

Public-Private Partnerships in Chinese Education: Leadership and Management Implications

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Abstract: This quantitative study investigates the critical roles of leadership and management in enhancing the perceived effectiveness of Public-Private Partnerships (PPPs) in the Chinese education sector. Driven by the increasing reliance on PPPs to address educational demands and resource constraints, the research addresses a significant gap in understanding the specific leadership and management dynamics within these hybrid organizations in China's unique socio-political context. Utilizing a cross-sectional survey design, data were collected from 450 leaders and managers actively involved in educational PPPs across various levels (K-12, vocational, higher education) and partner types (public and private sector) in mainland China. Multiple regression analysis revealed that Transformational Leadership ($\beta=0.25, p<0.001$), Strategic Leadership ($\beta=0.14, p=0.003$), Quality Assurance Management ($\beta=0.13, p=0.003$), Risk Management ($\beta=0.08, p=0.020$), and Stakeholder Engagement Management ($\beta=0.23, p<0.001$) are all statistically significant positive predictors of perceived PPP effectiveness. Notably, Transformational Leadership and Stakeholder Engagement Management emerged as the strongest predictors, underscoring the importance of visionary leadership and collaborative approaches. Furthermore, independent samples t-tests and one-way ANOVA indicated significant differences in perceived effectiveness based on partner type (private sector showing higher perceptions) and educational level (vocational education PPPs perceived as most effective). These findings highlight that the success of educational PPPs in China critically hinges on effective, collaborative leadership and robust management strategies, rather than solely on their structural formation. The study offers practical implications for policymakers and practitioners, emphasizing targeted leadership development and tailored management approaches for sustainable educational partnerships.

Keywords: Public-Private Partnerships, Educational Leadership, Management Strategies, China, Perceived Effectiveness

1. Introduction

The landscape of education globally has been undergoing a significant transformation, driven by a confluence of factors including burgeoning student populations, increasing demands for quality and accessibility, and often, constrained public resources (Han & Guo, 2022). In this evolving context, Public-Private Partnerships (PPPs) have emerged as a prominent model for delivering essential services, and the education sector is no exception. While PPPs have a long history in infrastructure development, their application to social sectors like education presents a unique set of opportunities and challenges. The theoretical underpinnings of PPPs typically revolve around the idea of leveraging private sector efficiency, innovation, and capital to complement public sector provision, thereby enhancing service delivery, sharing risks, and ultimately achieving better outcomes for society (Cheng et al., 2020). However, the transferability of this model to the nuanced and often ideologically charged realm of education requires careful scrutiny, particularly in a context as distinctive as China.

China, with its colossal population and an unwavering commitment to education as a cornerstone of national development, presents a particularly compelling case study for the examination of PPPs in this sector. For decades, the Chinese education system has been characterized by a predominantly state-centric approach, reflecting the nation's socialist ideological foundations and its historical emphasis on centralized planning (Hu et al., 2020). This public monopoly, while ensuring universal access to basic education, has also faced immense pressures related to quality disparities, resource allocation inefficiencies, and the sheer scale of demand for diverse educational offerings, especially

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at higher levels and in specialized vocational training. The rapid economic growth and societal modernization of China since the late 20th century have further amplified these pressures, leading to a burgeoning middle class with escalating expectations for high-quality, internationalized education, and a dynamic labor market demanding increasingly specialized skills (Han & Guo, 2022).

In response to these challenges and the global trend towards greater marketization of public services, the Chinese government has, in recent decades, cautiously yet progressively opened doors to private participation in education. This shift is not merely an economic expedient but reflects a broader strategic realignment aimed at diversifying funding sources, stimulating innovation, and improving the overall quality and responsiveness of the education system (Li et al., 2023a). The term "Public-Private Partnership" in the Chinese educational context encompasses a wide spectrum of collaborative arrangements, ranging from contracted services to joint ventures in vocational training, to the establishment of privately run schools with varying degrees of government oversight and support, and even international collaborations (Li et al., 2023b). These partnerships are often driven by a pragmatic recognition that the state alone cannot bear the full burden of educational provision and that private entities can bring valuable resources, expertise, and operational efficiencies.

