The Role of Intellectual Capital in Creating Value in the Banking Industry

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Introduction

• In recent years, financial institutions, especially those in the banking industry, have experienced a dynamic and competitive environment.

• The banking industry is one of the most knowledge-intensive industries. Intellectual Capital (IC) generally represents the critical resource in the value creation process.
Literature Review

- Intellectual capital can be viewed as knowledge, in formation, intellectual property and experience that can be put to use to create wealth (Stewart, 1997).

- Intellectual capital includes all employees, organizational knowledge and their abilities to create value added and led to sustainable competitive advantage.

- Intellectual capital has been identified as a set of intangibles (resources, capabilities and competences) that drives the organizational performance and value creation. (Bontis, 1998)

- This suggests causal relationships between intellectual capital and organizational value creation. At least three elements are common in almost all definitions: (i) intangibility; (ii) knowledge that creates value and; (iii) effect of collective practice (Maria do Rosario Cabrita and Jorge Landeiro Vaz, 2005)

- It is assumed that competitive advantage depends on how efficient the firm is in building sharing, leveraging and using its knowledge.
Literature Review

- **Value Added Intellectual Coefficient (VAIC™)**

  - Pulic (1998) proposed the Value Added Intellectual Coefficient (VAIC™) to provide information about the value creation efficiency of tangible and intangible assets within a company.

  - VAIC™ is an analytical procedure designed to enable management, shareholders and other relevant stakeholders to effectively monitor and evaluate the efficiency of Value Added (VA) by a firm's total resources and each major resource component.

- Value added (VA) is the difference between sales (OUT) and inputs (IN): \( \text{OUT} - \text{IN} = \text{VA} \).

  - Output (OUT) represents the overall income, all the products and services sold on the market.

  - Inputs (IN) contain all the expenses, everything that came into the company. Labour expenses were not calculated into input due to the active role in the value creating process, intellectual potential, represented by labour expenses)
Literature Review

- Value added grows out of physical capital and intellectual potential.

- Instead of valuing the intellectual capital of a firm, the VAIC method mainly measures the efficiency of firms' three types of inputs: physical and financial capital, human capital, and structural capital, namely
  - the Capital Employed Efficiency (CEE) — indicator of VA efficiency of capital employed,
  - the Human Capital Efficiency (HCE) — indicator of VA efficiency of human capital, and
  - the Structural Capital Efficiency (SCE) — indicator of VA efficiency of structural capital.

- The sum of the three measures is the value of VAIC. The higher VAIC value results in better companies' value creation potential.

Literature Review


- Dimitrios G. Mavridis (2004) applied the VAIC™ method in order to analyze the data of Japanese banks for the financial period 1 April 2000-31 March 2001, analyze the intellectual or human (HC) and physical capital (CA) of the Japanese banking sector and discussed their impact on the banks' value-based performance. The study confirmed the existence of significant performance differences among the various groups of Japanese banks but also the differences between the Japanese and some European banks.
**Literature Review**

- Pek Chen Goh (2005) measured the intellectual capital performance of commercial banks in Malaysia for the period 2001 to 2003, using efficiency coefficient called VAIC™ developed by Ante Pulic. As a whole, all banks have relatively higher human capital efficiency than structural and capital efficiencies. Domestic banks were generally less efficient compared to foreign banks.

- G. Barathi Kamath (2007) estimate and analyze the Value Added Intellectual Coefficient (VAIC™) for measuring the value-based performance of the Indian banking sector for a period of five years from 2000 to 2004. The study confirms the existence of vast differences in the performance of Indian banks in different segments, and there is also an improvement in the overall performance over the study period.

**Statement of Problem**

- The difference in financial performance between between the group of Thai banks and the group of foreign-owned banks results in the study on how the intellectual capital plays the role on the different financial performances.
Research Objective

• This study aims to evaluate the relationship between intellectual capital capability and financial performance of commercial banks in Thailand.

• It is to examine interrelationships among intellectual capital components and organizational performance, with the level of human capital efficiency (HCE), capital employed efficiency (CEE) and structural capital efficiency (SCE).

Model Estimation

• Model 1 and model 2 examine the relationships between Return on total assets and Cost to Assets and the aggregate measure of intellectual capital VAIC, and its three major components, Human capital efficiency (HCE) Capital employed efficiency (CEE) Structural capital efficiency (SCE). The regression models are as follows:

Model 1.1: \[ ROA_{it} = \beta_0 + \beta_1VAIC_{it} + \text{GROUP}_{it} + \epsilon_{it} \]

Model 1.2: \[ ROA_{it} = \beta_0 + \beta_1HCE_{it} + \beta_2CEE_{it} + \beta_3SCE_{it} + \text{GROUP}_{it} + \epsilon_{it} \]

Model 2.1: \[ CTA_{it} = \beta_0 + \beta_1VAIC_{it} + \text{GROUP}_{it} + \epsilon_{it} \]

Model 2.2: \[ CTA_{it} = \beta_0 + \beta_1HCE_{it} + \beta_2CEE_{it} + \beta_3SCE_{it} + \text{GROUP}_{it} + \epsilon_{it} \]
Variable definitions

