Current Research Journal of Economic Theory 5(2): 20-24, 2013
ISSN: 2042-4841, e-ISSN: 2042-485X

Submitted: December 26, 2012 Accepted: January 25, 2013 Published: June 20, 2013

The Effects of Intellectual Capital on Economic Value Added in Malaysians Companies

[1]Payam Mojtahedi and [2]Mohammad Ali Ashrafipour
[1]Department of Accounting, Islamic Azad University, Qaemshahr Branch, Qaemshahr, Iran
[2]Department of Economics, Faculty of Economics, Yerevan State University, Armenia

Abstract: The purpose of this study is to explore and explain the relationship between Intellectual capital and Economic value added in 150 Malaysian firms during the years 2000 and 2011. Intellectual capital are considered as an independent variable which divided to human, relational and structural capital, to measure the ingredients of intellectual capital operating revenues have been used to form the proxy of human and relational capital and research and development expenditures have been used in the structural capital equation. Economic value added is considered as dependent variable that represents the value of the firms. Debt to equity ratio and Administrative expenses per staff are considered as intervene and control variable and their effect have been analyzed on the firms value added the method of multiple regressions has been used to predict the impact of intellectual capital and value added. The finding of this study shows that there is a positive relation between intellectual capital and economic value added; it also indicates that the effect of debt to equity ratio on economic value added is positive but this relation for Administrative expenses per staff is negative.

Keywords: Economic Value Added (EVA), intellectual capital, Malaysian firms, panel data

INTRODUCTION

Today Intellectual capital is a Collective knowledge (whether or not documented) of the individuals in an organization or society. Intellectual capital includes customer capital, human capital, intellectual property and structural capital. Although historically, Intellectual capital represents the domain of knowledge, of practical experience, of organizational technology, of customer relation, of professional skills, that provides the company with relevant advantage in its market. includes intangibles, intangible assets, intangible resources, intellectual property, but it is not limited to them According to the International Accounting Standard No 38, the intangible assets is defined as a nonmonetary, immaterial, identifiable assets, whose featuring is discriminated by the cited norm, in such a way that implies the need of running into initial acquisition or internally generated costs. IC (Intellectual Capital) measurement is important from two aspects:

- Inter organizational which its purpose is better to allocate resources in the line of efficiency and to minimize the costs of organization.
- Second, enter organizational which its purpose is to make access existing and potential investment information to forecast future growth as well as long-term planning's.

On the other hand, Economic Value Added is the financial performance measure that comes closer than any other to capturing the true economic profit of an enterprise. Thus, in modern economics and finance area, EVA (Economic Value Added) holds an important part that has less debate among practitioners. It is the performance measure most directly linked to the creation of shareholders. More explicitly, *EVA* measure gives importance on how much economic value is added for the shareholders by the management for which they have been entrusted with. *EVA* is exceptional from other traditional tools in the sense that all other tools mostly depend on information generated by accounting. And we know accounting; more often produces historical data or distorted data that may have no relation with the real status of the company. But, *EVA* goes for adjustments to accounting data to make it economically viable.

Hence, in the present research, it was attempted to investigate the effectiveness of ingredients of intellectual capital on economic value added the in Malaysian firms in the period of 2000 till 2011 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 study consists of four sections. After the Introduction and express the importance of intellectual capital, in the second part of

Corresponding Author: Payam Mojtahedi, Department of Accounting, Islamic Azad University, Qaemshahr Branch, Qaemshahr, Iran

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.

LITERATURE REVIEW

Definition of intellectual capital: While there are plenty of generic definitions of intellectual capital, many organizations develop their own idiosyncratic definitions. For example, Skandia defines it as "the possession of knowledge, applied experience, organizational technology, customer relationships and professional skills that provide Skandia with a competitive edge in the market". There is some confusion over how intellectual capital differs from intangibles, intangible assets or intellectual property. This briefing will follow the approach adopted by the Meritum guidelines for managing and reporting on intangibles and will use intangibles and intellectual capital interchangeably. There is no commonly agreed definition of intangibles-the word is often used as a noun to mean broadly the same as intellectual capital. Intangible assets, on the other hand, are only those that financial standards would recognize as assets and allow on balance sheets. Intellectual property can be defined as intangible assets, such as patents, trademarks and copyrights that can be included in traditional financial statements. Measuring intellectual property is important so an organization knows what it owns but it does not capture the processes required to reach that stage. Intellectual capital can be both the end result of a knowledge transformation process or the knowledge that is transformed into intellectual property. Thus, intellectual capital can be defined as follows:

"Intellectual capital is the group of knowledge assets that are attributed to an organization and most significantly contribute to an improved competitive position of this organization by adding value to defined key stakeholders."

