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PUBLIC-PRIVATE PARTNERSHIPS IN E-GOVERNMENT: INSIGHTS FROM SINGAPORE CASES

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Abstract

There is a growing interest in public-private partnerships (PPPs) as a model for e-government service development and delivery. Although various underlying benefits of such arrangement have been enumerated, there exist challenges and issues in PPPs manifest in a number of unsuccessful cases. The success of PPPs in e-government depends on a number of factors that need to be considered from the first stage of evaluating the PPP to the last stage of development and roll-out. However, there is a dearth of PPP studies in the e-government literature that identified the success factors behind these efforts. Hence, this research attempts to address the existing gap by investigating what factors contribute to a successful e-government PPP. The paper starts out by introducing the relevant concepts and literature and then providing a review of e-government PPPs in Singapore, which has been a leader in e-government. We identify success factors based on existing studies and information of 5 cases of e-government PPPs. In future, we plan to collect data from new cases to further develop and validate these factors and identify their inter-relationships. This study is expected to contribute to research and practice by identifying success factors in different stages of e-government PPP.

Keywords: Public-Private Partnership (PPP), E-government, Success Factors, Stages of PPP.

1 INTRODUCTION

E-government is regarded as an opportunity to use ICT to make governance more efficient and effective, and enhance service provision to businesses, citizens, and employees (Baqir et al. 2007). The amount of investments in e-government indicates its importance. It is estimated that US\$68.6B will be spent on ICT by Western European governments by 2013 (Duffy 2010) and total US Federal Government IT spending is expected to surpass US\$81.2B in FY2012 (The White House 2012). As governments seek to utilize ICT effectively, one growing trend is for public agencies to strategically engage private parties to bring in best practices and contribute funds for e-government initiatives (Grasman et al. 2008). Essentially, public-private partnerships (PPPs) are seen to be an approach to improve social infrastructure, better utilize taxes, and enhance public assets value, if properly formulated (Abednego and Ogunlana 2006).

PPP in IT initiatives started gaining popularity in the 1980s and early 1990s (Marschollek et al. 2010). During that period, there was increasing citizens' demand for the expansion of telecommunication networks and other infrastructure. By employing PPPs, governments were able to meet the demands by exploiting the state-of-art information technology and private sector expertise while under a limited budget. For example, as one of the earliest PPPs in e-government, the partnership established in 1991 between Teranet (a private company) and the Government of Ontario to convert a 200-year-old paper-based land registration system to a modernized electronic title system resulted in a profit of more than \$100 million for the province (Borins 2003). Besides cost savings for government agencies, citizens can benefit from improved service delivery and better infrastructure through this arrangement (The Institute for Public-Private Partnership 2009). In view of these benefits, government IT executives have shown an increasing interest in PPPs, and it is expected that the rate of PPP adoption will increase in future (Claps 2012).

While PPPs can offer a range of benefits, they are not a panacea for all conditions. These partnerships are susceptible to issues such as cost overruns and time delays (Yuan et al. 2009). Several PPPs have been undertaken successfully but others failed, with the reasons for success not being well understood. As relatively few studies have investigated PPPs in the e-government context, what contributes to a successful e-government partnership has not been systematically studied. In view of this lack of understanding, we seek to answer the following research question: What are the success factors of PPPs in e-government per stage? To examine the research question, the paper starts out by introducing the relevant concepts and literature and then providing a review of e-government PPPs in Singapore. The country was chosen for our review because of its leadership in e-government (Accenture 2007; United Nations 2010). In addition, as Singapore has successfully implemented a number of e-government PPPs in recent times, a review of these cases could help to surface possible success factors of government PPPs in different stages. Subsequently, the future plan for research is outlined, including studying the inter-relationships between success factors. Besides contributing to research on PPP in e-government, this paper aims to provide insights for practitioners considering the use of PPPs.

