



**UNIVERSITI PUTRA MALAYSIA**

***INFLUENCES OF SOCIO-TECHNICAL FACTORS ON PUBLIC PRIVATE  
PARTNERSHIP SUCCESS IN MALAYSIA***

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PARTNERSHIP SUCCESS IN MALAYSIA**

By

**RAFEDZAH MOHD SOM**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra  
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Doctor of Philosophy**

**October 2021**

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in  
fulfilment of the requirement for the degree of Doctor of Philosophy

## **INFLUENCES OF SOCIO-TECHNICAL FACTORS ON PUBLIC PRIVATE PARTNERSHIP SUCCESS IN MALAYSIA**

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**October 2021**

**Chair : Prof. Ismi Ariff bin Ismail, PhD**  
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Human resources have been recognised as one of the most critical inputs in many organisational settings, including in the Public Private Partnership (PPP) contexts. The PPP program has been implemented in Malaysia since the 1980s to help the government provide public infrastructure. In a PPP setting, the public and private employees should work as a team to ensure PPP projects' successful implementation. Nevertheless, to date, studies on human-resource-development--related issues in inter-organisational settings are still limited, including in the PPP context. The general objective of this research is to examine the relationship between identified socio (facilitator leadership, trust and commitment) - technical (interdependence, communications, and business understanding) factors and PPP success (PPP project success and PPP relational success).

Proponents of Socio-technical System Theory have pointed out that the theory's suitability in improving non-linear working environment issues is still questionable. Therefore, there is a need to examine the PPP working environment issues from an organisational development perspective by applying STS theory. Past literature has pointed out that many factors contribute to an organisation's success or outcome. However, different factors will contribute differently depending on the situation. The theory also underlines the importance of optimising the human and technical input factors in generating organisational output performance and the well-being of the human resources which produce the output.

This study is quantitative research adopting purposive sampling. It examines the relationship between the identified socio-technical factors and PPP project success (satisfaction level on PPP project success) and PPP relational success

(satisfaction level on PPP relational success). Questionnaires have been developed by adapting past studies measurement items. This research has used different measurement facets, scale anchors, and two kinds of assessment scale to minimise common method variance. This research has analysed the data by employing descriptive, inferential and Structural Equation Modeling (SEM). The Goodness of Fit test has been done in all three SEM analysis levels.

The study found that most respondents have a high level of satisfaction on both dimensions of PPP success outcomes. Most respondents agree that there is a high level of leadership, trust, commitment, interdependence, communication and business understanding in the PPP setting. In terms of hypotheses testing, except for commitment and interdependence, other socio-technical factors have at least one positive significant relationship with either satisfaction level on PPP project success or satisfaction level on PPP relational success. The effect size of these relationships is between small to medium. Results also indicate that while facilitative leadership is the major contributor to PPP project success, trust plays an essential role in PPP relational success.

This study has contributed to the importance of STS theory in the HRD field by helping to frame the relationship of numerous factors in a non-linear working relationship, such as in a PPP setting. The study has implied the importance of identifying different pertinent factors that need to be intervened to enhance different PPP performance dimensions. However, as this is a cross-sectional quantitative study, a longitudinal qualitative study might better understand the overall level of PPP success and the socio-technical factors that influence it. The research proposed that even though PPP success depends on both the socio-technical factors that exist in the setting, it is found out that the socio factors play a more pertinent role. Besides facilitative leader and trust, Malaysia PPP players must acknowledge that communication quality and business understanding between the public and the private sectors are vital in achieving PPP success. Strategies must be put in place to enhance the contribution of these factors towards PPP organisational development success. In conclusion, understanding the importance of socio-technical factors to both dimensions of PPP success will improve PPP program management and decision-making process, including human resource and organisational development. While this research's findings could only be generalised to the intended population, the study itself is a starting point that can be developed further in various PPP settings.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia  
sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

## **PENGARUH FAKTOR SOSIO-TEKNIKAL KE ATAS KERJASAMA AWAM SWASTA DI MALAYSIA**

Oleh

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Sumber manusia telah diiktiraf sebagai salah satu input kritikal dalam pelbagai tetapan organisasi termasuk dalam konteks Kerjasama Awam Swasta (*Public Private Partnership*, PPP). Di Malaysia, program PPP telah dilaksanakan semenjak tahun 1980an bagi membantu kerajaan menyediakan infrastruktur awam. Dalam konteks PPP, pegawai awam dan swasta harus bekerjasama sebagai satu pasukan untuk memastikan projek PPP berjaya dilaksanakan. Walau bagaimanapun, sehingga kini, kajian tentang isu berkaitan pembangunan sumber manusia (HRD) dalam persekitaran antara organisasi masih terhad, termasuk dalam konteks PPP. Objektif umum penyelidikan ini adalah untuk mengkaji hubungan antara faktor sosio (kepimpinan fasilitator, kepercayaan dan komitmen) - teknikal (saling bergantung, komunikasi, dan pemahaman perniagaan) yang dikenalpasti dan kejayaan PPP (kejayaan projek PPP dan kejayaan hubungan PPP).

Penyokong Teori Sistem Sosio-teknikal telah menegaskan bahawa kesesuaian teori dalam menambah baik isu persekitaran kerja tidak linear masih dipersoalkan. Oleh itu, terdapat keperluan untuk mengkaji isu persekitaran kerja PPP dari perspektif pembangunan organisasi dengan mengaplikasikan teori STS. Literatur lepas telah menunjukkan bahawa terdapat banyak faktor yang menyumbang kepada kejayaan sesebuah organisasi. Walau bagaimanapun, faktor yang berbeza akan menyumbang secara berbeza bergantung kepada situasi. Teori ini juga menggariskan kepentingan mengoptimumkan faktor input manusia dan teknikal dalam menjana prestasi output organisasi dan kesejahteraan sumber manusia yang menghasilkan output berkenaan.

