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Intellectual Capital Efficiency and Firm's Performance: Study on Malaysian Financial Sectors

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Abstract

It is no doubt that successful companies tend to be those that continually innovate, relying on new technologies and emphasize on skills and knowledge of their employees rather than assets such as plants or machinery. Knowledge being the new engine of corporate development has become one of the great clichés of recent years. Value can be generated by intangibles, which are not always reflected in financial statements. Forward-looking companies have realized that these are an integral part of fully understanding the performance of their business. This study therefore tries to investigate the efficiency of intellectual capital and its performance in Malaysian financial sectors. The results were based on the data taken from 18 companies under financial sector for the year 2007. It was found that the banking sector relied more on intellectual capital followed by insurance companies and Brokerage firms. It was also found that intellectual capital has significant and positive relationships with company's performance measured by profitability and Return on Assets (ROA).

Keywords: Intellectual capital, Value added intellectual capital coefficient

1. Introduction

In Malaysia, the development of human capital, enrichment of the mentality and intellectual capacity of a nation is one of the areas targeted under the Ninth Malaysia Plan. Intellectual capital is defined as intangible assets which include technology, customer information, brand name, reputation and corporate culture that are invaluable to a firm's competitive power (Low and Kalafut, 2002),**)**. Hence, intellectual capital consists of (1) tacit knowledge and innovativeness of the employees, (2) infrastructure of human capital (i.e. good working system, innovation) and improvement processes of structural capital and; (3) external relationships of the firm (i.e. customers' capital). These are the key drivers of organization performance and creation of future wealth. (Bontis *et al.*, 2000; Riahi-Belkaoui, 2003). In realizing the goals of a progressive and dynamic financial sector and the desire to become a knowledge-based economy, greater efforts must be directed to building human intellectual capital (Lepak and Snell,1999).

In Malaysia, the role of human capital is pivotal to the development of a world-class capital market. The financial sector is now in a prime position to be more innovative, relying on new technologies and emphasizing on skills and knowledge of their employees rather than on assets such as plants or machinery. This is due to the intense competitive pressure, which arises from changes in the financial environment, technological advancements and the needs of the consumers in terms of product quality. Therefore, financial sectors need to anticipate and respond to these demands and expectations. Hence, highly skilled individuals are needed to facilitate the delivery of high value-added products and services as well as the competencies to build consumers' confidence and trust (Mavridis, 2004).). Moreover, financial sectors such as banking are a knowledge-intensive, skills-based and relationship-rich industry. In an increasingly complex and more liberal environment, the competitiveness of banking institutions will depend critically on the quality of human intellectual capital and the extent to which the industry is able to leverage on these talents.

Although intellectual capital has been recognized as a firm's wealth driver, there are many issues that are still being debated. In addition to the issue of the development of measurement models that best explain the invisible or hidden values of firms, various attempts have been made by companies and countries to develop an intellectual capital disclosure framework to reflect values unexplained by traditional accounting. On the other hand, it is not clear whether certain types of firms are more likely to focus on managing intellectual capital or not, or if they do, do they

view intellectual capital as a mission-critical resource and attempt to manage it accordingly (Usoff, Thibodeau , and Burnaby, 2002). Therefore this study is trying to investigate the intellectual capital efficiencies among companies under financial sectors particularly in the banking, insurance and brokerage firm in Malaysia. In addition, the study also attempts to analyze the relationships between intellectual capital and the company's performance.

2. Method of analysis

The value added intellectual coefficient (VAIC™) introduced by Pulic (1998) was used to measure the intellectual capital efficiency in the current study. Multiple regression analysis then was used to investigate the relationships between intellectual capital (measured by human capital efficiency, structural capital efficiency and capital employed) and firm's performance. Firm's performance on the other hand was conceptualized by looking at the value of Return on Assets (ROA) and company's profitability. Annual reports from 18 companies were chosen to be analyzed which encompasses of banks, insurance companies and brokerage firm.