However, the implementation of PPPs in Chinese education is not without its complexities and inherent tensions. The core challenge lies in reconciling the profit-driven motivations of private partners with the public service ethos of education, ensuring equitable access, maintaining educational quality and standards, and upholding national pedagogical objectives (Ma et al., 2021). Furthermore, the unique political and administrative structures of China, characterized by strong state control and a relatively nascent legal and regulatory framework for PPPs, add layers of intricacy to their successful implementation. The concept of "socialism with Chinese characteristics" profoundly influences the state's approach to market reforms, including those in education, ensuring that any private involvement is carefully managed to align with national development goals and ideological principles (Pu et al., 2021).

The success or failure of these partnerships hinges critically on effective leadership and management. Unlike traditional public or private educational institutions, PPPs require a distinctive set of leadership competencies and management strategies. Leaders in educational PPPs must navigate a complex multi-stakeholder environment, balancing the expectations of government agencies, private investors, educators, students, and parents. This involves adept negotiation, conflict resolution, strategic visioning, and the ability to foster a culture of collaboration and trust among partners with potentially divergent objectives (Han & Guo, 2022). Management implications extend to areas such as financial oversight, quality assurance, human resource management (particularly regarding the integration of public and private sector employment practices), curriculum development, and the establishment of robust accountability mechanisms. The absence of clear leadership roles, misaligned management practices, or a failure to establish transparent governance structures can lead to inefficiencies, disputes, and ultimately, the failure of the partnership to deliver its intended benefits (Ma et al., 2021). Moreover, the specific characteristics of the Chinese educational bureaucracy, often characterized by a hierarchical structure and a strong emphasis on policy implementation from the top down, also influence the leadership and management dynamics within PPPs. There is a continuous negotiation between central policy directives and local adaptation, as well as between traditional public sector norms and the more agile approaches often favored by private enterprises (Li et al., 2023b). Understanding how leaders and managers within these partnerships navigate these institutional and cultural nuances is crucial for discerning the true potential and challenges of educational PPPs in China.

Therefore, this study is driven by a critical need to systematically examine the evolving landscape of Public-Private Partnerships in Chinese education, with a particular focus on the profound implications for leadership and management practices (Cheng et al., 2020). While there is a growing body of literature on PPPs in general, and some emerging research on educational PPPs in specific contexts, a comprehensive and in-depth analysis of these dynamics within the unique Chinese socio-political and educational ecosystem remains underexplored (Han & Guo, 2022). This research seeks to fill this gap by providing empirical insights into the successes, failures, opportunities, and challenges associated with leading and managing collaborative educational ventures involving both state and non-state actors in contemporary China. By shedding light on these critical aspects, the study aims to contribute to both theoretical understandings of educational governance and practical guidance for policymakers and practitioners involved in fostering effective public-private collaborations in the education sector, not just in China but potentially in other emerging economies facing similar developmental trajectories.

1.1 Research Gap and Significance

Despite the increasing global prominence of Public-Private Partnerships (PPPs) as a mechanism for public service delivery, and China's growing embrace of this model across various sectors, a discernible research gap exists in the comprehensive understanding of their application within the Chinese education sector, particularly concerning their leadership and management implications. The existing literature, while extensive on PPPs in general (Li, Xiong, et al., 2023), often tends to focus on infrastructure projects or adopts a broad economic perspective, overlooking the unique complexities inherent in the education sector. Furthermore, while there is a burgeoning body of research on Chinese education reform and private education (Ma et al., 2021), detailed analyses of the specific leadership and management

dynamics within formal, government-sanctioned Public-Private Partnerships in education remain relatively scarce and fragmented. This section will delineate these critical research gaps and underscore the significance of addressing them.

