

# Intellectual Capital Accounting and Its Impact on Organizational Financial Performance: Evidence from Malaysian Firms

Payam Mojtahedi

Islamic Azad University, Qaemshahr Branch, Department of accounting, Qaemshahr, Iran

---

## ABSTRACT

Today intellectual capital (IC) is most important intangible asset and reporting of its information has influenced on transparency of managements accountability. The purpose of this study is to explore the relationship between intellectual capitals and financial performance in 150 Malaysian firms over the period 2000-2011, base on the concept of value added intellectual capital has been calculated. To determine financial performance three proxies have been used, earning per share (EPS) Return of capital equity (ROCE) and growth of annual sales (GS). Intellectual capital (human capital, relational capital and structural capital) have been calculated and analyzed. The technique of multiple regressions and panel data analysis has been used to predict the impact of IC on financial performance. Findings from the empirical analysis indicate that the relationships between intellectual capital and financial performance of Malaysian companies (profitability, and Growth in sales) are positive, significant and informative. The empirical findings suggest that exact managing and reporting of intellectual capital assets will create value to the organization.

**KEYWORDS:** intellectual capital, financial performance, Malaysian firms.

---

## 1. INTRODUCTION

Today, the intangible assets move into the driver's seat in successful corporations. Forward looking companies are recognizing the need to measure and manage these assets as carefully as they do their tangible ones. There are several reasons for this change. These companies recognize that human capital drive's innovation. It is people not building or machines create new product and service ideas, improve processes, and help companies shift direction in order to create new sources of value. On the other hand With development of globalization, Firms can become more sensitive to their customers and gain advantages over their competitors by sharing investment costs across markets and businesses or by leveraging core competences across geographic and product business units[4]. With the rapid growth of the global knowledge economy, intellectual capital has emerged as a concept to update the understanding of the competitive edge of business in knowledge-intensive and rapidly changing business environments. [18]

Hence, in the present research, it was attempted to investigate the effectiveness of ingredients of intellectual capital on corporate financial performance the in Malaysian firms in the period of 2000 till 2010 through considering some indices for the pattern of the intellectual capital and depicting them in the framework of data and tangible statistics.

For this purpose, the present paper consists of four sections. After the Introduction and express the importance of intellectual capital, in the second part of the research has been Review of Statement. The third section introduces the implemented model and its variables and in the fourth section, the results of model estimation and conclusion are provided.

## 2. LITERATURE REVIEW

### 2.1. Definition of intellectual capital (IC)

Stewart (1997, p. 67) was defined intellectual capital as "packaged useful knowledge." this includes an organization's processes, technologies, patents, employees' skills, and information about customers, suppliers, and stakeholders.[26] Intellectual capital is the term given to the combined intangible assets which enable the company to function argued by Brooking (1996, p. 12).

Intellectual capital represents the collective knowledge that is embedded in the personnel, organizational routines and network relationships of an organization [12]. IC has been recognized as an important resource that organizations need to develop to gain sustained competitive advantages [11]. Intellectual capital can be defined as the 'economic value' of three categories of intangible assets of a company-that includes human capital, organizational capital and social capital collectively. Strategic analyst's discusses that sustained development may occur only in the situations that human capital are differ from organization capital between the firms so that this firms are not able to be profitable to other firms. IC is recognized as a collection of intangible assets, so that it was divided to non physical assets and obtained assets by the firms. [12] Intangible resources are more likely to produce a competitive advantage because they often are rare and socially complex there by making them

difficult to imitate [6]. Chen & Min. 2004 have been defined IC as an important resource that organizations need to develop to gain sustained competitive advantages [11].

Black J. and Boal (1994) state that Intellectual capital can be defined as the 'economic value' of three categories of intangible assets of a company-that includes human capital, organizational capital and social capital collectively. Edvinsson and Malone (1997) define it as the possession of knowledge, applied experience, organizational technology, customer relations and professional skills that provide a company with a competitive edge in the market. [14]

One of the most popular models for classifying intellectual capital(IC) is the Saint- Onge, H. (1996) model developed in the early 1990s. It divides intellectual capital into three parts: Human capital, Structural capital; and Customer capital. A slight variant of this model developed by Dr. Nick Bontis re-states customer capital as relational capital to include relationships with suppliers.

