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Does Intellectual Capital have Impact on Financial Performance? A Case of Malaysian Consumer Product Companies

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Abstract
Purpose: To investigate the impact of intellectual capital on financial performance.
Design/methodology/approach: A panel data set of consumer product companies listed in Bursa Malaysia, regression method used to analyse the data.
Findings: All intellectual Capital elements of Structural Capital Efficiency (SCE), Human Capital Efficiency (HCE) and Capital Employed Efficiency (CEE) indicate a significant impact towards financial performance. Additionally, CEE contribute the higher contribution in the Fixed Effect model.
Research limitations/implications: A limited 50 consumer product companies with period of study is 2011-2019.
Practical implications: Benefited to financial experts, potential investors, management and future researchers.
Originality/value: Give readers an overview and understanding of the intellectual capital.
Paper type: Research paper

Keywords: Intellectual capital, Financial performance, VAIC, Human capital efficiency (HCE), structural capital efficiency (SCE), Capital employed efficiency (CEE)

Introduction

Performance of a company is determined by variety factors, including experience, expertise, and education level of its employees and managers. Improved intellectual capital will serve as an internal factor that improves a company's financial performance and competitiveness (Sardo et al., 2018). Intellectual capital or known as intangible assets which is not listed specifically on company's financial position but positively impact on the performance (Ozkan et al., 2017). It is a crucial source and a primary contributor to a company's economic growth and value development (Abdulaali, 2018) and it is regarded as an intangible value driver in a company which generates potential advantages. The intense competition in current market educates consumers to become wiser in making a buying decision. In the face of fierce competition, intellectual capital has been recognised for its ability to add value to the business. This study uses the value-added intellectual coefficient (VAIC) model develop by Pulic (2000) which measures the impact of intellectual capital on firm's performance. The reason why this study chooses VAIC model because this model is the most famous model for indicating the efficiency of intellectual capital in a company (Tarigan et al., 2019). The VAIC model will be used to

assess the firm's performance and the model is composed of three components of human capital efficiency (HCE), capital employed efficiency (CEE), and structural capital efficiency (SCE). In early study, intellectual capital only consists of human capital and structural capital. Human capital can be classified as the economic value of workers. Specifically, it can be defined as the accumulation of knowledge, habits, social and personality which are formulated together to provide an opportunity for economic value creation for an organisation. In other words, human capital is a collection of resources. Resources which are included in the capital are talents, knowledge, skills, experience, and wisdom and so on which possessed by the employees of an organisation. Whereas, structural capital can be defined as almost every vital element that must exist in an organisation to provide support for human capital in performing their task. Structural capital is an aiding assistance in structuring the human capital to function. The capital owned by an organisation and retained with an organisation even when people dismiss from the organisation. Trademarks, patents, even buildings are the examples of structural capital besides hardware of software.

Because of the rapid changes in technology and the high level of competition in the market, companies have placed a greater emphasis on the value of intellectual capital. Furthermore, the economy is gradually shifting toward a knowledge-based economy and a resource-based view (RBV), with a greater reliance and concern on employee's skill, their knowledge in information technology, instead of tangible assets. This prompted companies to have their intellectual capital scrutinised. One of the obstacles to handling intellectual capital is when top management is unsure that the organisation has valuable resources that can contribute to the development of new strategies. This is because they have lack of understanding about the nature and value of intellectual capital, on how value and wealth can be created, extracted and optimised through intellectual capital. Past studies (Kamaluddin & Rahman, 2013) found that intellectual capital vital in the firm survival and competitive advantage as there is a significant relationship between intellectual capital. A limited of research about intellectual capital and financial performance in consumer product industry lead research to study on the industry. Consumer products will subsequently be recognised as the basis of the consumer economy which generates the enormous amount of country's gross domestic product. In addition, this industry also gives a large proportion of income to other industries such as retail and advertising. The consumer product industry acts as catalyst for other industry since the investment are obviously made in consumer product companies (Jaafar et al., 2018). Hence, this study is attempt to explore more on the impact of intellectual capital on financial performance of selected companies.

