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PUBLIC SECTOR COLLABORATION IN FDI ATTRACTION AND FDI FIRM PERFORMANCE: AN INTEGRATED NGT–TCE PERSPECTIVE FROM VIETNAM

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ABSTRACT

Foreign direct investment (FDI) contributes significantly to growth in emerging economies, yet firm outcomes depend on the quality of institutional coordination. This study examines how inter-agency collaboration in FDI attraction affects the performance of foreign-invested enterprises (FIEs) in Vietnam's Northern Key Economic Zone. Drawing on Network Governance Theory and Transaction Cost Economics, we propose a mediation model in which leadership, financial resources, information sharing, and public service quality influence firm performance through collaboration effectiveness, captured by cost, time, and quality efficiency. Using a mixed-methods design, we conducted 15 interviews and surveyed 273 FIEs, analyzed with PLS-SEM. Results indicate that collaborative leadership is the strongest predictor of collaboration effectiveness, followed by public service quality and financial resources, while information sharing is not significant. Collaboration effectiveness significantly enhances production, market, and especially financial performance. The findings highlight the strategic role of institutional coordination in strengthening firm competitiveness in emerging markets...

KEYWORDS: Foreign Direct Investment; Inter-Agency Collaboration; Public Sector Governance; Transaction Costs; Firm Performance; Emerging Markets.

1. INTRODUCTION

Foreign direct investment (FDI) is widely regarded as a critical driver of growth and international integration in emerging economies. However, recent scholarship suggests that the benefits of FDI depend not only on the volume of capital inflows but also on the quality of the institutional environment and the degree of coordination among public authorities. In an increasingly competitive landscape for attracting FDI, the central challenge extends beyond securing new investment flows to ensuring that institutional arrangements are sufficiently effective to translate foreign capital into tangible firm-level performance outcomes.

The Northern Key Economic Zone (NKEZ) represents one of Vietnam's most significant destinations for FDI inflows. Despite substantial capital attraction, a noticeable gap persists between the scale of investment and the effectiveness with which it is leveraged. Limitations related to information transparency, administrative fragmentation, and insufficient inter-agency coordination have contributed to higher compliance costs and reduced predictability in the investment environment. Domestic studies and prior empirical evidence (Le & Dang, 2024; Nguyen et al., 2018; Ta et al., 2021) indicate that institutional coordination capacity plays a pivotal role in shaping FDI firms' investment decisions and expansion strategies. Nevertheless, systematic quantitative evidence remains limited regarding how collaboration among public organizations translates into concrete firm-level performance outcomes.

From a theoretical standpoint, public-sector collaboration has been extensively examined within the literature on network governance and public management. Network Governance Theory (NGT) emphasizes the importance of network structures, leadership, and trust in enhancing coordination among organizations (Provan & Kenis, 2008; Turrini et al., 2010). In contrast, Transaction Cost Economics (TCE) focuses on governance mechanisms that minimize transaction costs and mitigate risks arising from uncertainty and information asymmetry (Brown & Potoski, 2005; Williamson, 1985). While these theoretical streams provide valuable insights into coordination and governance arrangements, they have predominantly been developed within the internal dynamics of the public sector or contractual relationships, with comparatively less attention to how public coordination mechanisms influence the performance of private enterprises, particularly FDI firms.

Although international research has consistently highlighted the role of institutional quality in shaping FDI attraction and effectiveness, the mediating processes through which inter-agency collaboration converts institutional conditions into firm-level competitive advantages remain insufficiently specified. This gap is particularly salient in transition economies, where variations in coordination capacity across levels of government may generate substantial differences in transaction costs and operational efficiency for foreign investors. Accordingly, this study addresses the following research question: How does inter-agency collaboration affect the performance of FDI firms through collaborative effectiveness as a mediating mechanism?

Building on this contextual and theoretical gap, the study develops and empirically tests an integrated framework combining Network Governance Theory and Transaction Cost Economics to explain how public-sector collaboration in FDI attraction influences the performance of FDI enterprises in the NKEZ. The study makes three contributions. First, it integrates network governance and transaction cost perspectives, thereby extending their explanatory scope to the firm level within a transition economy context. Second, it conceptualizes collaborative effectiveness as a multidimensional construct that mediates the relationship between institutional coordination and firm performance. Third, it provides firm-level empirical evidence from an emerging economy, thereby advancing the literature on collaborative governance within the domain of international investment.

2. THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

In the context of globalization and intensifying competition for foreign direct investment (FDI), collaboration among public organizations has increasingly become a critical determinant of investment climate quality. Effective coordination among regulatory agencies not only reduces transaction costs and shortens administrative processing time but also enhances the quality of public services provided to investors. To explain these dynamics, this study adopts an integrated theoretical approach combining Network Governance Theory (NGT) and Transaction Cost Economics (TCE).

According to Network Governance Theory, public organizations operate within multi-level and cross-sectoral networks in which collaborative outcomes depend on structural design, coordination

mechanisms, and the level of trust among participating actors (Cristofoli et al., 2011; Provan & Milward, 1995; Provan & Kenis, 2008; Turrini et al., 2010). Elements such as collaborative leadership, financial resources, information quality, and public service capacity constitute foundational conditions that enable networks to generate collaborative advantages. However, NGT places relatively less emphasis on the economic incentives and cost considerations faced by firms when interacting with public-sector networks.

Transaction Cost Economics provides a complementary perspective. From a TCE standpoint, firms and public authorities are expected to select governance arrangements that minimize transaction costs and mitigate risks arising from uncertainty and information asymmetry (Williamson, 1985). Integrating NGT and TCE, therefore allows for a dual-level analysis, capturing both governance structures within public networks and the economic implications for firms. This integrated lens offers a comprehensive explanation of how public-sector collaboration influences the performance of FDI enterprises.

Building on this foundation, the study identifies four core dimensions of public-sector collaboration. First, collaborative leadership reflects the capacity to coordinate actors, articulate shared vision, and foster trust across public organizations (Agranoff & McGuire, 2001; Provan & Kenis, 2008). Second, financial resources, which ensure the sustainability of collaborative activities, infrastructure investment, and service quality enhancement (Provan & Milward, 1995; Turrini et al., 2010). Third, information resources, representing the ability to provide and share accurate, timely, and comprehensive data, thereby reducing information asymmetry (Cristofoli et al., 2011). Fourth, public service provision, referring to tangible outputs of collaboration such as one-stop administrative procedures, legal assistance, investment promotion, and post-licensing support (Provan & Kenis, 2008).