2 CONCEPTUAL BACKGROUND

2.1 Critical Success Factor (CSF)

The critical success factor (CSF) concept was established in 1960s and popularized over the last 50 years by a number of scholars, particularly Rockart (1979). Rockart (1979) refers to CSFs as critical elements required to ensure the successful competitive performance of organizations. Within an IT implementation context, CSFs have been defined as the essential managerial factors required for a successful system implementation (Nah and Delgado 2006). The concept has gained a great deal of attention in the IS literature with a number of studies focusing on the identification of descriptive lists of conditions that lead to implementation success for different kinds of systems (Sutanto et al. 2009). It is argued that taking into account of CSFs can have a major impact on an IT project during the various phases of its implementation (Remus and Wiener 2010). Consequently, these factors should

be identified, constantly managed, and carefully maintained (Nah and Delgado 2006; Sutanto et al 2009).

2.2 The Concept of PPP

A prerequisite to our discussion involving public-private partnerships is conceptual clarity. The term public, private, and partnership have multiple definitions, individually and jointly. The term partnership may be seen in other similar forms like cooperation (Hodge and Greve 2009; Langford and Roy 2006; Marschollek 2011), joint venture (Skelcher 2007), interplay (Gómez-Barroso and Feijóo 2010), mix (Wettenhall 2003), strategic alliance (Hancox and Hackney 1999), and collaboration (Donahue 2010).

A PPP is defined broadly as an arrangement between a government body and the private sector in which they jointly perform or undertake a public activity (Savas 2000). More precisely, this working arrangement is mainly based on mutual commitment (formal contract or informal agreement), and it can be with any organization external to the government sector e.g., a non-profit organization or NGO (Bovaird 2004; Gazley 2008). A PPP has also been defined as an inter-organizational cooperative venture (Brown et al. 1998) between public and private parties. Others suggest that in PPPs, it is an on-going agreement between government and private sector in which the private sector has a role in risk-sharing and the decision-making process (Forrer et al. 2010). Essentially, it involves a long-term cooperation where the partners share risks, resources, goals, and combine the strengths of both sectors (Maskin and Tirole 2008). In this paper, we define a PPP as an arrangement between the public and private sector where both parties work together in pursuit of public goals with the sharing of risks and rewards.

2.3 Success Factors of PPPs

As noted in the past literature, the success of a PPP comprises more than agreeing upon an explicit contract and dealing with legal restrictions (Grimsey and Lewis 2002). Additionally, the partnership involves the informal aspects of a relationship such as mutual trust and understanding (Grimsey and Lewis 2002). Furthermore, a partnership can evolve over the course of the arrangement. Thus, across different stages of a PPP, success factors can be different due to the process of changing of objectives and activities. In this section, we first define success and describe the stages of a PPP before discussing the success factors in each stage.

To assess the overall success of a PPP, we can define a project as successful only if related stakeholders are satisfied with the outcomes; in other words, key interests of stakeholders can be attained (Ng et al. 2010). For example, Ng et al. (2010) suggested the following 6 performance indicators, i.e., 'prompt, stable, and reliable service delivery', reasonable cost of service, meeting output requirements specified in contract, 'fair, open, and transparent procurement procedures', a level playing field in the market, and 'an efficient channel of communication between the community and service provider', for stakeholder satisfaction and success of PPPs.

To identify the success factors of a PPP per stage, we divided the PPP process into 3 broad stages i.e., evaluation, establishment, and development, based on past literature (Jamali 2004; Lawther 2005; Marschollek et al. 2010; Ng et al. 2010; Roy 2003). In the *evaluation* phase, the government body should consider the benefits of PPPs, and decide on whether the partnership approach should be pursued or not (Jamali 2004; Ng et al. 2010). Decision makers should assess the feasibility of a PPP from the point of view of the government, private sector, and the community. Therefore, it is suggested that a comprehensive feasibility study that takes public accountability, socio-economic concerns, technical competence, and commercial interests into account can contribute to a successful PPP (Jamali 2004; Ng et al. 2010).

