directions

This paper aimed to provide readers an in-depth understanding of the public-private partnership (PPP) and its sustainable performance. Sustainability is the main issue that is faced by both parties involved in the partnership, which can be affected by the uncertainty present in the environment. CSFs are the enabling factors that make PPP successful projects and ultimately lead to sustainable PPP performance. Therefore, the current review paper used PRISMA to provide information related to CSFs for PPP. For this purpose, those publishers, journals, and books were chosen by researchers which are indexed in Web of Science in Clarivate analytics or Scopus and Scimago. To the best of researchers' knowledge, the first contribution of researchers in the current study is to provide the information related to articles with CSFs for PPP. In this context,

information deduced that 172087 articles were published in Taylor and Francis, and out of these articles 675 were published on critical success factors of PPP which is 0.39% of the articles selected for this study. Followed by Wiley, the articles published in Wiley were 129720 related to PPP but only 611 were related to critical success factors (CSFs) of PPP and this is 0.47% of the sample. Sage published 85695 articles in which 124 were extracted which were related with CSFs of PPP and it is 0.14%, while Emerald published 17650 articles in which 1053 related with CSF of PPP and Elsevier published 12987 articles in which 953 were related with CSFs of PP and it is 7.3% of its total published material.

The second contribution of the existing study is that out of those published articles researchers have identified 92 latent variables while 693 indicators/constructs have also been identified in the current study (see appendix 1). The researchers have set the criteria for selection and rejection of CSFs of PPP on basis of citations. Based on this criterion 8 latent variables and 27 indicators have been selected for the current studies which are considered as the most relevant variables for the success of any PPP project and its sustainable performance. These factors are technical, political, economic, legal, financial, market maturity, procurement factor, regulation factor, and performance guarantee. The third contribution of this study that it provides comprehensive knowledge about the theories used in PPP and sustainability. Along with the provision of detailed knowledge about the CSFs, this article has also contributed by providing a glimpse of

PPP with the perspective of definitions, conceptualization, different dimensions, and models used in PPP. Lastly, the study has highlighted the challenges faced by sustainability in the shape of uncertainty which has numerous forms like environmental uncertainty, etc. Researchers are also suggested to find out the measures to tackle the uncertainty in sustainable PPP performance.

Despite several contributions, the existing study has some limitations. The articles were selected from a limited number of publishers and some other publishers such as Inder Science, IGI Global, etc have been overlooked. Future studies might also focus on these publishers to extract information related to CSFs and sustainable performance. The criteria for sustainable performance is used are different from the triple bottom line principle. There is a need to use the triple bottom line principle (social, economic, and environmental performance) and link it to the success of PPP.

12. Conclusion

The main aim of this paper was to present an overview of the critical success factors (CSFs) of PPP and sustainable performance. The systematic and meta-analysis was performed to select the papers from two renowned databases i.e. Scopus and Web of Science (WoS). The second criterion to select the articles from WoS was different indexing such as science citation index (SCI), social science citation index (SSCI), arts and humanities citations index (AHCI), and science citation index expanded (SCIE) and emerging science citation index (ESCI). Another contribution to the body of knowledge is a selection of papers from

different journals, publishers on basis of relevancy with CSFs of PPP. It is also concluded that several theories of public-private partnership have been used to study PPP i.e. agency theory, principle agent theory but there is an immense need to use and bridge different theories in future studies such as resource dependency theory (RDT) stakeholder theory (ST) and Theory of planned behavior (TBP). There is a dearth of studies on the above-mentioned theories. Moreover, it has also been discussed that sustainability may get affected due to uncertainty in the environment and this effect needs to be deterred to have sustainable PPP performance.

Conflict of Interest

The authors declare that there is no conflict of interest.

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