

Causal Ambiguity and Knowledge Transfer between Public and Private Sectors Organisations in Private Finance Initiatives Projects



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Research Purposes

- Causally ambiguous nature of knowledge
- Knowledge transfer process
- Partners in Private Finance Initiatives (PFI)
 - Public Sector Organisation
 - Private Sector Organisation
- The antecedents of causal ambiguity
 - (1) Tacitness; (2) Asset Specificity; (3) Experience; (4) Strategic Similarity; (5) Partner Protectiveness; (6) National Distance and (7) Organizational Distance.
- New research dimension – Public vs. Private



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Private Finance Initiatives (PFI)

- Public-Private partnership contract
- Quality services on a long-term basis
- Pre-defined deliverable requirements
- Roles of public sector
 - planning, licensing and other statutory procedures, etc.
- Roles of private sector
 - maintenance or construction of the infrastructure, etc.
- Effective means of establishing cooperation
- Share their different expertise and experience



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Knowledge Transfer

- Many perception variations in the use of knowledge between public and private sectors
- How to transport, interpret, & absorb ?
- Significant benefits :
 - (1) reducing duplicate works; (2) avoiding reinventing the wheel; (3) improved utilization of tacit knowledge; & (4) best practices to facilitate improvement & innovation.
- Public vs. Private : not yet fully explored
- Better understanding of knowledge transfer for PFI partners and better PFI process



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Causal ambiguity

- An obstacle hindering knowledge transfer throughout all phases of the transfer process
- Causal connections between actions & results
- Knowledge in social network
- Organisations with non-redundancy social ties to other organisations can access to more information & acquire more new knowledge
- Research study starting from its antecedents
 - (1) Tacitness; (2) and (7) Organizational Distance.



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Antecedents of Causal ambiguity

- Tacitness and Tacit Knowledge
 - the implicit & non-codified accumulation of skills
 - results from learning by doing
 - Tacit knowledge : people carry in their minds, cannot be easily shared, communicated & is difficult to access
 - Effective transfer of tacit knowledge, which is in an individual's involvement, requires extensive personal contact and trust
 - Tacit knowledge, which is embedded in each organization, is hard to identify, address, locate, quantify, value, map, etc.



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Antecedents of Causal ambiguity

- Partner Protectiveness
 - In alliances and partnerships, some partners may be less transparent or open than others
 - For knowledge transfer and acquisition between partners, it depends on not only the firm's internal absorptive capabilities but also the knowledge sharing willingness
- Asset Specificity
 - the extent to which the investments contributed to support a particular transaction, rather than redeployed for the other purposes



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Antecedents of Causal ambiguity

- National Distance or Cultural Distance
 - the various facets of collaboration including communication barriers, work routines, managerial approaches, and cultural differences
- Organisation Distance
 - the degree of dissimilarity between the partners' practices, institutional heritage and organizational culture
- Strategic Similarity
 - a universal knowledge sources & similar elements
- Experience



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Expected Moderating Factors

- Absorptive Capacity
 - their ability to exploit outside sources of knowledge
- Collaborative Know-how
 - proper procedures for information gathering, interpretation and diffusion
- Partnership Duration
 - As the partnership sustains itself over the years, trust intensifies and attachment between partners developed ?!



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Research Design & Methodology

- Quantitative methodology by Questionnaires
- Research Questions
 - Does causal ambiguity affect the process of knowledge transfer between partners in PFI projects?
 - How much is the strength of causal ambiguity affecting the process of knowledge transfer between partners?
 - What are the perception differences between government and private sectors organisation?



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Research Design & Methodology

- Hypotheses

- H1 : Tacitness is negatively related to Knowledge Transfer.
- H2 : Partner Protectiveness is negatively related to Knowledge Transfer.
- H3 : Asset Specificity is negatively related to Knowledge Transfer.
- H4 : National Distance is negatively related to Knowledge Transfer.
- H5 : Tacitness is positively related to Organisation Distance.
- H6 : Strategic Similarity is positively related to Partner Protectiveness.



