



Research on PPP Community Infrastructure in Industries with Local Characteristics and Its Financial Environment

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Abstract. This study aims to explore the contributions of public-private partnership (PPP) community infrastructure to developing industries with local characteristics and analyze its financial environment. It takes the cases in Xiamen City (Fujian Province) and Kaohsiung City (Taiwan Province) as examples to expatiate the PPP solution from policy, social-economic development, and infrastructure construction perspectives. In light of the practical experience from the PPP programs and the characteristics of the financial environment, the research suggests corresponding measures.

Similarly, based on the contributions of PPP community infrastructure to developing industries and the specific financial environment, the research discusses the execution risks and challenges of introducing the PPP solution, with counter-measures proposed, expecting to provide a favorable framework and reference for industries with local characteristics.

Keywords: Community Infrastructure, Public-Private Partnership (PPP), Financial Environment

1 Introduction

With the rapid economic and cultural development, industries with local characteristics have become the critical focus in beefing up cross-Straits economy and improving people's well-being [14]. As for government investment, compared to the traditional model, the public-private partnership (PPP) solution aiming at community infrastructure can better facilitate the development of industries with local characteristics and improve the quality and efficiency of infrastructure construction for its advantages, such as inherent flexibility in financing, explicit risk allocation, and high efficiency. In this case, this study aims to explore the contributions of the PPP solution to developing industries with local characteristics and analyze the financial environment. Accordingly, it proposes policy suggestions for the problems detected to help realize better development of these industries.

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The development of industries with local characteristics in Mainland and Taiwan is one of the critical contents for cross-Straits economic and cultural exchange. As the two sides are getting favorably closer, cooperation in developing industries with local characteristics is attracting more attention[1]. The PPP solution has become prevalent in the infrastructure sector in recent years, which makes PPP community infrastructure a new approach for the development of cross-Straits industries with local characteristics [2]. Taking the approach as a clue, the report attempts to provide helpful references and advice for cross-Straits economic cooperation and Chinese people's well-being on both sides [8].

2 Financial Environment of PPP Community Infrastructure

The financial environment community infrastructure development underpinned by the PPP model can be explained through four key dimensions. The magnitude of key financial impacts still depends on how much the promoter is familiar with the financial environment and whether there are sufficient supporting social-economic systems.

- **Financing**

The PPP solution allows ways of financing, including bank lending, issuance of bonds, and asset securitization. In practice, private enterprises often choose one or more of the modes according to their specific situations and project requirements as the optimal solution. Also, the government shall come up with a favorable policy to offer them support and guidance and cut financing costs.

- **Cost Effectiveness**

Private enterprises can use the PPP solution to help reduce the cost of their projects; in turn, the cost-effectiveness increases. At the same time, these enterprises are often superior in management efficiency and market competitiveness, which means higher project quality.

- **Sources of Revenue**

Under the PPP solution, the primary sources of revenue in community infrastructure construction include user fees from profit-making projects (e.g., toll roads), government subsidies for those projects with greater public interest but fewer economic benefits, and operating income (i.e., the proceeds that a private enterprise gains from its project management and operating activities).

- **Risk Management**

Risk management should be a joint effort of governments and private enterprises. The government should formulate reasonable solutions for risk allocation to stipulate the rights and responsibilities of each party. Enterprises should perfect their risk assessment and management mechanisms to ensure stable project operation.

3 Case Study

Currently, a series of measures should be applied to reinforce contract management in terms of signing, implementation, supervision, and other processes. For example, the government should establish corresponding management and supervisory mechanisms to guarantee effective implementation and supervision of contracts [15]. Thereupon, two typical cases of PPP community infrastructure are introduced in this report.

Xiamen City (Fujian Province) and Kaohsiung City (Taiwan Province) are significant sites for cross-Straits cooperation in developing industries with local characteristics. Recently, Xiamen and Kaohsiung have increasingly deepened their cooperation, especially in PPP community infrastructure, with excellent practices conducted as valuable references [3][4].