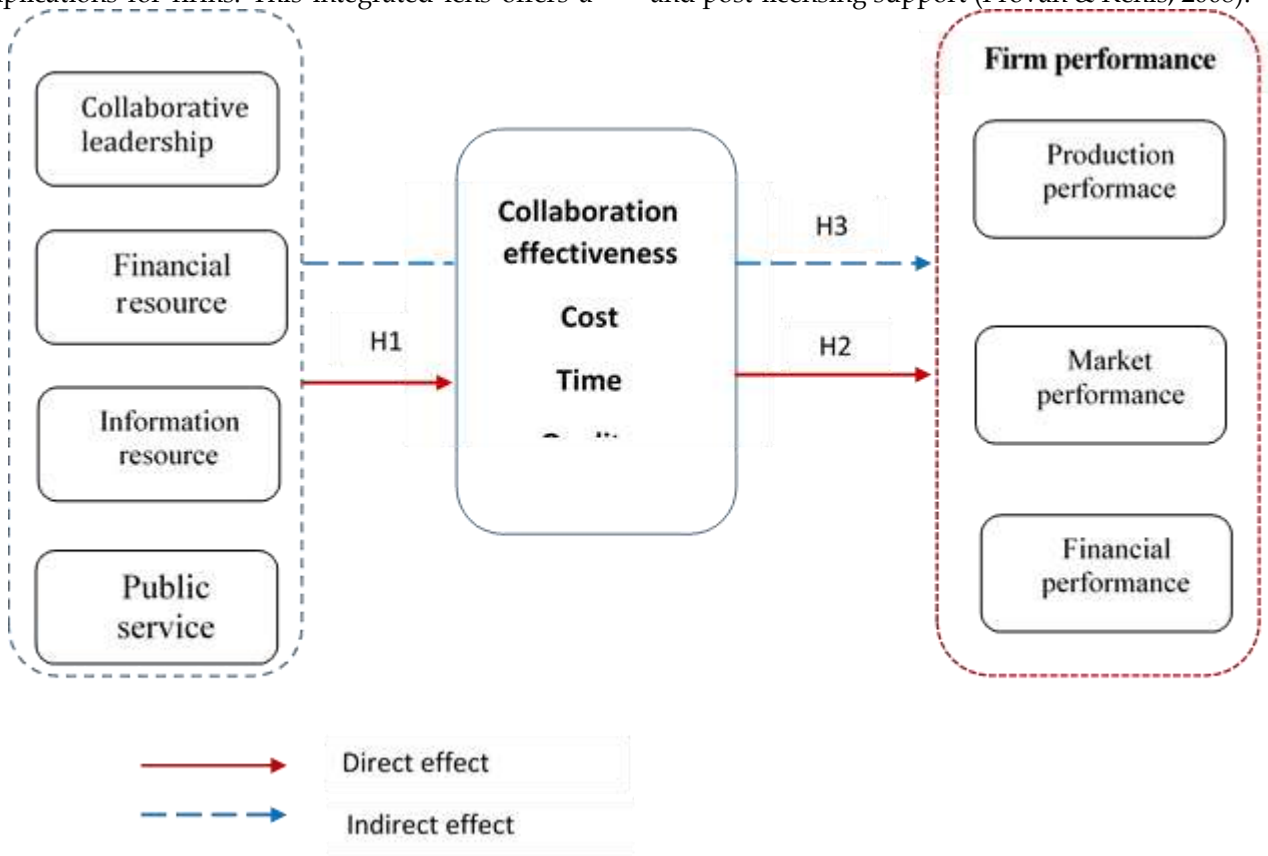

Figure 1: Research Model.

From a TCE perspective, FDI firms perceive collaborative effectiveness through three interrelated dimensions: reduced transaction costs, shortened processing time, and improved service quality (Williamson, 1985). Collaborative effectiveness thus represents both a direct outcome of public-sector collaboration and a mediating mechanism that translates institutional coordination into firm-level benefits. When collaborative effectiveness improves, firms are better positioned to enhance production performance (operational efficiency, productivity, quality), strengthen market performance (market share, growth rate, market expansion), and reinforce financial performance (revenue, profitability, return

on investment) (Venkatraman & Ramanujam, 1986).

Based on these theoretical arguments, the study proposes three groups of hypotheses:

(1) Public-sector collaboration → Collaborative effectiveness

H1.1: Collaborative leadership positively affects collaborative effectiveness.

H1.2: Financial resources positively affect collaborative effectiveness.

H1.3: Information resources positively affect collaborative effectiveness.

H1.4: Public service provision positively affects collaborative effectiveness.

(2) Collaborative effectiveness → FDI firm performance

H2.1: Collaborative effectiveness positively affects production performance.

H2.2: Collaborative effectiveness positively affects market performance.

H2.3: Collaborative effectiveness positively affects financial performance.

(3) The mediating role of collaborative effectiveness

H3.1–H3.12: Public-sector collaboration dimensions indirectly affect production, market, and financial performance through collaborative effectiveness.

Overall, the proposed theoretical framework offers an integrated and empirically testable approach to explaining how public-sector collaboration translates institutional conditions into firm-level outcomes. By combining governance and transaction cost perspectives within a structural modeling framework (SEM/PLS-SEM), the study contributes to both collaborative governance research and the international investment literature, while also generating policy-relevant implications for enhancing FDI effectiveness and national competitiveness.

3. METHODOLOGY

This study adopts a sequential mixed-methods design consisting of exploratory and confirmatory phases. The initial qualitative stage was conducted to validate the suitability of the integrated theoretical framework combining Network Governance Theory (NGT) and Transaction Cost Economics (TCE), while also refining measurement scales to ensure contextual relevance to FDI operations in Vietnam. Semi-structured in-depth interviews enabled a more nuanced understanding of collaborative dynamics, provided contextual evidence, and informed the development of the quantitative survey instrument.

The subsequent quantitative phase was designed to test both direct and indirect causal relationships among four dimensions of public-sector collaboration (collaborative leadership, financial resources, information resources, and public service provision), the mediating construct of collaborative effectiveness (cost, time, and quality dimensions), and three dimensions of FDI firm performance (production, market, and financial performance). Quantitative data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), a technique suitable for models involving multiple latent constructs and data that may deviate from normal distribution assumptions (Hair et al., 2016; Hair et al., 2019; Kock & Hadaya, 2016).

3.1 Qualitative Phase

During the qualitative phase, a total of 15 semi-structured interviews, each lasting between 45 and 60 minutes, were conducted from May to July 2023. Seven senior executives from FDI enterprises located in Hanoi, Bac Ninh, Hai Phong, and Quang Ninh participated to provide insights from the investor perspective. In addition, eight public officials from Industrial Zone Management Boards (Bac Ninh, Vinh Phuc), Departments of Planning and Investment (Hanoi, Hai Duong), and district-level economic divisions (Quang Ninh, Hai Phong) were interviewed to capture the public-sector perspective.

Participants were selected through purposive sampling, and data collection continued until theoretical saturation was reached, consistent with methodological recommendations by Guest et al. (2006) and Creswell and Poth (2016). All interviews were audio-recorded, transcribed, and subjected to open coding and thematic content analysis. This process enabled the identification of key themes, refinement of measurement wording, and incorporation of context-specific insights into the survey instrument.

