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Public-Private Partnership (P3) Success: Critical Success Factors for Local Government Services and Infrastructure Delivery

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EDITORIAL NOTE

Public-Private partnerships (P3s) are often promoted as promising solutions for the efficient and effective delivery of local government services and infrastructure projects. In this paper, the authors develop a novel framework that lays out a set of critical success factors (CSFs) for public-private partnerships. Moving beyond the typical focus on economic factors, the authors draw on the organizational literature to propose three core factors for enhancing the likelihood of P3 success: (1) partner relationships; (2) various process/project management aspects; and (3) the partners' entrepreneurial orientation. They also propose that active stakeholder (government, private entity and end user) interest has nuanced impact on the strength of the CSF - P3 success relationship. P3 success is defined in terms of project efficiency, organizational benefits, project impact, stakeholder satisfaction and future potential. The paper features careful validation of the model constructs and the hypotheses tested using 133 responses received from a targeted survey of government executive leadership, chief municipal and county chief elected/appointed officers, and their deputies/assistants in the state of Florida. The results support the proposed model and underpin strategy recommendations for forming successful public-private partnerships.

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ABSTRACT

The Public-Private Partnership (P3) approach is a viable option to address the slow growth and burgeoning need to deliver infrastructure projects and services by state and local governments. This study focuses on identifying critical success factors (CSF) that influence the success of P3s for local government service and infrastructure delivery. A framework is presented for integrating relationship and project management CSFs identified from previous literature into P3s. In addition, public agency entrepreneurial orientation is introduced as a potential CSF – a focus that has been absent in previous P3 CSF literature. To empirically assess the influence of these CSFs on P3 success, we surveyed public administrators from municipalities and counties in Florida, asking about their perceptions of these success factors. The results show that the P3 relationship, project management, and public agency entrepreneurial orientation are critical to a project's success. Moreover, government stakeholder influence significantly affects these factors. Private sector stakeholder influence also affects project management and public agency entrepreneurial orientation's effect on P3 success. When applied in a managerial context, these findings can help public agencies to improve their P3 success rates and growth and help to solve the infrastructure and service delivery challenges facing local governments in the US today.

SYNOPSIS

Purpose

This study aims to develop an understanding of the critical success factors of Public-Private Partnerships (P3) to help facilitate the growth of their implementation and improve the delivery of local government services and public infrastructure projects.

Problem of Practice

States, counties, and cities across the United States are continuously considering alternatives for solutions to deliver public infrastructure projects and services efficiently while improving the quality of life for their citizens and limiting the direct fiscal impact on taxpayers. Challenges in public infrastructure, affordable housing, transportation, environmental sustainability, education, healthcare, and parks, are coming at a pace much faster than the government can handle on its own and taxpayers can financially support. Although these challenges are national phenomena, the burden ultimately falls heavily on the state and local governments that own, maintain, and provide services for many of these economic and social infrastructure elements.

In response, Public-Private Partnerships (P3s) are gaining popularity in states and local governments to help with infrastructure and service delivery. However, the U.S. P3 market is developing slowly and remains relatively young compared to other countries worldwide. Some of the unrealized potential stems from implementation complexities and a lack of understanding among stakeholders of how to implement P3s successfully.

To address these implementation problems, an understanding of what led to the success of the implementation of a P3 after its completion would prove helpful for future replication and decision-making. This study proposes to address these problems by developing a theoretical model for understanding and categorizing the critical success factors (CSFs) of P3s into constructs that can be applied to future empirical studies. Drawing from the extant literature, additional elements of social entrepreneurial orientation and stakeholder influence are introduced as CSFs. The goal is to provide a model that can help local government agencies to gauge the potential success of a P3 project, understand how stakeholders influence the elements of P3 success, and improve their P3 implementation rates.

Specifically, this study answers the research question: What factors influence the success of a Public-Private Partnership (P3) for local government services and infrastructure delivery?

Results

The findings of this study suggest that enhanced relationships, both public and private influence over project management, and an entrepreneurial orientation in both the private and public partners are critical to the project's success. Moreover, an increased role in the P3 process for the government entity further enhances the relationship factor. The findings also highlight that a government entity's entrepreneurial orientation is enhanced when government influence over the P3 process is low. However, low government influence can negatively affect P3 success when project management needs are high. Hence, government entities need to maintain their influence over project management because ongoing decisions and evaluation are needed in projects as complex as P3s and allow for the government entity to maintain an entrepreneurial orientation during the P3 process.

Conversely, strong private sector influence has a negative effect on the overall success of a P3 when project management needs are high; such influence may limit the government's ability to effectively respond to project management challenges (e.g., project delays) in complex P3 projects. However, strong private entity influence can enhance P3 success when the public agency exhibits a high entrepreneurial orientation. The government also must have similar capabilities to co-create value and ensure the success of a P3 project.

Conclusions

These findings can help public agencies improve their P3 success rates and growth and help in solving the infrastructure and service delivery crises facing the U.S. today. Furthermore, this study contributes to the extant literature and theory by supporting government entities' entrepreneurial orientation as a P3 CSF, confirming that stakeholders influence P3 CSFs, and providing a framework of constructs comprising P3 CSFs for future study and managerial application.

Practical Relevance

From a managerial perspective, government entities can consider this framework of critical success factors when evaluating the potential success of a P3 project. A list of suggested strategies from the findings is provided that may help agencies to develop their P3 assessment and decision-making capabilities. While the list of strategies is not exhaustive in identifying how our study's findings can be applied in a practical context, it provides public agencies with a starting point in evaluating a P3 project for future success. It is encouraged that agencies use and tailor the framework and the findings of this study to their individual needs and capabilities.

INTRODUCTION

A water main break occurs in the United States every two minutes, and an estimated six billion gallons of treated water is lost daily. More than 40% of the public roadways are in poor or mediocre condition. In addition to the 30,000 miles of inventoried levies across the US, an estimated 10,000 miles of additional levies exist, the location and condition of which are unknown (ASCE, 2017). Challenges in areas such as public infrastructure, affordable housing, transportation, environmental sustainability, education, healthcare, and parks are developing at a pace much faster than government entities can handle on their own and than taxpayers can financially support (ASCE, 2017). Fiscal pressures will increase as the aging baby boomer population living on fixed incomes continues to grow. Millennials, the largest generation in US history, face the economic challenges of student loans and increasing costs of living. Although these challenges are national phenomena, the burden ultimately falls heavily on the state and local governments that own, maintain, and provide services for many of these economic and social infrastructure elements.

States, counties, and cities are having to consider alternative solutions to address these rapidly developing problems to deliver infrastructure projects and services efficiently while improving the quality of life for their citizens and limiting the direct costs on taxpayers. Only an estimated 16 percent of U.S. cities can self-fund their needs in infrastructure (Fishman & Flynn, 2019). However, the reality is that implementation under a government-sponsored funding model has been slow, and the corresponding fiscal implications, both in the short and long terms, serve to exacerbate such difficulties for most states and cities.

In response, Public-Private Partnerships (P3s) are gaining popularity in states and local governments to help with infrastructure and service delivery. For purposes of this study, the definitions of P3 by Wang et al. (2018) and the National Institute of Governmental Purchasing (2016) are synthesized and presented as follows:

> A public-private partnership (P3) is a broad term used to describe a long-term contract between a government agency and a private party to provide public facilities, infrastructure, and services. Components of financing, operations, maintenance, or management may be included in this contract. The government agency and the private party share risks and benefits during the contract term to achieve mutual goals.

Many experts predict that the United States will soon become one of the largest P3 markets in the world (Deloitte, 2013). Since 1985, more than 3,000 P3 projects have been completed worldwide, amounting in value to approximately $900 billion (Kwak et al., 2009). Projects range from social infrastructures, such as schools, prisons, hospitals, and public housing, to economic infrastructures, such as roads, bridges, tunnels, seaports, airports, train and railway development, and highways (Yescombe, 2011).

The P3 approach has been used as a procurement mechanism for infrastructure and urban renewal in the US since the 1950s. It currently is experiencing a renaissance period, with more than $36 billion worth of projects saving taxpayers 20 percent for most projects during the past decade (Coalition, 2018). Even with this recent resurgence, the U.S. P3 market is developing slowly and remains relatively young compared to P3s in other countries worldwide (Casady & Geddes, 2016; McNichol & Fund, 2013). For example, the United Kingdom has averaged more than $6 billion annually in capital investments through P3s, compared to the $2.4 billion annually of the US – an economy six times larger (PWC, 2016).

Some of the unrealized potential stems from implementation complexities and a lack of understanding among stakeholders of how to implement P3s successfully. Additional issues facing P3 implementation have been a lack of transparency in P3s, complex procurement processes, low P3 expertise among stakeholders, difficulties in cooperation among parties, equitable risk sharing, contracting challenges, low private interest, and inflexible or no legislation. Overall, these challenges have caused local governments in the US to avoid using long-term P3s (La, 2016; Martin, 2016).