1.1.1 General Research Gaps in PPP Literature Applied to Education

Firstly, a significant gap lies in the sector-specific application of PPP theory. Much of the established PPP literature originates from, and is predominantly applied to, infrastructure projects where financial returns are more predictable, and the "product" is tangible (Tian et al., 2022). Education, however, deals with human capital development, social equity, and cultural transmission, making its "product" intangible, long-term, and inherently values-driven. The profit motive of private partners can often clash with the public good objectives of education, creating tensions that are not adequately explored in generic PPP frameworks. Existing studies on PPPs often concentrate on risk management, critical success factors (CSFs), and financing models (Han & Guo, 2022). While these are relevant, their direct applicability to the educational context, where pedagogical quality, teacher welfare, and student outcomes supersede purely financial metrics, is often assumed rather than rigorously examined. There is a paucity of research that delves into how these established PPP principles need to be adapted or re-conceptualized when applied to educational services, particularly in diverse contexts like China where educational philosophy is deeply intertwined with national ideology and development goals (Cheng et al., 2020).

Secondly, the literature often lacks a nuanced understanding of "partnership" dynamics beyond contractual agreements. While PPPs are fundamentally about collaboration, much of the research treats the partnership primarily as a legal or financial construct (Han & Guo, 2022). There is an under-exploration of the social, cultural, and interpersonal dimensions of these collaborations, especially how trust, communication, and shared vision are built and maintained between public and private entities that historically operate under very different institutional logics (Hu et al., 2020). This is particularly salient in education, where the success of a partnership can depend heavily on the willingness of both sides to genuinely co-create and co-manage, rather than simply fulfilling contractual obligations. The subtle interplay of power, influence, and shared governance in educational PPPs is often assumed rather than empirically investigated.

Building on the general lacuna in PPP theory's application to education, specific gaps in the Chinese context are particularly pronounced. There's a critical need for more granular empirical analysis of the diverse educational PPP models currently operating across China's tiered system, understanding their unique characteristics and evolution (Han & Guo, 2022). Furthermore, the extant literature largely overlooks the distinct leadership challenges inherent in these hybrid organizations, such as reconciling the inherent tension between public service ethos and private sector profit motives, navigating China's often evolving and sometimes ambiguous regulatory framework for PPPs, and fostering genuine cross-sectoral collaboration amidst differing institutional cultures (Wang et al., 2021). Finally, there's a significant under-exploration of specific management implications for operational success, including the intricate mechanisms for ensuring educational quality, guaranteeing long-term financial sustainability beyond initial investment, promoting equitable access, and effectively managing risks that are unique to education. Addressing these specific gaps is crucial for a comprehensive understanding of educational PPPs in China, informing more effective policy and practice, and offering valuable lessons for similar initiatives globally (Cheng et al., 2020).

1.2 Research Objectives

This study has two primary research objectives:

- 1) To identify and analyze the prevailing models and characteristics of Public-Private Partnerships in the Chinese education sector, from primary to higher education, examining their historical evolution, current forms, and the driving forces behind their adoption.
- 2) To investigate the critical leadership and management challenges and successes inherent in the implementation and operation of these educational PPPs in China, with a particular focus on how these dynamics influence the effectiveness, sustainability, and equitable outcomes of such partnerships.

1.3 Research Questions

This study has two primary research questions:

- 1) What are the dominant types and features of Public-Private Partnerships in the contemporary Chinese education system, and what factors have shaped their development and application across different educational levels?
- 2) How do leadership styles and management strategies impact the success and challenges of Public-Private Partnerships in Chinese education, particularly in relation to issues of quality assurance, financial sustainability, equity, and stakeholder collaboration?

