

The Effects of Intellectual Capital on Firm's Financial Performance: Evidence from the ACE Market of Bursa Malaysia

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Abstract

Due to the undeniable importance of a Knowledge-Intensive Economy, intangible resources are still receiving attention. In the modern world, the challenges to organizations are the ability to translate the resources and capabilities into a competitive advantage. The ACE Market has faced inadequate investment in intellectual capital (IC). The continuousness of these problems will lead to unfavorable firm performance. In the long run, the firms could not afford to endure. Therefore, this study examined the influence of intellectual capital and financial performance of firms listed in the ACE Market of Bursa Malaysia. The data used were collected from the audited annual reports of 62 firms; the sample period was from 2009 to 2018. This study applied the Two-Step System Generalized Method of Moments (GMM) as an estimation method since it is suitable for data with small-time but large cross-sections. In addition, it has the competencies to solve the endogeneity problem. Intellectual capital was measured using the modified value-added intellectual coefficient (MVAIC) model, and financial performance was proxied by the return on asset (ROA). The empirical finding reveals that HCE tends to be the prime contributor to firm performance, and CEE increases the performance measured by ROA.

Keywords: Intellectual Capital, Intangible Asset, MVAIC, Firm Performance, ACE Market.

Introduction

New value creation techniques have contemplated intangible assets for a thriving competitive market (Dosso & Vezzani, 2019). The key to success for an organization nowadays is to

translate the firm's resources and capabilities into a competitive advantage to attain better performance (Dharni & Jameel, 2021). However, the present business condition is dynamic and uncertain. Hence, the basis of competition has shifted to the creation and absorption of knowledge. The transition from the physical-based to the knowledge-based economy has challenged many scholars to find a new way to measure intangible assets, including intellectual capital, as intellectual capital is a driving force and an essential resource in the creation of value and sustainable company development and as a source of profit growth. Nowadays, intellectual capital is considered a primary economic resource and a critical factor in improving financial and organizational performance. Knowing the importance of intellectual capital, firms are continuously looking into managing intellectual capital for performance improvement. Intellectual capital has been conceptualized from different perspectives in the literature; however, there has been little consensus since its seminal definition.

This study focuses on the ACE market listed firms in Bursa Malaysia, representing the firms with growth prospects with smaller capital constraint firms. These firms have characteristics that are the ideal market for start-ups and new companies run by entrepreneurs looking to push for more capital by listing the companies public. However, the ACE market firm's smaller size and capital are more exposed to several constraints and perform better. Hence, this study focuses on the 62 firms listed on the ACE market from 2009-2018.

Overview of ACE Market in Malaysia

The ACE Market is included in this study due to several reasons. First, the number of companies listed on the ACE market is constantly changing, and one of the main reasons behind listing and delisting is inconsistent finances (Isa, 2019). Besides, the difference in the survival rate between the Main Market and the ACE market discloses that the cumulative survival rates over one through seven years after the IPO are consistently higher for the Main Market IPOs than the ACE Market IPOs (Shari, 2019). Consequently, Shari (2019) claimed that the ACE Market IPOs have a higher chance of being delisted than the Main Market IPOs. Therefore, investments in ACE Market are considered riskier due to the lower listing requirements and uncertain performance. Compared to the main market, which includes firms with a strong case history. The ACE market promotes growing firms with excellent growth potential (Council, 2015). Therefore, this study brings extensive contribution as it sheds light on ACE Market firms' financial performance regarding intellectual capital. Accordingly, it could boost the ACE market's performance as intellectual capital's primary aspiration is to create value-added for firms and sustain competitive advantage. The critical challenge for most firms in this competing world is obtaining and sustaining a competitive advantage.

Second, the firms listed in the ACE market consist of manufacturing, trading and services, and construction that have excellent growth potential (Jaafar, Muhamat, Basri, & Joreme, 2020). Accordingly, most of the firms listed in the ACE market are considered knowledge-intensive sectors. Fundamentally, Intellectual capital studies are perfect for the knowledge-intensive sector (Adesina, 2019; Oppong & Pattanayak, 2019). Therefore, the ACE market is the legitimate market to be focused on for intellectual capital studies.