2.1 Variables

Intellectual capital includes customer capital, human capital, intellectual property, and structural capital. However in this study, intellectual capital was measured by human capital, structural capital and capital employed as suggested by Pulic (1998) and Firer and Williams (2003). *Human capital* refers to the collective value of the organization's intellectual capital - that is competencies, knowledge, and skills. This capital is the organization's constant renewable source of creativity and innovativeness, which is not reflected, in its financial statements. *Structural capital* can be defined as competitive intelligence, formulas, information systems, patents, policies, processes, and etc., resulted from the products or systems the firm has created over time. Structural capital is the intellectual value that remains with the enterprise when people leave. Structural capital includes the content within the enterprise knowledge asset, as well as the intellectual investment that the enterprise has made in the physical, technical and business culture infrastructures that support its activities. *Capital employed* on the other hand can be defined as total capital harnessed in a firm's fixed and current assets. Viewed from the funding side, it equals to stockholders' funds (equity capital) plus long-term liabilities (loan capital). However, if it is viewed from the asset side, it equals to fixed assets plus working capital. (businessdictionary.com).

2.1.1 VAIC™ model

The VAIC™ method enables the firm to measure its value creation efficiency (Pulic, 2001, 2002). VAIC™ method used financial statements of a firm to calculate the efficiency coefficient on three types of capital – that is human capital, structure capital and capital employed. Though VAIC™ uses accounting data, it does not focus on the cost of the firm. It's only focus on the efficiency of resources that create values to the firm (Pulic 2000, Boremann 1999).

Pulic (1998) proposed Value Added Intellectual Coefficient (VAIC) as an indirect measure of efficiency of value added by corporate Intellectual Capital. The VAIC™ method provides the information about the efficiency of tangible and intangible assets that can be used to generate value to a firm. Financial capital (monetary and physical), human capital, and structural capital have been recognized as major components of VAIC. A higher value for VAIC shows a greater efficiency in the use of firm capital, since VAIC is calculated as the sum of capital employed efficiency, human capital efficiency and structural capital efficiency. Pulic (2001) identified that firms' market value have been created by capital employed (physical & financial) and intellectual capital.

VAIC™ of a firm is calculated using the following five steps

Step- 1

Calculation of value added (VA_{it}) by all the resources of the firm during the't' period of time.

Where,

$OUTPUT_{it}$ = Total income form all products and services sold during the period of t

$INPUT_{i}$ = All expenses (except labor, taxation, interest, dividends, depreciation) incurred by firm for the period of t.

Therefore,

$$\mathbf{VAit = OUTPUTit - INPUTit} \quad (1)$$

The Calculation of value added by a firm during a particular period is based on the Theory of stakeholder view (Donaldson and Preston, 1995 in Pulic 1998). The stakeholder theory suggests that everyone who affects and be affected by what a firm does has an interest (stake) in the firm. In this context "stakeholder" includes not only venders, employees, customers, directors, government, but also members of community as a whole. Therefore, value added by a firm to stakeholders is a broad performance measurement of the firm than accounting profit, which calculates return attributable to shareholders of the firm. According to Riahi- Belkaoui (2003), Value added by a firm during a particular period can be calculated by the following formula (2).

$$\mathbf{R = S - B - DP - W - I - D - T} \quad (2)$$

Where: R is retained earnings for the period; S is net sales revenue; B is cost of good sold plus all expenses (except labor, taxation, interest, dividends, depreciation); W is employees' salaries and wages; I is interest expenses; D is dividend paid to shareholders; and T is taxes.

$$\mathbf{S - B = DP + W + I + D + T + R} \quad \mathbf{(3)}$$

The left hand side of the above formula shows that total value generated by the firm during a particular period and the right hand side shows how the firm has distributed its generated value among stakeholders, such as employees (salaries and wages- W); debt holders (interest- I); government (taxes- T); shareholders (dividend, retained earning and provision for depreciation- D, R, DP). Therefore, formula (3) can be re-arranged to calculate value added by the firm, by the following formula (4).

$$\mathbf{VA = DP + W + I + D + T + R} \quad \mathbf{(4)}$$

$VA_{it} = I_{it}$ (total interest expenses) + DP_{it} (depreciation expenses) + D_{it} (dividends) + T_{it} (corporate tax) + R_{it} (profits retain for the year)

Following Pulic (2000a, b) and Firer and Williams (2003), the following steps show the calculation of Value Added Intellectual Coefficient (VAIC) and its components such as coefficient of capital employed, coefficient of human capital and coefficient of structural capital.