Kajian ini adalah kajian kuantitatif menggunakan pensampelan bertujuan. Kajian ini mengkaji hubungan antara factor sosio-teknikal yang dikenalpasti dan

kejayaan projek PPP (tahap kepuasan terhadap kejayaan projek PPP) dan kejayaan hubungan PPP (tahap kepuasan terhadap kejayaan hubungan PPP). Soal selidik telah dibangunkan dengan mengadaptasi item pengukuran daripada kajian lepas. Penyelidikan ini telah menggunakan aspek pengukuran dan penambat skala yang berbeza, serta dua jenis skala penilaian untuk meminimumkan varians yang biasa berlaku. Penyelidikan ini telah menganalisis data dengan menggunakan kaedah deskriptif, inferensi dan Model Persamaan Struktur (SEM). Ujian *Goodness of Fit* telah dilakukan dalam ketiga-tiga peringkat analisis SEM.

Kajian mendapati bahawa kebanyakan responden mempunyai tahap kepuasan yang tinggi terhadap kedua-dua dimensi hasil kejayaan PPP. Kebanyakan responden bersetuju bahawa terdapat tahap kepimpinan, kepercayaan, komitmen, saling bergantung, komunikasi dan persefahaman perniagaan yang tinggi dalam persekitaran PPP. Dari segi ujian hipotesis, kecuali komitmen dan saling bergantung, faktor sosio-teknikal lain mempunyai sekurang-kurangnya satu hubungan signifikan yang positif sama ada dengan tahap kepuasan terhadap kejayaan projek PPP atau tahap kepuasan terhadap kejayaan hubungan PPP. Saiz kesan perhubungan ini adalah antara kecil hingga sederhana. Keputusan juga menunjukkan bahawa walaupun kepimpinan fasilitatif merupakan penyumbang utama kepada kejayaan projek PPP, kepercayaan memainkan peranan penting dalam kejayaan perhubungan PPP.

Kajian ini telah menyumbang kepada kepentingan teori STS dalam bidang HRD dengan membantu merangka hubungan pelbagai faktor dalam hubungan kerja bukan linear, seperti dalam tetapan PPP. Kajian ini telah mencadangkan kepentingan mengenal pasti pelbagai faktor penting yang berbeza yang perlu diintervensi untuk meningkatkan dimensi prestasi PPP yang berbeza. Walau bagaimanapun, memandangkan kajian ini adalah kajian kuantitatif keratan rentas, kajian kualitatif membujur mungkin akan dapat memberikan kefahaman yang lebih mengenai tahap keseluruhan kejayaan PPP dan faktor sosio-teknikal yang mempengaruhinya.

Berdasarkan dapatan kajian, kajian mencadangkan bahawa walaupun kejayaan PPP bergantung kepada kedua-dua faktor sosio-teknikal yang wujud dalam persekitaran, adalah didapati bahawa faktor sosio memainkan peranan yang lebih penting. Selain pemimpin pemudah cara dan kepercayaan, pelaku PPP Malaysia mesti mengakui bahawa kualiti komunikasi dan persefahaman perniagaan antara sektor awam dan sektor swasta adalah penting dalam mencapai kejayaan PPP. Strategi mesti diwujudkan untuk meningkatkan sumbangan faktor-faktor ini ke arah kejayaan pembangunan organisasi PPP. Kesimpulannya, memahami kepentingan faktor sosio-teknikal kepada kedua-dua dimensi kejayaan PPP akan menambah baik pengurusan program PPP dan proses membuat keputusan, termasuk pembangunan sumber manusia dan organisasi. Walaupun penemuan penyelidikan ini hanya boleh digeneralisasikan kepada populasi yang dimaksudkan, kajian ini merupakan titik permulaan yang boleh dibangunkan lagi dalam pelbagai tetapan PPP.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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## LIST OF ABBREVIATIONS

CFA	Confirmatory Factor Analysis
BLMT	Build-Lease-Maintain-Transfer
BOO	Build-Operate-Own
BOT	Build-Operate-Transfer
GOF	Goodness of Fit
GFI	Goodness Fit Indices
HRD	Human Resource Development
EXPL	Work Exploration
JPM	Jabatan Perdana Menteri (Prime Minister Department)
KPI	Key Performance Indicator
MI	Modification Indices
MOF	Ministry of Finance
PPP	Public Private Partnership
SRMR	Standardised Root Mean Square Residual (Standardised difference between the observed correlation and the predicted correlation)
STS	Socio-Technical System
UKAS	Unit Kerjasama Awam Swasta (Public Private Partnership Unit)

# CHAPTER 1

## INTRODUCTION

This chapter will discuss Public Private Partnership (PPP) in general and its implementation in Malaysia. The discussion will then proceed with problem statements, research objectives, significance, limitation and operational definition of the term used in this study.

### 1.1 Background of Study

Human resource is one of the critical inputs in many settings, including in inter-organisational settings (Dary et al., 2019; Rao et al., 2005; Ross et al., 2019). In today's highly competitive environment, partnership as a form of inter-organisational collaborative arrangements has become common in many business and institutional settings, including government organisations (Baxter & Sommerville, 2011; Benítez-Ávila et al., 2018; Termes et al., 2019). The partnership arrangement is adopted because organisations believe they could achieve more by partnering together than working independently (Ahmad et al., 2018; Lahdenperä, 2017; Narasimhan et al., 2009). Such a partnership has also been established between the public and private sectors in Malaysia.

Past studies have noted that the success of any inter-organisational relationship depended a lot on various socio-technical factors. For this reason, this research intends to focus on the socio-technical factors that affect Public Private Partnership (PPP) success in Malaysia. The study will address the issues from the human resource and organisational development perspective. This research has started the discussion by discussing the current study concerning the human resource and organisational development perspective, especially in inter-organisational settings, followed by PPP in general, before focusing on the socio-technical factors affecting PPP success.

#### *Organisational Development in PPP Setting*

Human resource and organisational development have been widely accepted as a tool to enhance organisational performance. It is a critical and science-based process that helps organisations build their capacity and enhance efficiency by improving their processes and strategies (Ross et al., 2019). While previous organisational development intervention has focused on the internal change of an organisation, the recent trend has shown that organisational development

interventions are becoming critical in inter-organisational settings (Berends & Sydow, 2019; Schruijer, 2020).

