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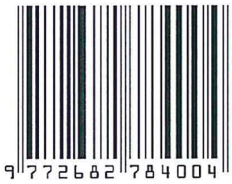

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MEASURING THE VALUE ADDED INTELLECTUAL CAPITAL ON FINANCIAL PERFORMANCE: A CASE OF MALAYSIAN GREEN TECHNOLOGY COMPANIES

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ABSTRACT

The purpose of this study is to examine the relationship between Intellectual Capital (IC) components and financial performance of Malaysian green technology companies. IC consists f three main components which are Human Capital (HC), Structural Capital (SC) and Capital Employed (CA). The data are gathered from the annual report of ten (10) selected Malaysian green technology companies (Eco-friendly companies) from 2014 until 2018 in various industries. Empirical findings reported that Value Added Structural Capital (STVA) is the most significant factor compared to Value Added Human Capital (VAHU), Value Added Capital Employed (VACA) and Value Added Intellectual Coefficient (VAIC). It shows that the companies depended highly on STVA (the companies used database, process, competitive intelligence and system which resulted from the product or system that is created by a firm) to increase their financial performance. This study proved that structural capital is an important element in intellectual capital for green technology companies since it will lead to an effective and efficient business operation (less cost of operations) to sustain competitive advantage of the company.

1. Introduction

Intellectual capital (IC) has been recognised as source of firm's growth, innovation and competitive advantage in a knowledge-based economy (Lev, 2004). It becomes the most crucial resource for an organisation since Malaysia is in the process of transformation into

globalisation, computerisation and information technology. Intellectual capital (IC) is a key resource involved in value creation process of the firm and it is generated from intangible asset instead of physical asset.

According to Petty (2000), corporate management has put more attention on the importance of IC which is aligned with the growth of technologically advanced companies in the knowledge-based economy. IC is considered a driver of corporate competitiveness and financial sustainability (Barney, 1991). Meanwhile, according to Bontis (2011), traditional business such as mass production in the industrial and agricultural sectors have drawn attention to the employment of physical capital such as building, equipment, land and financial property to create the firms' value. While moving from the traditional to knowledge economy, intangible assets are known as hidden values such as goodwill, brand value, patent and database that are easier in understanding the intellectual capital (Bontis, 1996). Therefore, some changes have been applied, from industrial age or traditional age to the knowledge age or known as information age (refer to Table 1.1).

Table 1.1:

The shift from industrial age to the knowledge age

Industrial age		**Knowledge age**
Production Driven		Customer Driven
Practical		Operation Integrated
Physical Capital (Tangible Assets)	⇨	Intellectual Capital (Intangible Assets)
Top down		Bottom Up
Management		Leadership

Source: (Chareonsuk & Chansa-Ngavej, 2008)

Table 1.1 discusses a huge change from the industrial age to the knowledge age which can lead to the effective management of intellectual capital (IC). Before the knowledge age, most of the businesses had lived in the tangible world in which they were dealing with traditional accounting practices. In response to the global competition, the modern management environmental has taken place and adapted in the business. The shifts consisted of business operations, management style (from top down to bottom up) and the change from production driven to customer driven. Due to that, intangible asset has become an important factor for corporate value creation process in the organisation (Chareonsuk & Chansa-Ngavej, 2008).

As a consequence, the survival of the companies does not only rely on the financial profit in the organisation. The combination of tangible and intangible assets is necessary to confirm the sustainability of the companies in the long term. In Malaysia, IC becomes a broad issue since most studies have debated its relationship with the performance of the firm. By using value added intellectual coefficient (VAIC), the concern of the companies is more on the financial performance (Muhammad and Ismail, 2009; Poh et al. (2018); Ting and Lean, 2009; Gan and