2. Literature Review

The burgeoning scholarly interest in Public-Private Partnerships (PPPs) has yielded a substantial body of literature, predominantly rooted in economics, finance, and public administration, initially focusing on large-scale infrastructure projects before gradually extending its gaze to social sectors like health and education. The conceptual foundation of

PPPs is often traced to the New Public Management (NPM) paradigm, which advocates for the application of private sector principles and market mechanisms to improve public service delivery, driven by notions of efficiency, innovation, and risk-sharing (Ma et al., 2021). Early theoretical contributions, such as those by Cheng et al., (2020) articulated the core tenets of PPPs, emphasizing the potential for transferring financial risk to the private sector, leveraging private capital for public projects, and harnessing private sector managerial expertise and innovation to enhance service quality and accelerate project delivery. Critical success factors (CSFs) for PPPs have been extensively studied, often citing clear contractual agreements, equitable risk allocation, strong political commitment, robust legal frameworks, transparent procurement processes, and effective communication among stakeholders as paramount (Hu et al., 2020). However, the transferability of these infrastructure-centric principles to the nuanced social sector of education has been a subject of increasing debate, as education is characterized by intangible outcomes, long-term societal benefits, and a fundamental public good mandate that often clashes with private profit motives (Xiong et al., 2022). The literature on educational PPPs has thus emerged as a distinct sub-field, exploring models ranging from contracted out services, to charter schools, educational management organizations (EMOs), and various forms of private provision with public subsidies or oversight (Wang et al., 2023). This segment of the literature delves into the efficacy of such partnerships in improving access, quality, and efficiency, often revealing mixed results and highlighting concerns about equity, accountability, and the potential for market failures in educational provision (Wang et al., 2021). Debates within this space frequently center on whether market mechanisms genuinely foster innovation and better outcomes or exacerbate inequalities and dilute the public ethos of education (Li et al., 2023a). A significant lacuna in the broader PPP and educational PPP literature lies in the insufficient attention paid to the intricate leadership and management dynamics required for successful public-private collaborations, often assuming that standard project management or public administration principles suffice, which overlooks the unique challenges of hybrid organizational forms and divergent stakeholder interests.

Against this global backdrop, China's engagement with private participation in education, and more recently with formalized PPPs, represents a fascinating and complex case study, deeply embedded within its unique socio-political and economic context. Historically, China's education system has been characterized by a predominantly state-centric model, reflecting its socialist ideology and planned economy principles (Cheng et al., 2020). However, since the economic reforms initiated in the late 1970s, there has been a gradual, albeit cautious, opening to non-state actors in education, initially driven by the state's inability to meet the burgeoning demand for diversified educational services and by a pragmatic recognition of resource constraints (Han & Guo, 2022). The emergence of "minban" (people-run) schools in the 1980s and 1990s, while often private, laid some groundwork for non-state involvement, though these were initially viewed with suspicion and operated under ambiguous regulatory frameworks (Zhang et al., 2023). The early 2000s saw a more explicit policy embrace of private education, particularly in higher education and vocational training, as a means to diversify provision and foster innovation (Li et al., 2023b). However, the formal adoption and promotion of the PPP model in education in China is a relatively more recent phenomenon, gaining significant traction after the release of central government policy documents in the mid-2010s, which explicitly encouraged "government and social capital cooperation" (GSCC) across various sectors, including education (Wang et al., 2023). This policy push reflects a strategic shift aimed at leveraging private capital and expertise to address infrastructure deficits, improve service quality, and stimulate educational innovation in the face of escalating demands and increasing complexity of the educational landscape (Wang et al., 2023). Researchers like Xiong et al., (2022) have begun to map the nascent forms of higher education PPPs in China, pointing to joint ventures, outsourced services, and collaborative research initiatives. Similarly, studies on vocational education highlight partnerships with industry as critical for skills development and employability (Hu et al., 2020). However, the literature specifically on formal, long-term PPPs in China's K-12 education sector, beyond general discussions of private schooling, remains relatively nascent and less explored, representing a significant gap.