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Research Design & Methodology

- Hypotheses

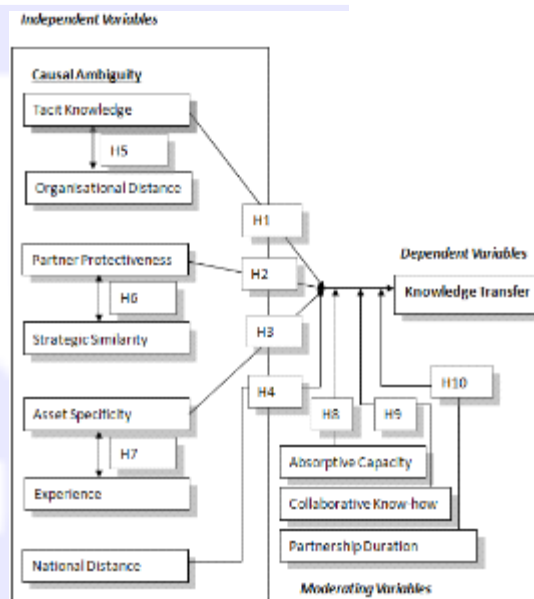
- H6 : Strategic Similarity is positively related to Partner Protectiveness.
- H7 : Asset Specificity is positively related to Experience.
- H8 : The relationship between Causal ambiguity and Knowledge transfer is moderated by Absorptive Capacity.
- H9 : The relationship between Causal ambiguity and Knowledge transfer is moderated by Collaborative Know-how.
- H10 : The relationship between Causal ambiguity and Knowledge transfer is moderated by Partnership Duration.



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Conceptual Framework

- Independent Variables
- Dependent Variables
- Moderating Variables

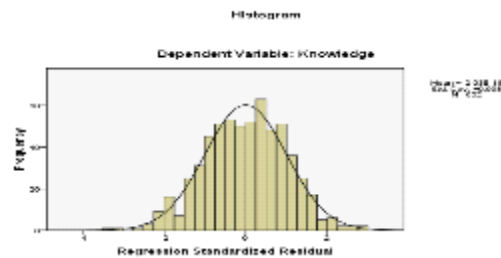


Questionnaire Survey

- Five-point Likert scale
- Target Population: “Community of Practices” of the PFI infrastructure projects in HK
 - Architects, Planners, Surveyors, Engineers, Landscape Architects, Civil Engineering Surveyors
 - Professional/Manager grade in PFI projects
- 602 questionnaires are valid
 - All questions are answered
 - Minimum 1 year working experience in PPP/PFI
 - Questions are answered in a proper manner

Data Analysis

- Data Validity and Reliability
 - Internal consistency : Cronbach's Alpha from 0.74 to 0.86
 - Convergent validity : Factor loadings & Average Variance Extracted are 0.5 or higher
 - Knowledge Transfer residuals are normally distributed

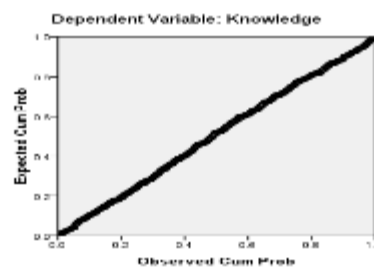


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Data Analysis

- Data Validity and Reliability
 - Probability plot (P-P plot): Perfect relationship of residuals around the linear line at 45°. Therefore normality of residuals and linearity of relationships exist.

Normal P-P Plot of Regression Standardized Residual

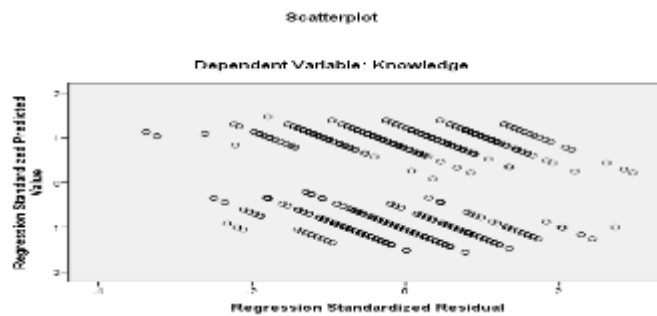


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Data Analysis

- Data Validity and Reliability

- The scatter plot shows randomness and non linearity of residuals. Therefore this data is suitable to form linear regression models.