The *establishment* stage involves the selection of suitable partner(s), and the initiation of a working PPP (Marschollek 2011). The establishment of a PPP may face difficulties as the differences between the public and private sectors can be a potential source of disagreement (Christensen et al. 2007; Jost et al. 2005). Marschollek (2011) discusses the divergent institutional logics in PPP and explains that

different mindsets, knowledge bases, and organizational structures in the establishment phase can lead to misunderstandings and impose distrust. Therefore, the author recommends the use of partnership management procedures to reduce knowledge gaps between the parties and to establish/legitimize common routines in this stage of a PPP (Marschollek 2011).

The last stage is the *development* phase in which parties work together to deliver the project (Marschollek et al. 2010; Roy 2003; Sharma 2007). In the development phase, there is a strong need for team building as staff members from different organizations with varying cultures depend on each other to attain the desired project outcomes (Jost et al. 2005). Moreover, staff commitment and deploying adequate time and energy can ensure that the objectives and needs of all parties are represented (Jamali 2004).

In addition to stage-based success factors, the literature has suggested a number of PPP success factors that are important in general across all stages. For example, an informal aspect of PPPs is embedded trust that involved parties develop during the partnership. It is argued that trust and mutual understanding are necessary conditions for success throughout a PPP (Jost et al. 2005; Marschollek et al. 2010; Smyth and Edkins 2007). Table 1 summarizes a sample of success factors of PPPs.

Stage	Success Factors	Citation
Evaluation	<ul style="list-style-type: none"> • Conducting a comprehensive feasibility study (e.g., economic, technical, social evaluation) 	(Claps 2012; Jamali 2004; Ng et al. 2010)
Establishment	<ul style="list-style-type: none"> • Identifying and consolidating of common objectives • Partnership management procedures: <ul style="list-style-type: none"> ○ transferring knowledge about the different mindsets, knowledge bases, and organizational structures ○ establishment and legitimization of common routines 	(Jamali 2004; Jost et al. 2005; Marschollek 2011)
Development	<ul style="list-style-type: none"> • Cultivating relationships among project members through team building 	(Jost et al. 2005)
All Stages	<ul style="list-style-type: none"> • Deploying adequate time and manpower • Member commitment 	(Jamali 2004; Jost et al. 2005)
	<ul style="list-style-type: none"> • Openness and fairness • Creating identification 	(Jamali 2004; Marschollek 2011)
	<ul style="list-style-type: none"> • Cultivating mutual trust and understanding among private and public parties • Management of common understanding and expectations 	(Jacobson and Choi 2008; Jamali 2004; Jost et al. 2005; Marschollek 2011; Marschollek et al. 2010; Smyth and Edkins. 2007)
	<ul style="list-style-type: none"> • Having strong structure at the central administration level 	(Jamali 2004)
	<ul style="list-style-type: none"> • Having legal and regulatory framework and specific reporting and record keeping 	(Jamali 2004)

Table 1. Sample of success factors of PPPs

2.4 PPP in E-government

E-government refers to the use of ICT to enhance governance and enable government to offer more convenient services to citizens, businesses, and employees (Palvia and Sharma 2007). By implementing e-government, public agencies can realize cost reductions and improved efficiency, while citizens, business, and employees receive faster and more convenient services (Gottschalk 2009; Mosse and Whitley 2009). However, government bodies face a number of challenges in implementing e-government initiatives such as the shortage of in-house specialists. Thus, they often opt for joint and contract approaches with private companies for e-government (Brown 2001). Moreover, government agencies facing budget constraints show increased interest towards alternative contracting models such as PPPs (Claps 2012). Beside these constraints, the public sector increasingly faces pressure from the institutional environment e.g., the community and political parties, to adopt e-government. Thus the level of political support and political engagement can shape a more partnership-intensive approach (Langford and Roy 2006).