Third, the ACE Market of Bursa Malaysia has not exhibited good performance for an extended period; also, the number of listed firms and market capitalization is lower than the main market (Shinozaki, 2014). The ACE market shows the lowest in both market capitalization and volume in comparing both markets. Since the share capital of ACE market firms is usually

smaller than firms listed in the main market, they are less liquid. Subsequently, share prices tend to fluctuate quickly compared with the main market counters. Concerning the number of firms listed in both markets, the ACE market has fewer firms than the main market. This is also consistent with the nature of the ACE market, which is small and fragile. Additionally, the Main market firm is always more valuable because many institutional investors do not buy ACE market stocks. Thus, intellectual capital is compulsory to enhance the ACE market performance in the business environment these days, that are more complex and demanding

The Objective of the Study

The importance of intellectual capital is undisputable in the current economy. However, the investment in intellectual capital by the ACE market firms is unfavourable. Hence, this will affect the firm's performance in the long run. Therefore, the purpose of this study is:

- 1) To determine the effects of Intellectual Capital on the firm's financial performance in the ACE Market.

Literature Review

Theory on Intellectual capital and dynamic capabilities on Firms performance: Resource-Based View Theory (RBV)

This study has been governed by the Resource-Based View Theory (RBV). The theory of RBV has been a focal point of fascination over the most recent 30 years, as it guides the internal firm-level factors to explore unexplained variability in firm performance (Kamasak, 2017). According to Cruz and Haugan (2019), RBV is a perfect theory to consider on a firm's performance. This theory was introduced in 1991 by Barney (1991) and specified that firm resources include all assets, capabilities, organizational processes, attributes, information, and knowledge that a firm will constrain and empower to pick up traits that improve its productivity and viability. These resources can be a source of competitive advantage for a firm when it can employ it to plan and implement value creation. However, Barney (1991) clarified that not all the resources in the firm could become a source of competitive advantage. To have this capability, firms' resources must have four attributes: valuable, rare, inimitable, and non-substitutable (VRIN).

Issues in the VAIC Measurement Model

The impediment provision on the measurement of IC recently had made the requirement for a new model by experts. One of the most well-known models utilized by many researchers recently (Al-Musali & Ku Ismail, 2014; Joshi et al., 2010; Joshi et al., 2013) is the VAIC model for IC measurement. VAIC model has focal points over different models. Nimtrakoon (2015) listed five advantages. First, the model is easy to determine the value of IC. Second, the acquisition of data required in the model is feasible because all the data are obtained from corporate financial reports (secondary data). Third, the data are obtained from audited financial statements. Therefore, the measurement is objective and verifiable. Fourth, the model makes cross-organizational or cross-national comparison possible, unlike other measurement models requiring financial and non-financial measures, often including subjective judgments. Fifth, organizations can utilize the model to assess their intellectual capital and firms' performance.

However, according to Nimtrakoon (2015), many developed countries have extensively used the VAIC model. This model has a few downsides in measuring IC (Joshi et al., 2013). Firstly, the VAIC model does not measure the IC, but it measures the impact of IC management.

Additionally, the VAIC model is inadequate to gauge relational capital (Joshi et al., 2013). Relational capital is the mainstay of intellectual capital, and it thoroughly intervenes in the connection between human capital (Agostini & Nosella, 2017). Therefore, in the light of the previous studies on intellectual capital, Ulum (2015) thought of a new altered VAIC model for performance measurement; the new model included relational capital and measured with marketing costs. Additionally, the new model of MVAIC, to some extent, is better at capturing the structural capital efficiency (SCE) of a firm more proficiently than the first model (VAIC) (Maji & Goswami, 2017; Nimtrakoon, 2015). Furthermore, Modified VAIC (MVAIC) is a better measure than VAIC because modified VAIC measure incorporates more informative variables than VAIC measure.

Methodology

Sample and Data Collection

Data for this study was collected from the audited annual reports, and the period of the analysis is from the year 2009-to 2018. The data was obtained from all the sponsor-driven markets in Malaysia (ACE market). This study attempted to take all the firms listed in the ACE Market of Bursa Malaysia, and the respective market comprises 131 firms. However, only 62 firms have been selected as a sample due to data limitations.