### **2.1.1. Ingredients of intellectual capital**

- **Human Capital**

Human Capital is the skill and creativity of employees which can be further encourage by investing more in their training programs. Human Capital is experience and expertise of employees which increases the efficiency of organizations. More efficient employees means more efficient of organization to boost Value Added (VA) efficiency. [28]

- **Relationship Capital**

In its strictest sense, capital is: "any form of wealth employed in the production of more wealth." While few may think have relationships in this sense, to Relcapp connections represent exactly that. Relationships are potential sources of revenue that only require the proper management skills to come to fruition. Relationship capital is the added value to your business of having a systematic process to manage and expand your professional network. This capital is divided in two parts. 1. Customer capital 2. Supplier capital

According to Bontis (1998) customer capital is defined as the knowledge embedded in the marketing channels and customer relationships. Customer capital is also one of the most important components of intellectual capital.

Customer capital mainly based on marketing capability, customer loyalty, and relationship with customer and customer satisfactions [2].

- **Structural Capital**

Structural capital is another important ingredient for the success of organizations. It can be considered as those capabilities that remain in the organization when employees leave [8]. It comprises of all non-human Storehouse of knowledge in organizations including organizational competitive intelligence, routine, formula, Policies, procedures and databases [22, 18].

### **2.2. Definition of financial performance**

Organizational performance metrics may not necessarily reflect a firm's global competitiveness or its potential to compete in the global economy. Some studies have considered only the financial aspects of organizational performance, such as equity, assets, or other market-based measures [21]. Other studies have considered only the non-financial aspects of organizational performance, such as innovation performance [27] or exporting tendencies [29]. Strategy is a pattern of resource allocation that enables a firm to maintain or improve performance that creates "fitness" among a company's activities. Simons (1990) observes that performance measurement is tracking the implementation of business strategy by comparing actual results against strategic goals and objectives. As performance is a result of an activity [8, 26] performance must be measured in order to analyze strategies performance measurement is perhaps the most important, yet most misunderstood and most difficult, task in management accounting [3]. Neely (1998) suggests that performance measurement "is the process of quantifying past action". Traditional accounting performance measurement employs financial techniques such as Return on Assets (ROA) and Return on Capital Employed (ROCE). These have been criticized for being backward looking, unable to measure intangible resources and not suitable for assessing performance of investments in new technologies and markets which firms require competing successfully in global markets [1]. Recent years have witnessed a move towards financial measures, such as Economic Profit type measures which are more closely linked to shareholder value [20]. These performance measures yield the same discounted present values as free cash flow, thereby retaining the focus of accounting profit on the matching of costs and revenues without losing value-relevance. Value relevance of Economic Profit is achieved by the numerous adjustments to conventional financial reports to reflect hidden assets such as intangibles and long-term investments. There is a high degree of uncertainty in intangibles and long-term investments, such as capitalization and amortization of R&D, market building, restructuring charges, and other strategic investments with deferred pay off patterns [5]. Thus Economic Profit has been advocated as an appropriate IC Performance measure.

Recent years have witnessed a move towards financial measures, such as Economic Profit type measures which are more closely linked to shareholder value [20]. These performance measures yield the same discounted present values as free cash flow, thereby retaining the focus of accounting profit on the matching of costs and

revenues without losing value-relevance. Value relevance of Economic Profit is achieved by the numerous adjustments to conventional financial reports to reflect hidden assets such as intangibles and long-term investments. There is a high degree of uncertainty in intangibles and long-term investments, such as capitalization and amortization of R&D, market building, restructuring charges, and other strategic investments with deferred pay off patterns [5]. Thus Economic Profit has been advocated as an appropriate IC Performance measure. Richieri (2007) makes a study with IC stock (CIA) and IC efficiency (ICE) and corporate financial performance as measured by ROA, ROE and ROS of 1000 biggest Brazilian companies. The study results suggest the existence of a positive relation between both CIV and ICE and the dependent variables ROE, ROA and ROS. B.A Ranjith Appuhami (2007) investigates the impact of value creation efficiency of Intellectual Capital on investors' capital gain on shares of listed companies in Thailand Stock Exchange.