Literature Review

Researchers describe intellectual capital in a variety of ways, however no specific definition that encompasses the meaning of intellectual capital. In other words, intellectual capital can be described as intangible assets which are excluded from a company's financial statements. (Ozkan et al., 2017). It consists of three components which are human capital, structural capital and relation or customer capital. Human capital can be defined as the knowledge and skills of employee which can be enhanced through training (Tarigan et al., 2019). Structural capital refers to as of the system and structure, besides processes in the company and involves various components like database, business strategies and organisation chart (Tarigan et al., 2019). Relational or customer capital refers to the relationship with external elements such as customer, suppliers, shareholder and banks within the company. Bontis et al., (2015) measured the relationship between IC and financial performance of Serbia hotels industry from 2009 to 2012 and the results shows that there is a positive impact in human and structural capital. Xu & Wang (2018) study the impact of intellectual capital and sustainable growth in Korean

manufacturing industry found that IC has a positive impact on financial performance and the sustainable growth of companies. Furthermore, physical capital, human capital (HC), and relational capital (RC) all have a positive relationship with company performance and sustainable growth. Similarly, the five ASEAN countries have reported a positive relationship between IC and financial performance indicators (Nimtrakoon, 2015). In particular, IC is found to be positively related to margin ratio and return on assets. A study done in Malaysia by Bontis et al. (2000) found that human capital has important role which affected the industry's value creation. It shown that human capital has higher impact in determining the performance of manufacturing industries.

This study used VAIC model to measure intellectual capital of the company. The VAIC has been widely used to measure the intellectual capital of the company. The VAIC model uses the value from comprehensive income and financial situation to measure the value adding occurred in the company (Joshi et al., 2013). According to them, VAIC is easy to be calculated and only concern on the efficiency of resources which create the company's value. The VAIC method provides data on the efficiency of tangible and intangible assets that an organisation can use to generate value. The formula of VAIC is addition human capital efficiency, structural capital efficiency, and capital employed efficiency which a higher value of VAIC implies high efficiency in the use of company capital. Seowarno and Tjahjadi (2020) the VAIC model and the A-VAIC model also show the influence of SCE on ROA. It is proving that high systemic capital management improves profitability in Indonesian banking firms. SCE also affect ROE; a well-managed structural capital portfolio should produce profit for the shareholders who invested their capital for the firms. Furthermore, Mohammad and Bujang (2019) demonstrated that CEE being an important element in improving the performance of Malaysia's financial sector. Tangible assets remained the most important underlying resource of bank financial performance. Adegbayibi (2021) found that CEE had a significant positive impact on ROA, concluded that an increase in CEE would boost the profitability of Nigerian nonfinancial firms. Nassar (2018) found insignificant result between firm size and financial performance for both ROA and ROE, he did on the study of IT companies in Istanbul, to see the impact of VAIC before and after crisis in year 2004 to 2015.

Resource based theory (RBT) is widely used in a study on the relationship between IC and company's performance. According to resource-based theory, resources and capabilities are the sources of sustainable advantage for company to achieve better financial performance. These resource and capabilities consist of both current and fixed assets including company management expertise, company process, information and knowledge that can be used by company to choose and implement the strategies. According to RBT insight, differences in company performance are primarily induced by the uniqueness of the company's resources and capabilities and not because of structural assets. Companies that take advantage of opportunities and neutralise threats using their resources and expertise will increase the net profits, decrease costs or both (Suryani & Nadhiroh, 2020).

Theoretical Framework and Hypotheses Development

Figure 1: Theoretical Framework

H_0: There is no significant relationship between intellectual capital and financial performance of companies.
H_1: There is significant relationship between intellectual capital and financial performance of companies.

H_0: There is no significant impact of intellectual capital on financial performance of companies.
H_1: There is significant impact of intellectual capital on financial performance of companies.

Data Measurement

Guided by Ka et al. (2015), this study used return on assets (ROA) to measure financial performance. ROA is a traditional way to represent the financial performance. ROA formulate by net income divided by total asset of the company. Commonly, ROA used as an indicator of probability of companies in annual reports.