Classification of intellectual capital:

Human capital: This is defined as the knowledge, skills and experience that employees take with them when they leave. Some of this knowledge is unique to the individual; some may be generic. Examples are innovation capacity, creativity, knowhow and previous experience, teamwork capacity, employee flexibility, tolerance for ambiguity, motivation, satisfaction, learning capacity, loyalty, formal training and education.

Relationship capital: This is defined as all resources linked to the external relationships of the firm-with customers, suppliers or partners in research and development. It comprises that part of human and structural capital involved with the company's relations with stakeholders (investors, creditors, customers, suppliers), plus the perceptions that they hold about the company. Examples of this are image, customer loyalty, customer satisfaction, links with suppliers, commercial power, negotiating capacity with financial entities and environmental activities. According to Bontis (1998) customer capital is defined as the knowledge embedded in the marketing channels and customer relationships. (Bontis, 1998) 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 (Amiri *et al*., 2010)

Structural capital: This is defined as the knowledge that stays within the firm. It comprises organizational routines, procedures, systems, cultures and databases. Examples are organizational flexibility, a documentation service, the existence of a knowledge centre, the general use of information technologies and organizational learning capacity. Some of them may be legally protected and become intellectual property rights, legally owned by the firm under separate title it comprises of all non-humans Storehouse of knowledge in organizations including organizational competitive intelligence, routine, formula, Policies, procedures and databases (Salleh and Selamat, 2007; Chen and Min, 2004). The International Federation of Accountants (IFAC) offers a slightly different classification (Table 1).

Table 1: Classification of intellectual capital

Human capital	Relationship capital	Structural capital	
• Know-how	• Brands	Intellectual property	Infrastructure assets
• Education	• Customers	• Patents	• Management philosophy
• Vocational qualification	• Customer loyalty	• Copyrights	• Corporate culture
• Work-related knowledge	• Company names	• Design rights	• Management processes
• Occupational assessments	• Backlog orders	• Trade secrets	• Information systems
• Psychometric assessments	• Distribution channels	• Trademarks	• Networking systems
• Work-related competencies	• Business collaborations	• Service marks	• Financial relations
• Entrepreneurial elan, innovativeness, proactive and reactive abilities, changeability	• Licensing agreements		

IFAC (1998)

Table 2: Ramboll's holistic company model list of indicators

Human capital indicators	Relationship capital indicators	Structural capital indicators
• Revenue generated per employee • Number of senior positions filled by junior staff • Recruitment, development and training spend per employee • Employee satisfaction • Average length of service of staff • Staff turnover • Educational level of staff • Staff with professional qualifications • New ideas generated by staff • Value added per employee • Post-training evaluation exercise - benefits accrued • Proportion of revenue-generating staff to other • Image of company from employee's perspective	• Income per R&D expense • Individual computer links to database • Number of times database has been consulted • Upgrades of database • Contributions to database • Upgrades of SOPs • Value of new ideas • Ratio of new ideas generated to new ideas implemented • Number of new product introductions • New product introductions per employee • Proportion of income from new product introductions • Number of patents • Average length of time for product design and development • Changes implemented due to employee or customer satisfaction surveys • IT expenditure as a percentage of administration spend	• Growth in sales volume • Revenues per customer • Proportion of sales to repeat customers • Customer satisfaction • Effectiveness of ad campaign • Brand loyalty • Brand image • Product returns as a proportion of sales • Customer complaints • Reputation of company • Proportion of customer's business that your product or service represents

The Chartered Institute of Management Accountants (CIMA)

Also the Table 2 provides a list of possible human, Structural and Rational capital indicators, but measurements will always be company-specific. This Classification is provided by Ramboll's holistic company.

