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KNOWLEDGE MANAGEMENT STRATEGY ON INTELLECTUAL CAPITAL AND ORGANIZATIONAL PERFORMANCE

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ABSTRACT

The advent of information technology has precipitated a paradigm shift in the global business landscape. One of the principal factors contributing to the ability of organisations to adapt to this paradigm shift is the capacity of their employees. Intellectual capital has emerged as a new area of focus in accounting research. There is a substantial body of empirical evidence that attests to the significance of intellectual capital enhancement for business strategy. Nevertheless, there is a paucity of empirical research examining the relationship between knowledge management strategies and intellectual capital and organisational performance. The objective of this study is to make a contribution to the empirical investigation of knowledge management strategy, specifically in relation to 556 companies from the Southeast Asia region for the period 2021-2023, as identified from the I/B/E/S database. The results of the study indicate that there is no significant effect of value-added intellectual coefficient (VAIC), which represents a firm's intellectual capital, on performance (return on investment (ROI)). This is due to the lack of complete data for calculating VAIC. Employee costs are the primary account used to calculate VAIC, and thus, knowledge management strategies may be perceived as less critical by managers when intellectual capital is not a primary concern.

Keywords:*: Intellectual Capital, Knowledge Management Strategy, Organizational Performance, Southeast Asia.*

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1. INTRODUCTION

The globalisation of markets inevitably gives rise to increased competition, which can be addressed through the implementation of customer satisfaction strategies. The existing literature on intellectual capital indicates that it is a critical factor in achieving a company's strategic approach, with the potential to enhance financial performance. Bagheri (2016) stated that

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human capital is the most important factor of production and a vital component of competitive advantage. It is becoming increasingly important to plan strategically in order to enhance human capital. Human capital comprises two key components: intellectual capital and human capabilities. Nevertheless, no study has yet examined the impact of intellectual capital on a company's strategy and the performance of the organisation.

The resource-based view of the firm suggests that the observed differences in performance between firms are due to their heterogeneous capabilities and resources. A firm's competitive advantage can be derived from resources that are valuable, unique and difficult to replicate. Most empirical tests of the resource-based view have found positive, direct effects of resources. Nevertheless, scholars argue that resources form the basis of organisational strategies (see, for example, Barney, 1991) and are critical to their implementation (Schoenecker & Cooper, 1998). Therefore, the interplay between an organisation's resources and its strategic approach is likely to lead to favourable outcomes. Strategies are developed and implemented using a combination of tangible and intangible resources. Tangible resources can be defined as physical assets such as buildings and financial capital. Intangible resources include human capital and brand equity, while tangible resources include other types of assets.

In the wake of the accelerating expansion of the knowledge economy, the concept of intellectual capital has emerged to refine our understanding of the competitive advantage of firms operating in knowledge-intensive and fast-paced business environments (Kavida & Sivakoumar, 2010; Perrott, 2007). However, despite the growing body of literature on intellectual capital, there are a number of shortcomings in the current research that need to be addressed. First, the distinction between knowledge management and intellectual capital management needs to be clarified. The terms 'intellectual capital' and 'intangible assets', 'intellectual property' or 'knowledge management activities' have been conflated in a significant number of studies (Okes, 2005). However, intellectual capital management is concerned with the valuation of knowledge in an organisational context, which is fundamentally different from the processes of knowledge creation and use. These are the focus of knowledge management (McElyea, 2002). Facilitating access to sources of knowledge, rather than knowledge itself, is the function of knowledge management. In other words, intellectual capital management is concerned with capturing and evaluating an organisation's knowledge capabilities, whereas knowledge management is concerned with transforming knowledge into value (Stahle & Hong, 2002). The knowledge management strategy can be seen as the process by which the output or end result of intellectual capital is realised, while the intellectual capital itself can be seen as the input or means by which the process is realised. It can be argued that intellectual capital and knowledge management are two aspects of a single concept, despite their inherent differences (Stahle & Hong, 2002).