Saleh, 2008; Muhammad Khalique et al, 2013; Kweh, Chan, and Ting (2015); Abdullah and Sofian (2012). Value Added Intellectual Coefficient (VAIC) consists of three main components which are Value Added human capital (VAHU), Value Added Structural Capital (STVA) and Value Added Capital Employed (VACA). These three components are important to confirm the presence of Intellectual Capital in an organisation and improve its financial performance.
Aligned with the goals of the company to sustain competitive advantage, environmental issues have become one of the serious matters to be considered in business operation. In Malaysia, environmental issues like pollution from fertilizers, pesticides and gaseous emissions of industrial processes and water pollution affected the entire Malaysian ecosystem. Due to that, the Malaysian government has seriously emphasised environmental perspective through various initiatives such as the efforts to promote the green initiative and finance the high impact research on green technologies by the Ministry of Energy, Green Technology and Water (KeTTHA) in 2009. Green technology can be defined as the development and application of products, equipment and systems used to conserve the natural environment and resources. In line with the National Green Technology, which was launched in 2009, the Malaysian Government has realised that in the 21st century, renewable and sustainable energy as well as green technology will be the core of economic growth for all countries.

Due to that, Bursa Malaysia has put an effort to promote sustainability and it is the key to success in business today. For this aim, the Malaysian government and Bursa Malaysia have mandated all public listed companies to produce a sustainability report known as corporate social responsibility (CSR) report to report sustainability practices in the organisation. Green practices require an organisation to conduct activities in ways that could enrich the environment rather than harm it. The past studies indicated that organisations that adopted green initiatives and intended green strategies have successfully executed a better organisational performance (Lisi, I.E, 2015).
Therefore, the aim of this study is to empirically examine the impact of intellectual capital on financial performance in ten (10) selected Malaysian green technology companies (Eco-friendly companies) in order to achieve sustainability development in the long term. This study mainly examines how Malaysian green technology companies which are practicing and conducting green initiative reflect the intellectual capital investment since there are limited studies which have discussed it from the Malaysian perspective.

2. Literature Review

Intellectual capital (IC) is the information, knowledge and intellectual property such as R&D expenditure that the company uses to gain income (Stewart, 1997). IC is also an important factor for strategic resources in an organisation (Barney, 1991) and it increases the financial performance and firm market value of companies (M. Chen, Cheng, & Hwang, 2005; Zéghal & Maaloul, 2010). In addition, Andrikopoulos (2005) stated that IC has high influences that increase the performance even when some companies are facing critical issues with their operation and management, due to difficulties of measurement. According to Roos et al. (1997), IC contains the value of the knowledge of its members and empirical translation of their knowledge. It covers all the assets which do not appear on the balance sheet such as patent, brands and trademark. Furthermore, Belkaoui (2003) indicated that companies achieve a sustainable competitive advantage by running tangible assets and intangible assets. This can prove that IC has significant elements (knowledge and information) to improve the firm financially, leading to an effective business operation and to achieve sustainable competitive advantage.

In line with the intellectual capital, Resource-based view (RBV) theory is a suitable approach to understand competitive dynamics (DeNisi, Hitt, & Jackson, 2003). Most of the previous researches stated that resource-based view (RBV) is the main theory that the development of intellectual capital (IC) (Penrose, 1959, Wernerfelt, 1984, Firer and William, 2003). The foundations of the RBV

can be viewed in the work by Penrose (1959) that conceived the firm as an administrative organisation and a collection of productive resources. According to Barney (1991), RBV states that the company's competitive advantage is derived from the ability of the company to assemble and exploit an appropriate combination of resources. Based on the theory, it can be concluded that RBV explored on the ability of the company to create competitive advantage (differentiate the value added of the company from others) through the collection of productive resources.

Apart from that, intellectual capital (IC) consists of three (3) components which are human capital, structural capital and capital employed (Cuganesan, 2006; Kim and Kumar, 2009; Mouritsen, Larsen and Bukh, 2005). However, some authors have named three components of IC with different names which are external structure for CE, SC and individual competencies for HC.

According to Marimuthu, et al., (2009), HC refers the procedure related to training, education and other professional resources in order to increase the levels of knowledge, ability, values and social asset of an employee which will lead to the employee's satisfaction and financial performance. In Malaysia, Muhammad & Ismail (2009) found that HC is the important component in measuring capital market. The strong innovative skills among the employees can change the financial environment, technological advancements and product quality to become higher. Based on the study, there is a positive relationship between IC and financial performance. This is also supported by Maditinos, Chatzoudes, Tsairidis, & Theriou, 2011b) which found that there are statistically significant relationship between HC and financial performance. It can be shown that HC is an important component in IC to enrich the skills, knowledge, expertise among employees which can maximise the financial profit in a organisation.