Introducing Economic Value Added (EVA): The EVA of a company is currently acknowledged as a single, most appropriate internal measure of corporate financial performance. Those studies investigate how existing management accounting and financial management techniques can be adjusted to incorporate the EVA Perspective. It also applies these adjusted techniques to a company listed on the JSE securities exchange south Africa (DeWet and de Hart, 2010).

The Stern Stewart Company defines EVA as a performance evaluation measure which defines performance as being 'net operating profit after taxes less the cost of the capital of both equity and debt employed to produce those profits'. The formula is as follows Ming-Chen *et al*. (2005):

> EVA = (return on invested capital - cost of capital) × invested capital = (Return on Invested Capital - Cost of Capital) × (stockholder's equity - interest - bearing debt - equivalent equity reserve)

Return on Invested Capital is the net operating profit after tax divided by invested capital. Cost of Capital is the weighted average of the cost of interest-bearing debt and the stockholder's equity. Specifically EVA adds back equivalent equity reserves into invested capital and the periodic changes of equivalent equity reserves into net operating profit after tax.

Lehn and Makhija (1996) and Mouritsen (1998) maintain that EVA explicitly considers the necessary cost of capital, where capital is derived from adjusting certain items on the balance sheet to more closely reflect the real cash flows invested; and that therefore EVA can better reflect a firm's risk and is more representative of the value creation ability of the firm than are the accounting earnings (Lehn and Makhija, 1996; Mouritsen, 1998).

However, Chen and Dodd (1997) found that EVA does not provide incremental information content beyond operating income, suggesting that accounting measures are still important in the valuation of firms (Chen and Dodd, 1997).

Intellectual capital and economic value added: Therefore, the effect of intangible assets (intellectual capital) and economic value added on the market value of firms in various industries including financial intermediation industry, for regard to affect that have EVA and IC on the market value of the organizations. Research in mind, will be necessary with review the role and necessity reporting EVA and IC criteria, that in the traditional reporting in Malaysia and are not presented in the form of financial statements.

Human capital is the stock of competencies, knowledge, social and personality attributes, including creativity, embodied in the ability to perform labor so as to produce economic value.

Also, Structural capital is the supportive infrastructure, processes and databases of the organization that enable human capital to function. Structural capital includes such traditional things as buildings, hardware, software, processes, patents and trademarks. In addition, structural capital includes such things as the organization's image, organization, information system and proprietary databases, which may have result on value added (Kavida and Sivakoumar, 2010).

The Relational Capital Group, a consultancy committed to helping corporations and professionals

develop the key relationships that most impact their business performance is pleased to announce an agreement with the Transition Partners Group, Inc (TPG) to license The Relational Capital Value Creation™ process to TPG as part of its new, custom approach to assisting individuals and executives in transition.

DETERMINATION OF RESEARCH MODEL AND EXPERIMENTAL RESULTS

In this study, 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 study 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 main equation of this study is as follows:

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

In the above equations, the following variables are the main variables:

- EVA = The Economic value added per share
- HCE = (Human Capital Efficiency):

$$= \frac{\text{NOR}}{\text{QS}} = \frac{\text{Net opreating revenue}}{\text{The quantity of staff for t term}}$$

- RCE = (Relationship Capital Efficiency) = Growth of operating revenue:

$$\text{RCE} = \frac{(\text{operating revenue for term} - \text{operating for} - 1\text{term})}{\text{operating revenue for t} - 1 \text{ term}}$$

- SCE = (Structural Capital Efficiency) = Research and Develop expenditure ratio:

$$SCE = \frac{\text{The research and development expenditure of the operating Available not expense and manufacturing expense}}{\text{Net operating revenue for t term}}$$

Table 3: Result of estimated model for Malaysian companies over the period 2000-2011

		EVA	
Explaining variables	Symbol	Coefficients	Prop
Human capital efficiency	HCE	0.8120*	0.000
Structural capital efficiency	SCE	0.1240**	0.096
Relationship capital efficiency	RCE	0.8340*	0.021
Debt to equity ratio	D	0.3220**	0.054
Administrative expenses per staff	AES	-0.4380*	0.022
R^2		0.8600	
F statistic		0.0000	
Hausman χ^2		0.0000	

*: Indicates the significance of the parameters at 5% level; **: Indicates the significance of parameters at 10% level; Researcher's findings

- **Furthermore:** D_{it} variable is considered as a proxy of risk and here is intervening variable
- D = Debt to equity ratio:

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

AES_{it} Variable is considered as an indicator of Procedure capital that used as a control variable in model.