Second, the international context has been conspicuously absent from the development of intellectual capital metrics or measures, although a significant number of scholars have devoted considerable attention to the measurement of intellectual capital (Marr et al., 2004). In 2006, Ling and Jaw proposed that in order to succeed in the global marketplace, companies should cultivate both their 'international human capital' and an appropriate measure of their 'international human capital'. Similarly, companies need to have intellectual capital to compete successfully in an unpredictable international environment. Developing measures of intellectual capital is the aim of this study.

Third, much of the existing research has focused on examining the relationships between intellectual capital and a variety of financial performance measures, although several studies have found a broadly positive relationship between intellectual capital and firm performance. Examples include Becker, Huselid and Ulrich (2001), Bozbura (2004) and Ting and Lean (2009). Although financial measures are typically used to assess the impact of intellectual capital, the inclusion of alternative, nontraditional measures, such as global initiatives, is essential to gain a more comprehensive and holistic understanding of the role of intellectual capital in organisational performance, particularly in the context of international business. Few studies have empirically tested this hypothesis, although some research has suggested a strong correlation between intellectual capital and a firm's global initiatives. For example, Ling and Jaw (2006) confirmed the positive relationship between human capital and a firm's global initiatives. Wu, Chang and Chen (2008) proposed that the accumulation of intellectual capital strengthens a firm's global initiatives.

There is a surprising lack of evidence on the interaction between intellectual capital and knowledge management on a firm's global performance, despite the considerable attention that researchers have paid to the concepts of intellectual capital and knowledge management. Most studies (Housel & Nelson, 2005; Jih, Helms, & Mayo, 2005; Shih, Chang, & Lin, 2010) agree that knowledge management provides a framework for managing intellectual capital. Evidence suggests that knowledge management is effective in transforming intellectual capital into value (Brooking, 1997; Housel & Nelson, 2005; Jih et al., 2005). As demonstrated by Shih et al. (2010), the ability to generate knowledge is paramount in the banking sector, with the effectiveness of knowledge generation having a significant impact on the accumulation of human capital. In particular, there is a paucity of empirical studies that examine the potential moderating effect of knowledge management on the relationship between intellectual capital and firm performance. Given the close relationship between knowledge management and intellectual capital, it would be beneficial to investigate whether the alignment of these two areas can enhance firm performance in an international context. For example, Roos, Bainbridge and Jocobsen (2001) propose different value creation mechanisms (e.g. people-centred and process-

oriented) for firms with different strategies. However, there is no empirical research on the moderating effect of knowledge management strategy. Building on Roos et al. (2001), this study examines the potential moderating effect of knowledge management strategy on the relationship between intellectual capital and global performance.

This study addresses the following research questions in order to achieve the above objective. The first research question is whether there is a relationship between intellectual capital and the performance of the firm. This would help to explain firm financial performance from an intellectual capital perspective using a longitudinal design. In the Indonesian context, this study can serve as an empirical investigation of the relationship between intellectual capital and global initiatives. The second research question is whether knowledge management exerts a moderating influence on the relationship between intellectual capital and financial performance. A third potential contribution of this study is to empirically investigate the moderator effect of knowledge management on the relationship between intellectual capital and international performance.

2. CONCEPTUAL FRAMEWORK

Intangible resources are more likely to provide a competitive advantage than tangible resources. In particular, intangible, firm-specific resources, such as knowledge, enable firms to increase the value of input factors of production. Spender (1996) argued that a firm's knowledge and its ability to generate specific knowledge are the fundamental tenets of the theory of the firm. Grant (1996) proposed that knowledge is a firm's most important competitive asset in a seminal contribution to the field. A significant proportion of a firm's knowledge is embedded in its human capital. Consequently, firms create value through the selection, development, and exploitation of human capital (Lepak & Snell, 1999).