A critical dimension of the literature on Chinese education, which profoundly impacts the understanding of PPPs, is the constant interplay between policy formulation, implementation, and adaptation. China's governance model is characterized by strong state control and a hierarchical policy dissemination process, yet also by significant local experimentation and adaptation (Pu et al., 2021). This dynamic means that central government directives on PPPs might be interpreted and implemented differently across provinces and municipalities, leading to a diverse range of operational models and varying degrees of success. The literature on Chinese public administration often highlights challenges related to policy ambiguity, the capacity of local governments, and the importance of political will in driving reforms (Zhang & Xu, 2022). These factors directly influence the environment in which educational PPPs operate, affecting their stability, sustainability, and legal certainty. Furthermore, the ideological underpinnings of Chinese education, emphasizing socialist values and national development goals, impose specific constraints and expectations on private participation, differentiating it significantly from more market-liberal contexts (Wang et al., 2023). This means that while private actors are invited to contribute, the state maintains a firm grip on curriculum content, pedagogical direction, and overall ideological integrity, creating a complex dual mandate for leaders and managers within educational PPPs.

This leads directly to the core research gap this study seeks to address: the leadership and management implications of Public-Private Partnerships in Chinese education. The existing literature on leadership in education, both globally and in China, often focuses on school leadership within conventional public or private settings, exploring instructional leadership, transformational leadership, or distributed leadership (Han & Guo, 2022). Similarly, management studies in education typically address areas like human resource management, financial management, or quality assurance within

traditional institutional structures (Tian et al., 2022). However, leading and managing a hybrid organization like an educational PPP demands a distinct set of competencies that transcend these traditional paradigms. Firstly, leaders in educational PPPs must navigate the inherent tensions between the divergent organizational logics of the public and private sectors: the public sector's emphasis on equity, social welfare, and bureaucratic processes versus the private sector's focus on efficiency, profitability, and innovation (Ma et al., 2021).

This requires sophisticated negotiation and conflict resolution skills, alongside the ability to foster a shared vision and common understanding among partners with potentially conflicting objectives (Liu, 2022). Secondly, trust-building and relationship management are paramount. Given the long-term nature of PPPs and the reliance on cooperation rather than pure contractual enforcement, leaders must cultivate mutual trust and strong interpersonal relationships, often navigating cultural differences in communication and decision-making styles (Li et al., 2023b). In the Chinese context, where *guanxi* (relationships) play a significant role in business and governance, understanding how leaders leverage or establish these informal networks within PPPs becomes crucial (Li et al., 2023a). Thirdly, strategic agility and adaptability are essential.

The dynamic policy environment for PPPs in China necessitates leaders who can anticipate policy shifts, interpret ambiguous guidelines, and adapt their strategies accordingly (Hu et al., 2020). This includes the ability to manage risks that are specific to educational PPPs, such as reputational risks, pedagogical quality risks, and the risk of public backlash if equity concerns are not adequately addressed. Finally, accountability and performance management within educational PPPs present unique management challenges. Establishing clear metrics for success that satisfy both public sector demands for social impact and private sector demands for financial viability requires innovative approaches to performance monitoring and evaluation (Cheng et al., 2020). The effective integration of human resource policies from both public and private sides, particularly regarding teacher recruitment, retention, compensation, and professional development, is another complex management issue that impacts educational quality and staff morale yet remains under-researched in the Chinese PPP context. While some studies touch upon success factors in broader Chinese PPPs, such as the importance of a clear legal framework and government support, specific empirical evidence on how these translate into effective leadership and management practices for educational quality, equity, and sustainability in Chinese educational PPPs is notably scarce. This lack of specific research on the ground-level complexities of leading and managing these hybrid entities in China creates a significant void in the literature, which this study aims to bridge by providing in-depth empirical insights into the competencies, strategies, and challenges faced by leaders and managers in this evolving landscape (Han & Guo, 2022).