Variable Measurement

This study used the MVAIC model developed by Ulum et al (2014), which originated from the VAIC model established by Pulic in 2000. The independent variables are measured using MVAIC components: HCE, SCE, RCE, and CEE (Xu & Li, 2020). The dependent variables (financial performance) have been measured using ROA; ROA is calculated as operating profit divided by total assets and reflects the efficiency of utilizing available assets in creating profits (Al-Musali & Ku Ismail, 2014). Finally, control variables such as SZE (total asset of the firm) and LEV (total asset/total liabilities) have been included to enhance the study's internal validity.

There are several steps to be considered in calculating the independent variable. First, the first step is calculating the value-added (VA). VA is derived from the following formula: $VA = OP + EC + D + A$, where OP is operating profit, EC is employee cost, D is depreciation, and A is amortization; **step 2** is to establish efficiency scores, namely HCE, SCE, RCE and CEE. To calculate human capital efficiency (HCE), the formula is: $HCE = VA / HC$, human capital (HC) is composed of the productivity, skills, experience, knowledge, and fitness of employees in the workplace. Next, to calculate the structured capital efficiency (SCE), the formula is: $SCE = VA - HC / VA$, SCE represents the ratio of structured capital to total VA. SCE shows how much of a company's value creation is generated by structural capital (Joshi et al., 2013). To compute capital employed efficiency (CEE), the equation is: $CEE = VA/CE$, capital employed (CE) represents the total assets of the firm (Ulum et al., 2014). CEE is a measure of physical capital. Finally, the following equation calculates relational capital efficiency (RCE): $RCE = RC/VA$. **Step 3**, the MVAIC model is mathematically presented as $MVAIC = ICE + CEE$, where ICE is the sum of HCE, SCE, and RCE. In contrast, the ICE of the VAIC model is the sum of HCE and SCE.

Hypotheses Development

Figure 1 illustrates the research framework of the study.

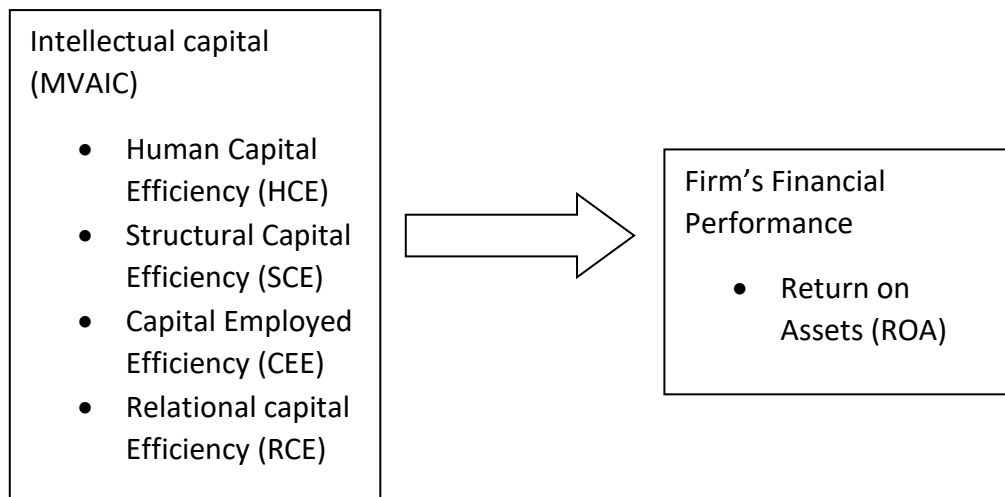


Figure 1: Research Framework

Based on the framework above, the hypothesis for this study is generated.

H1 There is a significant relationship between HCE and a firm's ROA

H2 There is a significant relationship between SCE and a firm's ROA

H3 There is a significant relationship between RCE and a firm's ROA

H4 There is a significant relationship between CEE and a firm's ROA

Regression Models

To measure the relationship between IC and the ACE market performance, the study regression model is articulated as follows:

$$\text{Model 1: } ROA_{it} = \alpha_{it} + \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 HCE_{it} + \beta_3 SZE_{it} + \beta_4 LEV_{it} + \omega_{it} \quad (1)$$

$$\text{Model 2: } ROA_{it} = \alpha_{it} + \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 SCE_{it} + \beta_3 SZE_{it} + \beta_4 LEV_{it} + \omega_{it} \quad (2)$$

$$\text{Model 3: } ROA_{it} = \alpha_{it} + \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 RCE_{it} + \beta_3 SZE_{it} + \beta_4 LEV_{it} + \omega_{it} \quad (3)$$

$$\text{Model 4: } ROA_{it} = \alpha_{it} + \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 CEE_{it} + \beta_3 SZE_{it} + \beta_4 LEV_{it} + \omega_{it} \quad (4)$$