Intellectual capital can be divided into three categories: human capital, relational capital and structural capital (Cuganesan, 2006; Kim & Kumar, 2009). Human capital can be defined as the skills, training, education, experience, and value characteristics of an organisation's workforce (Cuganesan, 2005; Seleim, Ashour, & Bontis, 2004). Structural capital refers to knowledge embedded in organisational systems and processes that is created by employees and generally owned by an organisation (Guthrie & Petty, 2000). Relational capital (external structure) refers to the relationships a firm has with external stakeholders. It encompasses the firm's ability to interact positively with members of the business community to stimulate potential wealth creation (Bruton, Dess, & Janney, 2007; Cuganesan, 2005). For businesses to thrive in the global marketplace, they must cultivate a considerable amount of intellectual capital (Mavridis, 2005; Stahle & Hong, 2002). The concept of dynamic intellectual capital, as

proposed by Stahle and Hong (2002), is implied here, as dynamic intellectual capital is closely related to a firm's strategy and business environment. Moreover, it is an appropriate concept for capturing the innovative nature of knowledge in turbulent international business environments. Therefore, intellectual capital can be defined as an organization's collective ability and asset base (Stahle & Hong, 2002). From one perspective, intellectual capital can be defined as an organisation's capacity for self-renewal and potential for mastery, creation, or innovation in the context of constant change (Stahle & Hong, 2002).

However, intellectual capital is produced by the capacity to act in fast-changing global environments (Stahle & Hong, 2002). In this study, intellectual capital is conceptualised as the capacity of an enterprise to generate and sustain value in the global market, operating within conditions of constant change and uncertainty. It is constituted by three elements: human capital, relational capital and structural capital.

2.1. Global Performance

Despite the existing literature on the relationship between intellectual capital and organisational performance, it is possible that the measures of organisational performance do not fully reflect a company's global competitiveness or its potential to compete in the global economy. Some studies have focused exclusively on the financial aspects of organisational performance. They have examined factors such as equity, assets or other market-based measures (Reed, Lubatkin, & Srinivasan, 2006). Other studies focus exclusively on nonfinancial aspects of organisational performance, such as innovation performance (O'Connor et al., 2007; Wu et al., 2007) or export propensity (Mavridis, 2005).

To assess a company's global performance, a combination of financial and non-financial measures from global initiatives was considered necessary, providing a more realistic and comprehensive perspective than relying solely on financial data. Regarding financial performance, items were adapted from those used in Ling and Jaw (2006). Regarding non-financial performance, a number of studies (Ling & Jaw, 2006) provided the basis for the Global Initiatives construct, which can be defined as "the proactive and deliberate entrepreneurial pursuit by a firm that enables it to compete globally." Birkinshaw and Fry (1998) proposed a twofold categorisation of global initiatives for foreign affiliates. The first category includes the development of new business activities and the use of subsidiary capabilities on an international scale. The second category concerns the rationalisation of existing activities, the elimination of inefficient practices and the optimal location for new investments. Ling and Jaw (2006) identified two global initiatives: global learning and marketing. In addition, Bartlett and Ghoshal (2000) presented a conceptualisation of global competitiveness with three dimensions: global efficiency, multinational flexibility and global learning. In this study, the construct of

global initiatives is defined to include global agility and global innovation (Bartlett & Ghoshal, 2000; Wu, Chiang, & Jiang, 2002). Global innovation can be defined as the ability of an organisation to identify and exploit emerging opportunities in global markets to deliver increased value to clients.