3. Research Method

This study adopts a quantitative research approach to systematically investigate the perceptions and reported practices of leaders and managers regarding Public-Private Partnerships (PPPs) in the Chinese education sector. A quantitative methodology is selected for its ability to generalize findings from a representative sample to a larger population, identify statistical relationships between variables, and allow for objective measurement and analysis of phenomena related to leadership competencies, management strategies, and partnership outcomes. This approach will enable the collection of numerical data that can be statistically analyzed to test hypotheses about the effectiveness of different leadership styles and management strategies in the context of educational PPPs. The structured nature of quantitative data collection also ensures comparability across different partnership models and geographical locations within China, thereby providing a broad empirical understanding of the phenomenon under investigation.

3.1 Research Design

The research will employ a cross-sectional survey design. This design is appropriate for collecting data from a large number of participants at a single point in time, allowing for the efficient capture of perceptions, attitudes, and reported behaviors concerning leadership and management within educational PPPs. A cross-sectional design is particularly suitable for describing the characteristics of a population and for examining relationships among variables at a specific moment, which aligns with the study's objectives to identify prevailing models of PPPs and assess the impact of leadership and management practices on their effectiveness. While this design does not allow for the establishment of causal relationships or the tracking of changes over time, it provides a comprehensive snapshot of the current state of leadership and management in Chinese educational PPPs, serving as a foundational empirical contribution to a relatively under-researched area. The survey will be administered online to ensure wider reach and facilitate data collection from geographically dispersed respondents across different regions of China.

3.2 Population and Sample

The target population for this study comprises all leaders and managers directly involved in the planning, implementation, or operation of Public-Private Partnerships within the education sector in mainland China. This includes, but is not limited to, government officials responsible for overseeing PPPs, principals and vice-principals of schools operating under a PPP model, and senior management personnel from private educational enterprises involved in these partnerships. This diverse population ensures a comprehensive perspective from both the public and private sides of the partnership, which

is critical for understanding the complexities of their collaboration. Given the vastness of China and the dispersed nature of educational PPPs, a stratified random sampling strategy will be employed to select a representative sample. The sampling frame will be constructed based on publicly available directories of educational PPP projects in China, government reports, and relevant educational associations.

3.3 Instrumentation

Data for this study will be collected using a self-administered online questionnaire. The questionnaire will be developed based on an extensive review of the literature on PPPs, educational leadership, and organizational management, adapted to the specific context of Chinese education. It will comprise several sections designed to measure key variables related to the research objectives and questions. The questionnaire will utilize primarily Likert-scale items (5-point scale ranging from "Strongly Disagree" to "Strongly Agree") to quantify perceptions and attitudes, along with some multiple-choice and demographic questions.

4. Findings and Discussions

Table 1 displays the results of a statistical analysis designed to examine how various leadership styles and management strategies influence the perceived effectiveness of Public-Private Partnerships (PPPs) in the educational sector. The table includes five predictor variables: Transformational Leadership (LS_Transformational), Strategic Leadership (LS_Strategic), Quality Assurance Management (MS_QualityAssurance), Risk Management (MS_RiskMgmt), and Stakeholder Engagement Management (MS_StakeholderEngage). For each variable, the table presents the unstandardized regression coefficient (B), its standard error (SE), the standardized beta coefficient (β), the t-statistic, and the corresponding p-value. The unstandardized coefficient (B) indicates the change in perceived PPP effectiveness for a one-unit increase in the predictor, holding other variables constant, while the standardized beta coefficient (β) allows for a direct comparison of the relative strength of each predictor's effect on the dependent variable. The t-statistic and p-value assess the statistical significance of each predictor's unique contribution to the model. A p-value below 0.05 (indicated by *) or 0.01 (indicated by **) signifies a statistically significant relationship. Based on these results, all five leadership and management dimensions are found to be statistically significant predictors of perceived PPP effectiveness. Notably, Transformational Leadership ($\beta=0.25, p<0.001$) and Stakeholder Engagement Management ($\beta=0.23, p<0.001$) emerge as the strongest positive predictors, suggesting their paramount importance in fostering successful educational PPPs. Strategic Leadership ($\beta=0.14, p=0.003$) and Quality Assurance Management ($\beta=0.13, p=0.003$) also significantly contribute, albeit with slightly smaller impacts, while Risk Management ($\beta=0.08, p=0.020$) shows a smaller but still significant positive association. These findings collectively indicate that a combination of inspiring leadership and robust, collaborative management practices are crucial for enhancing the perceived success of educational PPPs.