**a. Intellectual capital and financial performance**

In discussion of IC and its relation with performance many researchers have been done, in finding of Bontis, Nick (1998), IC have studied in three ingredients customer, structural and human capital in two sections, service and no service Malaysian firms based on his conclusion structural capital has the most strong effect on performance.[8]

Firer &Williams (2003) verified relation between IC and transparency of information their finding reveals that this relation was irregular, although in high level of IC much decrease in transparency of IC have established.

Davenport and Prusak (1998) find that technological development in data processing, Communication and transportation, as well as customer demand and strategists' planning have made the world economy has agility.

Barney, J. (1991) believe that naturally intellectual capital have unknown to everyone, but now it considered as strategic asset which produces sustainable advantages and optimal financial performance to firms.

Tan, H. P., Plowman, D., Hancock, P. (2007) have examined the relation between IC and financial performance in 150 Singapore firms between the years of 2000-2007, the results of their research shows that there is a positive and significant correlation between IC and performance of the firms. Furthermore the relation between IC and future performance of the firm was positive; also the result reveals that the proportion of IC was different between various industries.

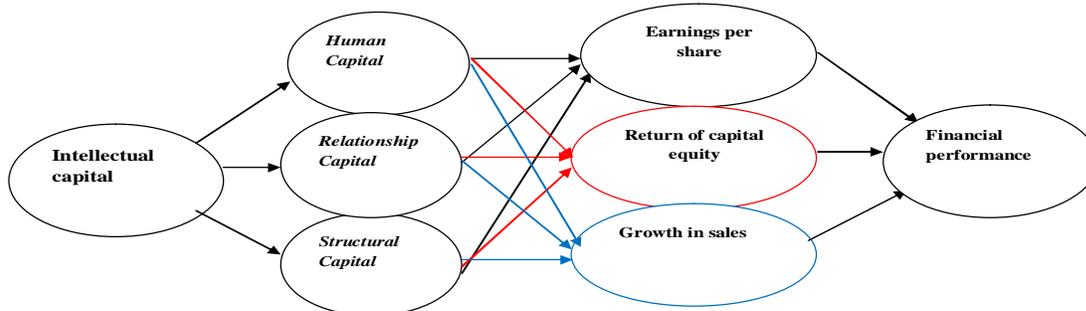
Chen HM & Min KJ. (2004) verified the relation between IC and market value and performance of Taiwan stock exchange firms, results of their research shows the positive relation of effects of IC on financial performance and market value of firms, also their research shows that it is possible to use from IC as a predicting indicator of future financial performance. [11]

Saudah Sofia (2005) verified the effect of the intellectual capital on management accounting practices, specifically, performance measurement and corporate performance. Results reveal that IC has influence on the corporate performance.

Bharathi Kamath (2010) evaluates the performance of banks in Pakistan. In their research intellectual capital are based on intangible assets in private banks. Their finding shows that the levels of IC in private sectors are more than other sectors in banking industry.

Based on the above finding, the following framework was demonstrated. it demonstrates the relationship between intellectual capital and financial performance of the firm, for measuring the financial performance I use from profitability and sales growth ratios, there are many factors for measuring the profitability of enterprises but I use from EPS and ROE, Since this two parameter have a key role in value creation of the firms. Because intellectual capital includes the relationship or customer part I use to growth in sale ratio to show that today Relationship with customer is intangible asset and will affect on the sales growth and finally will create value to the firms.

**Figure 1. Theoretical Research Model**



**3. Determination of research model and Experimental Results**

In this paper, whit using the econometrics analysis of panel data, the following model was enforced and assessed. Of course, it should be reminded that the absence of statistical data of some variables in some courses makes the unbalanced inevitable. According to the panel data method, two tests are conducted: The F-test and

Husmen test to select the appropriate model (fixed or random effects) was performed. To determine the equivalent of the intercept of the firms with difference in intercept of firms of the F test and for determining fixed effect test methods or random effects of Husmen test used. At this paper has been used panel data econometric approach to estimate the following model, It is noteworthy that the lack of statistical data, makes inevitable some variables in some courses unbalanced approach. Also after studying assumptions of the classical model, since that is the problem of non-homogeneity between groups, in order to resolve this problem, the method of generalized least squares (GLS) is estimated.