2.2. Knowledge Management Strategy

The majority of contemporary approaches to knowledge management are predominantly situated within either information technology or humanistic frameworks, with minimal overlap (Gloet & Berrell, 2003; Gloet & Terziovski, 2004). To illustrate, Sveiby (1997) identified two approaches to knowledge management: one emphasising the role of people and the other focusing on technology-related considerations. Similarly, Hansen, Nohria and Tierney (1999) identified two distinct approaches to knowledge management: "people-to-document," where information technology plays an important role, and "people-to-person," where people are used. Nonaka and Takeuchi's (1995) seminal work described four processes of knowledge transformation: externalisation, combination, socialisation, and internalisation. The articulation of tacit knowledge into explicit knowledge can be defined as the process of externalisation. Combining, on the other hand, can be described as transforming knowledge from precise to clear. This is achieved by using computerised communication networks to share and combine knowledge. Socialisation, in contrast, is a means of sharing knowledge from tacit to implicit. It can also be understood as the process by which explicit knowledge is transformed into tacit knowledge.

Based on the above discussions, two knowledge management strategies are proposed for this study: a technology-centred strategy and a people-centred strategy. The people-centred approach is driven by organisational learning and focuses on the implicit aspects of knowledge management (Perez & de Pablos, 2003). It transmits knowledge flows that are collected and generated within MNCs' networks of subsidiaries (Wang & Ling, 2005). It also provides valuable contributions to facilitating layers of distinctive complex knowledge and competencies for MNCs (Wang & Ling, 2005).

2.3. Intellectual Capital and Global Performance

The focus of most research on intellectual capital has been on the examination of the relationships between intellectual capital and various financial performance measures (Bozbura, 2004; Ting & Lean, 2009). For example, many studies have demonstrated the impact of market orientation, related to relational capital, on firm returns and increasing market share (Bozbura, 2004; Narver & Slater, 1990). A positive relationship between the development of employee competencies (related to human capital) and firm financial performance is also found by Becker

et al. (2001) and Bozbura (2004). The proposition that human capital has a positive impact on the financial performance of a firm is also supported by Ling and Jaw (2006). Carpenter et al (2001) also found that CEOs with international experience (which can be seen as a form of human capital) are able to create value, as evidenced by positive returns on assets and total stock market returns for their companies and for themselves. Firms that demonstrate commitment to employees, as evidenced by valuing human capital, have been observed to have better shareholder returns or market/book values (Becker et al., 2001; Bozbura, 2004).

The existing literature also suggests a potential relationship between intellectual capital and a firm's global initiatives with respect to non-financial aspects of firm performance. However, only a few studies have gone on to test this proposed relationship empirically. Wu et al. (2008) proposed that growing intellectual capital may increase a firm's ability to innovate, although this may not necessarily be consistent with its global strategy. The claim that human capital has a positive impact on a firm's global initiatives is also supported by Ling and Jaw (2006). Ling and Jaw (2006) suggested that human capital, including visionary leadership from the top management team (TMT), is crucial to a firm's ability to achieve GI. Cultivated, TMT competence creates a distinctive performance environment that enables the organisation to adapt, innovate and ultimately gain and sustain competitive advantage (Banutu-Gomez & Banutu-Gomez, 2007; Ling & Jaw, 2006). It has been confirmed that TMT visionary leadership (human capital) has a positive relationship with the innovation performance of firms (Wu et al., 2002). Companies with more human capital also tended to have better global marketing (Ling & Jaw, 2006).

A company's global initiatives could also be enhanced by the development of relational capital, which may include the establishment of positive relationships with customers or suppliers. A firm's social networks with international customers provide a foundation for understanding and responding swiftly to customer needs, which is a key aspect of global agility (Goldman et al., 1995). This has an impact on market share growth (global agility) (Bozbura, 2004; Narver & Slater, 1990) through the development of customer-supplier relationships across all sectors (relational capital). Input from international customers or suppliers (relational capital) also has a beneficial effect on the generation or sharing of knowledge, which in turn becomes a source of company-wide innovation breakthroughs (global innovation) (Ojeda-Gomez et al., 2007; Spencer, 2003). Furthermore, social networks (relational capital) may contribute to the wider acceptance of global innovations within the firm or sector (Subramaniam & Youndt, 2005).