Where

ROA_{it} = return on asset (i.e. the measure of performance) of the firm in the ACE market

HCE_{it} = Human capital efficiency of the firm in the ACE market i in year t

SCE_{it} = Human capital efficiency of the firm in the ACE market i in year t

RCE_{it} = Relational capital efficiency of the firm in the ACE market i in year t

CEE_{it} = Capital employed efficiency of the firm in the ACE market i in year t

LEV_{it} = leverage of firms in the ACE market i in year t ;

SZE_{it} is the size of firms in the ACE market.

Results and Discussion

Descriptive Statistics

The descriptive statistics analysis is based on the panel sample listed on Ace Market of Bursa Malaysia respectively over 2009 to 2018. The data gathered was for firms that constantly available data for 10 years under review and had not revised their financial years. These findings are summarized as follows in the table below: -

Table 1

Descriptive Statistics

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
ROA	620	-0.0680	0.7626	-14.391	10.614
HCE	620	1.5823	9.4405	-113.606	90.256
RCE	620	-0.7989	16.6614	-352.46	97.893
SCE	620	-0.2037	11.0178	-229.356	27.906
CEE	620	5.1363	27.8624	-77.488	455.882
SZE	620	6.76E+07	1.22E+08	1049000	1.32E+09
LEV	620	0.3286	0.4895	0.002	9.573

Table 1 presents the statistical description of all the variables during the sample period from 2009 to 2018. It shows that firms listed in the ACE Market experienced more negative returns than positive from 2009 to 2018. The mean values display that -0.0680 dropped in the ROA of the 62 firms in the ACE market. The mean value of ROA indicates, on average, for every RM 1 from the total assets, the firms experience negative returns of (RM 0.0680). The negative return of ROA is predominantly due to the nature of the firms listed in the ACE Market. The market is associated with high risks such as being delisted, high risk due to lower financial performance, and lower market capitalization. Moving to the components of intellectual capital, firstly, human capital efficiency earned the second-highest mean value of 1.5823 among the other components of intellectual capital. Revealed that firms in the ACE Market emphasize more on employees' skills, general knowledge, innovation, and ability. As for the relational capital efficiency, the ACE Market experienced a negative return of -0.7989 in the mean value by cooperating in RCE, with a minimum value of -352.46 and a maximum value of 97.893. Hence, -0.7989 of the mean value directs that, for every RM 1 invested in the RCE, it could lead to a negative return of (RM 0.7989) to the firms in the ACE market. In terms of structural capital efficiency, it is reported that SCE's mean value is -0.2037 with a minimum value of -229.356 and a maximum value of 27.906. Next, capital employed efficiency experienced the highest mean value for the components of intellectual capital, the mean value of 5.1363 reflecting the value creation amount. For example, for every RM 1 invested in the CEE, the firms in the ACE market could generate a value of RM 5.1363 to return. CEE also has the second-highest value for the standard deviation of 27.8624, indicating the immense diversity of capital employed among the firms listed in the ACE Market. Finally, this study's first control variable is the SZE proxied by the total asset. On average, the firms in the ACE Market have RM 67,600,000 of total assets. Total assets refer to the sum of the book value of all assets owned by the firms. The maximum value for the total asset is RM1,320,000,000, and the minimum value of RM 1,049,000. The descriptive statistics show a positive relationship between the SZE and the firms' value creation. Following is the second control variable of leverage. The descriptive statistics show a maximum value of 9.573 and the minimum value of 0.002. Denotes that firm finance RM 9.573 of debt for every RM 1 of total asset.

Hypotheses testing: Dynamic panel data estimation using two- step system GMM

Table 2 displays the two-step system GMM regarding the relationship between intellectual capital (HCE, SCE, RCE, and CEE) and a firm's financial performance (measured by ROA).