The 3 main equations of this paper are as follows:

$$1) EPS_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 RCE_{it} + \beta_3 SCE_{it} + \beta_4 FA_{it} + \beta_5 D_{it} + U_{it}$$

$$2) ROCE_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 RCE_{it} + \beta_3 SCE_{it} + \beta_4 FA_{it} + \beta_5 D_{it} + U_{it}$$

$$3) GS_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 RCE_{it} + \beta_3 SCE_{it} + \beta_4 FA_{it} + \beta_5 D_{it} + U_{it}$$

In the above equations:

- **EPS** (Earnings per Share): The portion of a company's profit allocated to each outstanding share of common stock. Earnings per share serve as an indicator of a company's profitability. Calculated as:

$$EPS = \frac{(\text{Net Income} - \text{Dividends on preferred stock})}{\text{Average outstanding shares}}$$

- **ROCE**: (Return on Capital Equity): Investors wishing to see the return on common equity may modify the formula above by subtracting preferred dividends from net income and subtracting preferred equity from shareholders' equity, giving the following: return on common equity. So:

$$ROCE = \frac{(\text{Net Income} - \text{preferred dividends})}{\text{Common equity}}$$

- **GS**: Growth in sales measures the changes in firm's current year's sales over last year's sales. Increase in sales signals the firm's growth prospect [11]. So:

$$GS = \frac{(\text{current year's sales} - \text{last year's sales})}{\text{Last year's sales}} * 100$$

- **HCE** (Human Capital Efficiency):  $= \frac{VA}{HC}$

VA=Value added =Output-Input

HC= personal cost (Salaries and Wages), considered as an investment.

Output = Net Premium

Input= Operating expenses (excluding personal costs).

- **RCE** (Relationship Capital Efficiency)  $= \frac{VA}{CA}$

VA=Value added =Output-Input

CA= Capital employed (both physical and financial capital)

Output = Net Premium

Input = Operating expenses (excluding personal costs)

- **SCE** (Structural Capital Efficiency):  $= \frac{SC}{VA}$

SC= Structural capital for company,  $SC= VA-HC$

VA=Value added =Output-Input

Output = Net Premium

Input= Operating expenses (excluding personal costs).

- **FA** = Fixed asset to Total Asset

$$FA = \frac{\text{Fixed Asset}}{\text{Total Asset}}$$

- **D** = Debt to equity ratio

$$D = \frac{\text{Debt}}{\text{Equity}}$$

In this paper, will verify the following hypotheses:

- **The main hypothesis:**

- 1- The improvements of explanatory variables of intellectual capital, lead to improvement of the Firm's EPS.
- 2- The improvements of explanatory variables of intellectual capital, lead to improvement of the Firm's ROCE.
- 3- The improvements of explanatory variables of intellectual capital, lead to improvement of the Firm's GS.

- **Secondary hypothesis:**

- 1- There is a significant relationship between debt to equity ratio and financial performance variables.
- 2- There is a significant relationship between the ratio of fixed asset and financial performance variables.

**4. the results of model estimation**

The mentioned equation for 150 Malaysian Firms over the period 2000-2010 and by using the panel data based on fixed effects has estimated. Results for estimated model have reflected in (4-1) table.

**Table (4.1): Results for estimated model for Malaysian Companies over the period 2000-2011**

Explaining variables	Symbol	EPS		ROCE		GS	
		Coefficients	Prop	Coefficients	Prop	Coefficients	Prop
Human Capital Efficiency	HCE	0.057*	0.000	0.091**	0.093	0.123*	0.032
Structural capital Efficiency	SCE	0.023**	0.072	0.044**	0.058	0.856#	0.466
Relationship Capital Efficiency	RCE	0.074**	0.063	0.091*	0.000	0.034*	0.041
Fixed asset to Total Asset	FA	-0.221*	0.001	-0.123**	0.066	0.322#	0.654
Debt to equity ratio	D	0.452**	0.077	0.218**	0.071	0.551#	0.326
$R^2$		0.83		0.88		0.82	
F statistic		0.0000		0.0000		0.0000	
Hausman $\chi^2$		0.0000		0.0012		0.0000	