From a business perspective, one way to address these implementation problems is to develop an understanding of what leads to the success of the implementation of a P3 ex-post its completion, to allow for future replication and decision-making. Many studies focus on critical success factors in different country settings and infrastructure projects. However, no standard, empirically tested success models can be readily applied and used by local governments or stakeholders to evaluate P3s. Every government entity has a different approach for assessing implementation. Location context, institutional goals, economic effects, and the type of project are considerations in model development (Hardcastle, Edwards, Li et al., 2005; La, 2016; Ward & Sussman, 2005).

The P3 approach potentially is a viable option to address the slow progress and burgeoning need to deliver on infrastructure projects and services. The many benefits of P3s include an opportunity to break the ubiquitous public-sector monopoly; provide competition and flexibility in the development of infrastructure assets; extend access to technical, financial, and physical resources; and improve service quality – all while operating in uncertain policy environments (Salamon & Elliott, 2002, p. 31). Taking advantage of P3s at a local government level allows infrastructure or services to be delivered quickly, often at low or no direct cost to taxpayers. Meanwhile, the private party bears the risk of financing the construction in exchange for the potential profits from oper-

ations that result from the improvement. This presents an opportunity for a win-win scenario for all stakeholders.

This study proposes to address these problems by developing a theoretical model for understanding and categorizing the critical success factors (CSFs) of P3s into constructs that can be applied to future empirical studies. Drawing from the extant literature, additional elements of social entrepreneurial orientation (Dwivedi & Weerawardena, 2019) and stakeholder influence (Li et al., 2018) are introduced as CSFs. The goal is to provide a model that can help local government agencies to gauge the potential success of a P3 project, understand how stakeholders influence the elements of P3 success, and improve their P3 implementation rates.

Specifically, this study seeks to answer the following research question: **What factors influence the success of a Public-Private Partnership for local government services and infrastructure delivery?** In answering this question, we develop a framework that supports government project teams by enabling them to transparently select a P3 versus a traditional procurement process and to prepare P3 projects efficiently in the early stages of development (La, 2016).

Literature Review

For purposes of this study, CSFs are defined as the factors in the P3 scenario that actively contribute to a profitable conclusion for one or more parties involved (Morledge & Owen, 1998, p. 567). From a project management perspective, CSFs are used to assess the organizational or managerial factors that lead to the success or failure of a project and to examine the reasons of its success or failure (Santos et al., 2019). At a project level, project success is defined as short-term project management success (efficiency), as well as the achievement of the long-term goals of the project (effectiveness) (Serrador & Turner, 2015).

Several studies have reviewed CSFs in P3s in a country context, with the US, the UK, China, and Hong Kong having the greatest focus (Osei-Kyei & Chan, 2015). This study builds on the CSFs found in Sehgal and Dubey's (2019) P3 CSF study in India by introducing entrepreneurial orientation and behaviors as a potential CSF; this inclusion is supported by Klein et al.'s (2010) theory of public entrepreneurship and is derived from Dwivedi and Weerawardena's (2018) study of social entrepreneurship. Such entrepreneurial behaviors include *innovativeness, proactiveness, risk management, effectual orientation,* and *the agency's dedication to its public mission*. These behavioral success factors have not traditionally been considered in P3 CSF literature (Dwivedi & Weerawardena, 2018; Li et al., 2018). In addition to this entrepreneurial expansion, the framework incorporates stakeholder influence as a moderator of these success factors, supported by stakeholder theory, and applies Li et al.'s (2018) work to quantify stakeholder influence from government, the private sector, and end users.

Over the past 40 years, P3s have received much attention worldwide from management and from researchers in various disciplines and fields, ranging from economics to public administration to management. In economics, the focus has been on the economic efficiencies of bundling services, instead of having each step of the P3 process completed by a single partner (Ross & Yan, 2015).

P3 Success Factors

Understanding what influences the success of a P3 has garnered attention from previous researchers. For example, Warsen et al. (2018) sought to understand what makes P3s work by analyzing the influence of both trust and managerial effort on their performance in a Dutch context. They found that both factors are essential for the implementation and for cooperation between partners of the project. However, the specific elements that make these factors effective (i.e., management and trust-building strategies) are absent from their findings. This lacuna provides opportunities to extend their research by developing a framework that can be applied for managerial use. In addition, examining these factors in a different country or state context can add validity to their findings while allowing for the integration of other relevant success factors from previous research.

Hodge and Greve (2018) found that the involved parties conducted minimal independent evaluations on P3 projects and that more careful assessments were needed to ensure that governments maintain their effectiveness and their relationships with the stakeholders involved. The goals should be to reduce the uncertainty around P3s and to help to ensure that these long-term arrangements are successful.

Researchers have applied various theoretical perspectives to study the creation and emergence of P3s. The extant literature suggests three primary approaches for developing theoretical frameworks to discuss P3s. First is the economic perspective. Transaction cost economics, property rights, and principal–agent theories are applied to analyze P3s from an optimal performance, contractual, and cost perspective. Second, P3s are viewed from a public policy lens. Governance theories, such as public choice and New Public Management (NPM), review the cooperation between public and private entities. Third, stakeholder and institutional theories take an organizational management view on P3s. Here, the focus is on ensuring that stakeholders receive equitable benefits and on looking at P3s' needs for legitimacy as a process at an institutional level (Wang et al., 2018).

In studies of why governments adopt P3s, the most common theoretical lens, and most researched and understood reasons, are in the economic category. Public infrastructure requires significant capital investment to satisfy ongoing demands and to address needs. However, most government entities cannot financially support all their capital investment needs on their own without incurring substantial

debt obligations through bonds or loans. P3s help reduce this burden by shifting the investment to the private sector while creating business opportunities for private firms (La, 2016; Li, 2003). For P3 project success, both partners need to evaluate the economic conditions in which they operate, both externally and internally, and how these conditions affect them as an organization entering a P3. These conditions affect the transaction costs and the decision to enter a P3 arrangement. Having stable economic conditions facilitates the P3 process and project delivery. Seghal and Dubey (2019) identify two economic factors that enhance the success of P3s: a favorable macroeconomic environment and a safe and secure economic policy.

From an economic view, delivering public goods and services is not sustainable in the long term by solely public or solely private means. If communities rely exclusively on the private sector to provide public goods, the market will fail to do so for several reasons: 1) the private sector is not able to provide all the public goods needed; 2) the desire for higher profits drives down consumer goodwill; and 3) citizens would have unequal access to social welfare goods, such as education and healthcare. Conversely, if the public sector is the sole provider of public goods and services, government entities eventually would fail because of government provision and regulation inefficiencies that would result in the inability to fund and equitably subsidize all public goods and services. (Le Grand, 1991; Miller, 1999; Walsh, 1995). Although research has shown that economic factors play a critical role in P3 success, other potentially critical factors have received less attention and are the focus of this study.

P3 Implementation

The emergence of P3s in the US began in the 1960s (PWC, 2016). At that time, Leibenstein (1966) stated that the public and private sectors need to work with one another to improve the efficiency of the public sector and use market resources to provide better services. Several recent studies have supported Leibenstein's proposal (Chakravarty, 1987; Reschke, 2001).

The studies discussed support P3s as a mechanism government can use for efficiency and resource optimization in delivering services and providing cost savings, but their findings also serve as an important rationale for P3 implementation. Modern infrastructure P3s were conceived in the New Public Management era of the 1990s, in which the government used private-sector models to run more like private businesses (see, e.g., Casady et al., 2020; Voytek 1991). However, the complexity and contractual sophistication of infrastructure P3s led to the evolution to a larger paradigm, which enabled governments to engage with several private agents (Greve & Hodge, 2010, p. 150). This evolution of using the private sector for public goods and service delivery could also be seen in the evolution of public governance theories. Known as New Public Governance (NPG), this theoretical paradigm captures the fragmentation and uncertainty of public management in the twenty-first century and understands the legitimacy and interrelatedness of policymaking and the implementation/service delivery processes (Osborne, 2006, p. 384). In this paradigm, P3s may be viewed as a tool of NPG that provides infrastructure services through an extensive network of government and business connections.

P3 Entrepreneurship and Stakeholders

To contribute to an understanding of how public agencies can approach alternative service and infrastructure delivery modes while improving project success, Klein et al. (2010) presented a framework analyzing public entrepreneurship behaviors in relationship to private entrepreneurship. With their public/private interaction, P3s are prime opportunities to measure public entrepreneurial activity and to apply Klein et al.'s (2010) framework, thus developing constructs for further theoretical development.