3.1 Xiamen (Fujian) Lotus Avenue Program

The Lotus Avenue Program is part of Xiamen's PPP community infrastructure, aiming at urban roads, bridges, wastewater treatment, and other areas. The program was jointly supported by multiple units, including Fujian Xianyue Group, Fujian Communication Transportation Group, and Fujian Investment Group, with a total investment amount of over 1.5 trillion yuan. Taking PPP as the underlying solution, the Lotus Avenue Program has realized financial sustainability and improved the efficiency and quality of infrastructure construction so that it becomes the exemplar among Xiamen's PPP community infrastructure programs [17][18].

3.2 Kaohsiung (Taiwan) Metropolis Park Development Program

Kaohsiung's PPP community infrastructure is targeted at urban development, road construction, wastewater treatment, and park landscape. The Metropolis Park Development Program was jointly supported by the Kaohsiung Government and foreign investors, with a total investment amount of 2 trillion yuan. Not only has the program increased the size and quality of the Metropolis Park but also significantly driven the city's development in tourism and economy [6][16].

4 Overview of Taiwan's Community Infrastructure Construction Under the PPP Solution

The popularity of the PPP solution has been growing in Taiwan since the 1990s, and it has been playing an essential role in community infrastructure construction. Through public-private cooperation, while the government optimizes its efficiency and financial pressure, the private sector gains constantly favorable returns [5]. In Table 1, specific features and descriptions of the achievements are presented.

Table 1. Features and Descriptions of Taiwan's PPP Community Infrastructure

| | Features | Descriptions |
|------------------------------|---|---|
| Achievements | 1.Extensive Cooperation | Taiwan's PPP Community Infrastructure involves multiple fields, such as water supply, energy, transportation, and health care. The government is proactive in public-private cooperation to address the problems faced in social development working with the private sector. |
| | 2.Distinctive Operational Pattern | Most of Taiwan's PPP programs follow a rule of open competition, in which the partners are invited. In this case, the government makes a call for bids to form a list of enterprises interested in co-operation and choose the most appropriate ones. |
| | 3.Increase Sense of Social Responsibility | PPP enterprises tend to underline social responsibility in community infrastructure construction. They pursue both economic interests and long-term benefits to society. This practice, in turn, safeguards the sustainability of these PPP programs. |
| Challenges & Countermeasures | 4.Imperfect Regulatory System | Despite the growing popularity of PPP in Taiwan, the regulatory system is imperfect. The government should improve the PPP-related laws and regulations to clarify the rights and responsibilities of each party to reduce potential cooperation risks. |
| | 5.Unsound Risk Sharing Mechanism | PPP programs are subject to massive risk factors, which should be shared by the government and the private sector in a reasonable manner. Thus, the government should set up a robust risk-sharing mechanism to improve PPP programs' ability to resist risks. |
| | 6.Lack of Quality Experts | The promotion of the PPP solution requires a vast pool of quality experts. The government should put more effort into cultivating PPP experts to help realize splendid PPP programs. |

Source: [10][11], and [13][20].

5 Financial Environment of PPP Community Infrastructure

5.1 Principal Problems

In reality, some critical, integral problems can emerge during the application of the PPP solution in community infrastructure construction. These problems can only be solved

by making improvements in financing, policy support, risk sharing, program management, and social participation[21]. It is expected to make better results in PPP community infrastructure construction through continual optimization in policy and management [7][9]. In Table 2, principal problems and their countermeasures are presented.

Table 2. Principal Problems and Countermeasures in Introducing PPP in Community Infrastructure Construction

| | Descriptions | Countermeasures |
|-----------------------------------|--|---|
| Financing | PPP programs aiming at community infrastructure require a considerable investment that often exceeds the combined input by governments and social investors (e.g., enterprises and banks). Thus, a PPP program may be deferred or suspended. | The financing problem should be considered the priority. |
| Policy Support | Despite a series of policies that have been launched to support PPP programs, the efforts and results are unsatisfactory in practice. | The regulatory system that underpins benign construction of PPP community infrastructure requires improvement. |
| Unclear Principle of Risk Sharing | As multiple parties (or stakeholders), such as governments, investors, and residents, are involved in PPP community infrastructure, it fails to make a clear principle of sharing risks. | The rights and responsibilities of each party in a program should be stipulated explicitly. Risk allocation and liability for breach of contract are critical to guarantee smooth construction. |
| Uneven Management Levels | Management quality is directly related to how smooth and well a PPP program is being carried on; poor management is found in certain regions. | More efforts should be invested in introducing and training management personnel to better control PPP programs. |
| Low Level of Social Participation | Construction of PPP community infrastructure requires extensive social participation to better understand and satisfy residents' needs. However, unfavorable social participation is found in certain regions. | More efforts should be invested in publicity and guide work to motivate residents to participate. |

Source: [10], [11], and [13][22][23].