Source: Researcher's findings

\* indicates the significance of the parameters at 5% level

\*\* indicates the significance of parameters at 10% level

# indicates the rejection of null hypothesis at significance level of 5% and 10%

The computing F statistic is used to test the equity of the intercepts. Because the computing F is larger than the table's F, the  $H_0$  hypothesis; i.e. heterogeneity of the countries, is rejected. Thus, the effects of the country groups are confirmed, so different intercepts should be considered in the estimation. In addition, in order to test the selection between the fixed effects and random effects the Hausman statistic is used. According to the results, because the computing  $X^2$  statistic is larger than the table's  $X^2$ , so the  $H_0$  is rejected; i.e. the random effects are heterogeneous and we should use the fixed effects method to estimate. Now we continue with the analysis of the obtained coefficients and values in the conducted estimations.

**5. Conclusion**

Human capital efficiency index has a positive and significant effect on the financial corporate performances. The Coefficients of growth of sale is more than two other performance indexes. This relation shows that the level of profitability will growth by growing the level human efficiency in the firm, which part of this increase pertains to growth of sales. Then between the HCE and annual growth of sale has a partially positive relationship. Since profitability will change by versatile employee, because they are able to reduce the non value added activities and by this they are create value for the firms.

The relation between structural capital and profitability (EPS, ROCE) in the significant level of 5% and 10% are very weak but positive. Structural capital by reducing the non value added activity will increase the level of profitability in the firms. On the other hand there is no relation between SCE and growth of sale in our selected firm. This matter is the same direct with conceptual framework, by growth of technology and IT as most important proxies of structural capital no relation will recognize.

There is strong and positive relation between relational capital efficiency and financial performance index in the significant level of 5% and 10%. This meant that by increasing the efficiency of relation to customers and suppliers the level of profitability will growth, part of this growth are related to the growth of annual sales. It's been noted that the amount of effect on return of capital equity (ROCE) is greater than the other financial performance parameters (EPS, GS). Today relation between owners of the businesses and their customers and suppliers are key matter for surviving the firms, for this reason relational capital today have considered as an intangible asset, which has a future benefit for the firm, base on the exploited result.

The ratio of fixed assets to total assets represent the volume of physical capital in firms, the result of analyses shows that there is negative relation between this ratio and profitability, maybe this matter related to depreciation or other maintaining cost of fixed asset, by increasing of physical capital the level of GS partially increased that may justify as an increase in the level of production, since in new era is a direct relation between the level of production and sale.

The last parameter is D/E ratio that represent the level of leverage in the firm, there is a positive significant relation between this ratio and financial performance, the reason may related to the peak period, since selected companies have been worked upper than the breakeven point.

**REFERENCES**

1. Amir, E., B. Lev. 1996. fValue-relevance of nonfinancial information: The wireless communications industry's Journal of Accounting and Economics, 22: 3-30.