Researchers in human resource and organisational development areas have pointed out that the complexities of working across organisational boundaries need to be addressed (Okonkwo, 2020; Schruijer, 2020). The complexities arise as each organisation will want to maintain their power, identities, objectives and existence, resulting in poorer inter-organisational performance than if they act alone. For example, PPP programs are implemented as many governments find it is difficult to fulfil this responsibility alone due to budgetary pressure (Ahmad et al., 2017, 2018a; Badasyan & Riemann, 2020). While the partnership exists at the organisational level, the PPP working arrangement consisted of many teams such as technical teams, financial teams and legal teams. In each team, members consist of representatives from both the public and the private. However, in reality, they are not a real team. A real team is defined as a "collection of individuals who are interdependent in their task, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems" (Bouwman et al., 2017; p. 72). However, PPP teams do not always meet these criteria. It is because they represent different organisations and their underlying objectives also differ from one another. The private sector has always been associated with maximising profit, while the public sector is more social-oriented. Also, as their reward system is independent of one another, any achievement may affect one party more than the other. In this regard, it is crucial for the human resource and organisational development practitioners to understand the socio and technical factors that influence the inter-organisational collaboration success, defined by the PPP team dynamics (Lyu et al., 2020; Schruijer, 2020).

Also, the success of PPP projects' execution and achievement is crucial because it involves billions of ringgits and many risks to both public and the private sector. As PPP is a long-term contract, the success of PPP must be measured by achieving objective performance and the healthy relationship established between both partners. Using overall satisfaction without segregating satisfaction on PPP performance objectives achievement and satisfaction on partnership relational quality may not be the best measure of PPP success. Using overall satisfaction measurement could be misleading. Even though both partners may be happy in their relationship, their objectives may not meet when they enter the partnership (Ariño, 2003; Benítez-Ávila et al., 2018). Similarly, even though the partnership may achieve its intended targets, the human resources' relational aspects are unfulfilled. From the human resource and organisational development perspective, both dimensions of satisfaction are essential because organisations should not neglect any aspects of performance (Okonkwo, 2020; W. Pasmore et al., 2018; Thomassen et al., 2017).

At this point, it is necessary to note that the process of identifying socio-technical inputs and their relationship with performance is the foundation contemporary to Human Resource Development (HRD). As part of the organisational development process, improving the input of various factors is pertinent to

enhance individual and organisational performance (Akdere, 2005; Otoo et al., 2019; R. A. Swanson & Holton, 2009). This research aims to improve PPP achievement by understanding the relationship between socio-technical aspects and PPP success. The improvement of PPP achievement is an organisational development process, i.e. an HRD function. It is based on the view that HRD ultimate focus is improving the existing standard of achievement (Richard A. Swanson & Holton, 2009; Thomassen et al., 2017).

### *Overall View of PPP in Malaysia*

PPP is a program initiated by the Malaysia Government to effectively and efficiently develop the country by mobilising both the public and private parties' resources and expertise. The initiative started through the implementation of the Malaysian Incorporated Policy on 25th February 1983. It was introduced formally under the Ninth Malaysia Plan (2006) as an alternative procurement method. PPP was initiated to promote private sectors' participation in delivering public facilities and services (Mohamad et al., 2018a; Rahman et al., 2014). The initiative is because the government is trying to keep pace with the demand to maintain existing infrastructure and develop new ones while facing budget constraints (Termes et al., 2019; Wibowo & Alfen, 2015; Yuan et al., 2010).

In Malaysia, PPP is defined as “a form of cooperation between public and private sectors where a standalone business is created, funded and managed by the private sector as a package which includes the construction, management, maintenance, repair and replacement of public sector assets inclusive of buildings, infrastructure, equipment and/or facilities” (UKAS, JPM website, referred on 11 December 2019). The private sector will construct the asset and provide services to the public sector client. In exchange for the assets and services provided, the private sector will receive a certain amount agreed. The payment amount depends on the service provider's quality levels and timeliness as per the concession agreement. In PPP projects, the government determines the specifications of public facilities or services required. Accordingly, the private sectors are entrusted with designing, constructing, financing, operating, managing, and delivering the assets, whether to the government or directly to the end-users. In return, for the facilities or service delivered, the private sector will be compensated by payments from the government or user charges levied directly on the end-users or both. Usually, payments to the private sectors depend and are bound by terms specified in the concession agreement.

Generally, from the above definitions, PPP has different characteristics than conventional procurement activities. Appendix 1 listed the differences between conventional public procurement and a general description of PPP procurement. In conventional procurement activities, a 'build and deliver' contract took place (Burger & Hawkesworth, 2011). Once completed, the asset will be transferred and operated by the government in a 'build and deliver' method. On the other hand, both the construction and operational features of the PPP projects are incorporated into a single contract. A single integrated PPP contract ensures that



the private sector has the incentives to design and build an infrastructure with cost optimisation in mind. In other words, PPP is a whole-life approach concept, i.e. from construction to maintenance, where the bottommost objective is to obtain value for money (Burger & Hawkesworth, 2011; O'shea et al., 2018; Sapri et al., 2016; Wibowo & Alfen, 2015). As the construction and maintenance phases are integrated, the partnership relationship between public and private sectors lasts longer than their conventional procurement relationship.

As stated earlier, organisations enter into an inter-organisational collaboration such as partnership because they believe they would achieve more by working together. Thus, it is imperative that the success of this union is measured. However, as a partnership consists of different stakeholders with different motives and objectives, measuring this relationship's success is complex (Dowling et al., 2004; Maosa & Muturi, 2019; Mwesigma et al., 2019). For example, in a PPP setting, even though partners are implementing the same project, their objectives may be different. Private sectors' objective of maximising profit is conflicted by the public sector orientation of value for money (Wojewnik-Filipkowska & Wegrzyn, 2019). In this regard, the establishment of a PPP central unit under the Ministry of Finance known as Unit Kerjasama Awam Swasta (UKAS), (previously under Jabatan Perdana Menteri (JPM) or (Public Private Partnership Unit, Prime Minister Department) on 22nd April 2009 is to strengthen further the unit function and PPP implementation in Malaysia. The unit's primary responsibility is to coordinate and facilitate PPP projects through privatisation, land swap or private financing initiatives and ensure these projects' success without compromising any parties.