Step- 2

The calculation of Value Added Capital employed Coefficient ($VACA_{it}$)

$$\mathbf{VACAit = VAit / CAit} \quad \mathbf{(5)}$$

Where,

CA_{it} = Capital Employed = Physical Assets + Financial Assets

= Total Assets - Intangible Assets at end of't' period

$VACA_{it}$ = The value created by one unit of capital employed during the't' period

Step- 3

Calculation of Value Added Human Capital Coefficient ($VAHC_{it}$)

$$\mathbf{VAHCit = VAit / HCit} \quad \mathbf{(6)}$$

Where,

HC_{it} = investment in Human Capital during the't' period or total salary and wage including all incentives

$VAHC_{it}$ = Value added by one unit of Human Capital invested during period of't'

Step- 4

Calculation of the value added structural capital coefficient ($STVA_{it}$)

$$\mathbf{STVAit = SCit / VAit} \quad \mathbf{(7)}$$

Where,

SC_{it} = Structural capital ($VA_{it} - HC_{it}$)

$STVA_{it}$ = the proportion of total VA accounted by structural capital.

Step- 5

Calculation of Value Added Intellectual Coefficient ($VAIC_{it}$)

$$\mathbf{VAICit = VAHCit + VACAit + STVAit} \quad \mathbf{(8)}$$

Where,

$VAIC_{it}$ = Indicate corporate value creation efficiency on firm resources.

⇒ **Value added (VA):**

newly created value, calculated as follows

VA = Operating profit+ Employee costs + Depreciation +Amortization or

VA = OUTPUT (Total income) – INPUT (All costs of purchasing goods and services from the market.)

⇒ **Human Capital (HC):**

Overall employee expenses (salaries, education, training); In this analysis considered an investment, not cost, and thus not substantial part of INPUT any more. Therefore:

Human Capital Efficiency (HCE=VA/HC):

⇒ **Structural Capital (SC):**

Result of Human Capital's past performance (organization, licenses, patents, image, standards, and relationship with customers). Therefore:

Structural Capital Efficiency (SCE=SC/ VA):

⇒ **Capital Employed (CE):**

All material and financial assets.

Capital Employed Efficiency (CEE=VA/ CE):

⇒ **Intellectual Capital Efficiency (ICE=HCE+SCE):**

Indicator which shows how efficiently IC has created value.

Indicator that shows how much VA is created on each monetary unit invested in CE.

⇒ **Value Added Intellectual Coefficient (VAIC^{TM}=ICE+CEE):**

Indicates the value creation efficiency of all resources (sum of the previous indicators). It expresses the intellectual ability of a company, regional or national economy.

3. Results and Finding

Based on the data collected from 18 financial company's annual reports listed in Bursa Malaysia for the year 2007, frequency analysis was done on the company's assets, profitability and number of employee (refer to Table 1 below). On average, Commercial banks followed by brokerage firms and insurance company were having the greatest amount in terms of its asset value, net profit and number of employees. These results might influence the findings of the current study in terms of their intellectual capital efficiency and it's relation to firm's performance.

3.1 Intellectual Capital Efficiency

Based on the calculation shown in table 2, the results of the current study found that, in terms of Intellectual Capital efficiencies among commercial banks, Public Bank has the highest efficiency ranking with VAIC^{TM} of 10.78, followed by Maybank, AMMB Holdings Berhad and Affin Holdings Berhad. The least efficient bank is Malaysia Plantation Holdings Berhad with VAIC^{TM} of 3.47. VAIC^{TM} of 10.78 means that, for every RM1 value invested, RM10.78 million was contributed form intellectual capital efficiency. In terms of human capital efficiency, Public Bank was also dominated with VAHC of 9.82, followed by Maybank, AMMB Holdings Berhad and Affin Holdings Berhad. VAHC of 9.82 means that for every RM1 invested, Public Bank created RM 9.82 million from its human capital. Public Bank was also the best performer for structure capital efficiency measured by STVA. However, for Capital employed (VACA), Maybank was dominated with VACA value of 0.06, followed by Public Bank. As a whole, banks in Malaysia have relatively high Value added human capital (VAHC), compared to Value added capital employed (VACA) and value added structural capital efficiency (STVA).

Being efficient alone is insufficient, as the company must also show that they have the capability to create value. Though Maybank was the second in terms of Intellectual capital efficiency, it created the highest added value of RM 13,030,850 million, which ranked as first of six commercial banks. This is due to its highest value of capital employed that contributed to high value added.

For Insurance companies, in terms of efficiency in utilizing human capital, LPI Capital Berhad topped the list with a VAHC of 8.30, followed by Pacificmas Berhad, Allianz General Insurance Malaysia Berhad and Jerneh Asia Berhad.. With regards to VAIC^{TM} ranking, LPI Capital Berhad has the highest efficiency ranking with VAIC^{TM} of 9.46, followed by Pacificmas with VAIC^{TM} of 4.56, Allianz General Insurance Malaysia Berhad with VAIC^{TM} of 3.30 and Jerneh Asia Berhad with VAIC^{TM} of 3.04. As a whole, insurance bank in Malaysia have relatively high VAHC, compared to VACA and STVA.