Dependent variables:

- Return on total assets (ROA) refers to Total income, including net interest income and non-interest income, over total assets.
- Cost to Assets (CTA) refers to operating costs over total assets

Independent variables:

- \( \text{VAIC}^\text{TM}_i = \text{CEE}_i + \text{HCE}_i + \text{SCE}_i \) where
- \( \text{VAIC}^\text{TM} = \text{VA intellectual coefficient for firm } i \);
- \( \text{CEE}_i = \frac{\text{VA}_i}{\text{CE}_i} \) VA capital employed coefficient for firm i;
- \( \text{HCE}_i = \frac{\text{VA}_i}{\text{HC}_i} \) human capital coefficient for firm i;
- \( \text{SCE}_i = \frac{\text{SC}_i}{\text{VA}_i} \) structural capital VA for firm i;
- \( \text{VA}_i = \text{Output} - \text{Input} (\text{Total Income} - \text{Operating Expenses excluding Salaries and employee benefits}) \)
- \( \text{CE}_i = \text{book value of the net assets for firm } i \)
- \( \text{HC}_i = \text{Salaries and employee benefits for firm } i \)
- \( \text{SC}_i = \text{VA}_i - \text{HC}_i \) structural capital for firm i.
Model Estimation

- Human capital efficiency (HCE) refers to indicator of VA efficiency of human capital.
- Capital employed efficiency (CEE) refers to indicator of VA efficiency of capital employed.
- Structural capital efficiency (SCE) refers to indicator of VA efficiency of structural capital.
- GROUP refers to types of commercial banks i.e. 0 = foreign banks’ branches and 1 = commercial banks registered in Thailand (Thai banks).

Data

- Period
  - from 2000 until 2007

- Half-year bank-level data
  - Published statistics by the Bank of Thailand, which classifies the data into 2 groups, commercial banks registered in Thailand (Thai banks) and foreign banks’ branches. The variables are selected from the banks’ balance sheet and income statements.
ROA: Gross Income / Assets

Cost to Assets
VAIC

HCE: VA / HC
Empirical Results

- Model 1.1:
  \[ \text{ROA}_t = \beta_0 + \beta_1 \text{VAIC}_t + \text{GROUP}_t + \epsilon_t \]
  \[ \text{ROA} = 0.013323 + 0.001913 \text{VAIC} - 0.002445 \text{GROUP} \]
  Std. Error (0.002344) (0.000482) (0.001186)
  t-Statistic (5.684467) (3.971231) (-2.060496)

- Model 1.2:
  \[ \text{ROA}_t = \beta_0 + \beta_1 \text{HCE}_t + \beta_2 \text{CEE}_t + \beta_3 \text{SCE}_t + \text{GROUP}_t + \epsilon_t \]
  \[ \text{ROA} = 0.0141 - 0.0035 \text{HCE} + 1.5257 \text{CEE} + 0.0037 \text{SCE} - 0.0044 \text{GROUP} \]
  Std. Error (0.001340) (0.000839) (0.199637) (0.003179) (0.000723)
  t-Statistic (10.52359) (-4.145782) (7.642312) (1.156430) (-6.040568)
Empirical Results

Model 3.1:
\[ CTA_{it} = \beta_0 + \beta_1 VAIC_{it} + \text{GROUP}_{it} + \epsilon_{it} \]
\[ CTA = 0.0172 - 0.0009 VAIC - 0.0032 \text{GROUP} \]

\[
\begin{array}{c}
\text{Std. Error} \\
(0.001722) \\
(0.000354) \\
(0.000872) \\
\text{t-Statistic} \\
(9.969718) \\
(-2.554420) \\
(-3.673549)
\end{array}
\]

Model 3.2:
\[ CTA_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 CEE_{it} + \beta_3 SCE_{it} + \text{GROUP}_{it} + \epsilon_{it} \]
\[ CTA = 0.0175 - 0.0043 HCE + 0.7921 CEE + 0.0035 SCE - 0.0044 \text{GROUP} \]

\[
\begin{array}{c}
\text{Std. Error} \\
(0.001357) \\
(0.000849) \\
(0.202187) \\
(0.003220) \\
(0.000732) \\
\text{t-Statistic} \\
(12.90759) \\
(-5.119105) \\
(3.917524) \\
(1.092244) \\
(-5.962420)
\end{array}
\]
Conclusions

• Empirical findings have some strong association between the efficiency of intellectual capital and banks’ financial performance.

• With regards to profitability, the efficiency of Intellectual Capital is to be significantly associated. When it is classified into major components, the efficiency of total assets (CEE) plays a major role in enhancing the returns. The total assets, both financial and physical assets, have been utilized importantly in generating highly valued returns.

• In terms of cost efficiency, the efficiency of intellectual capital also strongly related with the cost-to-assets ratio, indicating that the higher intellectual capability the bank has, the efficient cost can be managed.

• Furthermore, the human resources management is a major factor in determining the cost efficiency, resulting from the highly negative correlation between cost-to-assets and human capital efficiency (HCE).