3.2 Quantitative Phase

The quantitative survey was conducted between June and December 2023 across seven provinces within the Northern Key Economic Zone (NKEZ). Due to the absence of a comprehensive sampling frame of FDI firms, the study employed stratified purposive sampling based on geographic location, industry sector, and firm size. Each firm was requested to nominate one or two respondents at the senior management or managerial level to ensure informed responses across organizational levels.

A total of 305 questionnaires were collected. After data screening, missing values below 5% were addressed using the Expectation–Maximization (EM)

algorithm, while responses with more than 10% missing data were excluded. The final sample consisted of 273 valid observations used for analysis. The sample structure reflects diversity in geographic distribution, age, gender, education level, and firm size, corresponding to the general characteristics of the FDI community in the study region.

Table 1. Measurement scale for Collaboration factors.

Independent variables	Code	**Measurement items**	**Source**
Collaborative Leadership	LĐ1	Leaders articulate a clear and inspiring vision for local investment development.	(Bass, B. M., & Avolio, B. J. (1990). McGuire & Silvia, 2009)
	LĐ2	Leaders actively listen to and encourage new ideas from FDI enterprises.	
	LĐ3	Leaders demonstrate genuine concern and provide practical support for the specific needs of firms.	
	LĐ4	Leaders effectively mobilize relevant public agencies to coordinate in supporting enterprises	
	LĐ5	Leaders facilitate information sharing and coordination among government agencies.	
	LĐ6	Leaders are capable of resolving conflicts or procedural overlaps in the enterprise support process	
Financial Resources	TC1	Public agencies possess sufficient budgetary resources to effectively implement investment support activities.	Wang, W. (2015)
	TC2	Public agencies are able to flexibly utilize budget allocations to address issues arising during collaborative processes	
	TC3	Firms receive specific financial support (direct or indirect) from public authorities during the investment process.	
	TC4	Public authorities can proactively allocate appropriate budget resources for coordination activities with enterprises.	
	TC5	The use of public funds in supporting FDI enterprises is transparent and traceable	
Information Resources (TT)	TT1	Information provided by public agencies within the collaborative network is comprehensive.	Benmohamed et al. (2024), Charalabidis et al. (2014), Chen và Lee (2017)
	TT2	Information is updated regularly and in a timely manner.	
	TT3	Information is accurate and reliable.	
	TT4	The data and information provided are aligned with the needs of FDI enterprises.	
	TT5	Public agencies are willing to share data related to foreign investment activities.	
Public Service	DV1	Local administrative procedures are simple and processed efficiently.	Dang et al. (2024)

(DV)	DV2	Officials in administrative agencies demonstrate professional competence and service-oriented attitudes.	
	DV3	Firms receive adequate support from public agencies during licensing and legal procedures.	
	DV4	Investment, trade, and tourism promotion agencies provide effective support to investors.	
	DV5	Coordination among government regulatory agencies is smooth and effective	

Table 2. Measurement Scale for Collaborative Effectiveness.

Dependent Variable	**Items**	**Measurement items**	**Source**
	Cost Effectiveness		
Collaboration effectiveness (HT)	HQHT1	Collaboration helps ensure that project implementation costs remain within the firm's planned budget limits.	Koppenjan et al, (2022),
	HQHT2	Collaboration generates benefits that exceed the costs incurred by the project.	
	HQHT3	Collaboration contributes to FDI project implementation being carried out within the expected budget.	
	HQHT4	Collaboration enables the project to achieve a reasonable return on investment.	
	Time Effectiveness		
	HQHT5	Collaboration ensures that infrastructure development for the investment project is completed within the originally agreed timeframe.	Koppenjan et al., (2022), Warsen et al., 2018, Verweij và Meerkerk (2021)
	HQHT6	Coordination among public agencies shortens the time required to implement the investment project	
	HQHT7	Collaboration reduces waiting time for responses and administrative processing.	
	Quality Effectiveness		
	HQHT8	Project outcomes are achieved with adequate support from organizations within the collaborative network.	Koppenjan et al., (2022)
	HQHT9	Solutions developed through the collaborative network effectively address issues arising during project implementation.	
	HQHT10	Collaboration enables the project to utilize infrastructure and related assets in a sustainable manner	
	HQHT11	Collaboration contributes to the achievement of the project's stated objectives.	

Table 3. Measurement Scale for FDI Firm Performance.

Construct	**Code**	**Measurement Item**	**Source**

Production Performance (KQSP)	KQSP1	The firm's products meet the required quality standards.	Gunday, et al. (2011). Quadros et al. (2001),
	KQSP2	Production costs are effectively controlled.	
	KQSP3	The firm is able to adjust production volume flexibly in response to demand.	
	KQSP4	Delivery speed has improved compared to previous periods.	
Market Performance (KQTT)	KQTT1	Customer satisfaction has improved over time.	Gunday, et al. (2011). Narver và Slater (1990)
	KQTT2	Sales revenue demonstrates steady growth.	
	KQTT3	The firm's market share shows an increasing trend.	
Financial Performance (KQTC)	KQTC1	Return on sales has improved.	Gunday, et al. (2011), Barringer và Bluedorn (1999).
	KQTC2	Return on assets has increased.	
	KQTC3	Overall profitability of the firm has grown.	
	KQTC4	The firm's cash flow has become more stable and positive	

The survey instrument was developed through selective adaptation of established international scales and refined through qualitative analysis and a pilot test conducted with 10 senior FDI managers in Bac Ninh and Hai Phong. All measurement items were assessed using a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree").

The construct of collaborative leadership (six items) draws on the transformational leadership framework (Bass & Avolio, 1990) and network leadership behaviors identified in collaborative governance research (McGuire & Silvia, 2009). Financial resources (five items) capture the sufficiency, flexibility, and transparency of budgetary support mechanisms (Wang, 2015). Information resources (five items) assess the completeness, accuracy, timeliness, and inter-agency data-sharing capacity within collaborative networks (Benmohamed et al., 2024; Charalabidis et al., 2014). Public service provision (five items) reflects the quality of administrative procedures, professional competence and service attitudes of officials, legal support, and inter-agency coordination effectiveness (Dang et al., 2024; Parasuraman et al., 1988).

Collaborative effectiveness (eleven items) is operationalized across three dimensions cost, time, and quality, drawing on prior research in collaborative governance and network performance (Klijn & Koppenjan, 2016; Verweij & Meerkerk, 2021; Warsen et al., 2018). Finally, FDI firm performance (eleven items) is adapted from established measures in strategic management and innovation research (Barringer & Bluedorn, 1999; Günday et al., 2009; Narver & Slater, 1990), encompassing production, market, and financial performance dimensions. A subjective measurement approach was adopted, which is considered appropriate in contexts where objective financial data are difficult to access, particularly in FDI settings (Cheng & Wu, 2001; Dess & Robinson, 1984; Selvam et al., 2016).