The literature also indicates that structural capital can facilitate a firm's global initiatives. The implementation of new organisational structures or systems (structural capital) can lead to enhanced customer satisfaction and competitiveness on a global scale (Goldman et al., 1995;

Ling & Jaw, 2006). In small, innovative firms, structural capital is regarded as a key factor influencing performance (Tovstiga & Tulugurova, 2007). The larger the structure(s) or systems of a firm (structural capital), the greater the likelihood of innovation (global innovation) occurring through the improvement of existing knowledge (Subramaniam & Youndt, 2005). In light of the above analytical reasoning, this study proposes that:

Hypothesis 1: *Intellectual capital is positively associated with a firm's global performance (financial performance, global agility, and innovation).*

2.4. The Moderating Effect of Knowledge Management Strategy

There is currently limited evidence available on the interactive effects of knowledge management and intellectual capital on global performance. However, previous studies have confirmed that knowledge management provides a framework for managing intellectual capital and transforming it into value (Brooking, 1997; Housel & Nelson, 2005; Jih et al., 2005; Shih et al., 2010). The alignment of knowledge management and intellectual capital can have a positive impact on a company's global performance. For instance, Roos et al. (2001) put forward two distinct value creation mechanisms (people-centric and process-oriented) for firms with varying strategies, despite not examining the moderating effect of knowledge management strategy. There are similarities between the people-centric strategy proposed by Roos et al. (2001) and the people-centric knowledge management strategy adopted in this study. Conversely, their process-oriented approach is identical to this study's technology-centred KM strategy. For instance, a people-centred organisation places significant emphasis on its human and relational capital (Roos et al., 2001). Organisational performance is delivered by knowledgeable and competent individuals (human capital) who use these attributes to build personal relationships with clients (relational capital) (Roos et al., 2001).

The international HRM literature also indicates that competent global managers (human capital) with strong international networks (relational capital) enhance firm competitiveness (Antal, 1993). It is crucial for international managers to possess and cultivate intercultural competencies (human capital) and international networks (relational capital) in order to achieve success in the global arena (Antal, 1993). A people-centred knowledge management strategy that focuses on improving the interpersonal interactions of global managers could facilitate the development of their intercultural sensitivity (human capital) or interpersonal networks (relational capital), thereby enhancing the global competitiveness of the company. Therefore, an employee-centric knowledge management strategy can positively influence the relationship between human capital and international performance, as well as the relationship between relational capital and global performance.

A process-driven company places greater emphasis on its organisational resources (structural capital) and company relationships (relational capital) (Roos et al., 2001). (Roos et al., 2001) Human resources remain a key consideration, though their relative importance is less pronounced in a people-centred organisation. Value is created through customer relations (relationship capital), formal training and recruitment processes (structural capital) or a more standardised/systemic approach to production (structural capital) (Roos et al., 2001). In essence, the process-oriented strategy proposed by Roos et al. (2001) bears resemblance to the technology-oriented knowledge management strategy presented in this study. The knowledge base, associated with the technology-centred knowledge management approach, can be combined with the business or management structure (structural capital) of the company to support global operations (Stewart, 1997). In light of the above, the following hypothese is proposed:

Hypothesis 2: *A people-centered knowledge management strategy positively moderates the relationship between intellectual capital and a firm's global performance (financial performance, global agility, and innovation).*

3. METHODOLOGY

3.1. Data and Sample

The sample for this study was selected from public manufacturing companies in Southeast Asia. The selection criteria are manufacturing firms located in the home countries of Southeast Asian countries and competing globally. Our data covers the years 2021-2023 for data requirements. The final sample for this study is 1,668 firms per year (556 firms).

Table 1. Sample Selection

No	Description	Numbers
1	Southeast Asia companies	5,347 companies
2	Non-Global Company	(3,728 companies)
3	Missing data	(963 companies)
4	Outlier	(100 companies)
5	Final sample	**556 companies**
6	Period	Three years
7	Final data	**1,668 firms years**

Source: Data

The sample demographically consists of 71 companies from Indonesia, 155 from Malaysia, 22 from the Philippines, 84 from Singapore, 96 from Thailand and 128 from Vietnam.