Stakeholder theory is another theory that applies to the study of P3s. Clarkson (1995) who developed a stakeholder framework for analyzing and evaluating corporate social performance outlined that corporate success is based on stakeholder satisfaction. Stakeholders play a crucial role in P3s and are defined as any individual or organization who may affect or be affected by a project, positively or negatively, through a project's lifespan (PMI, 2008). In projects like P3s, various internal and external stakeholder groups may influence the project, including stakeholders from the government, the private sector, and the community of end users (Takim, 2009). These groups must be prioritized based on their influence levels in the decision-making process, with the goal of balancing their interests to ensure seamless project completion (Li et al., 2018).

From a global perspective, these theories support the emergence of P3s and the need to enhance their success for resource optimization, efficiency, and cost savings. In the past two decades, following their emergence, P3s have been implemented worldwide, and their use is expected to increase in both developed and less developed countries (La, 2016).

P3s theoretically and empirically have proven to be a viable procurement mechanism. This study seeks to understand the CSFs – beyond economics – that lead to effective P3 implementations. Li (2003) and La (2016) provide a conceptual framework for this study. However, studies using this framework in a U.S. context are limited because the extant studies tend to focus on the challenges of developing and lesser developed countries, such as Vietnam and India. Despite this limitation, the framework provides a helpful starting point for studying CSFs related to P3 implementation.

This study also builds on Sehgal and Dubey's (2019) research, which focuses on CSFs in an Indian context and introduces *entrepreneurial orientation and behaviors* as a potential CSF. Their work is supported by Klein et al.'s (2010) theory of public en-

trepreneurship and derived from Dwivedi and Weerawardena's (2018) study of social entrepreneurship. Sehgal and Dubey (2019) identify five entrepreneurial orientations and behaviors:

- *Innovativeness* – the development and promotion of new ideas and solutions to address issues in ways that are different from current norms;
- *Proactiveness* – the active review of the environment, both internally and externally, to account and prepare for future uncertainties;
- *Risk management* – the ability to recognize and take reasonable risks and to promote planning before risk-taking;
- *Effectual orientation* – a behavior of managing resource constraints to obtain an optimum solution; and
- *Mission orientation* – dedication to the entity's or agency's public mission.

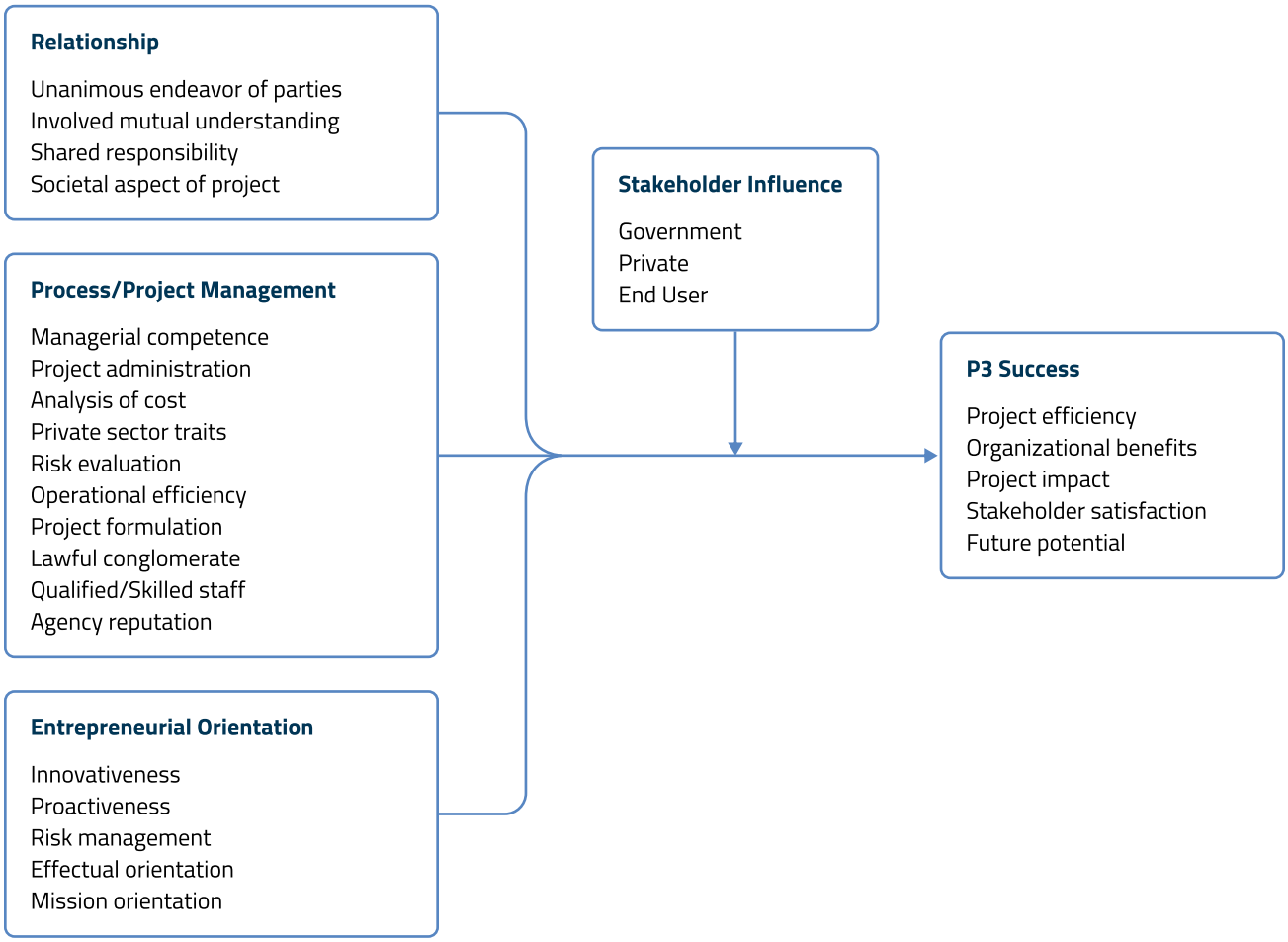
These behavioral success factors traditionally have not been considered in P3 CSF literature (Dwivedi & Weerawardena, 2018; Li et al., 2018). In addition, the framework proposed in this study incorporates *stakeholder influence* as a moderator of these success factors, supported by stakeholder theory, and applies Li et al.'s (2018) factor, which quantifies stakeholder influence from the government, private sector, and end user communities.

Research Method

Figure 1 below presents the theoretical model that groups the critical success factors (CSF) of P3s into two constructs-relationship and process/project management- and incorporates entrepreneurial orientation and P3 stakeholder influence from the government, private entity, and the end user as CSFs. A review of the model and respective hypotheses is provided below.

In terms of stakeholder theory, the parties and their relationships play a crucial role in P3s. As noted, stakeholders are defined as any individual or organization who may positively or negatively influence, or be influenced by, a project's lifespan (PMI, 2008). Successful P3s require a robust and cooperative relationship between the

Figure 1: Research Model



parties involved – a committed relationship with shared responsibility between the parties and a mutual understanding of the same goals toward which the parties are working. These goals should provide a positive social impact (Seghal & Dubey, 2019). Given this understanding, we offer the following hypothesis:

> ***H1:*** *Strengthening the CSFs pertaining to relationships between the parties will raise the likelihood of P3 success.*

Implementing a P3 is a complex process and requires capable project management for its construction and operations to ensure success. Strong project management in a P3 can provide lower transaction costs and result in allocating resources efficiently. Seghal and Dubey (2019) highlighted as the most significant factor in their study of P3 CSFs managerial competence; such competence is both people- and task-oriented and efficient leadership to result in positive organizational results. Their study also found that the project formulation process requires a complete analysis of the project before implementation. The project administration process, involving the coordination of parties and elements, also is essential to P3 success.

Other essential factors included analyzing costs in each project phase; understanding the traits of the private sector; properly evaluating all the risks involved; ensuring operational efficiency to deliver a high-quality project and services to end-users; and having a lawful conglomerate that ensures the legality of the arrangement. In addition, qualified and skilled staff from both parties and the reputation of the agencies also influence project success. As such, we hypothesize the following:

> ***H2:*** *Strengthening the CSFs pertaining to process/project management will raise the likelihood of P3 success.*

As previously discussed, Klein et al. (2010) also presented a framework for analyzing public entrepreneurship behaviors in relationship to private entrepreneurship. Although some similarities exist between public and private entrepreneurship, there are differences in definitions and objectives, environmental selection, and the goals for economic gains. Through an analysis using Klein et al.'s (2010) framework, we can establish support for a theory of public entrepreneurship. However, limited attention and efforts have been given to operationalize and quantitatively assess public entrepreneurial behaviors.

Klein et al. (2010) proposed that research on entrepreneurial behaviors within partnerships, such as P3s, clarifies public entrepreneurship. Moreover, understanding whether these behaviors affect the success of a P3 project may help government agencies that want to pursue a P3 to build public entrepreneurial capabilities internally.