3.3. Data Analysis

Quantitative data were analyzed using SmartPLS 4.0. The analytical procedure followed a two-stage approach consistent with PLS-SEM guidelines. In the first stage, the measurement model was assessed by examining outer loadings, internal consistency reliability (Cronbach's alpha and composite reliability), convergent validity (average variance extracted, AVE), and discriminant validity using the heterotrait–monotrait ratio (HTMT). Threshold values were evaluated in accordance with established methodological recommendations (Hair et al., 2016; Hair, 2014; Henseler & Ringle, 2015; Höck & Ringle, 2010).

In the second stage, the structural model was evaluated by assessing multicollinearity (variance inflation factor, VIF), standardized path coefficients (β), and statistical significance through bootstrapping procedures. Model explanatory power and predictive relevance were examined using R^2, f^2 effect sizes, and Q^2 predictive relevance indicators. Indirect effects through the mediating construct of collaborative effectiveness were tested using

bootstrapped confidence intervals for specific indirect paths (Hair et al., 2016; Kock & Hadaya, 2016).

To mitigate common method bias (CMB), the study implemented both procedural and statistical remedies. Procedural measures included ensuring respondent anonymity, randomizing item order, and using neutral wording. Post hoc statistical tests included Harman's single-factor test and the full collinearity VIF approach, with values below the recommended threshold of 3.3. Non-response bias was assessed by comparing early and late respondents. Missing data were handled as previously described, and robustness checks were conducted by comparing structural relationships across subgroups based on geographic location, industry sector, and firm size.

All participants were informed about the purpose of the study and assured of their right to decline participation or withdraw at any stage. Confidentiality was strictly maintained. Interviews were recorded and analyzed only with informed consent. Findings are reported in aggregate form without identifying individual respondents or firms, in accordance with established research ethics standards (Creswell, 2013).

Finally, qualitative and quantitative findings were integrated to achieve triangulation of evidence. Initial qualitative insights informed scale refinement and model validation, quantitative analysis tested causal relationships, and subsequent qualitative interpretation helped explain unexpected or inconsistent findings. This integrated approach strengthens both the methodological rigor and practical relevance of research on public-sector collaboration in FDI attraction (Klijn & Koppenjan, 2016; Koppenjan et al., 2022; Provan & Kenis, 2008).

4. RESULTS

4.1 Research Context and Sample Overview

The Northern Key Economic Zone (NKEZ) comprises seven provinces and municipalities, Hanoi, Hai Phong, Quang Ninh, Hai Duong, Hung Yen, Vinh Phuc, and Bac Ninh, and represents one of Vietnam's most economically dynamic regions. In 2024, the NKEZ accounted for approximately 19% of national GDP and attracted nearly USD 150 billion in cumulative registered FDI, equivalent to 46.4% of the country's total FDI inflows (MPI, 2024). FDI activity in the region is concentrated in electronics, high technology, automotive manufacturing, precision engineering, textiles and footwear, logistics, and information technology.

Despite the overall scale of foreign investment, its distribution across provinces remains uneven. Bac Ninh and Hai Phong report FDI shares of 65.6% and 59.2%, respectively, within their total investment structures, while other provinces exhibit comparatively lower levels. At the same time, the average localization rate remains modest, estimated at approximately 25–30% (Do, Nguyen, & Masina, 2022), indicating limited technological spillover effects. The survey of 273 FDI enterprises operating within the NKEZ provides both quantitative and qualitative data for examining the relationships among institutional collaboration, collaborative effectiveness, and firm performance.

3.4. Collaborative Effectiveness from the Perspective of FDI Firms

Cost Dimension: The mean scores for the cost-related indicators (HQHT1–HQHT4) range from 2.76 to 2.90, remaining below the midpoint of the five-point scale. These values suggest relatively low perceived effectiveness in terms of cost reduction and return on investment. Among the items, HQHT4 (reasonable return on investment) records the lowest mean (2.76). The relatively high standard deviations indicate substantial variation in firm experiences. Overall, the findings imply that cost-related benefits of inter-agency collaboration remain limited, with firms reporting persistent administrative and compliance burdens.

Time Dimension: The time-related indicators (HQHT5–HQHT7) show higher mean values, ranging from 3.09 to 3.27. Firms appear to recognize improvements in procedural efficiency, particularly for HQHT6 (shortened implementation timeline), which records the highest mean within this dimension (3.27). However, HQHT5 (completion within agreed timeframe) and HQHT7 (reduced waiting time for administrative responses) remain close to the scale midpoint, indicating moderate rather than substantial improvements. These results suggest that while progress has been made in accelerating procedures, implementation consistency may vary across local jurisdictions.

Quality Dimension: The quality-related indicators (HQHT8–HQHT11) exhibit the highest mean values, ranging from 3.12 to 3.49. HQHT9 (solutions effectively addressing project-related issues) records the highest mean (3.49), indicating relatively strong perceptions of problem-solving capacity within collaborative networks. HQHT10 and CE11 report median values of 4, reflecting generally positive evaluations of support effectiveness and goal attainment. These findings point to comparatively stronger performance in service quality and

coordination outcomes relative to cost and time dimensions.

4.2. Firm Performance of FDI Enterprises

Production Performance: The mean values for production performance indicators (KQSP1–KQSP4) range from 2.73 to 2.88, remaining below the midpoint of the five-point scale. These results indicate relatively modest performance perceptions in operational areas, particularly delivery speed (KQSP4 = 2.73), which records the lowest score within this dimension. Standard deviations exceeding 1.1 suggest substantial heterogeneity across firms, pointing to uneven operational capabilities within the sample.

Financial Performance: In contrast, financial performance indicators (KQTC1–KQTC4) exhibit considerably higher mean values, ranging from 3.78 to 4.20, the highest among the three performance dimensions. Return on sales (KQTC1 = 4.20) and overall profitability measures (KQTC3–KQTC4 ≈ 4.10) reflect relatively strong perceived financial outcomes. These findings suggest that, despite operational and market-related constraints, many firms report satisfactory financial returns.

Market Performance: Market performance indicators (KQTT1–KQTT3) record the lowest mean scores, ranging from 2.57 to 2.78. Customer satisfaction (KQTT1 = 2.57) shows the lowest value within this dimension, indicating comparatively weaker market positioning. The pattern suggests that market-related performance may lag behind financial outcomes within the sample, highlighting a potential imbalance between profitability and market competitiveness.

4.3. Measurement Model Assessment

The PLS-SEM results indicate satisfactory reliability and convergent validity of the measurement model. Cronbach's alpha values for all latent constructs exceed 0.77, while composite reliability (CR) values are above 0.85. Average variance extracted (AVE) values are greater than 0.59, exceeding the recommended threshold of 0.50. These results confirm adequate internal consistency and convergent validity (Hair et al., 2021; Henseler et al., 2016).

Table 4. Discriminant Validity Assessment Using the HTMT Ratio.