Public agencies can benefit in various ways when adopting a PPP arrangement for e-government projects. PPPs can provide opportunities for efficient project management, cost reduction, risk sharing, improvement of service quality, enhanced technological innovation, and combining the strengths of both sectors (Cheng and Yu 2010; Maskin and Tirole 2008; Ng et al. 2010). In terms of e-government projects, such partnerships can increase the pace of rolling out related services and infrastructure (The Institute for Public-Private Partnership 2009).

In order to gain the benefits of e-government PPPs, it is suggested that governments need to take into account a number of factors (Holden and Fletcher 2005; Langford and Roy 2006; Roy 2003). However, although a few studies have investigated PPPs in the e-government context, a detailed study of success factors of e-government PPPs is still lacking. This is because the main theme of these studies was not about identifying success factors. Also, with the limited empirical research conducted in this area, there is a need to identify and empirically validate the success factors of e-government PPPs. In addition, there is little understanding of the success factors for particular stages of PPPs with lack of consideration of the dynamics of a PPP over the life of a project. Further, as IS researchers interested in IT artifacts, we aim to examine the specific success factors of PPPs in e-government in comparison to the general PPP success factors of section 2.3.

In the next section, we will perform a review of e-government PPP cases in Singapore, with the objective of gleaning out factors influencing the success of this arrangement. This is because Singapore has been identified by a number of independent organizations as a pioneer in e-government adoption (Accenture 2007; United Nations 2010), earning third and first place in global e-government rankings in 2005 and 2007 respectively (Accenture 2005, 2007). Moreover, Singapore has been ranked first for four consecutive years from 2009 to 2012 by Waseda University Institute of E-government (Waseda University 2012). Thus, as an exemplary e-government adopter, we have chosen Singapore cases to study the success factors of PPPs in e-government initiatives.

3 SINGAPORE E-GOVERNMENT PPP CASES

Singapore government initiatives have benefited from a number of partnerships with private companies and non-government organizations, making it suitable to study PPPs in the e-government context. Over the decades, adoption of the PPP arrangement has increased across four e-government action plans, indicating that the government is actively leveraging on PPPs to introduce innovative and state-of-art e-government services. The first e-government action plan, Civil Service Computerisation Programme (CSCP), was introduced in the early 1980s, followed by eGAP I, eGAP II, and iGov 2010 with the aim of transforming the government to a world-class user of information technology (ICT)¹.

During eGAP I, the Government Electronic Business (GeBIZ) portal was rolled out. GeBIZ is a Government-to-Business (G2B) one-stop e-procurement portal, which allows local and international suppliers to search for government procurement opportunities and submit bids online. In 2006, the government decided to offer GeBIZ as a procurement solution to other countries. Consequently, it became a joint venture partnership between Defence Science and Technology Agency (DSTA) of Singapore and NIIT, an IT services company. While NIIT has been given the product and marketing license, the Singapore government owns the intellectual property rights of the system. NIIT acts as a partner by maintaining the GeBIZ portal and is responsible for commercializing the technology and marketing it to other governments (Sharma 2007).

In the next action plan, eGAP II, a high level joint public-private sector panel chaired by the Head of Civil Service conceived OBLS (One-stop Business Licensing Portal- now called EnterpriseOne) in order to reduce the amount of red-tape for businesses. OBLS is a one-stop G2B integrated portal that allows businesses to apply, update, renew or terminate any combination from a suite of 80 online business licenses issued by 17 government agencies, in one online transaction. In fact, OBLS is a

¹ Singapore e-government website (<http://www.egov.gov.sg/egov-masterplans-introduction>), Accessed in May 2012.

partnership among 43 government agencies and 9 other organizations and associations. The successful implementation of OBLs gained the 2005 United Nations Public Service Award for Singapore in the category of Application of Information and Communication Technology (ICT) in Government: e-Government (Periasamy and Sia 2007).