SC is the organisational procedure and it turns the individual human assets into group assets. Bontis et al. (2000) stated that SC has significant relationship on business performance especially in non-service based industries. Ting & Lean (2009) found that there is a positive significant relationship between IC and financial performance while SC shows a negative effect of financial institutions in Malaysia. On the contrary, Bontis & Fitz-enz, (2002) showed a positive relationship result between SC and financial performance. This is supported by Nimtrakoon (2015) who examined the relationship between SC and financial performance for Malaysia and found positive and statistically significant relationship. Therefore, SC has significant effect to the financial performance and important factor to support HC and to determine the presence of IC in the company.

Capital employed efficiency indicates the value added gained by the firms from the net book value of assets. According to Firer and Williams (2003), South African firms put more emphasis on utilising physical assets to gain higher returns. This is supported by Pulic (2000) who claimed that IC resources cannot perform without physical capital which is similar to the resource-based theory. Due to that, most of the previous scholars (Firer and Williams, 2003; Ting and Lean, 2009; Vishnu and Gupta, 2014) reported that there is a significant positive relationship between physical capital and firm performance. Another study by Ismail and Karem (2011) found that CEE and HCE are significantly correlated with bank performance in Bahrain. In Indonesia, Pradana et al (2018) documented that VACA has a significant effect and positive influence towards company value in retailing trade, property and real estate sector listed in Indonesia Stock exchange. It can be concluded that capital employed efficiency can be considered as the important element in IC to gain competitive advantage in the perspective of funding and this is consistent with the Resource based view (RBV).

In return to the need for IC valuation, several methods to measure IC and its performance have been developed by various researchers, for example, Skandia IC Report Method (Edvinsson and Malone, 1997) and Value Added Intellectual Coefficient (VAIC) Model (Pulic, 1998, 2000). Among these methods, Pulic's VAIC is widely adopted by academicians and practitioners as a method to measure IC and reflect the market value of corporations. VAIC provides a standardised and integrated measure, which allows cross-organisational or cross-national comparison and analysis. Value Added Intellectual Coefficient (VAIC) also represents information on value creation efficiency of tangible assets and intangible assets owned by a company. Recently, IC research attracted and received increasing interest from most researchers in the developing countries. Furthermore, the present study uses the VAIC™ method as it is recognised as the most suitable approach to measure IC (Chen et al., 2014; Phusavat et al., 2011; Young et al., 2009; Zeghal and Maaloul, 2010).

Muhammad & Ismail (2009) found that IC has significant and positive relationship with financial performance of 18 companies in the Malaysian financial sector. Soon Yau et al. (2010) found the effective companies among the smaller sized companies are providing more IC. It shows significant relationship between financial performances of Public Listed in Malaysia. In addition, Poh et al. (2018) also chose local bank or Malaysian financial sectors as a sample to see the relationship between IC and financial performance from 2011 to 2016. The findings show that all the components of IC have significant relationship with financial performance. Gan & Saleh (2008) showed that technology-intensive companies in Malaysia depend on physical capital efficiency due to the most significant of physical capital. Kamardin, Bakar, & Ishak (2015) found that VAIC is negatively related to IC but only company size and leverage are found to be positively related to IC of 68 biggest Malaysian companies listed in the Malaysian Stock Exchange. Based on the empirical findings, it concludes that intellectual capital (VAIC) is closely related and it influences financial performance across sectors and can be considered as universal approach to determine IC and firm performance.

Intellectual capital (IC), Green technology and financial performance

There are a few researches which discussed on IC and green technology focusing on financial performance in Malaysia. Climate change, environmental awareness and green consumption have raised numerous concerns about environmental issues in business organisations. Although many previous studies have shown that companies implementing environmental management have better financial performance (Graham and McAdam, 2016; Endrikat *et al*., 2014; Clarkson *et al*.,2011; Wagner and Schaltegger, 2004), the relationship between corporate environmental management and financial performance produced inconclusive results. According to Jayachandran (2013), extent research has stated three possible directions for the correlation between environmental management and financial performance which are negative, neutral, or positive. A negative relationship, also known as the trade-off hypothesis, suggests a negative impact of environmental management on financial performance. Most of the researchers (Levitt, 1958; Friedman, 1970; Preston and O'Bannon, 1997 and King and Lenox, 2001) argued that environmental engagement withdraws financial resources from a firm and thus, weakens its financial performance. In other words, green technology or environmental management affects the financial performance directly or indirectly to sustain the profitability of the company.