Construct	LĐ	TC	TT	DV	HQHT	KQSP	KQTC	KQTT
LĐ	—	0.62	0.55	0.61	0.74	0.45	0.47	0.39
TC		—	0.49	0.53	0.68	0.41	0.44	0.36
TT			—	0.50	0.56	0.38	0.42	0.35
DV				—	0.63	0.47	0.49	0.40
HQHT					—	0.64	0.66	0.59
KQSP						—	0.72	0.65
KQTC							—	0.68
KQTT								—

Discriminant validity is supported by heterotrait–monotrait (HTMT) ratios below 0.85, indicating sufficient distinctiveness among constructs. Most outer loadings surpass the recommended threshold of 0.70, demonstrating strong item–construct associations. A small number of indicators (HQHT6, HQHT8, HQHT10, and HQHT11) were removed due to insufficient loading values. After refinement, retained loadings range from 0.71 to 0.94, suggesting that the remaining indicators contribute substantially to their respective latent constructs.

Overall, the reliability and validity statistics support the adequacy and stability of the measurement model for subsequent structural analysis.

Table 5. Reliability and Convergent Validity Assessment.

Construct	Cronbach's Alpha	rho_A	Composite Reliability (CR)	Average Variance Extracted (AVE)
Collaborative Leadership (LĐ)	0.833	0.836	0.888	0.666

Financial Resources (TC)	0.772	0.774	0.853	0.593
Information Resources (TT)	0.888	0.890	0.923	0.750
Public Service Quality (DV)	0.857	0.867	0.903	0.699
Collaboration Effectiveness (HQHT)	0.890	0.892	0.914	0.605
Production Performance (KQSP)	0.810	0.815	0.875	0.636
Financial Performance (KQTC)	0.776	0.785	0.870	0.691
Market Performance (KQTT)	0.903	0.910	0.939	0.837

4.4. Structural Model Assessment

Coefficient of Determination (R^2): The coefficient of determination indicates that HQHT achieves an R^2 value of 0.612, explaining 61.2% of its variance. The explanatory power for the business performance constructs is moderate, with R^2 values of 0.281 for KQSP, 0.360 for KQTC, and 0.199 for KQTT. These results suggest varying levels of predictive strength across performance dimensions.

Effect Size (f^2): Effect size estimates reveal that the strongest structural relationships are observed for HQHT → KQTC ($f^2 = 0.563$) and HQHT → KQSP ($f^2 = 0.391$), indicating substantial practical relevance. In contrast, the effects of DV, TC, and TT on HQHT are comparatively weak.

Table 6. Multicollinearity Diagnostics Based on VIF.

	VIF
TT -> HQHT	1.374
DV -> HQHT	1.306
LĐ -> HQHT	1.584
TC -> HQHT	1.547
HQHT -> KQSP	1.000
HQHT -> KQTC	1.000
HQHT -> KQTT	1.000

HQHT -> KQTT 1.000

Multicollinearity Assessment: To examine potential multicollinearity among independent variables, variance inflation factors (VIF) were assessed. The VIF values range from 1.000 to 1.584, remaining well below the conservative threshold of 3.3 recommended by Kock (2015) and Hair et al. (2021). These results indicate that collinearity does not pose a concern in the structural model. Accordingly, no significant multicollinearity issues are detected in the model, and the independent variables contribute distinctly to explaining the dependent constructs.

4.5. Hypothesis Testing Results

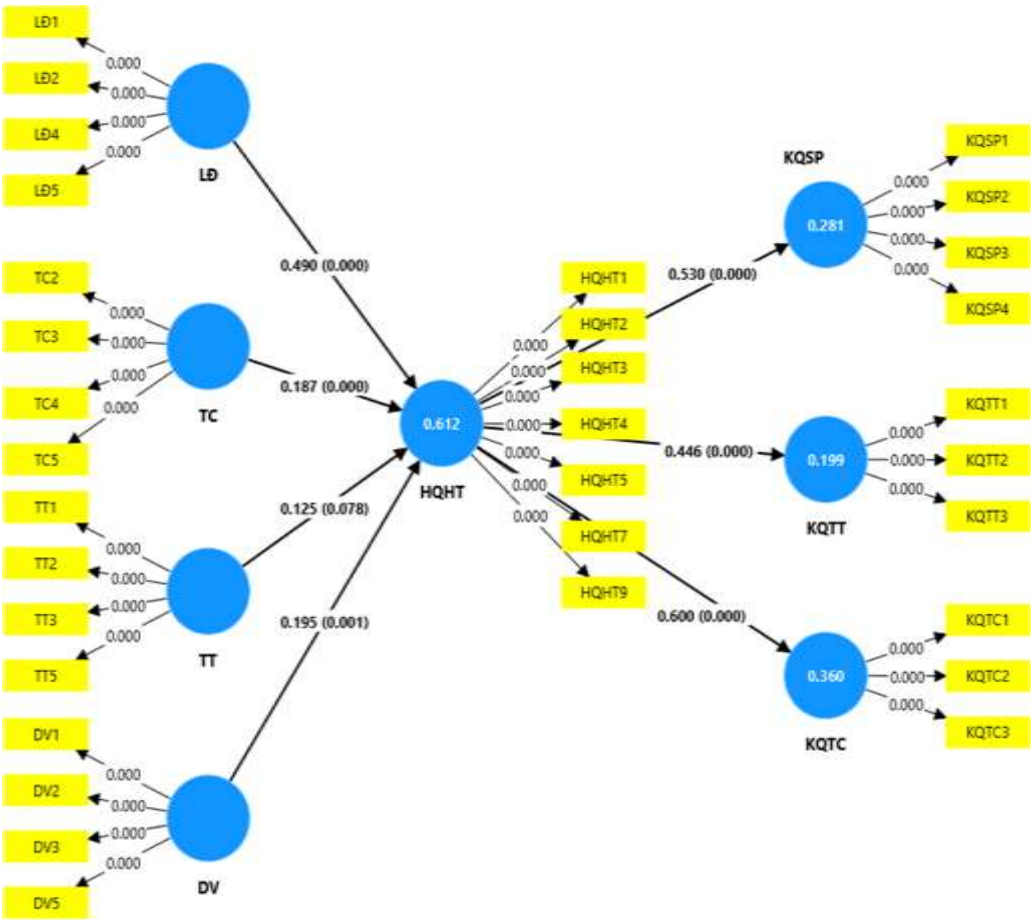

Figure 2: Structural model results (PLS-SEM).

Table 7. Structural Model Results.