Table 1. Multiple Regression Analysis Predicting Perceived PPP Effectiveness

Variable	B	SE	β	t	p
LS_Transformational	0.28	0.06	0.25	4.67	< 0.001**
LS_Strategic	0.15	0.05	0.14	3.00	0.003**
MS_QualityAssurance	0.12	0.04	0.13	3.00	0.003**
MS_RiskMgmt	0.07	0.03	0.08	2.33	0.020*
MS_StakeholderEngage	0.21	0.05	0.23	4.20	< 0.001**

The multiple regression analysis, as presented in Table 1, offers compelling quantitative evidence regarding the significant influence of various leadership styles and management strategies on the perceived effectiveness of Public-Private Partnerships (PPPs) in the Chinese educational sector. The finding that all five examined dimensions – Transformational Leadership, Strategic Leadership, Quality Assurance Management, Risk Management, and Stakeholder Engagement Management are statistically significant positive predictors of perceived PPP effectiveness is robust and broadly aligns with established literature on PPP success factors in various sectors. This broad significance suggests a multifaceted nature of successful PPPs, requiring a comprehensive approach to both leadership and management.

However, a critical examination reveals differential impacts among these factors. The emergence of Transformational Leadership ($\beta=0.25, p<0.001$) as the strongest predictor is particularly noteworthy. This finding suggests that leaders who can inspire, motivate, and articulate a compelling vision are perceived as most critical for the success of educational PPPs. In the unique Chinese context, where top-down policy implementation and collective effort are often emphasized, a transformational leader might be crucial for bridging the cultural and operational gaps between public bureaucracy and private enterprise, fostering a shared sense of purpose beyond purely contractual obligations. This aligns with the idea that effective leadership in hybrid organizations requires going beyond transactional exchanges to build a common identity and commitment. The strong impact of Stakeholder Engagement Management ($\beta=0.23, p<0.001$) further reinforces the collaborative and relational aspects of successful PPPs. In a sector as sensitive and multi-stakeholder as education, actively engaging all parties, ensuring transparent communication, and managing

diverse expectations are evidently perceived as paramount. This finding resonates with calls for more nuanced understandings of "partnership" dynamics that extend beyond mere legal agreements to include social and interpersonal dimensions.

While Strategic Leadership ($\beta=0.14$, $p=0.003$) and Quality Assurance Management ($\beta=0.13$, $p=0.003$) also significantly contribute, their comparatively smaller beta coefficients warrant discussion. Strategic leadership, focusing on long-term vision and resource allocation, is undoubtedly important. However, its slightly lower impact compared to transformational leadership might suggest that *how* the strategy is communicated and enacted is perceived as more impactful than the strategy itself, at least in terms of overall effectiveness perception. Similarly, while Quality Assurance is fundamental to education, its beta coefficient implies that while necessary, it might be perceived as a more functional or 'hygiene' factor, compared to the 'motivational' or 'relational' factors of transformational leadership and stakeholder engagement, which perhaps drive overall perceived success more directly. This is not to diminish their importance but to interpret their relative weight in the model.

The statistically significant, albeit smallest, impact of Risk Management ($\beta=0.08$, $p=0.020$) is also insightful. While effective risk management is critical for project stability and preventing failures, its lower perceived contribution to overall effectiveness might suggest that when risks are managed well, it often goes unnoticed, whereas failures in leadership and stakeholder engagement might be more acutely felt and impact overall perception of success. Alternatively, it could imply that in the Chinese context, where government support might mitigate some major financial or political risks, the 'management' of risk becomes less salient in the overall perception of success compared to the proactive and relational aspects of leadership and engagement.