Under the iGov2010 action plan, there were a number of PPP initiatives, which indicates an increased attention to the use of PPP. One such effort is the TradeXchange portal (an extension of TradeNet), which is an e-government PPP launched in October 2007. The G2B portal provides seamless interconnectivity among commercial and regulatory systems for the Singapore trade and logistics community (Toh et al. 2010). It offers a single electronic window for integrated workflow, submissions and enquiries to the sea ports, airports, maritime authorities, customs and controlling agencies.² The project was initiated by Singapore Customs, the Economic Development Board, and the Infocomm Development Authority (IDA). CrimsonLogic Pte Ltd was appointed by the Singapore Government as an independent contractor to develop, operate, and maintain as well as drive the adoption of this project for a 10 year-period from 2007-2017. CrimsonLogic is also working with other content and service providers to offer the TradeXchange services commercially. Both sides can benefit from the partnership in terms revenue from user payments for the provision of TradeXchange services and content, while the Singapore government is able to provide better services to businesses.

Other e-government PPPs launched under the iGov2010 action plan include the OneMotoring and National Service portals. The OneMotoring portal is a joint venture between the Land Transport Authority (LTA) and two private organizations i.e., National Computer Systems (NCS) and MIS Global. It aims to provide the public with a comprehensive range of information and services pertaining to buying, owning, and driving a vehicle in Singapore. Besides serving the citizens better, LTA has yielded cost savings through the partnership of the OneMotoring portal (LTA 2004). Another e-government PPP is the National Service Portal (NS Portal), which has been developed in partnership with NCS and the Ministry of Defence (MINDEF). The NS portal provides a wide range of services to national service personnel (Krishnan et al. 2010). The portal is operated and maintained by NCS and it contains Singapore government applications as well as commercial applications³.

3.1 Success Factors of E-government PPP in Singapore

We identify a range of success factors from case studies of the above systems. Table 2 provides a summary of the success factors for each of the discussed PPPs. It also groups the success factors according to the stages of PPP.

² TradeXchange portal, <http://www.tradexchange.gov.sg>, Accessed in May 2012

³ Terms and Conditions, <http://www.ns.sg>, Accessed in May 2012

Project	Success Factors	Stage	Citation
Government Electronic Business (GeBIZ)	<ul style="list-style-type: none"> • Strong service level agreements • Clear definition of responsibilities for each stakeholder according to their competence 	Establishment	(Sharma 2007)
EnterpriseOne (OBLS)	<ul style="list-style-type: none"> • Formation of steering committee • Adoption of appropriate project funding structure • Securing project buy-in by convincing participants of the project's vision and benefit 	Establishment	(Periasamy and Sia 2006; Periasamy and Sia 2007; Teo and Koh 2010)
	<ul style="list-style-type: none"> • Key stakeholders' involvement in the reviewing and re-engineering process, participation from all involved agencies • Consolidating and integrating cross-agency requirements 	Development	
	<ul style="list-style-type: none"> • Eco-centric leadership structure 	All stages	
TradeXchange (TradeNet)	<ul style="list-style-type: none"> • Formation of steering committee 	Establishment	(Toh et al 2010; Teo et al. 1997)
	<ul style="list-style-type: none"> • Revolutionary business process change 	Development	
	<ul style="list-style-type: none"> • Commitment from all parties to allocate time, effort, and resources • Willingness to change the existing mindset 	All stages	
OneMotoring	<ul style="list-style-type: none"> • Clear definition of customer segments and elements of branding and marketing to sharpen the purpose of the initiative • Secure stakeholders project buy-in by building rapport with partners and fostering a sense of collaboration towards shared goals • Incentivise business partner to remain committed to meeting the goal of the initiative • Public agency to take joint responsibility for overall business development to ensure the initiative stays focused and remains • Establishment of key performance indicators to align progress and discuss issues. 	Establishment	(Howe-Teo 2008)
	<ul style="list-style-type: none"> • Learning from prior experience e.g., undergoing pilot trials • Adopting a phased approach to make vital adjustments and to mitigate possible risks 	Development	
	<ul style="list-style-type: none"> • Willingness to change the existing mindset • Openness and transparency between public agency and business partner 	All stages	
National Service Portal (NS Portal)	<ul style="list-style-type: none"> • Systematic evaluation of partner, e.g., using the Analytic Hierarchy Process, to form an objective judgment 	Establishment	(Krishnan et al. 2010)
	<ul style="list-style-type: none"> • Supportive management with high fault-tolerance due to the use of state-of-the-art technologies • Commitment of government partner toward continuous IT innovation and service excellence 	Development	