Hypothesis	Relationship	Path coefficient (β)	t-value	p-value	Type of effect	Conclusion
H1.1	LĐ → HQHT	0.490	9.321	<0.001	Direct	Supported
H1.2	TC → HQHT	0.187	3.212	0.001	Direct	Supported
H1.3	TT → HQHT	0.125	1.044	0.297	Direct	Not supported
H1.4	DV → HQHT	0.195	3.341	0.001	Direct	Supported
H2.1	HQHT → KQSP	0.530	7.932	<0.001	Direct	Supported
H2.2	HQHT → KQTC	0.600	10.114	<0.001	Direct	Supported
H2.3	HQHT → KQTT	0.446	6.951	<0.001	Direct	Supported
H3.1	LĐ → HQHT → KQSP	0.260	7.045	<0.001	Indirect (full mediation)	Supported
H3.2	LĐ → HQHT → KQTC	0.294	8.330	<0.001	Indirect (full mediation)	Supported
H3.3	LĐ → HQHT → KQTT	0.219	6.512	<0.001	Indirect (full mediation)	Supported
H3.4	TC → HQHT → KQSP	0.099	2.635	0.009	Indirect (partial mediation)	Supported

H3.5	TC → HQHT → KQTC	0.112	2.942	0.003	Indirect (partial mediation)	Supported
H3.6	TC → HQHT → KQTT	0.083	2.431	0.015	Indirect (partial mediation)	Supported
H3.7	TT→ HQHT → KQSP	0.035	1.201	0.230	Indirect (Insignificant)	Not Supported
H3.8	TT→ HQHT → KQTC	0.039	1.337	0.182	Indirect (Insignificant)	Not Supported
H3.9	TT→ HQHT → KQTT	0.029	1.174	0.241	Indirect (Insignificant)	Not Supported
H3.10	DV → HQHT → KQSP	0.103	3.154	0.002	Indirect (partial mediation)	Supported
H3.11	DV → HQHT → KQTC	0.118	3.322	0.001	Indirect (partial mediation)	Supported
H3.12	DV → HQHT → KQTT	0.089	2.721	0.007	Indirect (partial mediation)	Supported

• Estimated using PLS-SEM (SmartPLS 4.0) with bootstrapping (5,000 subsamples).

• β values are standardized path coefficients; t-value > 1.96 and $p < 0.05$ indicate statistical significance.

Source: Author's calculations based on survey data from 273 FDI firms in the Northern Key Economic Region (2023).

H1 (collaboration factors → collaborative effectiveness).

The results indicate that collaborative leadership exerts the strongest influence on collaborative effectiveness ($\beta = 0.49$, $p < 0.001$). This is followed by public service quality ($\beta = 0.195$, $p < 0.01$) and financial resources ($\beta = 0.187$, $p < 0.001$). In contrast, information resources do not show a statistically significant effect.

H2 (collaborative effectiveness → firm performance).

Collaborative effectiveness demonstrates a substantial positive impact on all three dimensions of firm performance, including financial performance ($\beta = 0.60$), production performance ($\beta = 0.53$), and market performance ($\beta = 0.446$), with all relationships significant at $p < 0.001$.

H3 (indirect effects).

The mediation analysis further confirms that collaborative effectiveness functions as a significant mediating mechanism. The indirect effect is particularly pronounced in the relationship between collaborative leadership and financial performance (Leadership → Collaborative effectiveness → Financial performance; $\beta = 0.294$). By contrast, the indirect effects associated with information resources are not statistically significant.

4.6. Qualitative Analysis Results

Interviews with 15 participants (seven FDI executives and eight public-sector officials) provide additional support for the quantitative findings.

Collaborative leadership was widely identified as a decisive factor. Provincial and municipal leaders who responded promptly were reported to reduce administrative processing time by approximately 30%.

Financial resources emerged as another important issue. Many FDI firms reported difficulties in accessing investment incentives, while public officials acknowledged limitations in available budgets.

Information resources were perceived by both groups as the most significant bottleneck, largely due to fragmented data systems and insufficient transparency.

Public service provision has improved in recent years but remains uneven across localities. In many cases, the effectiveness of support still depends on the competence and attitudes of individual officials.

FDI enterprises emphasized three primary benefits arising from effective public-sector collaboration: shorter administrative procedures, reduced unexpected costs, and improved quality of infrastructure and legal support. However, limitations in information transparency and cross-agency coordination mechanisms continue to represent major barriers.

5. DISCUSSION OF RESEARCH FINDINGS

The findings highlight the central role of collaborative leadership in shaping collaborative effectiveness and, ultimately, firm performance. This result is consistent with recent syntheses on public network leadership, which emphasize that in horizontally structured governance networks lacking hierarchical control, coordination depends on relational and behavioral forms of leadership (Akerboom et al., 2024). In line with this perspective, leadership in public networks functions as a distributed process that facilitates coordination, alignment, and shared goal formation. The strong effect of leadership observed in this study further supports the argument that coordination behavior is a critical driver of effectiveness in multi-actor governance settings (Siciliano et al., 2022).

The study also provides robust evidence for the mediating role of collaborative effectiveness, confirming that public-sector inputs—such as leadership, financial resources, and public service provision—do not directly translate into firm-level outcomes. Instead, their effects are realized through improvements in coordination processes. This finding aligns with collaborative governance literature, which emphasizes that institutional inputs generate value only when transformed through interaction and coordination mechanisms (Akerboom et al., 2024; Emerson & Nabatchi, 2015). It also reinforces the view that network effectiveness constitutes a key mechanism linking governance structures to performance outcomes (Siciliano et al., 2022).

A notable finding is the non-significant effect of information resources, which challenges the assumption that improved information availability inherently enhances collaboration. Prior studies suggest that fragmented data systems, lack of standardization, and weak interoperability limit the effectiveness of information sharing in the public sector (Yang & Maxwell, 2011; Renteria et al., 2019). The present results reflect this institutional context, indicating that information contributes to collaboration only when supported by integrated systems and inter-agency alignment, a condition that remains underdeveloped in Vietnam.

In contrast, public service provision and financial resources exhibit positive but relatively modest effects. This pattern reflects institutional constraints highlighted in recent assessments of Vietnam's governance environment, including disparities in service quality and administrative discipline (VCCI, 2023), as well as challenges in policy consistency and inter-agency coordination (OECD, 2018). These findings suggest that resources and services alone are insufficient without effective coordination mechanisms, and their value emerges primarily through improvements in collaborative effectiveness.

Finally, the results confirm that collaborative effectiveness significantly enhances firm performance across production, market, and financial dimensions. This finding is consistent with recent research showing that transparent institutional environments and effective coordination reduce transaction costs and strengthen investor performance (Khan et al., 2024). In this sense, collaborative effectiveness operates as a mechanism through which institutional conditions are translated into firm-level competitiveness, particularly in developing economies where coordination can compensate for institutional limitations.

6. MANAGERIAL AND POLICY IMPLICATIONS

The findings suggest that public-sector inputs—such as leadership, public services, financial resources, and information—generate value for FDI firms only when they are effectively translated into collaborative effectiveness. As demonstrated by the structural model, collaborative effectiveness functions as a key mechanism linking governance conditions to firm-level outcomes. This implies that policy responses should move beyond resource provision toward strengthening coordination processes across administrative levels, consistent with prior work on collaborative governance (Emerson & Nabatchi, 2015; Provan & Kenis, 2008).