Based on the VAIC^{TM} ranking for brokerage firm, it shows that Kaf Seagroatt & Campbell Berhad is on the top of the list with VAIC^{TM} of 7.65. Seagroatt & Campbell Berhad have a higher efficient in utilizing their human capital, structural capital and capital employed followed by TA Enterprise Berhad. Eventhough OSK Holdings Berhad was in the fourth ranking, this company has created a highest value which is RM 352,380 million followed by TA Enterprise Berhad with VACA of 0.10.

Overall, for the year 2007, the VAIC results shows that commercial banks is the most efficient in terms of utilizing their intellectual capital compared to insurance company and security brokerage firms. Table 2 below shows the result from the analysis of VAIC.

3.2 Relationships between Intellectual Capital and company's performances

In measuring the relationship between intellectual capital and company's performance, multiple regression analysis was used. The results found that the relationship exists between intellectual capital efficiency and performance (measured by profitability and ROA). The relationships between Intellectual Capital (VAIC) had shown positive and significant relationships with both ROA and Profitability. From the results in table 3 below, it indicates that when intellectual capital increase by one percent, the company's profitability increased by 13 percent and ROA increased by 53 percent. However, Human Capital and Structure capital is insignificant and shows negative relationships with Profitability and ROA. It means that Human Capital and Structure capital efficiency does not influence the profitability of the company. However, Capital employed efficiencies shows positive and significant relationships with company's profitability and ROA.

4. Discussion and conclusion

With the globalization, organizations are increasingly confronted with worldwide competition. In order to build and sustain their competitive advantage, the knowledge and expertise of an organization, staff needs to be seen as a critical strategic resource.

The purpose of this empirical study is to investigate the efficiency of the three elements of intellectual capital in the financial sector, i.e. human capital, structural capital, and capital employed and its relationships with company's performance. The study was conducted using the data from 18 companies annual reports listed from Bursa Malaysia. The method of analysis used was the one introduced by Pulic (1998,2000,2001). The main conclusions from this particular study are: Intellectual capital has greater influence in banking institution compared to insurance company and security brokerage companies. Based on the measurement using VAIC™ method, banking institutions shows the highest result in efficiently utilizing their intellectual capital especially in human capital compared to insurance companies and securities companies in year 2007. Public Bank shows the highest intellectual capital efficiencies compared to the others companies under financial sector in Malaysia. However, in terms of total corporate value added, the companies with high capital employed shows high total value added, for example Maybank, LPI capital and OSK holdings. It can be concluded that, in Malaysian financial sectors, market value have been created more by capital employed (physical & financial) rather than intellectual capital.

The findings of the study is consistent with the previous study (e.g. Goh, 2005), where he found that for banks in Malaysia, those with good financial performance as measured by the traditional measures may not have high value added in terms of intellectual capital. According to Goh (2005), who examined the intellectual capital performance of commercial banks in Malaysia for the period of 2001 to 2003. He found that there is a significant difference between rankings of banks according to intellectual capital performance/efficiency that measured via VAIC™ and traditional performance, which represented by assets, net profit and shareholders' equity. The results indicated that Maybank, which is the largest bank in terms of assets, net profit and shareholders' equity, had a lower intellectual coefficient. In the same study, he also found that the performance of human capital is higher than those of structural and physical capital for both domestic and foreign banks in Malaysia.

In terms of inter-relationship between company's performance measured by Profitability and ROA, the current study found that, overall intellectual capital has positive and significant relationships with Profitability and ROA. However, human capital and structural capital has no significant relationships with company's Performance. The reasons may be due to the fact that profitability may be influence more by other financial factors such as sales volume and how the company manages their expenses rather than non-financial factors. Another possibility is that, the human capital efficiencies might be used for other agendas which is not align to organizational goals; furthermore the measure of human capital using VAIC™ method might be flawed as it doesn't actually measure the value added of the human resources; in fact all it measures is the value added per $ wages - which can be attributable to other resources. Capital employed on the other hand shows positive relationship with business performance as capital employed was determined by the usage of the tangible assets. However, the findings of the study was consistent with Bontis , Keow and Stanley (2000) who also found that intellectual capital influence the performance of the company although not all elements contribute to the efficiency. In contrast to the study done by Ranjith (2007), who measure company's performance by capital gain on shares, found that Intellectual Capital shows a significant positive relationship with capital gain shares and both structural capital and human capital efficiency have positive relationship with capital gain on shares. However, capital employed efficiency shows significant negative relationship with capital gain on shares.