#### *Overall View of the Research*

PPP is an inter-organisational partnership (Petković et al., 2015). Each partner is interdependent (Bajwa et al., 2017). PPP working arrangement at the operational level consisted of many teams such as technical, financial, and legal. In each team, members consist of representatives from both the public and the private sectors. Public and private organisations are different in their objectives of existence, culture, process and system (Esteve, 2010). Despite these differences, both parties enter the partnership to develop a successful project and a harmonious working relationship.

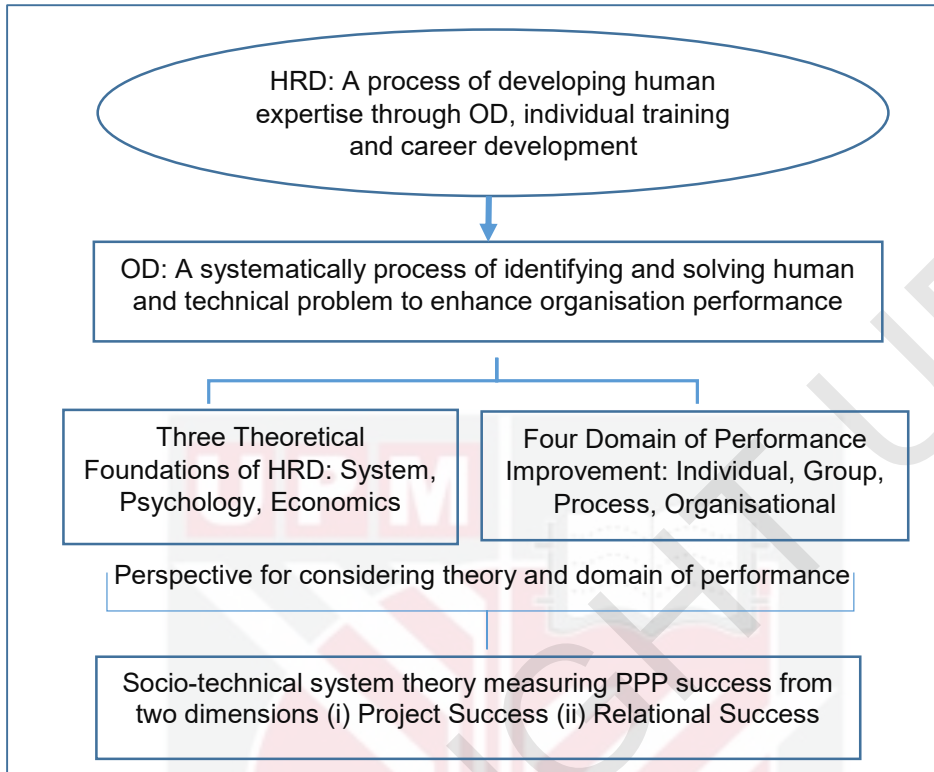
A project is a success when it meets a certain standard of success criteria. Some standard success criteria are that the projects' quality is acceptable to all stakeholders, and the overall completion is within budget or time stipulated by all parties. Generally, these success criteria are applied regardless of whether the project is implemented through conventional procurement or PPP method (Ahmad et al., 2018a; Pinto & Slevin, 1988b; Xiong et al., 2015). A successful project signifies an organisation output performance.

However, besides measuring the attainment of project performance indicators, it is imperative to examine the quality of the PPP relationship. The quality of the PPP relationship can be determined by the working relationship of the human resources involved in PPP. This relational success is essential to be measured because it will determine the overall organisational partnership performance level (Dyer & Singh, 1998; Quang et al., 1998; Warsen et al., 2019). Also, to some extent, from the HRD perspective, the quality of the working relationship determined the well-being of the partnership's employees.

Past studies have pointed out that the performance of PPP as an inter-organisational partnership is affected by socio, technical and environmental factors (Baxter & Sommerville, 2011; O. Ee et al., 2013; Irfan et al., 2017; S. Ismail, 2013a; Lee & Kim, 1999; Maltin, 2019; Singaravelloo, 2010; G. H. Walker et al., 2008; Warsen et al., 2019). For example, previous researchers have proposed trust (socio-factor), communication (technical factor), legal frameworks (environmental factor) as success factors that influence various inter-organisational partnerships, including PPP success.

Based on the above discussion, this research proposed that the study of PPP success in terms of its performance objective and relationship quality; and the socio-factors that contribute to its success could be viewed from an HRD perspective through the Socio-Technical System Theory.

Figure 1.1 illustrates this research's overall view from human resource development (HRD) and organisational development (OD) perspectives. It shows that HRD is a process of developing human expertise, where OD is one way to achieve this process. OD is a systematic process of identifying and solving human and technical problems to increase organisations' performance (Lynham et al., 2004; Pramanik, 2019). The research has taken into account HRD's three theoretical foundations (i.e. system, psychology and economics) and four domains of performance improvement (i.e. individual, group, process and organisational) that need to be assessed in designing how PPP success should be assessed. Based on these considerations, the Socio-technical Systems theory is proposed to measure organisational PPP success. PPP success will be measured in terms of PPP project success and PPP relational success.



**Figure 1.1: Research's Theory and Domain Performance**

(Source: Lynham et al., 2004)

In a nutshell, this research proposal in analysing factors that affect PPP success is aligned with the overall OD theory and domain performance. Adopting STS theory has been considered appropriate considering the research is undertaken from OD theories and performance domain perspective (Figure 1.1). It is because enhancing PPP performance is a part of enhancing organisational performance. Furthermore, past studies have indicated that research on human and organisational development in inter-organisational settings is still lacking (Okonkwo, 2020; Pramanik, 2019). Literature also indicated that the usefulness of the Socio-technical system Theory in a non-linear situation such as in a PPP environment is yet to be proven (Ju, 2019; Thomassen et al., 2017). Also, a non-linear working environment proves a challenge for the adaptability of the STS theoretical framework to practice because there are no real benefits reaped from it (Hussain et al., 2014; W. Pasmore et al., 2018).

