

## Human Capital Efficiency and Financial Performance: Empirical Evidence of Malaysian Public Companies

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### Abstract

The purpose of this study is to investigate empirically the relationship between human capital efficiency and financial performance of Malaysian public companies. Using accounting data, this study reviewed the annual reports of Malaysian companies for a period of thirteen years from 2000 to 2012. The study applied Value Added Intellectual Coefficient (VAICTM) methodology developed by Ante Pulic to determine the human capital efficiency of a company. The regression models was construct to examine the relationship between human capital efficiency and financial performance measures including return on assets (ROA) and return on equity (ROE). The results revealed that human capital efficiency has significant and positive relationships with financial performance. The human capital efficiency is seen as a value driver for a company's competitiveness. Hence, the findings of this study should help companies' managers to make better decision pertaining to investment of their strategic asset that is human capital.

**Keywords:** Human capital efficiency; Performance; VAICTM; Malaysia.



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### 1. Introduction

Human capital is the most important asset that exists within a firm. It represents the human factor in an organisation with the combination of intelligence, skills, knowledge and expertise that gives the organisation its distinctive character that contributes to production and profitability, thus improve organizational performance (Bontis *et al.*, 2000; Gazor *et al.*, 2013; Tayles *et al.*, 2007), especially in the knowledge-based economy. As for Malaysia, the transition towards a knowledge-based economy started with the initiative to realize the objective of the nation's Vision 2020. With the move towards a knowledge economy, the country can achieve sustainable Gross Domestic Product (GDP) growth rates in the long run with knowledge playing a dominant role in driving productivity and sustaining economic growth (Ramlee and Abu, 2004).

Measuring human capital performance has become an essential issue for companies in today's business world since it may help them to get the right perspective on human capital. In other words, efficiency in using resources plays an important role in determining the strength of the organization. A proper performance measurement tool could provide the firms with the necessary information for creating an action plan in order to improve human capital contribution to the organizational success. Most of the successful organizations implement a good business strategy which depends on the efficient use of intangibles asset, particularly human capital.

The purpose of this study is to investigate empirically the relationship between human capital efficiency and financial performance of Malaysian public companies. Using accounting data, this study reviewed the annual reports of Malaysian companies for a period of thirteen years from 2000 to 2012. The study applied Value Added Intellectual Coefficient (VAICTM) methodology developed by Ante Pulic to determine the human capital efficiency of a company. Even though the term human capital is widely used in recent times by the research community in the developed countries, there have been very few studies that have used emerging economies for evaluating the implications of human capital for the industries. Therefore, it becomes necessary to understand whether this resource is being efficiently utilized by the industries in the emerging economy to their advantage in creating value over time (Kamath, 2007). Thus, the results from this study may benefits the government and accounting professional bodies for future regulatory impact especially in drawing up future guidelines and policies pertaining to human capital performance. Additionally, it may facilitate the accountants and managers of the companies for better allocation of resources in those organizations.

The remainder of this article is structured in the following manner. The next section reviews the empirical background of the issue addressed in this study, followed by data and methodology. Then, the results of the study. The final section presents the conclusion and implications of the study.

## 2. Literature Review

### 2.1. Definition Human Capital Efficiency

Human capital can be defined as the employee competence in creating both tangible and intangible assets by contributing continuous knowledge and ideas (Nik Mahteran and Md Khairu, 2009). It comprises knowledge, skills, abilities to develop by employees of an organisation (Baron, 2011). Human capital is the main element of intellectual capital of a company (Anna, 2015). There have been many attempts made by the researchers to define human capital. Different authors give different interpretation of this concept. Even though the definitions differ from one to another, many definitions have offered general view of the human capital. The underlying concepts in these definitions include the notions that human capital is emphasis on the skills and knowledge of employees rather than on the physical assets of a company (Muhammad and Ismail, 2009). Human capital definitions by various authors summarized in Table 1.