Baharum & Pitt (2009) found that there is a positive significant relationship between IC and green facilities management of facilities management firm in Romania. Although, Avagyan, Cesaroni, & Yildirim (2011) studied on the impact of environmental technologies such as less polluting process technologies or green products and environmental marketing strategies on the firms market value, it was found that there is a positive relationship between green IC and firm performance of Green Chemical companies in The United States. According to Yong et al. (2019), there is a

significant relationship between green IC and green human resource management but only SC is not significant on green human resource management of 112 manufacturing firms in Malaysia. It can be concluded that both IC and green technology affect the performance of the company as they are important in making decision on strategic resources for the company.
Therefore, this study fills the gap by investigating the intellectual capital efficiency among Green Technology Companies since there are limited research done in Green technology Companies especially in Malaysia.

3. Estimation Method

3.1 Sample collection and data analysis

The sample comprises ten (10) selected green technology companies (eco-friendly companies) in Malaysia during 2014-2018. These companies have been chosen because they were listed in top ranking among eco-friendly companies in Malaysia. The companies were also selected from various industries and sectors. Data were gathered from the annual report of ten (10) Malaysian Green Technology companies from four different industries which were manufacturing companies, oil and gas, pharmaceutical and electronic. STATA 14 software was employed in this study to see the impact of IC components and financial performance of the companies. Using STATA 14 software, this study conducted several tests which are descriptive analysis, panel specification tests, diagnostic tests and regression analysis.

3.2 Measurement and variables

These are the list of measurement and variables for the study. Return on Asset (ROA) is a proxy for financial performance (Dependent variable) and Intellectual capital components (VAHU, VACA, STVA,VAIC) as independent variables.

Table 3.2.1:
Measurement and variables

Dependent variable	
Financial performance	Return on Asset (ROA) – Net income/total asset
Independent variables	
Intellectual Capital components	Value Added Intellectual Coefficient (VAIC) Value Added Human Capital (VAHU) – VA/HU Value Added Capital Employed (VACA) – VA/CA Value Added Structural Capital (STVA) - SC/VA

3.4 Research model

The objective of this study is to determine the relationship between the dependent variable and independent variables. The regression model for dependent variable (ROA) and intellectual capital components can be written as follows:

$$ROAit = \beta 0 + \beta 1VAHU + \beta 2STVA + \beta 3VACA + \beta 4VAIC + \varepsilon$$