Table 2. The success factors of Singapore e-government PPPs

Our analysis revealed that in comparison to the success factors previously identified for PPPs in general (Table 1), there are factors in Table 2 that are both common and unique to the e-government context. For example, commitment of time, effort, and resources by involved parties to the PPP and mutual understanding are common in both tables. However, more specific factors are outlined in Table 2 in terms of how to manage and implement IT projects, which hold for e-government PPPs. For example, the government partner's commitment to deploy IT innovations and re-engineer

business processes in response to the new IT are identified as success factors of e-government PPPs. Further, with such rapid technology change environments, implementing state-of-the-art technologies tends to be more challenging due to their increased complexity. Therefore, management may need to increase their fault-tolerance when utilizing new technologies in e-government PPPs.

4 RESEARCH METHOD AND FUTURE PLAN

To validate and refine the success factors reported in the previous section, we plan to conduct multiple case studies at public agencies in Singapore. A multiple-case study design is preferred over a single-case study design for obtaining more compelling and robust data (Herriott and Firestone 1983).

Singapore is chosen for this study because of the successful use of PPP within the country as reviewed in the previous section. In 2010, the Singapore government announced its commitment to invest \$450m over 5 years to fund PPP projects. Such projects serve as a suitable opportunity for data to be collected for our research question. Here, public agencies first identify their need where there are no off-the-shelf solutions and where partnership is required to resolve the issue at hand. Private companies that secure the project are required to co-share a small part of the cost to ensure that they have a stake in the project. For example, one of the proposed IT projects is the development of a healthcare monitoring solution for diabetic patients to monitor their blood glucose levels from home through remote technology. We plan to conduct in-depth case studies of such e-government PPP initiatives. This will allow us to identify success factors specific to e-government PPPs.

We will include both success and failure e-government PPP cases to ensure that the criteria to identify CSFs are met. For each case, we will be targeting various stakeholders from different levels of management and users to be interviewed. Our primary source of data will be semi-structured interviews. Secondary data sources include news, internal and external publications, and project documents. Through our case study protocol we intend to study the influential factors for the success of e-government PPP in different stages. In the case analyses, we will look for previously identified success factors for e-government PPP. At the same time, we will be open to identifying new CSFs and refining existing factors. Subsequently, we plan to interrelate them using methods such as a causal loop diagram (CLD) (Sterman 2000) as was done in previous studies (Sutanto et al. 2009). This can help us explain the dynamics of such partnerships, i.e., how success factors interact and affect each other during e-government PPP stages.

Our findings aim to contribute to e-government PPP research and practice. The study intends to extend previous research by increasing our understanding of the success factors of e-government PPPs. This is performed through the review of e-government PPPs in Singapore to glean out possible success factors. Subsequently, we plan to empirically validate and refine these success factors with a larger number of cases and possibly a survey. For practitioners, the findings of our study can provide insights to assist them to successfully leverage PPPs to roll out e-government initiatives.

This research should be viewed within the context of its limitations, i.e., the generalizability issue common to case studies. As our case studies are performed in a single country, it is possible some factors may not be surfaced due to the varied conditions of other countries. For example, the structure and decision-making process of government agencies may differ from those in Singapore. Therefore, future studies can be conducted across different countries in the Asia Pacific region in order to extend and substantiate our findings.

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