- AES = Administrative expenses per staff:

$$AES = \frac{\text{Administrative expenses for t term}}{\text{the quantity of staff for t term}}$$

In this study, will verify the following hypotheses:

The main hypothesis: The improvements of explanatory variables of intellectual capital, lead to improvement of the Firm's EVA.

Secondary hypothesis:

- There is a significant relationship between debt to equity ratio and economic value added variable.
- There is a significant relationship between the Administrative expenses per staff and economic value added variables.

THE RESULTS OF MODEL ESTIMATION AND CONCLUSION

The mentioned equation for 150 Malaysian firm over the period 20000-2011 and by using the panel data based on fixed effects has estimated, Result of estimated model have reflected in Table 3.

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 X2 statistic is larger than the table's X2, 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.

Discussion of results: Base on the obtained result, in the significant level of 5%, between human capital efficiency and economic value added, have a strong and positive relationships. This relation reveals that by growth of human abilities in the firms, they are able to create value for themselves, by using the concept of earning per staff as a proxy of HCE, the logic of these relations have analyzed and demonstrated.

In the significant level of 10% between structural capital efficiency and economic value added is a positive but not strong relation, in this study R&D expenditures have used to construct the proxy of SCE, then the positive relation could interpreted so that the effect of these expenditure are positive for value of the firms, then the effect of R&D are not like other expenses.

In the significant of 5% the relation of relational capital efficiency and EVA is strong and positive, this means that by increasing the firm's relation to their customers and suppliers, those firms are able to create value for themselves. In the proxy of RCE has used from operating revenue that prove the former matter.

Debt to equity ratio is the intervene variable that represents the sensitivity of firms to outside economic factors, risk, to firms, since most of selected firm are operate in above breakeven point, more leveraged firms have more EVA and their relation in the significant level of 10% is positive.

The last part related to expense of administrative staff that considered as a control variable, in the significant level of 5% has a negative relation with EVA; it meant that by growth of administrative expense the creation of value to firms will reduce.

REFERENCES

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.

Bontis, N., 1998. Intellectual capital: An exploratory study that develops measures and models. Manage. Decis., 36(2): 63-76.

Chen, S.J. and L. Dodd, 1997. Economic Value Added (EVA): An empirical examination of a new corporate performance measure? J. Manage., 6: 318-333.

Chen, H.M. and K.J. Min, 2004. The role of human capital cost in accounting. J. Intell. Cap., 5(1): 116-130.

DeWet, J.H. and F.J. de Hart, 2010. EVA and Innovations in Decision Making and Financial Management. Retrieved from: http:// ssrn.com/abstract=1656346.

IFAC, 1998. IFAC Handbook: Technical Pronouncements. IFAC, New York.

Kavida, V. and N. Sivakoumar, 2010. The Impact of Intellectual Capital on International Business-An Analysis of Investments in Intellectual Capital and Export Performance. Retrieved from: SSRN: http://ssrn.com/abstract=1622199.

Lehn, K. and A.K. Makhija, 1996. EVA & MVA as performance measures and signals for strategic change. Strategy Leader., 24: 34-38.

Ming-Chen, C., Sh.J. Cheng and Y. Hwang, 2005. An empirical investigation of the relationship between intellectual capital and firms market value and financial performance. J. Intell. Cap., 6(2): 159-176.

Mouritsen, J., 1998. Driving growth: Economic value added versus intellectual capital. Manage. Account. Res., 9: 461-482.

Salleh, A. and F. Selamat, 2007. Intellectual capital management in Malaysian public listed companies international. Rev. Bus. Res. Papers, 3(2): 262-274.