ROAit = Return on Asset in natural log for companies i, in year t

β0 = Constant

β1VAHU = Value Added Human Capital (RM) for companies i, in year t

β2STVA = Value Added Structural Capital (RM) for companies i, in year t

β3VACA = Value Added Capital Employed (RM) for companies i, in year t

β4VAIC = Value Added Intellectual Coefficient (RM) for companies i, in year t

ε = Error

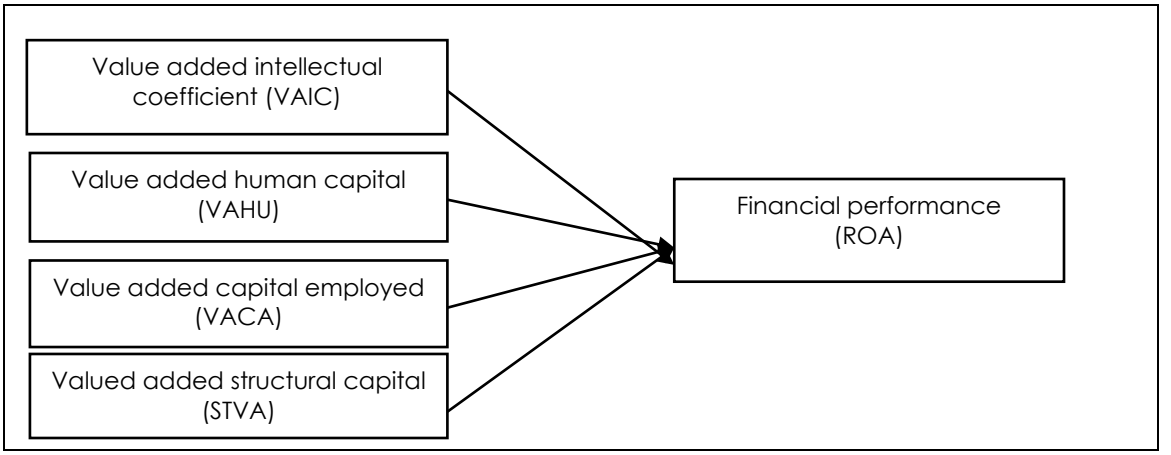

Figure 3.4.1: Relationship between Intellectual Capital and Financial Performance from selected Green technology companies in Malaysia

Sources: I. Ting & H. Lean (2009), Intellectual capital performance of financial institutions in Malaysia.

3.5 Hypothesis

From the research framework, the study came up with four (4) hypotheses which are:

H1: There is significant relationship between Value Added Intellectual Coefficient and Financial Performance (ROA)

H2: There is significant relationship between Value Added Human Capital and Financial Performance (ROA)

H3: There is significant relationship between Value Added Capital Employed and Financial Performance (ROA)

H4: There is significant relationship between Value Added structural capital and Financial Performance (ROA)

4. Results and Discussion

4.1 Value Added Intellectual Coefficient (VAIC) method

These are the results and analysis of intellectual capital components (VAHU,VACA and STVA) for ten (10) Green technology companies:

Table 4.1.1:
Average of Intellectual Capital Component of ten (10) selected Malaysian Green Companies

AVERAGE OF VALUE ADDED COMPONENT			
COMPANIES	**VAHU**	**STVA**	**VACA**
CANON	1.53	0.34	0.49
DAIKIN	1.43	0.30	0.09
HITACHI	1.33	0.25	0.25
PANASONIC	1.21	0.17	0.42
PETRONAS	4.14	0.76	0.17
PHARMANIAGA	1.50	0.33	0.28
SHELL	5.02	0.77	0.35
SAPURA	2.97	0.65	0.08
SIME DARBY	1.43	0.29	0.16
TOP GLOVE	2.57	0.61	0.21

Table 4.1.1 shows the average of Intellectual Capital component of ten (10) selected Green Companies for five (5) years in Malaysia. The average of VAIC is divided into three (3) components which are VAHU, VACA and STVA. The average of VAIC is the sum from all the five (5) years from 2014 to 2018. Human capital was the highest component contributed to the VAIC. Based on Table 4.1.1, the highest average for VAHU is Royal Dutch Shell Plc which leads the rank by earning 5.02 profit. It means that for every RM1 investment made in the human capital, the company will gain RM5.02 profit. In addition, this shows that by investing in human capital company performance, it will increase due to good soft skill, knowledge and experience. Next, the second highest average is Petronas Plc with 4.14 profit. However, the lowest average is Panasonic Corporation with only 1.21 profit compared to others.

Capital employed is an investment of companies by gaining the profits from their fixed asset and current assets. In this study, capital employed efficiency is the lowest component that contributes to VAIC. Physical assets of capital employed such as property and equipment that employees cannot take out from the company if they quit from the company. Based on the table above, apparently it shows that the lowest average of capital employed is Sapura followed by Daikin with RM0.08 profit and RM0.09 profit respectively. This proves that both companies are not efficient in utilising the physical assets to generate their profit. In addition, the highest VACA is Canon Corporation followed by Panasonic Plc with RM0.48 and RM0.42 respectively. It means that both companies mostly invest in their physical assets to generate income.

Besides, structural capital efficiency is the important tool that allows human capital to function. From the table above, the highest average of structural capital is Royal Dutch Shell Plc with RM0.77 profit. It means that every RM1 of investment, the company will earn RM0.77. This is followed by the second highest average of structural capital which is Petronas Plc with RM0.76. Panasonic Corporation had the lowest average of structural capital among the ten (10) companies that only generate RM0.17 from every RM1 investment.