Dwivedi and Weerawardena (2018) proposed a social entrepreneurship construct, including behavioral measures that describe the organizational behaviors of social purpose organizations in their strategic decision-making. Social entrepreneurship differs from commercial organizations because these social purpose organizations operate in uncertain conditions, are resource-constrained, and compete for funding, and their mission guides their strategic postures to provide social value (Dwivedi & Weerawardena, 2018). Government entities have objectives that are like those of social organizations because they strive to provide public value in resource-constrained settings. Hence, the application of Dwivedi and Weerawardena's (2018) construct in a governmental context may provide insights into how public entrepreneurial behavior affects the success of a P3. Thus, we construct hypothesis 3:

> ***H3:*** *Strengthening the CSFs pertaining to a government entity's entrepreneurial orientation will raise the likelihood of P3 success.*

In P3s, various internal and external stakeholder groups may influence the project – from the government, private sector, and end-user communities (Takim, 2009). How various stakeholders influence the decision-making processes of projects, which includes assessing CSFs, requires a balancing of the interests of these groups to ensure seamless project completion (Li et al., 2018). Understanding the moderating effect of various stakeholders' influence on P3 success factors can help government entities to properly manage and measure such influence and determine whether a prospective P3 will be successful**.** This study advances an omnibus hypothesis:

> ***H4:*** *Increased stakeholder influence in project decision-making processes will strengthen the link between each CSF category and the success of the P3 project.*

To investigate further the moderating effects of stakeholder influence, we derive sub-hypotheses for the influence of each stakeholder group (i.e., government, private, and end-user) and for each independent variable. Stated generally, hypotheses H4a through H4i are derived as follows:

> ***H4a - i****: As [Government, Private Entity, End-User] stakeholder influence on the decision-making process of the project increases, the effect of the [Relationship, Project/Process, Entrepreneurial] CSFs and the success of the P3 project will be strengthened.*

Study Methodology

Our dependent variable is P3 success. It is defined as short-term project management success (efficiency), as well as achievement of the long-term goals of the project (effectiveness) (Serrador & Turner, 2015). Traditionally, the success of a project is measured according to project goal achievement, with time, cost, and quality as the predominant goals. However, we argue that project success should be viewed from a multidimensional perspective, considering the traditional mindset and weaving in stakeholder perspectives and the firm's project processes (Rodriguez-Segura, 2016).

Taking this expansion into account, P3 success is measured by applying Shenhar and Dvir's (2007) diamond model, with survey items derived from Santos et al. (2019). This multidimensional model accounts for the typical dimensions of project success as recognized in the project management literature, such as efficiency, cost, and time, as well as dimensions incorporating the company's strategic objectives. The specific measures that makeup or promote project success are *project efficiency, organizational benefits, project impact, stakeholder satisfaction,* and *future potential*.

We assess 21 CSFs to understand their effect on P3 success in Florida. For data analysis purposes, these CSFs have been grouped into three constructs by type, as they generally are outlined in existing studies: *relationship, process/project management,* and *entrepreneurial orientation*. The moderator is an index representing a factor of stakeholder influence for the three primary stakeholders involved in a P3: *government, private sector/owner,* and *end-user*. To assess the effects of the P3 success factors, we use a quantitative, deductive approach based on a cross-sectional questionnaire survey based on a Likert scale format.

We conducted a pilot study to assess measurement validity and reliability using the tenets set forth by Straub (1989). Questions and items were tailored to the proposed research topic. To establish validity for the survey questionnaire, we derived the questions and scale items from Li (2003); Cheung et al. (2009a, 2009b); Cheung et al. (2012); and Ismail (2013a, 2013b, 2013c); and La (2016). In addition, we derived critical success items (relationship, and process/project administration) from Seghal and Dubey (2019); stakeholder influence items from Li et al. (2018); project success items from Santos et al. (2019); and entrepreneurial orientation items from Dwivedi and Weerawardena (2019).

Further, we measured our dependent variable and explanatory constructs using the same instrument. This approach suggests the possibility of common method bias (Podsakoff et al., 2003). Thus, we calculated a Harman single-factor score using the Statistical Package for the Social Sciences (SPSS) to determine the degree to which common method bias existed. The total variance for the single factor was well below the 50% threshold set forth by Aguirre-Urreta and Hu (2019).

Sample

To develop our framework, we had to identify a sampling frame and boundary among US government entities that had enough P3 maturity to allow us to assess the factors that lead to successful implementation. Florida, with a population of 21.8 million (U.S. Census Bureau, 2021), is unique in that it is well positioned to compete for private investment in infrastructure using P3s. Florida's P3 enabling legislation, Florida Statute 334.30, is broad and includes local governments. Further, Florida is one of only four states identified by Public Works Financing (PWF, 2017) that has significant P3 closure experience (Saviak and Martin, 2018).

We developed an email database comprising government executive leaders, chief municipal and county elected and appointed officers, and their deputies or assistants of each entity. We used this database for survey distribution and found publicly available email address information on city and county websites. We distributed a link via email to a sample of participants from all counties (67) and municipalities (412) in Florida, totaling 479 agencies. The survey was web-based using the Qualtrics platform.

Findings

We received 133 complete and usable responses, representing a combined 25% municipal and county response rate; 102 completed surveys were from respondents representing 97 municipalities (23% response rate) and 31 completed surveys were from respondents representing 25 counties (37% response rate). About 59% of the responses came from the city or county manager or the assistant manager. Most respondents (60%) had previous P3 implementation experience. We found no significant differences across the sample characteristics when comparing respondents without P3 experience. In addition, subjects without specific, prior P3 experience displayed in their responses a similar understanding of the P3 concept as those who had previous experience.

Descriptive data was collected on the P3 projects implemented. Here, 105 respondents (79%) found P3s helpful; economic development, project development, and financial benefits were the top three reasons for implementation. The P3 project types with the highest implementation numbers included parks, sports facilities, roads and highways, and housing. We developed the study framework using Partial Least Squares structural equation modeling (PLS-SEM) software and SmartPLS software (Ringle et al., 2015). This software provides SEM solutions incorporating various levels of complexity in the structural model and constructs (Hair et al., 2016). Table 1 outlines the main study sample characteristics.

Table 1. Sample Characteristics

Baseline Characteristic	n	%
Municipality	102	77
County	31	23
Job Position		
Manager/Chief Administrative Officer (CAO)	66	49.6
Assistant Manager/CAO	13	9.8
Management or Budget Analyst	3	2.3
Finance/Accounting Officer	4	3
Department Head	29	21.8
Procurement/Purchasing Officer	2	1.5
Elected Official	1	.8
Other	15	11.3
Prior P3 Experience		
Yes	80	60.2
No	53	39.8

Project Type	# Implemented
Parks	25
Sports Facilities	19
Roads/Highways	18
Housing	18
Other	18
Stormwater/Drainage	16
Public Buildings	15
Utilities	15
Cultural Facilities	11
Greenways and Trails	10
Environmental Sustainability	9
Waste Treatment Facilities	9
Smart Cities/Technology	8
Telecommunications	8
Water Treatment Facilities	8
Transit	7
Transportation Facilities	6
Educational Facilities	6
Healthcare Facilities	5
Bridges	2
Prisons	1
Total	234

Table 1. Sample Characteristics

Constructs for purposes of the model were deemed to be reflective because the indicators share a common theme and apply definitions outlined previously in existing literature (Petter, Straub, & Rai, 2007). We reviewed indicator reliability using the outer loadings for each latent variable. All indicators had significant outer loadings above 0.5 and were retained. We assessed internal consistency using composite reliability, and the resulting values were considered suitable for research purposes (Daskalakis & Mantas, 2008, p. 288). Cronbach's alpha was excellent for all but one construct (exceeding 0.8); only entrepreneurial orientation measured as acceptable (exceeding 0.7) (Hair et al., 2016). High composite reliability scores and Cronbach's alphas may be descriptive of multicollinearity, but this result is desirable for reflective constructs (Petter, Straub, & Rai, 2007).

We evaluated convergent validity using average variance extracted (AVE) and discriminant validity using the Fornell-Larcker criterion (Fornell & Larcker, 1981). All AVE measures were 0.5 or higher, which suggests convergent validity with the diagonal elements: the square roots of the AVEs; the AVEs displayed a greater value in each respective construct than their associated correlations with any other constructs, providing for discriminant validity. Furthermore, examination of the cross-loadings indicated that they were all less than their factor loadings, establishing discriminant validity (Hair et al., 2016). Overall, our testing indicated that the psychometric properties of the model were found to be acceptable. Table 2 outlines these values.