Subsequent paragraphs and chapters will discuss this research in detail.

## 1.2 Problem Statement

To date, the Malaysian government has implemented more than a hundred PPP projects that involved billions of ringgits. However, the PPP implementation assessment in Malaysia is still limited (Ahmad et al., 2018a; S. Ismail & Haris, 2014; Nen & Ahmad, 2017; Sapri et al., 2016). Moreover, the Auditor's General's Report for 2012 has also indicated the weaknesses of performance evaluation of PPP projects in Malaysia (Mohamad et al., 2018b).

Despite studies done on Malaysia's PPP, most of these studies have focused on the process, financial and economic aspects of it. For instance, a study by Ahmad et al. (2018a) merely describes the PPP process in Malaysia. Several other studies examined the risks involved in PPP project execution (Ahmad et al., 2017; Valipour et al., 2019), problems in PPP projects (H. Hashim et al., 2017; Markom et al., 2012), reasons for PPP project failure (Rahman et al., 2014), evaluation criteria of value for money (K. Ismail et al., 2011), the critical success factors (S. Ismail, 2013a; Muhammad & Johar, 2018) and the performance indicators and performance objectives of PPP implementation (Mohamad et al., 2018a, 2018b). To the best of the researcher's knowledge, none of these studies has empirically tested the relationship between socio-technical factors with PPP success. Similarly, although Singaravelloo (2010) has examined how effective leadership plays a vital role in facilitating PPP project success, the researcher did not test this relationship empirically. In all, there are still gap to be examined in the Malaysia PPP setting.

Furthermore, the overall existing literature related to the PPP environment is still lacking in several critical areas. Firstly, PPP studies on factors that can strongly influence PPP success is still limited (Narbaev et al., 2020; Sehgal & Dubey, 2019). Empirical studies to test the relationship between the performance of the socio-technical aspects and the outcome performance of PPP is still lacking (Badasyan & Riemann, 2020; Ma et al., 2019; Petković et al., 2015; Yuan et al., 2009). This gap makes available studies on PPP implementation inadequate in identifying each factor's contribution to PPP success (Ramli & Mohamed, 2019; Sehgal & Dubey, 2019) and in understanding the relationship between different key stakeholders (Salve et al., 2018). The inability to identify the individual socio-technical factors to PPP success will dampen HRD intervention and development progress.

Secondly, human-resource-related issues have been increased threefold over the last two decades. However, there is still insufficient research on these issues in the inter-organisational setting, including in the PPP setting (Badasyan & Riemann, 2020; Gomes et al., 2016; Jones et al., 2014; Okonkwo, 2020). Thus, this study attempts to address all these gaps by exploring the success of PPP and investigating the level of socio-technical factors contributing to PPP success through a quantitative survey.

STS's suitability in improving work-related issues in a non-linear working environment is still questionable (W. Pasmore et al., 2018; Pava, 1986; Thomassen et al., 2017). Thus, this gap provides an opportunity for researchers to contribute to STS theory's importance by applying its principles in non-linear research settings such as in the PPP setting. By applying STS principles in a non-linear setting, complex issues could be easily understood. It will also prove that STS principles and theories are also relevant in a non-linear situation.

Also, Ju (2019) has proposed a need to conduct 'quantitative studies on organisational development to investigate how systems theory supports the relationship' (p.147). These include identifying various variables in HRD areas to improve productivity. System theory is applicable at both the micro and macro level, and it is suitable for enhancing individual and organisational performance (Ju, 2019; W. Pasmore et al., 2018). Therefore, continued researches applying STS principles in the various non-linear setting is pertinent to ensure that system theory preserves its essential role in the human resource and organisational development field.

In conclusion, as limited studies have examined the relationship between socio-technical factors and PPP success in Malaysia, the success of the existing partnership between public and private sectors and the factors contributing to it has not been entirely ascertained. In this regard, failure to identify those factors contributing to the success of PPP will hinder any effort to improve it. Therefore, examining factors that influence PPP success is pertinent, including those pertinent from the HRD perspective. In this respect, this study's findings will not only uphold the importance of STS in the HRD field. It will also help relevant agencies and organisations improve PPP performance in Malaysia and eventually benefit the *rakyat*.

### **1.3 Research Objectives**

This research's general objective is to examine the relationship between identified socio-technical factors and PPP success (satisfaction on PPP project success and satisfaction on PPP relational success). Accordingly, the research will study the relationship between socio-subsystems (facilitator leadership, trust and commitment) and technical-subsystems (interdependence, communications, and business understanding) with PPP success.

Specifically, this research intends: -

- 1.3.1 to describe the level of PPP success (satisfaction with PPP project success and satisfaction with PPP relational success) perceived by PPP team members in the public and private sectors;

- 1.3.2 to describe the level of socio-subsystem (facilitative leadership, trust and commitment) and technical-subsystem (interdependence, communication and business understanding) perceived by PPP team members in the public and private sectors;
- 1.3.3 to determine the relationship between socio-subsystem and technical-subsystem, and satisfaction with PPP project success perceived by PPP team members in the public and private sectors;
- 1.3.4 to determine the relationship between socio-subsystem and technical-subsystem, and satisfaction with PPP relational success perceived by PPP team members in the public and private sectors; and
- 1.3.5 to determine which of the socio-technical factors contribute the most to the satisfaction with PPP project success perceived by PPP team members in the public and private sectors; and
- 1.3.6 to determine which socio-technical factors contribute the most to the satisfaction with PPP relational success perceived by PPP team members in the public and private sectors.