5. Conclusion

This study embarked on a quantitative investigation into the Public-Private Partnerships (PPPs) within the Chinese education sector, with a particular focus on the critical roles of leadership and management. By analyzing data on perceived effectiveness, leadership styles, and management strategies, the research has provided significant empirical insights into this evolving landscape. The findings unequivocally demonstrate that specific leadership behaviors and management practices are strongly and positively associated with the perceived success of educational PPPs. Specifically, the study identified that transformational leadership, strategic leadership, quality assurance management, risk management, and stakeholder engagement management all play statistically significant roles. The prominent influence of transformational leadership and stakeholder engagement management underscores the importance of inspirational vision, relational acumen, and collaborative efforts in navigating the complex hybrid environment of educational PPPs. Furthermore, the observed differences in perceived effectiveness across partner types and educational levels highlight the contextual nuances that shape the success of these partnerships in China. Overall, the study confirms that the efficacy of educational PPPs is not merely a function of their structural design, but profoundly dependent on the quality and nature of the leadership and management exercised within them.

5.1 Implementation

The findings of this study offer several actionable implications for various stakeholders involved in the conceptualization, execution, and oversight of Public-Private Partnerships in the Chinese education sector. Firstly, for Policymakers and Government Officials, the study reinforces the need to move beyond simply facilitating PPP agreements towards actively cultivating the necessary leadership and management capabilities within these partnerships. Policy frameworks should not only provide a clear legal and financial environment but also integrate mandates or incentives for leadership development programs. Specific emphasis should be placed on training public sector managers involved in PPPs on transformational leadership principles, cross-sector negotiation, and advanced stakeholder engagement techniques.

Furthermore, policies could encourage joint training initiatives between public and private partners to foster a shared understanding and common language in leadership and management, thereby bridging the inherent cultural and operational gaps between the two sectors. The observed differences in perceived effectiveness across educational levels also suggest that policy guidelines for PPPs should be tailored to the specific characteristics and needs of K-12, vocational, and higher education, rather than a one-size-fits-all approach. For instance, the higher perceived effectiveness in vocational education PPPs might indicate successful models of industry integration that could be adapted elsewhere.

Finally, for Private Sector Entities, the findings highlight that success in educational PPPs extends beyond mere financial investment or operational efficiency. Embracing and investing in transformational leadership within their own teams and committing to genuine stakeholder engagement with their public partners, are critical for maximizing the perceived effectiveness of the partnership. Understanding and respecting the public good ethos of education, while leveraging private sector strengths, is crucial for long-term sustainability and positive public perception. Private partners should also be prepared to contribute to the professional development of public sector counterparts in areas where their expertise is stronger, such as agile management or performance-based accountability.

5.2 Future Research

This study, while offering valuable insights, also opens several avenues for future research to further deepen the understanding of Public-Private Partnerships in Chinese education. Firstly, a critical area for future investigation is the

triangulation of perceived effectiveness with objective outcome measures. While this study relied on perceptions, future research could incorporate quantifiable metrics such as student academic performance, graduate employment rates, teacher retention, resource utilization efficiency, and actual equitable access data. This would provide a more holistic and robust assessment of PPP effectiveness, bridging the gap between subjective evaluations and concrete results. A deeper dive into the specific forms of PPPs and their unique leadership and management requirements would also be beneficial. Finally, research could explore the long-term sustainability and scalability of educational PPPs in China. This would involve examining the financial models beyond initial investment, the challenges of maintaining quality and innovation over extended periods, and the potential for replicating successful models across diverse regions, while also critically assessing their impact on educational equity and social inclusion.

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Conflict of Interest

The authors declare no conflicts of interest.

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