Table-1. Summary of human capital definitions

Authors	Definition of human capital
(Edvinsson and Malone, 1997)	The knowledge, expertise, innovative ideas and the
(Becker <i>et al.</i> , 2002)	The productive efforts of an organization's workforce
(Fincham and Roslender, 2003)	It is the only property which generates value
(Chen <i>et al.</i> , 2004)	No value can be generate without human capital
(Ting and Lean, 2009)	Human capital include innovation, capacity, creativity, know-how and previous experience, teamwork capacity, employee flexibility, tolerance for ambiguity, motivation, satisfaction, learning capacity, loyalty, formal training and education.
(Baron, 2011)	It comprises of knowledge, skills, abilities to develop and innovativeness possessed by the employees of an organisation
(Micah <i>et al.</i> , 2012)	The energies, skills, talents and knowledge of people which are, or which potentially can be applied to the production of goods or rendering useful services

### 2.2. Concept of Human Capital Efficiency (HCE)

Value Added Intellectual Coefficient (VAIC™) developed by Ante Pulic is an analytical tool for measuring the efficiency of intellectual capital within a company. VAIC is a component of human capital efficiency (HCE), structural capital efficiency (SCE) and capital employed efficiency (CEE). The model measures how much and how efficiently the intellectual capital create value. It was designed to enable management, shareholders and other relevant stakeholders to efficiently monitor and evaluate the efficiency of firm's total resources and each major resource component. The model gives a new insight into how value creation efficiency in the company is measured and monitored using accounting based figures.

Human capital efficiency (HCE) is one of the VAIC™ components. HCE measures the value added by the human resources of an organization (Kwarbai and Akinpelu, 2016). Many literatures have discussed the advantages of using the VAIC™ methodology usefully (Bontis *et al.*, 2000; Chan, 2009; Chen *et al.*, 2005; Firer and Williams, 2003; Goh, 2005; Mavridis, 2004; Tseng and Goo, 2005). The availability of these studies adds further credibility to the usage of this methodology. According to these researchers, VAIC™ produces quantifiable, objective and quantitative measurements without the requirement of any subjective grading and awarding of scores or scales. It aids further computation and statistical analysis of a large sample size that may run into thousands of data items collected over a period of time.

Furthermore, it uses relatively simple and straightforward procedures in the computation of the necessary indexes and coefficients, which may be simple to understand, especially for management and business people who are accustomed to traditional accounting information. These coefficients enable the management to visualize the value creation efficiency of resources in the company. The higher the coefficient, the better management utilizes the company's value creation potential. Even though there are several measurement methodologies, the most suitable method to measure the intellectual capital efficiency and relate it to the value of the organization is VAIC™ created by Pulic and classified under ROA group method (Jurczak, 2008). The introduction of these monetary intellectual capital measurement methods provides new opportunities for companies and their stakeholders. This is because it provides a concrete basis for comparing the intellectual capital of different companies (Kujansivu and Lonnqvist, 2007).

Human capital efficiency indicates the value added by human capital which is the main focus in this study. This method has been widely used by researchers (Chan, 2009; Chen *et al.*, 2005; Ghosh and Mondal, 2009; Kamath, 2007). Therefore, the selection for this model in Malaysian context is justifiable. In fact, VAIC™ provides a unique measurement that can be used for comparative analyses across various companies, time periods and industries, both internationally and locally (Ranjith, 2007).

### 2.3. Human Capital Efficiency and Financial Performance

Previous studies have shown that there is a significant relationship between human capital efficiency and organizational performance (Ghosh and Mondal, 2009; Goh, 2005; Ting and Lean, 2009). According to Plink and Barning (2010) human capital positively affects organizational performance because it can generate significant value

for companies and provide them with sustainable competitive advantage. Basically, these study focus on the intellectual capital as a whole. Based on the market capitalization. Ghosh and Mondal (2009), analyzed the relationship between intellectual capital and the performance of pharmaceutical and software companies in India. Based on 80 companies, they concluded that there is a significant positive relationship between intellectual capital and profitability. On the other hand, there is no significant relationship with productivity. Ze'ghal and Maaloul (2010), measured intellectual capital and its relationship with financial performance and market value of commercial and industrial companies in UK. The study used data from 37 multinational companies in Serbia from 2006 to 2008. The results of this study reveal that there is a significant positive relationship between intellectual capital and the financial and economic performance of these companies.