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Data Analysis

- Testing H1, H2, H3, and H4

- Tacit knowledge, Partner Protectiveness, Asset Specificity and National Distance (independent variables) with Knowledge Transfer (dependent)
- The Multiple Linear Regression model: -
 - Knowledge Transfer = $a + b_1$ (Tacit Knowledge) + b_2 (Partner Protectiveness) + b_3 (Asset Specificity) + b_4 (National Distance) + error
 - H_0 : model does not fit the data ; H_1 : model fits the data
 - H_0 : $\beta = 0$; H_1 : $\beta > 0$ (positively related)
 - H_0 : $\beta = 0$; H_1 : $\beta \neq 0$ (2 tailed test)



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Data Analysis

- Testing H1, H2, H3, and H4

- Results in ANOVA Table (Coefficient of MLR Model): -

- Knowledge Transfer = 4.13 + 0.49 (Tacit Knowledge) + 0.19 (Partner Protectiveness) + 0.27 (Asset Specificity) – 0.14 (National Distance)

Model ^a	Unstandardized Coefficients ^a		Standardized Coefficients ^a	T ^a	Sig. ^a	Collinearity Statistics ^a	
	B ^a	Std. Error ^a	Beta ^a			Tolerance	VIF ^a
1 ^a (Constant) ^a	4.133	.699 ^a		5.914	.000 ^a		
TKnowledge ^a	.487	.037	.591	13.097	.000	.241	4.142
PProtect ^a	.189	.048	.113	3.909	.000	.590	1.696
ASpecificity ^a	.271	.061	.195	4.481	.000	.259	3.867
NDistance ^a	-.137	.088	-.035	-1.559	.119	.994	1.006

a. Dependent Variable: Knowledge Transfer^a



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Data Analysis

- Testing H1, H2, H3, and H4

- Results in ANOVA Table: -

- H1 : t = 13.10, p-value = (0.0001)/2, H₀ is rejected as p-value < 0.05

- ➔ Tacit Knowledge is a significant variable.

- H2 : t = 3.91, p-value = (0.0001)/2, H₀ is rejected as p-value < 0.05

- ➔ Partner Protectiveness is a significant variable.

- H3 : t = 4.48, p-value = (0.0001)/2, H₀ is rejected as p-value < 0.05

- ➔ Asset Specificity is a significant variable.

- H4 : t = - 1.56, p-value = (0.119)/2 = 0.06, H₀ is not rejected as p-value > 0.05.

- ➔ National Distance is not a significant variable.

- Multicollinearity can be tested using Variance Inflation Factor (VIF)

- VIF < 5 : Independent variables are independent from each other.

- There is no multicollinearity in the multiple linear regression.



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Data Analysis

- Testing H1, H2, H3, and H4
 - Strength of relationship : Adjusted R2 value
 - R2 around 0.01 – small ; R2 around 0.09 – medium ; R2 around 0.25 – strong (Cohen, J., 1992)
 - R2 is 0.705, showing 70.5 % of change in Knowledge Transfer is due to the changes in Tacit knowledge, Partner protectiveness, Asset Specificity and National distance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics ^a				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.841 [*]	.707	.705	1.41958	.707	359.946	4	597	.000

a. Predictors: (Constant), NDistance, ASpecificity, PProtect, TKnowledge

b. Dependent Variable: Knowledge Transfer



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Data Analysis

- Testing H1, H2, H3, and H4
 - Based on the above analysis, H1, H2, and H3 are not accepted or not supported as Tacit knowledge, Partner protectiveness and Asset Specificity are positively related to Knowledge Transfer significantly.
 - However, H4 is supported as National Distance is negatively related to Knowledge Transfer.