5.2 Advantages of Introducing the PPP Solution in the Financial Environment

Based on the case study, it shows that the introduction of the PPP solution in the construction of community infrastructure, as a financial mode, enjoys great flexibility, transparent allocation of risks, and high efficiency. In particular, the fusion of government and social capital is highly advantageous in PPP community infrastructure construction; it also serves as a way for the government and the private sector to create a favorable environment [12].

5.3 Execution Risks of Introducing the PPP Solution

Assessment and control of risks are crucial in introducing the PPP solution in community infrastructure construction. Relevant policies, laws, and regulations are necessary

to guarantee each party's legitimate rights and interests. Also, it is vital to reinforce project supervision and risk management. In general, the following potential risks are listed [19]:

- Lack of Proper Understanding

Some personnel may have an inadequate understanding of the policies and regulations related to PPP programs, which results in incorrect conceptions.

- A Problematic Pricing System

For profitable projects, some consultants are casual in calculation for not following specified terms and regulations. In addition, the discount rate is a problem, especially in calculating a PPP program, because each party may adopt a different discount rate.

- Absence of a Robust Legal Environment

Currently, most specifications in China aim at, to a large extent, guiding the private sector, and there is no authoritative document that is set up for the PPP solution. PPP programs need a stable legal environment, and the existing legal framework can neither adjust and balance the benefits and risks of the government and the private sector nor provide each party with stable prospective earnings.

5.4 Measures to Improve the Financial Environment

Again, in the financial environment, innovative cooperation and risk allocation are feasible pathways toward financial sustainability in PPP community infrastructure construction. Meanwhile, they can help alleviate the government's fiscal burden and improve construction quality and efficiency [11][13]. Given the risks mentioned above, the following measures are suggested:

- Knowledge supplement. Through reinforced training and education, the private sector should provide more people with a better understanding of PPP programs, as well as relevant policies and skills. The government should put more effort into the investigation to gain knowledge to constantly improve PPP-related laws and regulations, creating a more favorable policy environment.
- Establishment of a sound pricing system and a reasonable tax planning strategy. Consultants should conduct their negotiations and public bidding based on an accurate grasp of the data of local PPP programs so as to realize the desired value of a program. Also, the government and enterprises should set up a sound pricing system and a reasonable tax planning strategy to lower PPP programs' costs and risks.
- Enhanced risk control. A reasonable risk management mechanism should be built up to allocate risks accordingly. Both the government and the private sector should formulate their countermeasures and emergency plans against a rainy day.
- Establishment of a stable legal environment. The government should set up and perfect PPP-related laws and regulations to ensure prospective earnings and provide legal protection for each party.

6 Conclusion and Prospect

This study aims to explore the contributions of PPP community infrastructure to developing industries with local characteristics, as well as its financial environment. It also proposes corresponding policy suggestions. The development prospect of cross-Straits industries with local characteristics is extensive and promising, and existing policies have driven cross-Straits cooperation in developing industries with local characteristics to a deeper level.

PPP community infrastructure construction is one of the representations of the PPP solution in infrastructure. It promotes the construction of urban infrastructure. It helps improve operating efficiency and reduce the private sector's financial pressure and the government's fiscal burden. Also, it enhances community governance and improves public services. PPP community infrastructure construction plays a vital role in developing industries with local characteristics on both sides.

As an effective and integrated financing approach, PPP community infrastructure construction optimizes the efficiency and quality of infrastructure construction and the government's finances. The government should put more effort into improving PPP-related laws and regulations, as well as the examination and supervision procedures for PPP programs. In addition, it should be proactive in popularizing the experience and practices of excellent PPP programs to attract more social capital for community infrastructure, so as to promote social-economic development and improve people's well-being.

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