Clarke *et al.* (2011) investigated the relationship between intellectual capital with a performance of 2161 firms accepted at Australia's stock exchange during 2004 till 2008, results of research represented that there is a positive and significant relationship between intellectual capital and its components with ROA and ROE ratios. Only few study that focus on the human capital. Yusuf (2013), investigated the relationship between human capital efficiency and financial performance of Nigerian banks. The study concluded that efficient utilization of human capital does not have any significant impact on the return of equity of banks. Parham and Heling (2015), studied the efficiency of human capital and its impact on the financial performance of Dutch production companies. The study revealed that there is positive relationship between human capital efficiency and all three corporate performance measures" namely return on asset, return on equity and employee productivity. The result shows a strongly significant relationship between human capital efficiency and employee productivity.

In Malaysia, one of the earliest study on intellectual capital performance was conducted by Goh (2005), where he measured the intellectual capital performance of commercial banks for the period 2001 to 2003. The results found that, all banks have relatively higher human capital efficiency than structural and capital efficiency. Nik Maheran and Md Khairu (2009), investigated the intellectual capital efficiency and its performance in Malaysian financial sector. The data were taken from 18 companies under financial sector for the year 2007. It was found that intellectual capital has significant and positive relationships with company's performance measured by profitability and Return on Assets. Further, Ting and Lean (2009) studied the intellectual capital performance and its relationship with financial performance of financial institutions in Malaysia for the period 1997 to 2007. The study revealed that intellectual capital performance and Return on Assets are positively correlated among the finance sector. The recent study in Malaysia was conducted by Tze *et al.* (2011) where they review the annual reports of Food and Beverage (F&B) companies from 2008 to 2010. Those companies selected were under consumer sector listed in Bursa Malaysia. The findings indicated that the beverage companies have greater VAIC compared to food companies over the 3 years period.

As one of the emerging market in Asia, there is a practical need for Malaysia to determine the human capital efficiency and understand the impact of human capital efficiency on firms' performance. Thus, the firms will get to know the utilization of their resources, so that they can decide on their future resource allocation decisions.

## 2.4. Hypotheses Development

If human capital is a valuable resource for firms' competitive advantages, it will contribute to firms' performance. Therefore, it is expected that human capital will play an important role in enhancing the firms' performance. In order to achieve the objectives of the study, the following hypotheses were developed:

**H1.** *There is a significant positive relationship between human capital efficiency (HCE) and return on asset (ROA).*

**H2.** *There is a significant positive relationship between human capital efficiency (HCE) and return on equity (ROE).*

## 3. Methodology

### 3.1. Sample Selection and Data Collection

The study examined the annual reports of Malaysian public companies listed in the Main Market of Bursa Malaysia. The selected data cover a period of thirteen years, from 2000 to 2012. All the annual reports were downloaded from the Bursa Malaysia website. The companies listed in the Main Market were chosen for analysis because the companies' annual reports are publicly available in the databases and all information needed for the analysis was available. The samples used for the study are the top hundred companies based on the market capitalization. Due to some missing data and negative value added, some companies were eliminated. After the screening process, only 59 companies with sufficient available data. Therefore, the final data consists of 767 firm-year observations