2. Amiri, N.A., R. Majid and A. Omrani, 2010. Studying the impacts of organizational organic structure on knowledge productivity effective factors case study: Manufacturing units in a domestic large industrial group. *Eur. J. Sci. Res.*, 40: 91-101.
3. Atkinson A. B., L. Rainwater, T. M. Smeeding, 1995. «Income Distribution in the OECD Countries: The Evidence from the Luxembourg Income Study, *Social Policy Studies*, 18, OECD, Paris, France.
4. Bartlett, C. A. & Ghoshal, S. 1998. *Managing across borders the transnational solution* (2 ed.). London: Random House.
5. Barskey, N.P. and Marchant, G. (2000) ‘The most valuable resource—measuring and managing intellectual capital’, *Strategic Finance*, Vol. 81, No. 8, pp.59–62. Bartlett & Ghoshal, 2000;
6. Black, J. A. and Boal, K. B. (1994). "Strategic Resources: Traits, Configurations and Paths to Sustainable Competitive Advantage". *Strategic Management Journal*, Vol. 15, pp. 131-148.
7. Bontis N, Chua W, Richardson S (2000), "Intellectual capital and the nature of business in Malaysia". *J. Intellect. Capital*, 1(1): 85-100.
8. Bontis, Nick. (1998). "Intellectual Capital: An exploratory study that develops measures and models", *Management Decision*, 36, 2, 63-76. Bose & Oh, 2004;
9. Brennan N. 2001. Reporting intellectual capital in annual report: evidence from Ireland. *Accounting, Auditing & Accountability Journal* 14(4): 423–436.
10. Cabrita, E.; Robles, V.; Herraez, P., 2009: Sperm quality assessment. *Methods in reproductive aquaculture. Marine and freshwater species*. Cabrita, E.; Robles, V.; Herraez, P. eds. CRC Press Taylor & Francis Group, Boca Raton, USA, ISBN 978-0-8493-8053-2.
11. Chen HM & Min KJ. 2004. The role of human capital cost in accounting. *Journal of Intellectual Capital* 5(1): 116–130.
12. Choo, C.W. and Bontis, N. (2002) *The Strategic Management of Intellectual Capital and Organizational Knowledge*. New York: Oxford University Press. Drew, 1999.
13. Cohen, G., Kiss, G. and M. Le Voi. (1993). *Memory – Current Issues*. Buckingham: Open University.
14. Edvinsson L, Malone MS (1997). *Intellectual capital: The proven way to establish your company's real value by measuring its hidden brainpower*. London: Judy Piatkus.
15. Francis, J. & Schipper, K., 1999, "Have Financial Statements lost their Relevance?", *Journal of Accounting Research*, 37, 2, 319-352. Seleim et al., 2004.
16. Hitt, M. A., Ireland, R. D., & Stadter, G. 1982. Functional importance and company performance: Moderating effects of grand strategy and industry type. *Strategic Management Journal*, 3: 315–330.;
17. Hitt, M. A., Keats, B. W. and DeMarie, S. M. (1998), *Navigating in the New Competitive Landscape: Building Strategic Flexibility and Competitive Advantage in the 21st Century*, *Academy of Management Executive* 12(4): 22-42.
18. Kavida, V, and Sivakoumar, N, (2010). *The Impact of Intellectual Capital on International Business – An Analysis of Investments in Intellectual Capital & Export Performance*, Available at SSRN: <http://ssrn.com/abstract=1622199>. Kong & Prior, 2008;
19. Mavridis, D.G. (2004). The intellectual capital performance of Japanese banking sector. *Journal of Intellectual Capital*, 5(1), 92-115.
20. O'Hanlon J and K Peasnell (1998), 'Wall Street's Contribution to Management Accounting: the Stern Stewart EVA® Financial Management System', *Management Accounting Research*, 9, pp 421-444.
21. Reed, K.K., Lubatkin, M. and Srinivasan, N. (2006) "Proposing and Testing an Intellectual Capital-Based View of the Firm", *Journal of Management Studies*, Vol. 43, No. 4, pp 867–893. S Najibullah, 2005.
22. Salleh, A. and Selamat, F. (2007), "Intellectual capital management in Malaysian public listed companies international", *Review of Business Research Papers*, Vol. 3 No. 2, pp. 262-74.
23. Saudah S, Mike T, Richard P (2005). 'The implications of intellectual capital on performance measurement and corporate performance'. Available online.
24. Shaari, Jamal Abdul Nassir, Khaliq, Muhammad & Isa, Abu Hassan bin Md. (2010). Ranking of public and domestic private sector commercial banks in Pakistan on the basis of the intellectual capital performance. *Proceedings of International Borneo Business Conference (BBC2010)*, 1.
25. Simons, R., & Whitbeck, L. (1991). Sexual abuse as a precursor to prostitution and victimization among adolescent and adult homeless women. *Family Issues*, 72, 361-379.
26. Stewart, T. (1997). *Intellectual Capital: The New Wealth of Organizations*. Doubleday/Currency: New York.
27. Subramaniam, M. & Youndt, M.A., 2005. The influence of intellectual capital on the nature of innovative capabilities. *Academy of Management Journal*, 48(3), 450-464. Wu et al., 2007.
28. Wasim ul Rehman & Chaudhary Abdul Rehman & Ayesha Zahid "Intellectual Capital Performance And Its Impact On Corporate Performance: An Empirical Evidence From Modaraba Sector Of Pakistan" *Australian Journal of Business and Management Research* Vol.1 No.5 [08-16] | August-2011.
29. Youndt, M.A., Subramaniam, M., & Snell, S.A., 2004. Intellectual capital profiles: An examination of investments and returns. *Journal of Management Studies*, 41(2), 335-361.