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
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

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
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.

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.
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

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
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 ?!

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?
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.

• 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.
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

![Histogram of dependent variable: Knowledge](image1)

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](image2)
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.

  ![Scatter plot](image)

• 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 + b1 (Tacit Knowledge) + b2 (Partner Protectiveness) + b3 (Asset Specificity) +b4 (National Distance) + error
    ➢ H0: model does not fit the data ; H1: model fits the data
    ➢ H0: β = 0 ; H1: β > 0 (positively related)
    ➢ H0: β = 0 ; H1: β ≠ 0 (2 tailed test)
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)

<table>
<thead>
<tr>
<th>Models</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>4.133</td>
<td>.604</td>
<td>5.144</td>
<td>.000</td>
<td>100.0</td>
</tr>
<tr>
<td>TKnowledge</td>
<td>.987</td>
<td>.037</td>
<td>.591</td>
<td>13.097</td>
<td>.000</td>
</tr>
<tr>
<td>PProtect</td>
<td>.189</td>
<td>.048</td>
<td>.113</td>
<td>3.909</td>
<td>.000</td>
</tr>
<tr>
<td>ASpecificity</td>
<td>.271</td>
<td>.061</td>
<td>.195</td>
<td>4.811</td>
<td>.000</td>
</tr>
<tr>
<td>NDistance</td>
<td>-1.137</td>
<td>.088</td>
<td>-1.559</td>
<td>1.119</td>
<td>.994</td>
</tr>
</tbody>
</table>

• 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.
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

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.841*</td>
<td>0.707</td>
<td>0.705</td>
<td>1.41958</td>
<td>R Square Change, F Change, df1, df2, Sig F Change</td>
</tr>
</tbody>
</table>

a. Predictors (Constant), NDistance, ASpecificity, PProtect, TKnowledge
b. Dependent Variable: Knowledge Transfer

- 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.
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. R² = 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. R² = 27.4% of variations in partnership Protection is explained by the strategic similarities.
  – H7: Asset specificity is positively related to experience. R² = 24.9% of variations in asset specificity is explained by experience.

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
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

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.
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.

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.
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.

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.
Thank You!

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