Table 2

Estimated Result for the relationship between HCE, SCE, RCE and CEE, and ROA

Variables	Notation	(ROA)
lag DV (ROA)	L.roa	0.396*** (0.056)
Human Capital Efficiency	hce	0.048*** (0.010)
Relational Capital Efficiency	rce	0.001 (0.003)
Structural Capital Efficiency	sce	0.001 (0.004)
Capital Employed Efficiency	cee	0.003** (0.001)
Size of the firms	lsze	0.274 (0.164)
Leverage of the firms	lev	0.566*** (0.175)
Constant		-5.080* (2.885)
Observations		558
Number of Firms		62
Number of Instruments		13
Arrelano-Bond test for AR (2) (p-value)		0.290
Hansen (p-value)		0.214

Notes: ***, **, and * indicate 1%, 5%, and 10% significance levels, respectively, while values in parentheses are the standard errors.

Table 2 reveals the relationship of estimated coefficient results. The relationship between Human capital efficiency (HCE) and ROA is positive at a 1% significant level (0.048). The result is consistent with the previous studies (Dzenopoljac et al., 2016; Maji & Goswani, 2017; Nadeem, 2017). Similarly, a positive and 1% significant relationship is found between HCE and ROA; this is unswerving with the previous studies (Buallay et al., 2019; Dzenopoljac et al., 2017; Maji & Goswani, 2017). The empirical shreds of evidence put forward that Human Capital, which comprises employee skills, general knowledge, ability, and innovation, usually assesses the individual's knowledge and skills to provide individuals with increased cognitive ability, leading the workers to be more efficient and highly supported in this study.

Next, RCE is a good relationship between the firm and external stakeholders. It includes customer relationships, distribution networks, business collaboration, and franchise agreements. However, this study proved that RCE is not significant with ROA. Some small firms believe that relational capital investment is expensive for a small firms' natural short-term performance goals. Also, challenges for small firms competing in a small-capitalization market with small advertising budgets will limit the expenditure on relational capital. Consequently, the above finding corresponds with the characteristics of the ACE Market, which encompasses new small to medium-sized firms. Hence, the firms have a small capital to invest in RCE and are unfamiliar with marketing and relationships with outsiders.

SCE includes knowledge embedded in organizational structures and processes. Each

firm has its own unique organizational culture, management philosophy, and operating system, different from other firms. If management ignores the unique characteristics that drive value, it will decline its value and affect revenue and profitability (Soewarno & Tjahjadi, 2020). In this Study, SCE was found to have an insignificant relationship with ROA.

Next, the final component of the intellectual capital on Capital Employed Efficiency (CEE) can increase the return on assets and equity because it generates income. Capital employed measures the efficiency in using the firm's physical capital and financial capital to obtain higher income. Thus, effective use of the capital will drive revenue and affect an increase in return. This study verified that the ACE Market's CEE is significant with ROA.

This study adopts the two most used control variable measures based on previous studies on intellectual capital, and the control variable comprises size and leverage. Size (SZE) is the most used indicator, followed by Leverage (LEV). SZE, estimated as the natural logarithm of total assets and LEV, is the ratio between total debt and total assets.

Relating to the first control variable of leverage, the result obtained a positive 1% significant level. The finding parallels the previous literature, as the relationship between leverage and a firm's financial performance is positive; it also shows the firms in the ACE market are financially leveraged (Yao et al., 2019). Next, is the SZE measured by the natural log of total assets; it was found that SZE is insignificant with ROA. This is consistent with the previous literature of (Buallay et al., 2020).

Conclusion

Based on the coefficient values, the appropriate conclusion for this study is as follows. Firstly, HCE obtained the highest coefficient value among the intellectual components. Therefore, to improve the performance of the firms in the ACE market, the essential component is HCE. An effective contribution to the HCE could provide a positive return. Consequently, it is crucial for the firms in the ACE market to further strengthen the personnel structure and employee efficiency to improve future profitability as HCE provides the highest coefficient in creating value-added.

Next, CEE obtained the second-highest coefficient values. Thus, as the results imply, firms in the ACE market still operate based on physical and financial capital for return on asset generation; therefore, the firms should focus on using and managing the physical and financial resources effectively to achieve a higher level of profitability.

Furthermore, SCE and RCE are insignificant in this study. Although SCE and RCE have not shown favourable effects, both efficiencies are valuable assets that should not be neglected if the firms in the ACE market wish to maintain competitiveness. The efficient investment in all the components of intellectual capital will generate a superior return for the firms (Xu & Li, 2019).

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