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Data Analysis

- Testing H5, H6 and H7
 - Pearson’s correlation analysis is used to test the strength and direction of relationship between two variables for H5, H6 & H7.
 - H5: Tacit knowledge is positively related to organisation Distance. $R^2 = 30.9\%$ of variations in Tacit Knowledge can be explained by the variations in organisational distance.
 - H6: Strategic similarity is positively related to partner protectiveness. $R^2 = 27.4\%$ of variations in partnership Protection is explained by the strategic similarities.
 - H7: Asset specificity is positively related to experience. $R^2 = 24.9\%$ of variations in asset specificity is explained by experience.



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Data Analysis

- Differences between Public and Private Sectors Organisation
 - Cross tabulations & chi square tests : determine the association between the independent constructs and nature of organisations

		Type ^a		Total ^b
		Government ^c	Private ^d	
1 ^e	Count ^f	101	0	101
	% within Gov or Pri ^g	34.1%	.0%	16.6%
2 ^e	Count ^f	93	0	93
	% within Gov or Pri ^g	31.4%	.0%	15.4%
3 ^e	Count ^f	69	0	69
	% within Gov or Pri ^g	23.3%	.0%	11.5%
4 ^e	Count ^f	29	0	29
	% within Gov or Pri ^g	9.8%	.0%	4.8%
5 ^e	Count ^f	4	4	8
	% within Gov or Pri ^g	1.4%	1.3%	1.3%
6 ^e	Count ^f	0	7	7
	% within Gov or Pri ^g	0%	2.3%	1.2%
7 ^e	Count ^f	0	48	48
	% within Gov or Pri ^g	0%	15.7%	8.0%
8 ^e	Count ^f	0	122	122
	% within Gov or Pri ^g	0%	39.9%	20.3%
9 ^e	Count ^f	0	123	123
	% within Gov or Pri ^g	0%	40.8%	20.8%
Total ^h	Count ^f	296	306	602
	% within Gov or Pri ^g	100.0%	100.0%	100.0%

	Value ^a	df ^b	Asymp. Sig. (2 sided) ^c
Pearson Chi Square	1.940E-34	8	.000
Likelihood Ratio ^d	8.73793	8	.000
N of Valid Cases ^e	602		

a. 4 cells (22.2%) have expected count less than 5. The minimum expected count is 3.44.



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Data Analysis

- Differences between Public and Private Sectors Organisation
 - Significant differences: Public vs. Private
 - Tacit Knowledge, Partnership Protectiveness, Asset Specificity
 - More likely to agree on the importance
 - Tacit Knowledge : Private Sector
 - Partnership Protectiveness : Private Sector
 - Asset Specificity : Private Sector



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Conclusions

- Causal ambiguity affects the process of knowledge transfer between partners in PFI projects.
- Tacit Knowledge, Partner Protectiveness, Asset Specificity and National Distance are all significant constructs affecting the process of knowledge transfer between Public and Private Sectors organisation.



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Conclusions

- Unlike the traditional strategic alliances both from private organisations, Tacit Knowledge, Partner Protectiveness and Asset Specificity are positively related to Knowledge Transfer.
- National Distance is negatively related to Knowledge Transfer.
- Interesting Results are due to the nature of PFI and clear working procedures of government.



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Conclusions

- Tacit knowledge is significantly and positively related to Organisational Distance
- Strategic Similarity is significantly and positively related to Partner Protectiveness.
- Asset Specificity is significantly and positively related to Experience.
- Same results as private partnership.



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Conclusions

- There is significant difference in the mindsets and conceptual considerations of knowledge transfer between government and private sectors organisation.
- It is due to the organisational culture.



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Conclusions

- The author is undergoing the analysis to the moderating variables. The results will be announced in the final thesis.
- For preliminary and interesting reference, The relationship between Causal ambiguity and Knowledge transfer is not moderated by Partnership Duration.



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