### 3.2. Research Model

The following research models are formulated to empirically test the relationship between human capital efficiency and financial performance

$$ROA = \beta_1 HCE + \beta_2 FSIZE + \beta_3 LEV + \varepsilon \quad (1)$$

$$ROE = \beta_1 HCE + \beta_2 FSIZE + \beta_3 LEV + \varepsilon \quad (2)$$

### 3.3. Variable Definition

#### 3.3.1. Dependent Variables

The dependent variable, financial performance is measured by return on asset (ROA) and return on equity (ROE). Return on asset (ROA): It is the ratio of operating income to book value of total assets. The ratio is

commonly used in financial reporting Bontis *et al.* (2000), Chen *et al.* (2005), Tseng and Goo (2005) and as proxy measures related to the dimensions of corporate performance such as profitability (Firer and Williams, 2003; Ghosh and Mondal, 2009; Kamath, 2008). Return on equity (ROE): It is the ratio of net income to total shareholders' equity. It clarifies the extent of company profitability through the invested money by Najibullah (2005).

### 3.3.2. Independent Variable

The independent variable used in this study is human capital efficiency. It is one of the components of VAIC developed by Pulic (1998). HCE is computed as the ratio of Value added to Human costs (HC). This ratio shows the value added by every unit of money spend on human capital resources of the companies. It can be calculated by dividing the total value added over human capital.

$$HCE = VA / HC,$$

Where HCE = human capital efficiency; VA = value added; HC = human capital, which is calculated from total employee expenditure for the company. One of the assumptions in this methodology is by treating the total expenditure on employees as investment and not as a cost. Therefore, the employee costs are considered as an indicator of human capital. Thus, the relation between VA and HC indicates the ability of HC to create value in a company.

### 3.3.3. Control Variable

Two control variables were used in this study to control for their effect on the human capital efficiency. The variables are leverage and size of the firm. Leverage is measured as the ratio of total liabilities to total equity (Ahangar, 2010; Chu *et al.*, 2011) while size of the firm is measured as the ratio of natural log of total market capitalization (Ze'ghal and Maaloul, 2010).

## 4. Findings and Discussion

### 4.1. Descriptive Analysis

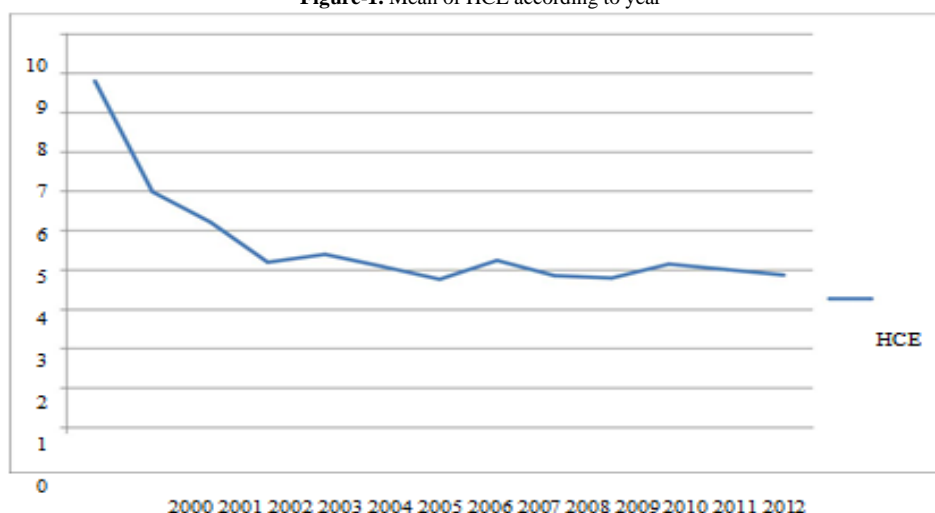
Table-2. Descriptive statistics for the continuous variables

	Mean	Std. Deviation	Minimum	Maximum
HCE	4.647884	9.393938	-14.0261	206.0823
ROA	0.2149	0.47261	-3.83	5.62
ROE	14.4916	31.52518	-391.99	211.59

Descriptive statistics reveals that the mean of human capital efficiency for the sample companies is 4.64 with a range from 3.79 to 8.79. There is no evidence of significant variation over the period under study. On average, the Malaysian public companies created RM 4.64 for every one ringgit employed. It indicates that Malaysian companies were utilizing their human capital well. It explains that the major contribution in terms of efficiency in the Malaysian market was contributed by the utilization of resources from the human capital. This result is consistent with Kamath (2008) and Firer and Williams (2003).