The current study has it limitation in terms of its samples (which is only 18 companies). Therefore, it is unfair to generalize the findings for all financial sectors. Hence the external validity is very weak. This is due to the difficulty in getting consistency of all-relevant information for all companies. For future research, it is recommended that, more companies should be used. Future research can also compare other measures of intellectual capital efficiency with VAIC model and gauge more valuable output.

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Table 1. Selected financial sectors value of assets, net profit and number of employees for year 2007

		Asset (RM '000)	Net profit (RM '000)	Employee
Commercial Banks				
1	AMMB Holding Berhad	72,260,637	479,040	9280
2	Affin Holdings Berhad	35,483,992	226,918	3777
3	Malaysia Plantations Holdings Berhad	23,581,197	-201,424	3676
4	Malayan Banking Berhad	224,205,326	2,865,764	23147
5	Public Bank Berhad	147,789,543	1,795,161	13396
6	RHB Capital Berhad	103,309,975	595,897	10356
Insurance Company				
1	Allianz General Insuranc Malaysia Berhad	2,178,123	34,961	1196
2	Jerneh Asia Berhad	821,624	15,662	479
3	LPI Capital Berhad	754,690	78,128	328
4	MAA Holdings Berhad	7,167,226	-1,662	3245
5	Pacific & Orient Berhad	628	-11	610
6	Pacificmas Berhad	1,277,318	38,487	425
Brokerage Firm				
1	Pan Malaysia Capital Berhad	461,947	12,447	249
2	Hwang- DBS(Malaysia) Berhad	1,253,596	40,503	663
3	K & N Kenanga Holdings Berhad	1,593,033	35,600	831
4	Kaf Seagroatt & Campbell Berhad	290,616	11,827	106
5	OSK Holdings Berhad	3,816,941	131,094	1405
6	TA Enterprise Berhad	2,381,692	89,046	846

Table 2. Result from the analysis using VAIC™ for year 2006

VAIC ranking		VAIC	VACA	VAHC	STVA	VA (RM'000)	VA ranking
Commercial Bank							
1	Public Bank	10.78	0.05	9.82	0.90	7,973,105	2
2	Maybank	9.34	0.06	8.40	0.88	13,030,850	1
3	AMMB	7.50	0.04	6.61	0.85	3,040,520	4
4	Affin	7.42	0.04	6.53	0.85	1,446,520	5
5	RHB	6.65	0.04	5.78	0.83	4,190,375	3
6	Malaysia Plt	3.47	0.03	2.80	0.64	701,021	6
Average		**7.53**					
Insurance Company							
1	LPI Capital	9.46	0.28	8.30	0.88	214,637	1
2	Pacificmas	4.56	0.09	3.74	0.73	112,801	3
3	Allianz	3.30	0.06	2.62	0.62	131,804	2
4	Jerneh	3.04	0.08	2.38	0.58	68,360	5
5	MAA	2.66	0.01	2.12	0.53	94,651	4
6	Pacific & Orient	1.44	0.05	1.22	0.18	30,934	6
Average		**4.08**					
Security Brokerage							
1	Kaf Seagroatt	7.65	0.10	6.69	0.85	30,196	5
2	TA Ent	5.22	0.10	4.35	0.77	245,374	2
3	Pan Malaysia Cap	4.21	0.09	3.41	0.71	28,028	6
4	OSK Holdings	4.16	0.10	3.36	0.70	352,380	1
5	Hwang- DBS	3.25	0.10	2.54	0.61	111,738	3
6	K & N Kenanga	2.88	0.07	2.26	0.56	102,314	4
Average		**4.56**					

Table 3.The result of regression analysis

		PROFITABILITY	**ROA**
F value		77.738***	593476.44***
R square		0.947	1.00
Adjusted R square		0.935	1.00
F change		77.738***	593476.44***
Durbin Watson		1.316	1.866
T value – VACA		15.028***	1354.716***
	VAHC	-0.182	-1.323
	STVA	-0.709	1.187
	VAIC	13.152***	52.497***

***significant at the 0.01 level, ** significant at the 0.05 level, * significant at the 0.1 level