#### **1.4 Research Hypotheses**

Past literature has pointed out that inter-organisational success depends on many socio-technical factors (Irfan et al., 2017; Ramadass et al., 2017; Warsen et al., 2018, 2019). The general literature proposed a positive relationship between facilitative leadership, trust, commitment, interdependence, communication, business understanding, and inter-organisational success. Based on these findings and this study's objective, the hypotheses for this research are listed below:

- (i) H1a: There is a positive relationship between facilitative leadership and satisfaction with PPP project success.
- (ii) H1b: There is a positive relationship between facilitative leadership and satisfaction with PPP relational success.
- (iii) H2a: There is a positive relationship between trust and satisfaction with PPP project success.
- (iv) H2b: There is a positive relationship between trust and satisfaction with PPP relational success.

- (v) H3a: There is a positive relationship between commitment and satisfaction with PPP project success.
- (vi) H3b: There is a positive relationship between commitment and satisfaction with PPP relational success.
- (vii) H4a: There is a positive relationship between interdependence and satisfaction with PPP project success.
- (viii) H4b: There is a positive relationship between interdependence and satisfaction with PPP relational success.
- (ix) H5a: There is a positive relationship between communication and satisfaction with PPP project success.
- (x) H5b: There is a positive relationship between communication and satisfaction with PPP relational success.
- (xi) H6a: There is a positive relationship between business understanding and satisfaction with PPP project success.
- (xii) H6b: There is a positive relationship between business understanding and satisfaction with PPP relational success.

## **1.5 Significance of Study**

This research offers several theoretical and practical significance. It will contribute to the socio-technical system theory and add to the literature on partnership in general, PPP and HRD. Consequently, the findings will facilitate the practical implications of addressing work-related issues.

### **1.5.1 Theoretical**

This study has demonstrated that the STS theory and framework are valuable tools in HRD fields. Past researches have proved the importance of STS in an industrial and linear working relationship (W. Pasmore et al., 2018). However, this study will contribute to the applicability of STS in a non-linear working relationship, i.e. PPP setting. The relevance of STS theory and framework in linear and non-linear working relationships will ensure STS and system theories' sustainability, especially in the HRD field.

These study findings will also contribute to the usefulness of the STS theory. A model that integrates the identified socio-technical factors with PPP success (satisfaction on PPP project success and satisfaction on PPP relational success) will be developed. The model can improve performance as there is a clear distinction between each socio-technical factor and its relationship with the different dimensions of PPP success. The distinction between different factors and different performances is critical in assisting future frameworks and hypotheses.

Finally, this study will add to the socio-technical theory body of literature concerning that outcome must be presented by a balance between task productivity and human well-being. Rather than using an overall measurement of performance satisfaction to measure PPP success, this study made an allowance to the different aspects of the measurement of PPP success, i.e., differentiating success between satisfaction on PPP project success and relational success. Adopting two success measurement indicators as suggested by socio-technical system theory is in line with Ariño (2003) and Wojewnik-Filipkowska and Wegrzyn (2019). They indicated that overall performance satisfaction as a strategic alliance success indicator does not capture partnership outcome achievement. Thus, it is essential to develop different measures to capture various PPP success indicators. It is because each indicator represents distinct aspects of success, i.e. task productivity and human well-being.

### **1.5.2 Practice and Research**

Firstly, in terms of practical contribution, this study will further contribute to understanding the important relationship between various socio-factors and PPP performance. By understanding the relationship between different factors that influence PPP success, appropriate intervention to ensure effective integration between human resources and the operational aspects of PPP can be manifest (Clegg et al., 2017; W. Pasmore et al., 2018; Potnuru & Sahoo, 2016; Richard A. Swanson & Holton III, 2001). Because not all input factors have similar effects on all aspects of the outcome (Omar & Ahmad, 2014), organisations can focus on performance's main contributors. Especially in times where resources are limited, it is impractical to overhaul the whole input factor.

Secondly, a clear distinction between socio and technical factors; and their relationship with the different perspectives of PPP success will make it easier to understand and manage the partnership process at the individual level. Prioritising the partnership process at the individual level is pertinent to achieving a more favourable organisational partnership outcome (Sambasivan et al., 2011; Warsen et al., 2019). It is because each of the socio-factor qualities at an individual level of performance will aggregately affect the organisational performance status, i.e. PPP success (Abubakar et al., 2019; J. Mohr & Spekman, 1994; Prati et al., 2003). Understanding the socio-technical factors



and their relationship with PPP success is imperative for improving the performance of individuals, processes, the public and the private sector, and PPP as a whole.

Thirdly, this study's findings indicate the current level of identified socio-technical factors and PPP success in Malaysia. Therefore, the results could assist the future development of HRD in the country, particularly in the PPP setting. For example, this study's findings will help identify potential HRD related interventions issues, i.e. individual and organisational learning and performance, in ensuring Malaysia's PPP performance (Pramanik, 2019; R. A. Swanson & Holton III, 2001). For example, there might be a need to develop and train leaders to be more facilitative to ensure this particular setting's success.

Thirdly, to the best of the researcher's knowledge, at least in Malaysia, no quantitative research has studied the relationship between the identified socio-technical factors and PPP success. Therefore, it is invaluable to examine the influence of variables such as trust, commitment and leadership on PPP success. It is because previous studies have found that these variables are critical factors in determining successful partnership including in PPP setting (Dowling et al., 2004; H. Hashim et al., 2017; S. Ismail, 2013a; S. Ismail & Harris, 2014; J. Mohr & Spekman, 1994; Singaravelloo, 2010). Likewise, it is crucial to evaluate PPP project performance indicators as the PPP programs will be permanent for many years to come. Similarly, the relational partnership quality between public and private sectors must also be analysed. It ensures that the relationship is healthy enough to provide the added value of PPP project implementation over a long time (Osei-Kyei et al., 2017; Warsen et al., 2019; Yung et al., 2005; Zou et al., 2014).