Table 2: Model Properties

Construct	Cronbach's α	Composite Reliability	Average Variance Extracted	ENT	PS	PM	REL
Entrepreneurial Orientation - ENT	0.71	0.81	0.50	***0.68***			
P3 Success - PS	0.92	0.94	0.76	0.31	***0.87***		
Project Management - PM	0.90	0.92	0.55	0.59	0.25	***0.74***	
Relationship - REL	0.81	0.87	0.62	0.38	0.40	0.54	***0.79***

Construct	Sub-Factors	ENT	PM	PS	REL
Entrepreneurial Orientation	Innovativeness	**0.67**	0.31	0.19	0.22
	Proactiveness	**0.81**	0.49	0.27	0.34
	Risk Management	**0.62**	0.58	0.16	0.32
	Effectual Orientation	**0.63**	0.32	0.20	0.15
	Public Mission Orientation	**0.65**	0.34	0.21	0.25
Project Management	Managerial Competence	0.44	**0.79**	0.20	0.48
	Project Administration	0.43	**0.81**	0.24	0.47
	Analysis of Cost	0.39	**0.74**	0.17	0.42
	Traits of the Private Sector	0.36	**0.62**	0.11	0.35
	Evaluation of Risk	0.38	**0.67**	0.07	0.44
	Operational Efficiency	0.53	**0.76**	0.13	0.38
	Lawful Conglomerate	0.45	**0.78**	0.22	0.36
	Qualified and Skilled Staff	0.46	**0.78**	0.12	0.36
	Agency Reputation	0.50	**0.74**	0.25	0.36
P3 Project Success	Project Efficiency	0.25	0.14	**0.88**	0.36
	Organizational Benefits	0.26	0.23	**0.90**	0.36
	Project Impact	0.35	0.34	**0.86**	0.36
	Stakeholder Satisfaction	0.19	0.17	**0.81**	0.29
	Future Potential	0.28	0.21	**0.89**	0.39
Relationship	Unanimous Endeavor of Parties	0.31	0.33	0.42	**0.83**
	Mutual Understanding Among Parties	0.26	0.47	0.34	**0.85**
	Shared Responsibility	0.33	0.51	0.28	**0.81**
	Social Aspect of Project	0.32	0.50	0.17	**0.65**

Table 2. Model Properties

The square roots of average variance extracted (AVE) appear on the diagonals and are italicized.

We assessed the significance and relevance of the structural model relationships using a bias-corrected and accelerated (BCa) bootstrapping procedure (Ringle et al., 2015) on 500 subsamples; in doing so, we incorporated one-tail *t*-tests because of the directional hypotheses (Hair et al., 2016). Table 3 shows the results of the hypothesis testing.

Table 3. Summary of Results
***p<.05; **p<.01; ***p<.001**

	Hypotheses	Result	Significance
H1	Strengthening the CSFs pertaining to relationships between the parties will raise the likelihood of P3 success.	Supported	β= .47***
H2	Strengthening the CSFs pertaining to process/project management will raise the likelihood of P3 success.	Not Supported	β= -.17
H3	Strengthening the CSFs pertaining to a government entity's entrepreneurial orientation will raise the likelihood of P3 success.	Supported	β= .32**
H4	Increased stakeholder influence in project decision-making processes will strengthen the link between each CSF category and the success of the P3 project.	Supported	β= .44*
H4a	As Government stakeholder influence on the project's decision-making process increases, the effect of the Relationship CSFs and the success of the P3 project will be strengthened.	Supported	β= .44*
H4b	As Government stakeholder influence on the project's decision-making process increases, the effect of the Project/Process CSFs and the success of the P3 project will be strengthened.	Supported	β= .25*
H4c	As Government stakeholder influence on the project's decision-making process increases, the effect of the Entrepreneurial Orientation CSFs and the success of the P3 project will be strengthened.	Supported	β= -.28*
H4d	As Private Entity stakeholder influence on the project's decision-making process increases, the effect of the Relationship CSFs and the success of the P3 project will be strengthened.	Not Supported	β= -.16
H4e	As Private Entity stakeholder influence on the project's decision-making process increases, the effect of the Project/Process CSFs and the success of the P3 project will be strengthened.	Supported	β= -.33*
H4f	As Private Entity stakeholder influence on the project's decision-making process increases, the effect of the Entrepreneurial Orientation CSFs and the success of the P3 project will be strengthened.	Supported	β= .43**
H4g	As End User stakeholder influence on the project's decision-making process increases, the effect of the Relationship CSFs and the success of the P3 project will be strengthened.	Not Supported	β= -.19
H4h	As End User stakeholder influence on the project's decision-making process increases, the effect of the Project/Process CSFs and the success of the P3 project will be strengthened.	Not Supported	β= .10
H4i	As End User stakeholder influence on the project's decision-making process increases, the effect of the Entrepreneurial Orientation CSFs and the success of the P3 project will be strengthened.	Not Supported	β= -.13

Table 3. Summary of Results
***p<.05; **p<.01; ***p<.001**

Discussion

In Seghal and Dubey's (2019) study, a series of 18 economic, relationship, and project management CSFs were presented as being vital to the success of a P3. After making theoretical assumptions, Seghal and Dubey (2019) grouped these CSFs into three constructs – economic, relationship, and project/process management – to determine whether they positively affected P3 success. After our assessment, the relationship between the partners involved was deemed to have a significant positive effect, further supporting Seghal and Dubey's (2019) findings and the use of a relationship construct for future application. In addition, government influence further enhances the effect of the construct on P3 success, especially when the levels of government influence are high. Those in the private sector often find working with government entities to ensure project delivery challenging because of cumbersome bureaucratic processes. However, when the public sector is heavily involved as the owner/client of the project in establishing a solid relationship as a partner, the greater the added value. This finding reaffirms that P3s are indeed partnership-based, complex projects in which a more substantial and active relationship among parties improves their success.

Interestingly, Seghal and Dubey's (2019) study stressed that project/process management was essential to the success of a P3, and in this study, it also had a sig-

nificant effect on the success of a P3 project when government and private entity stakeholder influence was involved. This finding adds support to their study while confirming the viability of project/process management as a construct. Stakeholder influence levels on the decision-making process of projects must balance the interests of these groups to ensure seamless project completion (Li et al., 2018). On this basis, the moderating effect of stakeholder influence on project management emphasizes that project management *requires* stakeholder involvement to affect the performance of a P3. Here, our findings highlight that when the levels of the agency's responsibility for project management are higher, having low government influence can negatively affect the success of a P3 project. In a P3 arrangement, government personnel are the owners/clients of the project, and they are responsible for approvals and oversight. According to Li et al. (2018), government organizations are highly influential in the decision-making and evaluation of construction projects. Hence, greater involvement when project management needs are high means they can help to mitigate the negative effects of being too removed and can ensure enhanced, seamless project delivery. Meanwhile, too much private entity influence may limit the government's ability to respond to project management challenges (e.g., delays), further diminishing the project's success. In addition, excess private entity involvement in the project management process has a negative effect because private entities have different goals than that of the government entity – profit vs. service delivery – and profit goals may lend themselves to "cutting corners" in project delivery.

Klein et al. (2010) proposed that research on entrepreneurial behaviors within partnerships can clarify public entrepreneurship. Specifically, in market and value co-creation, leveraging the different capabilities of either party can enhance value (Klein et al., 2013). P3s are prime opportunities to measure public entrepreneurial behaviors because of their complexity, risk, and private entity involvement. However, studies of the effects of a public entrepreneurial orientation in a P3 context have rarely been reported in the literature. Our findings highlight that such an orientation does influence the success of a P3 project. A government entity with an entrepreneurial orientation is better suited to manage the complexity and risks involved. Also, they can navigate the entrepreneurial posture of the private sector to ensure seamless project delivery.

In addition, both the government and private entities as stakeholders influence the effect of entrepreneurial orientation on P3 success. The negative beta coefficient for H4c suggests that when government influence is low, due to governments' tendency to be bureaucratic, slow, and risk-averse, having higher levels of entrepreneurial orientation within the government organization helps in improving the significant impact of entrepreneurial orientation on P3 success. This finding highlights that government organizations can improve the likelihood of P3 success when they exhibit entrepreneurial behaviors, such as innovation and being proactive, in the P3 process; further, this finding offers additional support for public entrepreneurship theory and literature. The private sector often is inherently entrepreneurial and more risk tolerant. Working with private-sector partners has an enhancing effect on government entities' entrepreneurial orientation and thus on P3 success. The effects are stronger when the agency has a high entrepreneurial orientation, and the influence of the private sector is high. Government entities that have a high level of entrepreneurial orientation can exhibit similar behaviors to that of the private sector, seek to co-create value, and can ensure the success of a P3 project.

From a managerial perspective, government entities can consider this framework of critical success factors when evaluating the potential success of a P3 project. Table 4 provides a list of suggested strategies from the findings that may help agencies to develop their P3 assessment and decision-making capabilities.

Table 4. Strategies for P3 Success

The list of strategies in Table 4 is not exhaustive in identifying how our study's findings can be applied in a practical context, but it provides public agencies with a starting point in evaluating a P3 project for future success. We make no assertions of uniformly successful strategies across project types. However, we do encourage agencies to use and tailor the framework and the findings of this study to their individual needs and capabilities.