Table 3 presents the descriptive statistics for human capital efficiency from 2000 to 2012. In general, the HCE for the thirteen years period are all above 3 with the highest in 2000 (HCE=8.7948) and lowest in 2006 (HCE=3.7984). The details were tabulated in Figure 1, which presents the mean of HCE according to year. The efficiency of utilizing HCE in most Malaysian companies is good. This indicates that companies included in the sample from 2000 to 2012 were more effective in creating value added through the human capital efficiency (HCE). The results support the findings from Ze'ghal and Maaloul (2010), Maditinos *et al.* (2011) and Rahman (2012). This means that companies included in the sample depended more on human capital in creating value than other IC components.

Figure-1. Mean of HCE according to year



**Table-3.** Descriptive statistics for HCE from 2000 to 2012

	N	Minimum	Maximum	Mean	Std. Deviation
2000	59	0.267	206.0823	8.7948	27.2806
2001	59	-14.0261	114.7012	5.9829	15.1873
2002	59	0.5463	73.2467	5.2179	9.5293
2003	59	-0.725	16.0232	4.2069	3.1306
2004	59	1.1746	20.4991	4.3985	3.2182
2005	59	0.2465	22.1484	4.0914	3.1901
2006	59	0.504	10.4367	3.7642	2.2357
2007	59	0.5694	18.9906	4.249	3.123
2008	59	-4.1215	11.1036	3.8666	2.5751
2009	59	0.7587	10.5688	3.7984	2.2916
2010	59	1.0447	10.6677	4.1546	2.2515
2011	59	0.336	14.7881	4.0195	2.6871
2012	59	0.095	14.3375	3.8779	2.5933
Total	767	-14.0261	206.0823	4.6479	9.3939

## 4.2. Relationship Between Human Capital Efficiency and Financial Performance

The regression models was construct to examine the relationship between human capital efficiency and financial performance measures including return on assets (ROA) and return on equity (ROE). Table 4 presents the results of the multiple regression analysis based on the following research model:

$$ROE = \beta_1 HCE + \beta_2 FSIZE + \beta_3 LEV + \varepsilon$$

$$ROA = \beta_1 HCE + \beta_2 FSIZE + \beta_3 LEV + \varepsilon$$

**Table-4.** Regression results

	Coefficient	Dependent variables	
		ROA	ROE
Independent variable		t-statistic	t-statistic
Constant	0.000	0.002	0.0000
HCE	0.392	6.062	-0.251
Adjusted R2	0.627		0.338
p-value	0.000*		0.004

\* significant at the 0.01 level

Table 4 show the multiple regression analysis of Human Capital efficiency (HCE) and the financial performance; return on asset (ROA) and return on equity (ROE). The results show the adjusted R2 is 0.627. It indicates that HCE are able to explain 62.7 percent of the variance in the dependent variable. From the table it appears that HCE are significantly and positively influenced by the sample companies' financial performance which is measured by return on assets (ROA). Firm size and leverage have negative relationship with the dependent variables. The relationship between HCE and ROA is significant.

Model 1 examines the relationship of HCE with return on asset (ROA). The adjusted coefficient of determination (R-Square) for the sample is 0.627, which indicates that 62.7% of the variability in the dependent variable return on asset is explained by the independent variable. The result explains that there is a significant positive effect of the variable HCE on ROA for the whole sample at significance level 5%. This indicates that the independent variable (HCE) has a positive effect, and it is statistically significant in explaining the effects in the dependent variable (ROA). Therefore, hypothesis H1 - there is a significant positive association between the intellectual capital efficiency and return on asset is accepted. The result of this study is supported by Ghosh and Mondal (2009). The findings suggest that the performance of a company's intellectual capital can explain profitability but not productivity and market valuation in India.