Also, this study is necessary as the population and sample are dissimilar from previous researches on partnership. For example, past researchers have focused on the partnership between distributors and manufacturers (J. C. Anderson & Narus, 1990; O. Ee et al., 2013). Many have also examined factors contributing to successful collaboration in the private sector (Kale & Singh, 2009 as cited in Ramadass et al., 2018). Some studies also consider public and private perspectives in determining PPP success criteria (S. Ismail, 2013a; Masrom et al., 2015; Osei-Kyei et al., 2017). However, studies examining the socio-technical factors and its' relationship to PPP success are still limited (Badasyan & Riemann, 2020; Ma et al., 2019). Besides, it is crucial to look into whether the public and the private partnership relationship is working well when undoubtedly their objective of existence and organisational culture is different (Dowling et al., 2004; G. Hodge et al., 2018; G. A. Hodge & Greve, 2007; Yung et al., 2005). Compared to other kinds of partnerships with a similar objective of existence (for example, between profit-oriented organisations); however, in PPP, the public sector is more social-oriented. Therefore, by researching partnership in a PPP setting, these research findings are helpful in a larger population, i.e. not limited to the business-to-business environment only.

Finally, this study's findings will offer insight into the importance of considering human relationship performance as an indispensable HRD factor for long-term inter-organisational sustainability (Osei-Kyei et al., 2017; R. A. Swanson & Holton III, 2001; Warsen et al., 2019). The integration of HRD into PPP performance management activity signifies the importance of enhancing human performance. These include their relationship with one another, which indirectly facilitates organisational and partnership level performance. Concurrently, this study insights will also bridge the gap of the limited human-resource-related issues in partnership settings and contribute to understanding the relationship between HRD and performance through this particular setting (Badasyan & Riemann, 2020; Gomes et al., 2016; Thomassen et al., 2017).

### **1.6 Limitations of Study**

This study had several limitations. Firstly, because of the limited HRD research carried out in the PPP setting, this study focused on the findings and methodologies used in various partnerships, project management, and team settings. This study has reviewed the similarities of variables that influence partnerships, project management, and teams' performance in overcoming this limitation. While many other variables could affect PPP success, this research only studies six variables: facilitative leadership, trust, commitment, interdependence, communication and business understanding. Therefore, subsequent studies could deliberate other socio-technical factors influencing PPP success, such as power dynamics, cultural differences and conflict resolution.

Secondly, by collecting data through a self-administrated structured questionnaire, there is always a possibility that individuals' respondents might construe different meanings for any particular question. Several discussions on the questionnaires' suitability and clarity were held with the public and private PPP practitioners in minimising this problem. Based on these discussions, ambiguous words are replaced, and sentences are restructured to ensure flow. Respondents are also welcome to ask for clarification regarding the questions at any time convenient to them.

Thirdly, this study has adopted a purposive sampling method. As such, the sample of this study does not randomly represent the whole PPP population, and hence this study's findings must be generalised cautiously to other PPP settings. This study's repetition in different PPP settings is also encouraged to enable future generalisation (Sarstedt et al., 2017). Similarities of findings in repeated replication of research done in various sample conditions will infer the results across multiple populations and settings (Polit & Beck, 2010; R. M. Walker et al., 2017).

Fourthly, due to confidentiality issues, this research does not measure PPP project success objectively. Rather than measuring the actual amount of Ringgit Malaysia involved, time spent and numerical quality assessment, the measurement of PPP project success depends on respondents' satisfaction level on projects' key performance indicators' achievement. Therefore, to some extent, respondents' answers are subjective as their answers are based on their personal views. Their views may be influenced by recent events or the quality of information that they had. In minimising this problem, all project members from the selected PPP projects can participate in the study. The participation of all team members of a particular randomly selected PPP project will minimise biases.

Lastly, the empirically cause-effect relationships comparing the success level at different partnership stages could not be established. It is due to this research adopted a cross-sectional design where data was collected at a single point in time. As PPP projects involve a lengthy concession period, partners perceptions on the achievement of the performance objectives of PPP or factors that influence it may be fluctuating (Dolla & Laishram, 2019; Xiong et al., 2015). Likewise, satisfaction among PPP teams' members also has its ups and downs. As such, causal conclusions between the independent and dependent variables must be made cautiously. Therefore, a longitudinal study might be superior in measuring and giving a more accurate picture of the selected variables' causal relationship with PPP success.

## **1.7 Scope of the Study**

This study examines the relationship of the socio-technical factors that lead to PPP success. In enabling the study's objectives, this cross-sectional study confined itself to the perception of those directly involved in PPP project teams. This study does not consider the general public perception of PPP success even though they are also principal stakeholders in PPP projects (Battisti & Guarini, 2017; Nederhand & Klijn, 2019; Xiong et al., 2015).

This study will also measure PPP project success by measuring three common project performance indicators, i.e. cost, time and quality. These selected three indicators may not represent the full spectrum of PPP project performance indicators as different PPP projects come with distinct individual differences. For example, the building of highways through the Build-Operate-Transfer (BOT) method has distinctive technical performance indicators compared to hostels' facilities through Build-Lease-Maintain-Transfer (BLMT) approach. For BOT's projects, revenue is collected from the end-user while the government pays the BLMT's projects payments. Additionally, general performance indicators have been chosen due to confidentiality issues. The reason is that the research has not been permitted to reveal any performance indicators achievement in terms of Ringgit Malaysia or by an absolute number of a specific indicator.

Finally, this study focused only on the relationship between selected socio-technical factors with PPP success (satisfaction with PPP project success and satisfaction with PPP relational success). The selection of these variables does not mean that no other factors may affect an individual's perception of PPP success. Among other factors that may influence PPP success are the satisfaction with the norms of the partnership agreement (Cannon et al., 2000), acceptability of cultural differences (Sambasivan & Yen, 2010a; Yung et al., 2005) and coordination between partners ((J. Mohr & Spekman, 1994).

## 1.8 Assumption

This study is based on three assumptions. Firstly, it is assumed that each of the socio-technical factors contributes directly to PPP success. Even though input factors could influence one another, such as leadership influence commitment (Ramadass et al., 2018), this research treats each factor independently. This presumption is based on the idea that system theory could be applied and adapted in real and conceptual situations (Ghosh & Sahney, 2013; Ju, 2019). System theory offers a framework to examine the relationship between and among variables (Jacobs, 2014; Thomassen et al., 2017; Torraco, 2016). Therefore, in this research, the identified variables are theoretically hypothesised to have an independent relationship with the dependent variable(s), i.e. PPP success. In contrast, other factors and their relevant relationships are regarded as *status quo*.