Table 4.1.2:
Value Added Intellectual Coefficient (VAIC) ranking of ten (10) selected Green Companies in Malaysia for five (5) years.

AVERAGE OF VAIC RANKING	
COMPANIES	**VAIC**
SHELL	6.15
PETRONAS	5.07
SAPURA	3.70
TOP GLOVE	3.38
CANON	2.37
PHARMANIAGA	2.11
SIME DARBY	1.88
DAIKIN	1.83
HITACHI	1.83
PANASONIC	1.80

Based on Table 4.1.2 above, the most efficient company in utilising its intellectual capital is Royal Dutch Shell Plc with 6.15 profit. It means that for every RM1 invested, the company is able to generate RM6.15 profit from IC. It is followed by Petronas Plc that is able to generate RM5.07 from every RM1 investment in IC. In conclusion, the higher value of VAIC shows that companies are efficient in utilising their intellectual capital component and it also encourages a competitive advantage over competitors.

4.2 Descriptive analysis

Table 4.2.1:
Descriptive Statistics

Variables	N	Mean	SD	Min	Max
ROA	48	5.102708	4.126822	-7.42	14.1
VAHU	49	2.329043	1.349969	1	5.8988
STVA	49	0.4531571	0.2173516	0.1572	0.8304
VACA	49	0.2467082	0.1909863	0.0439	1.2041
VAIC	49	3.036641	1.561427	1.6092	7.9333

Table 4.2.1 reports the descriptive statistics for Intellectual capital components and financial performance. The total number of observations is 49 for all variables except for ROA which indicates 48 observations. The highest mean value is ROA which shows 5.102708 and the lowest mean value is VACA. For standard deviation (SD), ROA also marked as the highest value which indicates 4.126822 and the lowest SD is VACA. It means that ROA has greater spread of data from the mean compared to other variables. Besides, VAIC is the highest minimum value and maximum value.

4.3 Panel Specification test

Table 4.3.1:
Panel Specification Tests

	p-values of the tests			
Model	F-test	BP-LM	Hausman	Technique
Model 1	0.0000	0.0000	0.5600	Random Effect

The next step is to choose the most suitable panel data analysis technique. There are three (3) types of alternatives that can be used which are Pooled Ordinary Lest Squares (POLS), Fixed Effects (FE) and Random Effects (RE) models. As presented in Table 4.3.1, the result of the F-test is 0.000 (p-value<0.05), BP-LM test 0.000 (p-value<0.05) and Hausman test 0.5600 (p-value>0.05). From the results, the Random Effect (RE) is the most appropriate model estimator for the study.

The study also performed diagnostic test to check the presence of multicollinearity, heteroscedasticity and serial correlation problem.

4.4 Diagnostic test

Table 4.4.1:
Diagnostic Tests for Static Models

		p-values of the tests		
Models	VIF	H	SC	Strategy
Model 1	376.11	-	0.2366	Random-effects GLS regression with robust option

From the table above, the diagnostic tests show that the presence of serial correlation 0.2366 which is p-value>0.05 is considered as is no serial correlation problem. For RE model, the errors are assumed to be heteroskedastic. Following the suggestion by Hoechle (2007), the remedial procedure has been carried out by using the Random-effects GLS regression with robust option.

4.5 Regression analysis

Table 4.5.1:
Regression Results

	Model 1	Model 2	Model 3	Model 4
VAHU	2.0052	0.9832	1.9025	0.9832
	(0.19)	(0.16)	(0.31)	(0.44)
STVA	21.9401	15.4462	12.5021*	15.4462
	(1.66)	(1.55)	(1.84)	(1.32)
VACA	7.6821	3.4713	5.6993	3.4713
	(0.68)	(0.50)	(0.86)	(1.74)
VAIC	-4.1344	-0.4761	-1.8690	-0.4761
	(-0.39)	(-0.08)	(-0.30)	(-0.28)
Constant	1.1156	-3.6720	-0.6961	-3.6720
	(0.64)	(-1.17)	(-0.28)	(-0.83)
N	48.0000	48.0000	48.0000	48.0000
r2	0.1516	0.2670		0.2670
r2_a	0.0727	-0.0132		0.1989
r2_w		0.2670	0.2511	0.2670
r2_b		0.0600	0.0607	0.0600
r2_o		0.0760	0.0854	0.0760
F	1.9207	3.0968		.
p	0.1243	0.0041	0.0262	.
chi2			11.0330	