Study Limitations

As with any empirical work, the findings should be interpreted considering the study's limitations. First, the sample used for this study is solely representative of local municipal and county governmental entities in one state in the US. As mentioned, P3 project experience varies significantly across states in the US, with some states having yet to adopt the practice. Thus, we urge caution in applying the findings of this study to other states, nations, and international settings.

In addition, this study relied on a sample of participants comprising mainly chief administrative officers of local municipal and county government entities. However, because participants voluntarily chose to be included in the survey, self-selection bias might exist. Also, managers may have passed the survey on to another person in their agency who responded on their behalf. Perceptions of these factors may vary by function, agency, or political structure.

Finally, Seghal and Dubey (2019) highlighted that stable economic conditions facilitate the P3 process and project delivery. Economic CSFs were not the focus of this study. However, because P3s inherently have a robust economic component, agencies should not interpret the findings in this study as suggesting the elimination of economic CSFs from their assessments.

Table 4. Strategies for P3 Success

Category	Strategies
Relationships & Project Management	Formally assess the relationship between the parties involved: ▪ Is undertaking the project a unanimous endeavor? Do mutual understandings exist between the two parties? ▪ Is there a societal aspect to the project, serving all parties? Is the responsibility for the project's success equitably shared? Develop and implement relationship enhancement strategies in a project strategic plan or a roadmap from the beginning; schedule regular project meetings, institute a communication policy, and celebrate project progress with all parties. Evaluate the relationships across all parties regularly and adjust to improve the relationships as needed.
Entrepreneurial Orientation	Formally assess the agency's entrepreneurial orientation: ▪ Is the agency viewed as innovative and proactive? ▪ How comfortable is the agency with varying types and levels of risk? ▪ Are agency leaders managing resources effectively? ▪ Do they support the mission of the project and agency? ▪ What is the government policy and approach to entrepreneurship? Develop and implement strategies to enhance the agency's entrepreneurial orientation. For example, encourage entrepreneurial or project management training, establish an innovation policy, and formalize performance management procedures. Avoid or limit political, organizational, bureaucratic, or regulatory practices and influences that stifle entrepreneurial behaviors,. Evaluate the agency's entrepreneurial orientation regularly and adjust it to improve entrepreneurial behaviors as needed. Identify and try to understand the private entity's entrepreneurial orientation. Use the measures in this study to evaluate prospective partners.
Stakeholder Involvement	Formally assess the levels of involvement of the government and private entity stakeholders in project management. Ensure that roles are clearly defined and associated with each stakeholder's capabilities. Are the roles assigned fairly, equitably, and to each stakeholder's strengths? Periodically assess the stakeholder involvement during the project and adjust participation as needed.

Future Research

In future research, this framework may be extended by increasing the sample size and obtaining the perceptions of other stakeholders involved, including private sector participants and end users. The framework also might be studied and expanded in other ways, and the findings can be compared with P3 efforts in other states or nationally, or in an international context.

Given the varied nature of the public infrastructure challenges facing local governments, additional research should focus on the effects of CSFs on specific types of local government services and responsibilities.

Another avenue for future research is to validate the results of this study through qualitative studies and interviews with agency chief administrative officers. New CSFs might be considered that can further enhance the effect of the overall model. In addition, we encourage further study of our findings on public entrepreneurial orientation and stakeholder influence, outside of the P3 context, to determine how they affect government operations more generally.

CONCLUSION

This study sought to answer the question, **what factors influence the success of a Public-Private Partnership (P3) for local government services and infrastructure development?** The findings of this study suggest that enhanced relationships, both public and private influence over project management, and an entrepreneurial orientation in both the private and public partners are critical to the project's success. Moreover, an increased role in the P3 process for the government entity further enhances the relationship factor. The findings also highlight that a government entity's entrepreneurial orientation is enhanced when government influence over the P3 process is low. However, low government influence can negatively affect P3 success when project management needs are high. Hence, government entities need to maintain their influence over project management because ongoing decisions and evaluation are needed in projects as complex as P3s and allow for the government entity to maintain an entrepreneurial orientation during the P3 process.

Conversely, strong private sector influence has a negative effect on the overall success of a P3 when project management needs are high; such influence may limit the government's ability to effectively respond to project management challenges (e.g., project delays) in complex P3 projects. However, strong private entity influence can enhance P3 success when the public agency exhibits a high entrepreneurial orientation. The government also must have similar capabilities to co-create value and ensure the success of a P3 project.

When applied in a managerial context, these findings can help public agencies to improve their P3 success rates and growth and help to solve the infrastructure and service delivery crises facing the US today. This study contributes to the extant literature and theory by supporting government entities' entrepreneurial orientation as a P3 CSF, confirming that stakeholders influence P3 CSFs, and providing a framework of constructs comprising P3 CSFs for future study and managerial application.

REFERENCES

Aguirre-Urreta, M.I., & Hu, J. 2019. Detecting common method bias: performance of the Harman's single-factor test. ***The DATABASE for Advances in Information Systems***, 50(2): 45–70.

American Society of Civil Engineers. 2017. ***American Infrastructure Report Card | GPA: D+***. https://www.infrastructurereportcard.org/. Retrieved April 2, 2020.

Casady, C. B., Eriksson, K., Levitt, R. E., & Scott, W. R. 2020. (Re)defining public-private partnerships (P3s) in the new public governance (NPG) paradigm: An institutional maturity perspective. ***Public Management Review***, 22:2, 161-183. https://doi.org/10.1080/14719037.2019.1577909

Casady, C., & Geddes, R. 2016. Private participation in U.S. infrastructure: The role of PPP units. ***SSRN Electronic Journal***. https://doi.org/10.2139/ssrn.3306259

Chakravarty, S. 1987. ***The State of Development Economics***. The Manchester School, 55: 125-143. https://doi.org/10.1111/j.1467-9957.1987.tb01293.x

Cheung, E., Chan, A. & Kajewski, S. 2010. Suitability of procuring large public works by PPP in Hong Kong, ***Engineering, Construction and Architectural Management***, 17(3): 292–308.

Cheung, E., Chan, A. P., & Kajewski, S. 2012. Factors contributing to successful public-private partnership projects: Comparing Hong Kong with Australia and the United Kingdom, ***Journal of Facilities Management***, 10(1): 45–58.

Cheung, E., Chan, A. P., & Kajewski, S. 2009. Enhancing value for money in public-private partnership projects: Findings from a survey conducted in Hong Kong and Australia compared to findings from previous research in the U.K., ***Journal of Financial Management of Property and Construction***, 14(1): 7–20.

Cheung, E., Chan, A. P., & Kajewski, S. 2009. Reasons for implementing public-private partnership projects: Perspectives from Hong Kong, Australian and British practitioners, ***Journal of Property Investment & Finance*** 27(1): 81–95.

Cheung, E., Chan, A. P., Lam, P. T., Chan, D. W., & Ke, Y. 2012. A comparative study of critical success factors for public-private partnerships (PPPs) between Mainland China and the Hong Kong special administrative region, ***Facilities*** 30(13/14): 647–66.

Clarkson, M. E. 1995. A stakeholder framework for analyzing and evaluating corporate social performance. ***Academy of Management Review***, 20(1): 92–117.

Performance Based Building Coalition. 2018. Mayors and governors urge congress to pass legislation expanding public-private partnerships (P3s) for public buildings. https://www.prnewswire.com/news-releases/mayors-and-governors-urge-congress-to-pass-legislation-expanding-public-private-partnerships-p3s-for-public-buildings-300607139.html, retrieved August 4, 2019.

Daskalakis, S. & Mantas, J. 2008. Evaluating the impact of a service- oriented framework for healthcare interoperability. In S. K. Anderson, G. O. Klein, S. Schulz, J. Aarts, & M. C. Mazzoleni (Eds.), ***eHealth Beyond the Horizon – Get I.T. There: Proceedings of MIE2008***, vol. 136: 285–90. Amsterdam: IOS Press.

Deloitte Touche Tohmatsu India Private Limited. 2013. ***Funding the Infrastructure Investment Gap*** [discussion report]. https://www2.deloitte.com/content/dam/Deloitte/in/Documents/IMO/in-imo-funding_the_infrastructure-investment-gap-noexp.pdf., retrieved August 4, 2019.

Dwivedi, A., & Weerawardena, J. 2018. Conceptualizing and operationalizing the social entrepreneurship construct. ***Journal of Business Research***, 86: 32–40.

Fishman, T. & Flynn, M. 2019. ***Using Public-Private Partnerships to Advance Smart Cities.*** New York: Deloitte Center for Government Insights. https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Public-Sector/gx-ps-public-private-partnerships-smart-cities-funding-finance.pdf, retrieved August 4, 2019.