VAIC is the coefficient of value-added intellectual which consist of three components, that are, value added by human capital efficiency (HCE), value added by capital employed efficiency (CEE) and structural capital efficiency (SCE). Value added (VA) is value created by the company itself, it computed as sum of; C is employee salaries; OP is operating profit; D is depreciation; A is amortisation (Xu & Wang, 2018). The VAIC model was to establish efficiency namely, HCE, CEE and SCE. HCE can compute by dividing value added with human capital. HC represent investment made by company to its employee including the payment of salary and wages. It is a proxy of value added by human resources used by the business. CEE formulated by using total value added divided by capital employed. Capital employed (CE) also refer to the valued of company's total assets, CEE is to measure the physical capital. Where, to compute SCE, structural capital divided by value added. SCE indicates how much the company's value creation was generated by the structural capital (Mohammad & Bujang, 2019). Size is calculated by logged total assets.

Method

Consumer product companies is chosen because of it is contribute enormous amount to the gross domestic product (GDP). The data was collected from Malaysian consumer product companies from the year 2019 until 2011. In total, there are 158 consumer product companies listed on Bursa Malaysia. Based on Krejcie and Morgan (1970) sample size table, the sample size of the study is 50 consumer product companies. A total of 450 firm year observations is included in the final sample. This study collects intellectual data in from the companies' annual reports and obtained financial performance data from Thomson Reuters. Then, researcher will analyse the data using correlation and regression method.

$$ROA_{it} = \alpha + \beta 1_k\, HCE_{it} + \beta 2_k\, CEE_{it} + \beta 3_k\, SCE_{it} + \beta 4_k\, SIZE_{it} + \varepsilon_{it}$$

Equation 1

Where,
i= entity and t= time
α= intercept
ε_{it} = Error term
β_k = Beta coefficient
ROA_{it}= Return on Asset
HCE_{it}= Human Capital Efficiency
CEE_{it}= Capital Employed Efficiency
SCE_{it}= Structural Capital Efficiency
$SIZE_{it}$= Size of the firm

Findings

Correlation Analysis

Table 1: Correlation Analysis and VIF

Variables	ROA	HCE	SCE	CEE	SIZE	VIF
ROA	1					-
HCE	0.3333*	1				1.06
SCE	0.1066*	0.0942*	1			1.05
CEE	0.7172*	0.1212*	0.0537*	1		1.02
SIZE	-0.1908*	-0.0213	-0.0516	-0.2141*	1	1.01
Mean VIF						1.04

In identifying the problem of multicollinearity among independent variables, the Variance Inflation factor (VIF) test was run. The result shown no presence of multicollinearity problem as VIF value is below than 10 (O'Brian, 2007). Then, Pearson correlation test was performed to confirm the multicollinearity, as indicates in above table, all correlation values are below 0.8, which signifies no multicollinearity problem (Gujarati, 2014).

Regression Analysis

Table 2: Regression Analysis

	Model 1	Model 2	Model 3	Model 4
	POLS	Random Effect	Fixed Effect	Robust Fixed Effect
HCE	0.6626***	0.5656***	0.4989***	0.4989**
SCE	0.2585	0.2230	0.2000	0.2000***
CEE	16.7776***	14.9934***	13.7489***	13.7489***
Size	-0.4436	-0.3240	-0.1346	-0.1346
constant	1.2614	1.5830	1.0901	1.0901
R-squared	0.5758	0.5794	0.5787	0.5787
F-stat	153.54***			9.93***
BP-LM Test		83.88***		
Hausman Test			31.20***	
VIF Test	1.04	1.04	1.04	1.04
Heterocedasticity			397.87***	

Asterisks *, **, and *** denote statistical significance level at 10%, 5% and 1% respectively.

Researcher run regression methods using panel data set including Pooled Ordinary Least Square (POLS), Random Effect model (REM) and Fixed Effect model (FEM) as presented in Table 2. Breusch-Pagan Lagrange Multiplier (BP-LM) test was conducted in order to confirm the presence of heterogeneity in this model. Since BP-LM test is significant, researcher rejects null hypothesis, hence panel data is chosen. Next, Hausman Fixed test is used to identify the best fitted model for this study. Since the Hausman Fixed test is significant, researcher rejects null hypothesis and the interpretation of results is based on the robust model of FE model after correct heteroscedasticity problem.

