The role of social capital, knowledge exchange and the growth of indigenous knowledge-based industry in the Triple Helix system: the case of Thailand

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Session 1C
Introduction & background of the study
- Aim of the study
- Triple Helix system and social capital
- Social capital and SME development
- Indigenous knowledge-based industry and the Thai dessert industry

Research methodology
- Questionnaire and interviews

Result and Discussion
- Relationship between social capital and technological capability development

Conclusion & Policy recommendation

The aim of the study
To explore the relationship between social capital and technology development in indigenous SMEs in Thailand by using the case of the Thai dessert industry
The Triple Helix System of Innovation, indigenous knowledge and small and medium size enterprises (SMEs) development

- SMEs play crucial roles in economic development (99.8% of Thai firms)
- SMEs operate largely based on indigenous knowledge and implicit knowledge
- SMEs operate with limited resources (particularly capital fund and knowledge)

Introduction

**SME**

**Indigenous/traditional knowledge**

**Limited resources**

**Blend with modern technology and knowledge exchange**

**Appropriate technology**

- Suitable for local use
- More competitive and effective

**Government support**

**Knowledge sources**

**Financial sources**

**Business alliance**

**Infrastructures etc.**

SME definition: Less than 200 employees and registered capital ≤ 200 million Thai Baht or 4 million Pounds
Social capital:

Trust, norms and network that facilitate collaboration and cooperation resulting in mutual benefits

(Putnam, 1993)
Profile of the Thai dessert industry

- SMEs based on traditional, indigenous knowledge
  - Local raw materials
  - Simple production processes
  - Labour-based industry

- Important market
  1) Domestic market
     - Tourist market
     - Gift purpose
  2) Export market

- Market value/year
  558.5 mB (18.5 mUSD)
  (Data from survey of 145 firms in 2009)
The Thai dessert industry

- **Important for community development**
  - value added to local products
  - improve well-being of the community members and local people

- **Medium-low technology and labour intensive but has a potential for growth and development**
  - product development (e.g. shelf life extension, new segment of market, package development)
  - process development (e.g. machine development, production improvement, product and process control)
  - organisation development
Research methodology

Questionnaire survey
- 13 social capital variables,
- Technological capability development

Quantitative data

Interview
- In-depth information

Qualitative data
- Used in complement with the survey data

Statistical techniques
- Explore relationship
  - (Multiple regression analysis: stepwise method)

Discussion & Conclusion

121 firms
(17% response rate)

22 firms

121 firms
(17% response rate)
### Measurable items

<table>
<thead>
<tr>
<th>Technological capability development (Y)</th>
<th>Social capital (X)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and development capability</td>
<td><strong>TRUST</strong></td>
</tr>
<tr>
<td>Process improvement</td>
<td>Trust in same industry</td>
</tr>
<tr>
<td>Investment in technology</td>
<td>Trust in supply chain</td>
</tr>
<tr>
<td></td>
<td>Trust in knowledge and support institutes</td>
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</tbody>
</table>

#### Regression equation

\[
Y = \beta_0 + \beta X + \varepsilon
\]

Where:

- \( Y \) = Dependent variable
- \( X \) = Independent variables
- \( \beta \) = Regression coefficients
- \( \beta_0 \) = Constant or intercept
- \( \varepsilon \) = Error term

- Amount of contact time
- Strength of ties
- Honest and truthful approach of relationships
- Norms and reciprocity
- Knowledge and information sharing
- Network development
- Reduced transaction cost, repeat transactions
### Results & Discussion

**Relationship between social capital elements and technological capability development in the Thai dessert industry**

#### Multiple regression analysis

<table>
<thead>
<tr>
<th>Constant ( \beta_0 )</th>
<th>Trust in Knowledge ( \beta_1 )</th>
<th>Honest &amp; truthful ( \beta_2 )</th>
<th>Knowledge sharing ( \beta_3 )</th>
<th>Network dev. ( \beta_4 )</th>
<th>( R^2 )</th>
<th>Adj ( R^2 )</th>
<th>Model Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coef.</td>
<td>1.027***</td>
<td>0.182*</td>
<td>0.176**</td>
<td>0.203*</td>
<td>0.168*</td>
<td></td>
<td>0.36</td>
</tr>
<tr>
<td>Std. Coef.</td>
<td>(0.168)</td>
<td>(0.169)</td>
<td>(0.213)</td>
<td>(0.206)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>S.E.</td>
<td>0.354</td>
<td>1.00</td>
<td>0.088</td>
<td>0.106</td>
<td>0.093</td>
<td></td>
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</tr>
<tr>
<td>T-value</td>
<td>2.901</td>
<td>1.826</td>
<td>2.005</td>
<td>1.915</td>
<td>1.801</td>
<td></td>
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<tr>
<td>Sig.</td>
<td>0.004</td>
<td>0.070</td>
<td>0.047</td>
<td>0.058</td>
<td>0.074</td>
<td></td>
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</tr>
<tr>
<td>Tolerance</td>
<td>0.652</td>
<td>0.778</td>
<td>0.445</td>
<td>0.422</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>VIF</td>
<td>1.533</td>
<td>1.285</td>
<td>2.250</td>
<td>2.371</td>
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</tr>
</tbody>
</table>

Statistical significance at *\( p < 0.1 \), **\( p < 0.05 \) level , *** \( p < 0.01 \)

**Results**: Social capital elements affecting technological capability development in the Thai dessert industry are:

- Knowledge & information sharing > Trust in knowledge and support institutes
- > Honest and truthful approach of relationships
- > Network development
A higher index of social capital results in a better technological capacity development in SMEs

Knowledge exchange and information sharing is the most important factor for technological capability development in SMEs

Knowledge exchange and information sharing in knowledge sphere occurs based on trust, honest and truthful relationship

*Note: interitem correlation is in parenthesis*
1) Social capital enhancing the effectiveness of the Triple Helix network is important for technological capability development and innovation in SMEs (i.e. Social capital as the active ingredient of TH network)

- Enhances exposure to new ideas through triple helix network
- Enhances access to government supports and public resources

2) Traditional industries, like the Thai desert industry based on indigenous knowledge, have the potential to be creative and innovative through engagement in knowledge exchange.

**BUT**

Government intervention is required for providing the framework for knowledge exchange for technological innovation in SMEs

- Strategic policy intervention: continual support, in terms of provision of integrated service and network development based on social capital creation
- Creation of intermediary organisations, interfacing university, industry and government, is crucial for the development of triple helix system
Thank you