Therefore, from the study results it is revealed that human capital have significant and positive impact on the financial performance measured through return on assets. The study results support hypotheses H1 that is greater performance from human capital efficiency leads to higher financial performance. Same results have been observed by a large number of IC researchers like Riahi-Belkaoui (2003), Chen *et al.* (2005), Tan *et al.* (2007) and Khan *et al.* (2015) who all found a significant positive association between IC and return on assets.

As for the relationship between the human capital efficiency and return on equity, the regression produces an adjusted R2 of 0.338 which indicate that the model is able to explain 33.8 percent of the variance in the dependent variable for the whole sample. The results are quite satisfactory since it is higher than the study by Firer and Williams (2003) who found R2 up to 30 percent in identifying the relationship between IC and corporate performance. However, there is no significant association between return on equity with the financial performance. It is at 1% significant level.

The result explains that there is no significant positive effect of the variable HCE on ROE for the whole sample at significance level 1%. This indicates that the independent variable (HCE) has no positive effect, and it is not significant in explaining the effects in the dependent variable (ROE). Therefore, hypothesis H2 - there is a significant positive association between the human capital efficiency and return on equity is rejected. The result is in

contrast with Khan *et al.* (2015) where the regression analysis is used to show the relationship of intellectual capital and the bank's performance. The results suggest that the bank's performance (Return on asset, Return on equity) is positively and significantly related to the intellectual capital of Islamic Banks in Pakistan.

As a result, from the table it shows that the HCE (human capital efficiency) do not have positive association with the dependent variable. Therefore, the results indicate that human capital efficiency does not play a major role in enhancing return on equity of firms. The findings reject hypotheses, concluding that firms with human capital efficiency do not have higher return on equity. As a result, there is no significant relationship between HCE and firms' financial performance.

The results indicate that human capital efficiency play an important role in enhancing return on assets (ROA). The findings support the hypotheses that are greater performance from human capital efficiency leads to higher financial performance. Same results have been observed by a large number of IC researchers like Riahi-Belkaoui (2003), Chen *et al.* (2005), Tan *et al.* (2007) and Khan *et al.* (2015). Nevertheless, there is no significant relationship between human capital efficiency and return on equity (ROE) of companies. The findings do not support the hypotheses that companies with human capital efficiency, tend to have higher return on equity (ROE).

## 5. Conclusions and Implications

The study concluded that Malaysian public companies have maintained consistently in the utilization of their human capital. The mean of HCE were above 3 for the thirteen years period. The empirical findings revealed that there is a significant positive relationship between HCE and ROA. Nevertheless, there is no significant relationship between HCE and ROE. Findings from this study are subject to some limitations that provide initiatives for future research. The study does not include analysis of HCE among industry. Therefore, the avenues for further research will include more data from sample companies covering several industries. In addition, it could be useful to further investigate the relationship of human capital and other firms' characteristics such as market value, return on investment and others.

In spite of some existing limitations, this study contributes to the human capital literature in several ways. First, this study provides the empirical understanding on the human capital efficiency in Malaysian public companies for a thirteen year period. The longitudinal perspective of intellectual capital efficiency contributes to the human capital efficiency literature and may assist accounting bodies in the future development of human capital guidelines. In addition, results of the study reveal that firms that have proper utilization of human capital help the companies become more efficient and productive. Therefore, it may benefit the regulators and standard setting bodies for future regulatory impact especially in setting framework for Malaysian companies.

## Acknowledgement

We wish to thank the Institute of Quality and Knowledge Advancement and the Institute of Research Management and Innovation of Universiti Teknologi MARA for their support and funding.

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