Fornell, C., & Larcker, D. F. 1981. Evaluating structural equation models with unobservable variables and measurement error. ***Journal of Marketing Research***, 18(1): 39–50. https://doi.org/10.1177/002224378101800104

Greve, C., & Hodge, G. 2010. Public-private partnerships and public governance challenges. In S. Osborne (Ed.) ***The New Public Governance: Emerging Perspectives on the Theory and Practice of Public Governance***. London, UK: Routledge. 1st ed.: 149-62.

Hair, Jr., J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. 2016. ***A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)***. Newbury Park, CA: Sage Publications.

Hardcastle, C., Edwards, P., Akintoye, A., & Li, B. 2005. Critical success factors for PPP/PFI projects in the U.K. construction industry: A factor analysis approach. ***Construction Management and Economics*** 23(5): 459–71.

Hodge, G., & Greve, C. 2018. Contemporary public-private partnership: Towards a global research agenda. ***Financial Accountability & Management***, 34(1): 3–16. https://doi.org/10.1111/faam.12132

Ismail, S. 2013. Critical success factors of public private partnership (PPP) implementation in Malaysia. ***Asia-Pacific Journal of Business Administration*** 5(1): 6–19.

Ismail, S. 2013. Drivers of value for money in public-private partnership projects in Malaysia. ***Asian Review of Accounting***, 21(3): 241–56.

Ismail, S. 2013. Factors attracting the use of public-private partnership in Malaysia. ***Journal of Construction in Developing Countries***, 18(1): 95–108.

Klein, P. G., Mahoney, J. T., McGahan, A. M., & Pitelis, C. N. 2010. Toward a theory of public entrepreneurship. ***European Management Review***, 7(1): 1–15.

Klein, P. G., Mahoney, J. T., McGahan, A. M., & Pitelis, C. N. 2013. Capabilities and strategic entrepreneurship in public organizations. ***Strategic Entrepreneurship Journal***, 7(1): 70–91.

Kwak, Y. H., Chih, Y., & Ibbs, C. W. 2009. Towards a comprehensive understanding of public-private partnerships for infrastructure development. ***California Management Review***, 51(2): 51–78.

La, A. T. 2016. Principal factors for public-private partnership (PPP) implementation in Vietnam: A mixed methods study. PhD diss., Business School, University of Technology Sydney, Sydney, Australia. Open Publications of UTS Scholars. http://hdl.handle.net/10453/116214, retrieved August 4, 2019.

Le Grand. (1991). The Theory of Government Failure. ***British Journal of Political Science***, 21(4), 423–442. https://doi.org/10.1017/S0007123400006244.

Leibenstein, H. 1966. Allocative efficiency vs. "x-efficiency." ***The American Economic Review*** 56(3): 392–415.

Li, B. 2003. "Risk management of construction in public-private partnership projects." PhD diss. School of the Built and Natural Environment, Glasgow Caledonian University, Glasgow, Scotland.

Li, B., Akintoye, A., Edwards, P. J., & Hardcastle, C. 2005. Critical success factors for PPP/PFI projects in the U.K. construction industry. ***Construction Management and Economics***, 23: 459–71.

Li, H., Zhang, X., Ng, S. T., & Skitmore, M. 2018. Quantifying stakeholder influence in decision/evaluations relating to sustainable construction in China–A Delphi approach. ***Journal of Cleaner Production***, 173: 160–70.

Martin, L. L. (2019). State public-private partnership (P3) legislation and P3 project implementation: An exploratory investigation. ***Journal of Public Procurement***, 19(1): 55–67. https://doi.org/10.1108/JOPP-03-2019-025

McNichol, D., 2013. ***The United States: The World's Largest Emerging P3 Market***. Star America Infrastructure Fund and AIG. New York, NY. https://www.danmcnichol.com/wp-content/uploads/2014/03/FINAL-P3-AIG-Whitepaper.pdf, retrieved August 4, 2019.

Miller, J. B. 1999. Applying multiple project procurement methods to a portfolio of infrastructure projects. In S. Rowlinson & P. McDermott (Ed.) ***Procurement Systems: A Guide to Best Practice in Construction.*** London, UK: Routledge. 1st ed.: 209–27.

Morledge, R and Owen, K (1998) Critical success factors in PFI projects. *In:* Hughes, W (Ed.), *Proceedings 14th Annual ARCOM Conference*, 9-11 September 1998, Reading, UK. Association of Researchers in Construction Management, Vol. 2, 565–74.

National Institute for Government Procurement (NIGP). 2016. ***Public-Private Partnership (P3): Facilities and Infrastructure, 2016***. https://www.nigp.org/docs/default-source/New-Site/public-private-partnership-(p3)-facilities-and-infrastructure, retrieved August 4, 2019.

Osborne, S. P. 2006. The new public governance? ***Public Management Review***, 8: 377–88. https://doi.org/10.1080/14719030600853022

Osei-Kyei, R., & Chan, A. P. C. 2015. Review of studies on the critical success factors for public–private partnership (PPP) projects from 1990 to 2013. ***International Journal of Project Management***, 33(6): 1335–46. https://doi.org/10.1016/j.ijproman.2015.02.008

Petter, S., Straub, D.W., & Rai, A. 2007. Specifying formative constructs in information systems research. ***MIS Quarterly***, 31: 623–56. https://doi.org/10.2307/25148814

Project Management Institute. 2008. ***Guide to the Project Management Body of Knowledge***. Newtown Square, PA: Project Management Institute.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. ***Journal of Applied Psychology.*** 88(5): 879–903. doi: 10.1037/0021-9010.88.5.879.

PwC. (2016). ***Public-Private Partnerships in the U.S.: The State of the Market and the Road Ahead***. https://www.pwc.com/us/en/industries/capital-projects-infrastructure/library/public-private-partnerships.html, retrieved August 4, 2019.

Public Works Financing (PWF) (2017). PPP database. Available by subscription at: http://pwfinance.net/projects-database/

Reschke, C.H. (2001), Investigations into Industrial Evolution: Evidence from Population Ecology, Industrial Economics, and a Suggested Framework (April 6, 2001). Available at SSRN: https://ssrn.com/abstract=1585166 or http://dx.doi.org/10.2139/ssrn.1585166

Rodriguez-Segura, E., Ortiz-Marcos, I., Romero, J. J., & Tafur-Segura, J. 2016. Critical success factors in large projects in the aerospace and defense sectors. ***Journal of Business Research***, 69(11): 5419–425.

Ross, T. W., & Yan, J. 2015. Comparing public–private partnerships and traditional public procurement: Efficiency vs. flexibility. ***Journal of Comparative Policy Analysis: Research and Practice***, 17(5): 448–66.

Salamon, L. M., & Elliott, O. V. (2002). *The tools of government: A guide to the new governance*. Oxford: Oxford University Press.

Santos, I. A. M. D., Barriga, G. D. C., Jugend, D., & Cauchick-Miguel, P. A. 2019. Organizational factors influencing project success: An assessment in the automotive industry. ***Production***, 29, 20180108. https://doi.org/10.1590/0103-6513.20180108

Saviak, J., & Martin, L.. 2018. Florida is well-positioned to compete for federal and private infrastructure financing. https://www.jamesmadison.org/florida-is-well-positioned-to-compete-for-federal-and-private-infrastructure-financing/, retrieved May 2, 2019.

Sehgal, R., & Dubey, A. M. 2019. Identification of critical success factors for public–private partnership projects. ***Journal of Public Affairs***, 19(4): e1956.

Serrador, P., & Turner, R. 2015. The relationship between project success and project efficiency. ***Project Management Journal***, 46(1): 30–39.

Shenhar, A. J., & Dvir, D. 2007. ***Reinventing Project Management: The Diamond Approach to Successful Growth and Innovation***. Cambridge, MA: Harvard Business Review Press.

Straub, D. W. 1989. Validating instruments in MIS research. ***MIS Quarterly***, 13(2): 147–69. https://doi.org/10.2307/248922

Takim, R. 2009. The management of stakeholders' needs and expectations in the development of construction projects in Malaysia. ***Modern Applied Science***, 3(5): 167–75.

U.S. Census Bureau. (n.d.). *QuickFacts Florida*. U.S. Department of Commerce. Retrieved January 25, 2023, from https://www.census.gov/quickfacts/fact/table/FL/PST045221.

Voytek, K. P. 1991. Privatizing government service delivery: Theory, evidence, and implications. ***Environment and Planning C: Government and Policy***, 9(2): 155–71. https://doi.org/10.1068/c090155

Walsh, K. 1995. ***Public Services and Market Mechanisms: Competition, Contracting and the New Public Management***. Basingstoke: Macmillan.

Wang, H., Xiong, W., Wu, G., & Zhu, D. 2018. Public–private partnership in public administration discipline: A literature review. ***Public Management Review***, 20(2): 293–316. https://doi.org/10.1080/14719037.2017.1313445

Ward, J. L., & Sussman, J. M. 2005. ***Analysis of the Malaysian Toll Road Public-Private Partnership Program and Recommendations for Policy Improvements***. Cambridge MA: Massachusetts Institute of Technology Engineering Systems Division, Working Paper Series.