Based on the result of robust FE model, adjusted R-square value shows 57.87% of the variation of intellectual capital is able to explain ROA. The rest of it is referring to the variation of other variables which are not taken into this study. As referring to the probability F-statistic, this study is fit and strong as it significant. The regression test above indicates that all independent variables are insignificant except for size with respects to 1% and 5% significance level.

Discussion

Table 3: Discussion on Findings

ROA	Coefficient	Result	Supported Authors
HCE	0.4989	Significant	Adegbayibi (2021)
SCE	0.2000	Significant	Seowarno & Tjahjadi (2020)
CEE	13.7489	Significant	Mohammad & Bujang (2019)
Size	-0.1346	Insignificant	Soewarnoo & Tjahjadi (2020)

Table 5: Discussion on ROE

The equations of regression logarithm are written as follows:

$$ROA_{it} = 1.0901 + 0.4989HCE_{it} + 0.2SCE_{it} + 13.7489CEE_{it} - 0.1346SIZE_{it} + \varepsilon_{it}$$

Equation 2

SCE and CEE are found to have positive significant impact on ROA at 1% significance level. Any one unit increase in SCE will increase the company's profitability by 0.2 unit. This result was in line with research done by Seowarno and Tjahjadi (2020) where they show the positive influence of SCE on ROA. It is proving that strong systemic capital management improves profitability in consumer product companies. A well-managed capital portfolio would improve the company's profitability. CEE showed a significant positive impact between ROA. The result shows any increase of any a unit equivalent to increase in ROA by 13.7489 unit. This indicates that the bigger the capital employed used in valuing the company's goods, the better the company's performance as calculated by ROA. This study reveals that the greater the capital employed used, the graeter the benefit gained. Profitability will increase if the capital asset is properly handled. The efficiency of capital employed is improved if it generates a higher return for each unit of capital employed. This study in line with previous study conducted by Mohammad and Bujang (2019). The control variables, firm size, have insignificant impact, indicating that firm size has no effect on the company's financial performance. Soewarna and Tjahjadi (2020) support the result which they also found insignificant impact of firm size on ROA.

HCE has the positive impact on ROA at 5% significance level, by mean if companies produce one HCE per unit, their ROA is expected to rise by 0.0.4989 unit as it shows positive direction. This means that the company's financial output as calculated by ROA would be affected by increasing human capital costs in order for the company to add value of its goods. The previous study by Adegbayibi (2021) revealed a positive impact between HCE and ROA listed firms' in Nigeria. It indicated that human capital can aid the profitability and create the value of the company. Also, optimal utilisation of human resources leads to competitive advantages that may improve the financial performance.

Conclusion and Recommendation

The study looks at the impact of intellectual capital on a company's financial results. The independent variables in this analysis are human capital efficiency (HCE), systemic capital efficiency (SCE), and capital employed efficiency (CEE) and ROA is used to assess financial performance. The control variable in this study is firm size. This study has a 450 observations period. In this study, 50 consumer product sector companies are eligible to be sampled over a 9-year period (2011-2019). All research objectives are achieved as correlation and regression analysis were used to determine the result. All the result was supported by various studies done by previous researchers.

Theoretical Implications

This study makes a significant contribution to the understanding of the effect of value creation factors on the financial performance of Malaysian consumer product companies. This research contributes significantly to the current literature by analysing variations in VAIC scores across industries using the VAIC model. The regression results indicate that all intellectual capital dimensions, namely HCE, SCE and CEE have an impact on the IC performance of Malaysia's consumer product industry. The best fitted model for this study is Fixed Effect model after went through all required tests.

Limitations and Suggestions for Future Research

Future research could use a different approach for valuing intellectual capital in order to generate different findings which has a stronger explanatory power on intellectual capital or possibly with the establishment of a linkage with intangible assets. Things including research and development costs, trademarks, copyrights, and goodwill are listed as intangible assets under the International Reporting Financial Standard (IRFS), and other aspects of intangible assets and intellectual capital could become an extension to the current available measurement of intellectual capital. Further research is expected to increase the sample size and lengthen the study period. Companies are required to better manage intellectual capital as a result of the findings of this study. Good intellectual capital management can have an impact on financial performance and how companies can make a profit.

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