t statistics in parentheses
Notes: (1) ROA=Return on Asset, VACA=Capital employed, VAHU =Value Added Human Capital, STVA= Value Added Structural Capital, VAIC= Value Added Intellectual Coefficient. (2) Figures in parenthesis are t-statistic.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Considering the various diagnostic tests that have been conducted and the remedial procedures undertaken, there is enough evidence to conclude that the examined statistical test satisfies the key assumptions of linear regression. Based on model 3 (Random Effect GLS regression with robust option), the total number of observation is 48. The regression result suggests that the model fits the data well at 0.05 significance level. The Overall R^2 of 0.0854 suggests that the four (4) independent variables have explained 8.54% of the variance in the dependent variable (ROA). The remaining 91.46% is explained by other variables that are not included in this model. The results of the regression also suggest that Value Added Structural Capital (STVA) has a statistically significant relationship with return on asset (Coeff= 12.5021, p<0.1). The results also suggest that Value Added Intellectual Coefficient (VAIC) is negatively related to return on assets.

Therefore, Value added structural capital (STVA) seems to have the greatest influence on return on assets, which is explained by the highest t-value of 1.84.

5. Conclusion

Empirical findings show that intellectual capital component is consistent with the resource-based view theory. Based on the result, the most significant factor that influences financial performance (ROA) of the companies is Value Added Structural Capital (STVA). Based on previous studies, Structural Capital plays an important role compared to other intellectual capital components in order to increase the company's financial performance and competitive advantage. This is supported by most of the researchers (Chen et al., 2005; Xu & Wang, 2018; Zéghal & Maaloul, 2010), Structural Capital will boost the performance of the company to become better. Apparently, Green initiatives adopted by the companies focused ore on innovation for their system, process, operations and policy of the company which can reduce their cost of operations. This is because producing green product and system created by the company itself gives benefit to the entire company's business operations. It can minimise the cost of the productions, maximise the financial profit of the company as well as can support and save our environment from any hazards like pollution and wastes. This also proved that Malaysian Green Technology Companies which practice intellectual capital become more efficient in the global marketplace in order to sustain the competitive advantage.

Besides, there is no significant relationship between VAHU, VACA and financial performance, but there is only a positive relationship between them. This is because of the nature of Green technology Companies which adopted less human capital component such as people behaviour, soft skill, experience and knowledge ability in their operations rather than structural capital. Besides, inefficiency in VACA also shows that green technology companies do not emphasise in investing more on physical asset to generate profitability of the company. The result is consistent with previous studies (Ting & Lean , 2009 and Maditinos et al. ,2011). In conclusion, VAHU and VACA may not affect much on the financial performance (ROA) in Malaysian Green Technology companies.

Besides, the findings also show that there is a negative significant relationship between VAIC and ROA. This is supported by Kamardin et al. (2015) which stated that there is a negative relationship between VAIC and ROA. To compare VAIC between companies, Royal Dutch Shell indicated the highest value of VAIC, followed by Petronas Plc and the lowest is Panasonic. It shows that Royal Dutch Shell and Petronas maximised the utilisation of IC to become more efficient in operation. To summarise, intellectual capital components (VAHU and VACA) are less efficient in order to increase the company's financial performance of Green Technology companies in Malaysia as they exist merely to support the business operations. Empirical findings indicated that Malaysian green technology companies only focus on structural capital (System, process, procedure, databases) as the nature of the companies align with the competitive advantage and it encourages sustainable development using green initiative. These can boost the financial profit of the company to become more efficient in the marketplace. For future research, the researchers can add more time range to the study in order to see the impact of IC on financial performance of green companies in a long-term period. In addition, the researcher can add on green initiative factors such as carbon emissions, energy productivity and waste productivity as control variables or independent variables, so that the study become more realistic.

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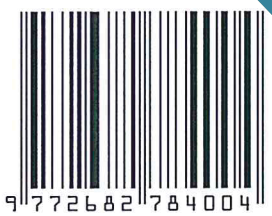

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