Warsen, R., Nederhand, J., Klijn, E. H., Grotenbreg, S., & Koppenjan, J. 2018. What makes public-private partnerships work? Survey research into the outcomes and the quality of cooperation in P3s. ***Public Management Review***, 20(8): 1165–85. https://doi.org/10.1080/14719037.2018.1428415

Yescombe, E. R. (2011), ***Public-Private Partnerships: Principles of Policy and Finance.*** Oxford, UK: Butterworth-Heinemann. 1st ed.

APPENDIX

Construct Measures

This study builds on existing literature in five ways: (1) It evaluates existing CSFs from literature in a US state setting; (2) it evaluates whether entrepreneurial behaviors by government entities contribute to P3 success; (3) it determines the effect of stakeholder influence on P3 success factors; (4) it proposes a decision-making framework that enhances the probability of success for P3 projects; and (5) it assesses the effect of each of these factors in the model on P3 success. All measures are found in Table A1.

Li et al.'s (2018) study quantifying stakeholder influence on sustainable construction in China proposes an index factor of for measuring stakeholder influence. This factor is measured in two ways based on a value of three stakeholder attributes – power, legitimacy, and urgency – and a value for the level of impact a stakeholder's vested interest and influence has on a project. For each stakeholder group, the value of stakeholder attributes is determined by the scale weight of each attribute and their sum. The value of the sum of scale weighted attributes is labeled *A*. The impact a stakeholder's vested interest and influence has on a project is established by assigning a value for their vested interest and influence (VII) impact level, as calculated using the following equation:

$$VII = \sqrt{\frac{v \times i}{25}}$$

After this calculation, a single construct measure for stakeholder influence as an index value for each stakeholder group is calculated as follows:

$$A \times VII$$

The study applies these measures to three separate groups that influence P3 projects: the government entity, the private owner, and the end user.

To ensure additional content and face validity, we tested the survey by asking for feedback from 15 individuals (municipal employees and doctoral students). Participants provided feedback on the wording of specific questions, grammar, format, and the overall survey experience. We made changes to the initial survey tool based on this feedback, in preparation for pilot testing. We also relied on recommendations from the work of Podsakoff and Organ (1986) to minimize common method biases, such as avoiding identifying a respondent's most successful project. Instead, the survey asked respondents to base their answers on one completed P3 project. In addition, the informed consent provided for anonymity.

The survey design consisted of two parts. Part one provided a definition of a P3, collected municipal information and the survey respondent's organizational position, and asked for an evaluation of one P3 or partnership project using the P3 success construct scale items, based on a five-point Likert scale format (with 5 as strongly agree and 1 as strongly disagree). It also asked respondent to evaluate the P3 critical success factors using a five-point Likert scale (with 5 as extremely important and 1 as not at all important). Respondents also provided data on stakeholder influence for each stakeholder group (government, private sector/owner, and end user) using a five-point Likert scale, ranking attributes on their influence (with 5 as very high, and 1 as very low). A final scale asked for respondents' overall perceptions of P3s using a five-point Likert scale (with 5 as extremely useful and 1 as not useful at all). These scales provided the numeric data to examine factor impact.

Part two of the survey asked for specific P3 information, such as whether the agency had implemented a P3, information on P3 types and quantities, and reasons for implementation. A final question asked for a narrative description from respondents recounting the overall experience of one P3, based on the respondent's experience.

As outlined in MacKenzie, Podsakoff, and Podsakoff (2011), validating measures adopted from existing research is essential before collecting data for hypothesis testing. We conducted a pilot study to establish validity for the main construct measures in the survey.

Pilot Study

The pilot study was conducted using a web-based survey through the Qualtrics web platform. We distributed the survey via email, which included a link to the survey, to a group of local government department employees – mainly municipal and county park and recreation directors –across the state of Florida. The email database developed for the survey distribution came from publicly available email addresses on city websites.

In total, we received 47 complete and usable responses. We conducted a principal axis factor analysis (FA) on the 23 items in the five primary constructs in the study (i.e., P3 project success, economic, project/process management, entrepreneurial orientation, relationship) using oblique rotation (varimax rotation). However, we excluded stakeholder influence items from the factor analysis because stakeholder influence is a single construct measure with an index value for each stakeholder group. The initial analysis presented a factor structure consisting of six factors with eigenvalues over Kaiser's criterion of 1; and they explained 75.40% of the variance in the data. However, the structure presented a high level of cross-loading among the items.

After removing items with significant cross-loadings, a four-factor structure emerged with eigenvalues over Kaiser's criterion of 1; they explained 79.24% of the variance in the data. The items that cluster on the same factor suggest that factor 1 represents process/project management success factors, factor 2 represents project success, factor 3 represents entrepreneurial orientation, and factor 4 is relationship success factors. The scree plot was ambiguous and showed inflections that would justify retaining the four factors. The process/project management, project success, and entrepreneurial orientation subscales each had high reliability; all Cronbach's alphas exceeded .80. The relationship subscale also had relatively high reliability, with Cronbach's alpha of .74. Table A1 shows the descriptive statistics of the pilot study data. Table A2 shows the factor loadings after rotation.

Table A1. Descriptive Statistics of Pilot Data (N=47)

Construct (Reference)	Item Code	Model Item	Mean	SD	α
P3 Project Success Santos et al. (2019)	PS_1	Project Efficiency	4.06	1.10	.83
	PS_2	Organizational Benefits	4.09	.97	
	PS_3	Project Impact	4.00	1.00	
	PS_4	*Stakeholder Satisfaction*	*N/A*	*N/A*	*N/A*
	PS_5	*Future Potential*	*N/A*	*N/A*	*N/A*
Relationship Seghal and Dubey (2019)	*REL_CSF2_1*	*Unanimous Endeavor of Parties*	*N/A*	*N/A*	*N/A*
	REL_CSF2_2	Mutual Understanding Amongst Parties	4.40	.58	.74
	REL_CSF2_3	Shared Responsibility	4.09	.90	
	REL_CSF2_4	*Societal Aspect of Project*	*N/A*	*N/A*	*N/A*
Project Management Seghal and Dubey (2019)	PM_CSF3_1	Managerial Competence	4.26	.92	.92
	PM_CSF3_2	Project Administration	4.15	.91	
	PM_CSF3_3	*Analysis of Cost*	*N/A*	*N/A*	*N/A*
	PM_CSF3_4	*Traits of the Private Sector*	*N/A*	*N/A*	*N/A*
	PM_CSF3_5	Evaluation of Risk	4.15	.96	
	PM_CSF3_6	*Operational Efficiency*	*N/A*	*N/A*	
	PM_CSF3_7	Lawful Conglomerate	4.13	1.01	
	PM_CSF3_8	*Qualified and Skilled Staff*	*N/A*	*N/A*	*N/A*
	PM_CSF3_9	*Agency Reputation*	*N/A*	*N/A*	*N/A*
Entrepreneurial Orientation Dwivedi and Weerawardena (2019)	ENT_1	Innovativeness	4.21	.86	.80
	ENT_2	Proactiveness	4.34	.73	
	ENT_3	*Risk Management*	*N/A*	*N/A*	*N/A*
	ENT_4	*Effectual Orientation*	*N/A*	*N/A*	*N/A*
	ENT_5	Public Mission Orientation	4.19	.88	

Note. Items italicized and with N/A are subscale items; they did not load well in the presence of the other items in the factor analysis and are not factored in α of the scale.

Table A2. Exploratory Factor Analysis Pilot Questionnaire[a]

Item Code	Factor			
	Project Management	Project Success	Entrepreneurial Orientation	Relationship
PM_CSF3_1	**.90**	*.21*	*.16*	*.10*
PM_CSF3_2	**.82**	*.16*	*.25*	*.17*
PM_CSF3_7	**.73**	*.29*	*.26*	*.03*
PM_CSF3_5	**.71**	*.20*	*.23*	*.26*
PS_1	*.14*	**.86**	*.24*	*.21*
PS_2	*.29*	**.82**	*.19*	*.01*
PS_3	*.27*	**.47b**	*.18*	*.22*
ENT_2	*.30*	*.11*	**.74**	*.06*
ENT_1	*.15*	*.33*	**.70**	*.11*
ENT_5	*.25*	*.23*	**.61**	*.32*
REL_CSF2_3	*.01*	*.20*	*.25*	**.92**
REL_CSF2_2	*.38*	*.09*	*.04*	**.65**

N = 47. The extraction method was principal axis factoring with an oblique (Varimax with Kaiser Normalization) rotation. Factor loadings above .4 are in bold.

Although, PS_3 value was low, it was retained due to the small and limited sample size and evidence from existing literature that the item will hold well in a bigger sample.

The pilot study displayed a factor structure validating the measures for four main factors influencing P3 success: P3 project success, relationship, process/project management, and entrepreneurial orientation.

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