At the firm level, FDI enterprises are encouraged to develop institutional and regulatory capabilities that enable them to anticipate and adapt to policy environments. This includes establishing dedicated public affairs or compliance functions integrated with internal management systems. The adoption of digital tools, such as enterprise resource planning systems and compliance monitoring dashboards, can help firms reduce transaction costs and improve administrative efficiency. Moreover, investment location decisions should incorporate not only traditional cost-based factors, but also the collaborative effectiveness of local governments, reflecting differences in coordination quality across provinces. Active engagement in policy dialogue platforms and industry associations may further enhance firms' ability to navigate and influence institutional environments, in line with research on firm–institution interactions in emerging economies (Peng et al., 2008).

At the level of public organizations, the results

underscore the importance of institutionalizing inter-agency coordination mechanisms. Rather than relying on fragmented administrative processes, coordinated structures, such as interagency task forces or joint service platforms, can improve consistency and responsiveness in FDI-related procedures. The effectiveness of such mechanisms depends on clearly defined roles, performance standards, and accountability systems, which are widely recognized as critical elements of network governance (Provan & Kenis, 2008). In addition, improving the competence of public officials through targeted training in investment governance and cross-sector coordination can enhance implementation capacity. The development of integrated and interoperable data systems, shared across agencies, is also essential to address the limitations of fragmented information environments highlighted in prior studies (Yang & Maxwell, 2011; Renteria et al., 2019).

At the macro level, the findings point to the need for stronger regional coordination frameworks to mitigate fragmentation and uncoordinated competition among local governments. Rather than focusing solely on incentive provision, policy design should incorporate indicators that capture collaborative effectiveness, such as administrative efficiency, transparency, and coordination capacity. Linking policy evaluation to these indicators may create stronger incentives for institutional reform and inter-agency alignment. However, given existing institutional constraints, such reforms are likely to require gradual and context-sensitive implementation, particularly in developing administrative systems.

Overall, these implications highlight that improving FDI performance is less about expanding policy instruments and more about enhancing the quality of coordination mechanisms through which such instruments are implemented. By strengthening collaborative effectiveness, both firms and public authorities can reduce transaction costs, improve efficiency, and foster a more adaptive and competitive investment environment.

7. CONCLUSION

This study demonstrates that collaborative effectiveness functions as a key transformation mechanism through which institutional factors, including leadership, public services, financial resources, and information, are translated into firm-level advantages for FDI enterprises. The results highlight the dominant role of collaborative leadership in shaping coordination outcomes, while public services and financial resources provide supportive conditions. In contrast, information contributes to collaboration only when embedded within integrated and transparent coordination systems. Overall, collaborative effectiveness, reflected in cost, time, and quality improvements, emerges as the primary driver of firm performance, particularly financial outcomes.

From a theoretical perspective, the study contributes by integrating network governance theory with transaction cost economics to explain how institutional coordination influences firm performance through a mediating mechanism. In doing so, it extends existing literature by linking governance processes with measurable firm-level outcomes and by validating a multidimensional construct of collaborative effectiveness in an emerging economy context.

From a practical perspective, the findings suggest that improving the investment environment requires a shift from expanding policy incentives to enhancing the quality of coordination among public institutions and firms. Strengthening collaborative mechanisms across organizational and policy levels can generate more sustainable improvements in firm competitiveness than resource-based approaches alone.

This study has several limitations. The analysis focuses on the Northern Key Economic Zone, which may limit generalizability. The use of self-reported firm data may introduce bias, and the model does not fully capture potential interaction effects among institutional factors. Future research could address these limitations by conducting comparative regional studies, incorporating data from public agencies, and applying dynamic models to examine long-term institutional effects.

Overall, the findings suggest that effective investment governance depends less on the quantity of policy instruments and more on the quality of coordination mechanisms through which they are implemented. Strengthening such mechanisms represents a critical condition for attracting higher-quality FDI and enhancing long-term competitiveness in emerging economies.

REFERENCES

Agranoff, R., & McGuire, M. (2001). Big Questions in Public Network Management Research. Journal of Public Administration Research and Theory, 11(3), 295–326.

https://doi.org/10.1093/oxfordjournals.jpart.a003504
Akerboom, M., Groeneveld, S., & Kuipers, B. (2024). Leadership in Public Sector Interorganizational Networks: A Synthesis of the Literature and Propositions Based on a Multiple Case Study. Perspectives on Public Management and Governance, 7. https://doi.org/10.1093/ppmgov/gvae007
Barringer, B. R., & Bluedorn, A. C. (1999). The relationship between corporate entrepreneurship and strategic management. Strategic Management Journal, 20(5), 421–444. https://doi.org/10.1002/(SICI)1097-0266(199905)20:5%253C421::AID-SMJ30%253E3.0.CO;2-O
Bass, B. M., & Avolio, B. J. (1990). Transformational Leadership Development Manual for the Multifactor Leadership Questionnaire. Palo Alto, CA Consulting Psychologists Press. - References—Scientific Research Publishing. (n.d.). Retrieved February 22, 2026, from https://www.scirp.org/reference/ReferencesPapers?ReferenceID=2193218
Benmohamed, N., Shen, J., & Vlahu-Gjorgievska, E. (2024). Public value creation through the use of open government data in Australian public sector: A quantitative study from employees' perspective. Government Information Quarterly, 41(2), 101930. https://doi.org/10.1016/j.giq.2024.101930
Charalabidis, Y., N. Loukis, E., Androutsopoulou, A., Karkaletsis, V., & Triantafillou, A. (2014). Passive crowdsourcing in government using social media. Transforming Government: People, Process and Policy, 8(2), 283–308. https://doi.org/10.1108/TG-09-2013-0035
Cheng, L. K., & Wu, C. (2001). Determinants of the Performance of Foreign Invested Enterprises in China. Journal of Comparative Economics, 29(2), 347–365.
Creswell, J. W. (2013). Qualitative Inquiry and Research Design: Choosing Among Five Approaches. SAGE.
Creswell, J. W., & Poth, C. N. (2016). Qualitative Inquiry and Research Design: Choosing Among Five Approaches. SAGE Publications.
Cristofoli, D., Maccio, L., & Sancino, A. (2011). Managing successful networks: The case of intermunicipality collaboration in Switzerland (pp. 121–139). https://doi.org/10.13140/2.1.5082.0165
Dang, T., Banh, T., Tran, V., Trinh, T., & Nguyen, T. (2024). What drives the satisfaction and loyalty of foreign investors in a locality? Empirical evidence in Nghe An, Viet Nam. Cogent Business & Management, 11. https://doi.org/10.1080/23311975.2024.2353847
Dess, G. G., & Robinson, R. B. (1984). Measuring organizational performance in the absence of objective measures: The case of the privately-held firm and conglomerate business unit. Strategic Management Journal, 5(3), 265–273. https://doi.org/10.1002/smj.4250050306
Emerson, K., & Nabatchi, T. (2015). Evaluating the Productivity of Collaborative Governance Regimes: A Performance Matrix. Public Performance & Management Review, 38, 717–747. https://doi.org/10.1080/15309576.2015.1031016
Guest, G., Bunce, A., & Johnson, L. (2006). How Many Interviews Are Enough? Field Methods - FIELD METHOD, 18, 59–82. https://doi.org/10.1177/1525822X05279903
Günday, G., Gunday, G., Ulusoy, G., Ulusoy, G., Kilic, K., Kilic, K., Alpkan, L., & Alpkan, L. (2009). Effects of innovation types on firm performance.
Hair, J. F. (2014). A primer on partial least squares structural equation modeling (PLS-SEM). sage.
Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Danks, N. P., , Ray, S. (2021). Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook. Springer International Publishing. https://. https://doi.org/10.1007/978-3-030-80519-7
Hair, J. F., Risher, J. J., & Sarstedt, M., , Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. European Business Review, 31(1), 2-24. https://. https://doi.org/10.1108/EBR-11-2018-0203
Hair, J., Hult, G. T. M., & Ringle, C., , Sarstedt, M. (2016). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (2nd edition). Sage Publications, Inc.
Henseler, J., Hubona, G., & Ray, P. (2016). Using PLS Path Modeling in New Technology Research: Updated Guidelines. Industrial Management & Data Systems, 116, 2–20. https://doi.org/10.1108/IMDS-09-2015-0382
Henseler, J., & Ringle, C. M., , Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43(1), 115-135. https://. https://doi.org/10.1007/s11747-014-0403-8
Höck, M., & Ringle, C. (2010). Local strategic networks in the software industry: An empirical analysis of the value continuum. International Journal of Knowledge Management Studies - Int J Knowl Manag Stud, 4. https://doi.org/10.1504/IJKMS.2010.030789