Secondly, it is assumed that PPP success dimensions, i.e. satisfaction on PPP project success and PPP relational success satisfaction, is independent. This assumption is because partners can perceive that the PPP project success has been achieved but feel dissatisfied with the PPP working relationship experience or vice versa (Ariño, 2003; Benítez-Ávila et al., 2018; O. Ee et al., 2013; Whipple & Frankel, 2000).

Finally, it assumes that the respondent's perception of the achievement of PPP project success performance indicators does reflect the actual performance of PPP project success achievement. The target respondents are those who have been participated in PPP project/s for at least twelve months. Therefore, it is assumed that they have the credibility to answer this study's questions, hence the reliability of their views regarding this research.

## 1.9 Definition of Terms

The conceptual and operational definitions of terms are as below:

### (i) Public Private Partnership

Conceptually, PPP refers to the long-term contractual relationship between the government and the private sector that arises from an agreement to procure jointly and deliver public projects (Ahmad et al., 2018a, 2018b; S. Ismail & Harris, 2014; Khadaroo et al., 2013; Warsen et al., 2018; Yuan et al., 2009).

In the context of this study, PPP has been defined as individual projects that are implemented through a long-term agreement between the Malaysia Government and private sectors to deliver a public project.

### (ii) Public Private Partnership Success

Conceptually, in this study, PPP success refers to PPP project success and PPP relational success.

This study operationalised PPP success by measuring respondents' satisfaction with PPP project success and PPP relational success.

### (iii) PPP Project Success

Refers to the respondents' satisfaction level of achieving PPP project performance indicators, i.e. cost, time and quality (Ahmad et al., 2018b).

### (iv) PPP Relational Success

Conceptually, PPP relational success refers to the relationship success among those individuals and organisations involved in a PPP setting.

In the context of this research, PPP relational success refers to the respondents' satisfaction level of the working relationships between public and private sectors at the individual level and their willingness to continue working together again (Aube & Rousseau, 2005; Bishop & Scott, 2000; Pineda & Lerner, 2006; Ramaseshan et al., 2006; L. P. J. Robert & You, 2018).

**(v) Public Private Partnership Teams**

Refers to PPP project team members consisting of both the public and the private sector's employees.

**(vi) Socio-subsystem**

Conceptually refers to a subsystem that consists of people who work in the organisation and their relationship with others. It includes reasons working with the organisation, their attitude, their skill level, the interpersonal relationship among employees and relationships between groups (Carr-Chellman & Carr-Chellman, 2020; Cummings, 1978a; Ghosh & Sahney, 2013; Manz & Stewart, 1997; W. Pasmore et al., 1982, 2018; W. A. Pasmore, 1988; G. H. Walker et al., 2008).

In this study, socio-subsystem refers to PPP socio inputs factors that comprise facilitative leadership, trust and commitment.

**(vii) Facilitative Leadership**

Refers to the facilitating behaviours that PPP leaders have shown to achieve PPP objectives and manage the relationship between his team and his public/private sector partners' team (Bussu & Bartels, 2014; Z. Chen et al., 2018; Conley & Goldman, 1994; Hirst et al., 2004; Kaimal et al., 2017; Stamevski et al., 2018).

**(viii) Trust**

Refers to the level of confidence of a partner character and competence to meet their PPP obligations (Cullen et al., 2000; Hughes et al., 2018; Morgan & Hunt, 1994; L. P. J. Robert & You, 2018; Sitkin & Roth, 1993; Whipple & Frankel, 2000).

**(ix) Commitment**

Refers to the team members determination towards achieving PPP goals (Cullen et al., 2000; O. Ee et al., 2013; Kingshott, 2006; Lee & Kim, 1999; Li et al., 2018; Pearson et al., 1998).

**(x) Technical-subsystems**

Conceptually, it refers to a subsystem that is comprised of business processes, tools, procedures and knowledge used to accomplish the organisation's output (Carr-Chellman & Carr-Chellman, 2020; Cummings, 1978; Fox, 1995; W. Pasmore et al., 1982, 2018; G. H. Walker et al., 2008).

In this study, technical-subsystem refers to PPP technical input factors that comprise interdependence, communication, and business understanding.

**(xi) Interdependence**

Refers to the degree to which the public and the private sector partners depend on each other's effort and information in order to complete their task; and the extent to which the partners have related and compatible goals (Fong et al., 2018; Rico et al., 2011a; Sambasivan et al., 2011; van Vijfeijken et al., 2002; Wageman & Baker, 1997).

**(xii) Communication**

Refers to the quality of the information, i.e. timeliness, accuracy, adequacy, the credibility of information exchanged and the extent to which critical information is being shared (O. Ee et al., 2013; Hoegl & Gemuenden, 2001; Lee & Kim, 1999; Sambasivan et al., 2011; Suifan et al., 2020).

**(vii) Business Understanding**

Defined as the degree of understanding regarding PPP business process, roles, goals, risks and responsibilities between partners (O. Ee et al., 2013; Lee & Kim, 1999; K. O. Park et al., 2017).

**1.10 Chapter Summary and the Organisation of the Thesis**

Chapter one has briefly explained the background of the study, problem statement and research objectives. It is understood that even though PPP has become a popular public procurement method, there is still limited study on factors that influence its success. As such, this research intended to fill the gaps through the HRD perspective. It will be done by examining the socio-technical factors that contribute to its success.

The remaining thesis has been divided into four chapters. Chapter two summarises previous literature and findings related to socio-technical factors contributing to the partnership and PPP success. Chapter three discussed the conceptual framework, methodology and analysis procedures applied for this study. Chapter four addresses the analysis findings and the results of the study. Finally, chapter five summarises the study's outcomes and outlines recommendation, limitation and conclusions.



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