Hodge, G. A., & Greve, C. (2007). Public–Private Partnerships: An International Performance Review. Public Administration Review, 67(3), 545–558. https://doi.org/10.1111/j.1540-6210.2007.00736.x

Khan, H., Dong, Y., Bibi, R., & Khan, I. (2024). Institutional Quality and Foreign Direct Investment: Global Evidence. Journal of the Knowledge Economy, 15(3), 10547–10591.

Klijn, E. H., & Koppenjan, J. (2016). Governance Networks in the Public Sector. https://doi.org/10.4324/9781315887098

Kock, N. (2015). Common Method Bias in PLS-SEM: International Journal of E-Collaboration, 11, 1–10. https://doi.org/10.4018/ijec.2015100101

Kock, N., & Hadaya, P. (2016). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods: Sample size in PLS-based SEM. Information Systems Journal, 28. https://doi.org/10.1111/isj.12131

Koppenjan, J., Klijn, E. H., Verweij, S., Duijn, M., Meerkerk, I., Metselaar, S., & Warsen, R. (2022). The performance of public-private partnerships: An evaluation of 15 years DBFM in Dutch infrastructure governance. Public Performance & Management Review, 45, 998–1028. https://doi.org/10.1080/15309576.2022.2062399

Le, T.-N., & Dang, T.-T. (2024). Performance Analysis of Vietnamese Provinces' FDI Attractiveness: An Application of DEA and Malmquist Indexes. SAGE Open, 14, 2024. https://doi.org/10.1177/21582440241260505

McGuire, M., & Silvia, C. (2009). Does Leadership in Networks Matter? Public Performance & Management Review, 33, 34–62. https://doi.org/10.2753/PMR1530-9576330102

Narver, J. C., & Slater, S. F. (1990). The effect of a market orientation on business profitability. Journal of Marketing, 54(4), 20–35. https://doi.org/10.2307/1251757

Nguyen, B., Mickiewicz, T., & Du, J. (2018). Local governance and business performance in Vietnam: The transaction costs' perspective. Regional Studies, 52(4), 542–557.

Parasuraman, A. P., Zeithaml, V., & Berry, L. (1988). SERVQUAL A Multiple-item Scale for Measuring Consumer Perceptions of Service Quality. Journal of Retailing, 64, 12–40.

Provan, K. G., & Milward, H. B. (1995). A preliminary theory of interorganizational network effectiveness: A comparative study of four community mental health systems. Administrative Science Quarterly, 40(1), 1–33. https://doi.org/10.2307/2393698

Provan, K., & Kenis, P. (2008). Modes of Network Governance: Structure, Management, and Effectiveness. Journal of Public Administration Research and Theory, 18. https://doi.org/10.1093/jopart/mum015

Renteria, C., Gil-Garcia, J. R., & Pardo, T. (2019). Toward an Enabler-Based Digital Government Maturity Framework: A Preliminary Proposal Based on Theories of Change (p. 417). https://doi.org/10.1145/3326365.3326419

Selvam, M., Gayathri, J., Vasanth, V., Lingaraja, K., & Marxiaoli, S. (2016). Determinants of Firm Performance: A Subjective Model. International Journal of Social Science Studies, 4(7), 90–100.

Siciliano, M., Wang, W., Hu, Q., Medina, A., & Krackhardt, D. (2022). Networks in the Public Sector: A Multilevel Framework and Systematic Review. In Elements in Public and Nonprofit Administration. https://doi.org/10.1017/9781009104241

Ta, V. L., Do, A. D., Phan, T. U., Nguyen, Q. H., Nguyen, T. T., Le, T. D., & Nguyen, T. P. (2021). Factors Affecting FDI Intentions of Investors: Empirical Evidence from Provincial-Level Data in Vietnam. Journal of Asian Finance, Economics and Business, 8, 0125–0134. https://doi.org/10.13106/jafeb.2021.vol8.no4.0125

Turrini, A., Cristofoli, D., Frosini, F., & Nasi, G. (2010). Networking Literature About Determinants of Network Effectiveness. Public Administration, 88(2), 528–550. https://doi.org/10.1111/j.1467-9299.2009.01791.x

Venkatraman, N., & Ramanujam, V. (1986). Measurement of Business Performance in Strategy Research: A Comparison of Approaches. The Academy of Management Review, 11. https://doi.org/10.5465/AMR.1986.4283976

Verweij, S., & Meerkerk, I. (2021). Do public-private partnerships achieve better time and cost performance than regular contracts? Public Money & Management, 41, 286–295. https://doi.org/10.1080/09540962.2020.1752011

Wang, W. (2015). Exploring the Determinants of Network Effectiveness: The Case of Neighborhood Governance Networks in Beijing. Journal of Public Administration Research and Theory, 26, muv017. https://doi.org/10.1093/jopart/muv017

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 PPPs. Public Management Review, 20(8), 1165–1185. https://doi.org/10.1080/14719037.2018.1428415

Williamson, O. E. (1985). The Economic Intstitutions of Capitalism. Simon and Schuster.

Yang, T.-M., & Maxwell, T. A. (2011). Information-sharing in public organizations: A literature review of interpersonal, intra-organizational and inter-organizational success factors. Government Information Quarterly, 28(2), 164–175. https://doi.org/10.1016/j.giq.2010.06.008.