As we can see, there is no dominance of one country in the sample. The list of industries and company names is presented in Appendix 1.

3.2. Variable Measurement

3.2.1. Financial performance

Financial performance is measured by return on investment. Return on investment (ROI) is an approximate measure of the profitability of an investment. ROI is calculated by subtracting the initial cost of the investment from its final value, then dividing this new figure by the cost of the investment and finally multiplying by 100.

3.2.2. Intellectual capital

IC will be measured as a value-added intellectual coefficient (VAIC) model developed by Pulic (1999). These variables include Value-added capital employed (VACA), Value-added capital (VAHU), Structural capital value added (STVA), and Value-added intellectual coefficient (VAIC). We follow VAIC™ by Pulic (1999) as follows:

1. Calculate the Value Added (VA). VA = OUT - IN.
   OUT = output: total sales and other income; IN = input: selling costs and other costs (excluding personnel costs). VA can also be calculated as follows: VA = OP + EC + D + A. OP = Operating profit; EC = Employee costs (personnel costs); D = Depreciation; A = Amortisation.
2. Calculate the value added capital employed (VACA). VACA is a measure of the VA produced by a unit of physical capital. The result is the contribution of each unit of CE to VA. VACA = VA / CE. VACA = Value Added Capital Employed: VA as a ratio of CE; VA = Value Added; CE = Capital Employed; available funds (derived from net profit and equity). Calculate the Value Added Human Capital (VAHU). This ratio indicates the value added generated from each dollar invested in HC. This ratio shows the contribution made by each dollar invested in HC against VA organization. VAHU=VA/HC. VAHU = Value Added Human Capital: The percentage of VA to HC. VA = Value Added; HU = Human Capital: personnel expenses.
3. Calculate structural capital value added (STVA). The ratio indicates the number of SCs used by companies to generate one dollar of VA. STVA = SC/VA. STVA = Structural Capital Value Added: Ratio of SC to VA; SC = Structural Capital: VA reduced by HC (VA-HC); VA = Value added.
4. Calculate the Value Added Intellect Coefficient (VAIC). VAIC, which can be considered as a BPI (Business Performance Indicator), identifies the intellectual capabilities of an organisation. VAIC is the sum of the previous three components: VACA, VAHU and STVA. VAIC = VACA + VAHU + STVA.

3.2.3. Knowledge management strategy

Two knowledge management approaches have been identified by Sveiby (1997) and Hansen et al. (1999). These are the technology-driven strategy and the people-driven strategy. The technology-centred strategy focuses on the technological aspects of knowledge management practices, such as converting knowledge into documents or patents, or increasing productivity by updating equipment. The people-centred strategy, on the other hand, focuses on the human aspect of knowledge management. People-centred strategy uses knowledge management practices such as mentoring or on-the-job training to accumulate and transfer employee expertise. In this study, strategy is scaled by IT spending for the technology-centric strategy and by CEO compensation for the people-centric strategy.

3.2.4. Control variables

In the analyses, firm size was used as a control variable. Size is associated with organisational performance. As knowledge creation and diffusion is evolutionary, the extent to which an organisation develops its intellectual capital may vary with age (Youndt et al., 2004). In the same way, the size of the organisation may influence the development of intellectual capital through access to resources (Serenko, Bontis, & Hardie, 2007; Youndt et al., 2004). The size is calculated as the natural logarithm of the total assets (Reed et al., 2006; Youndt et al., 2004). While market capability is used as a control variable. The capabilities of the company in the market show the performance of the company in the market.

3.3. Empirical Model

Model 1 tested the direct relation between intellectual capital and a firm's performance. Model 2 would test the moderating effect of knowledge strategy on the relation between intellectual capital and a firm's performance. The empirical model is:

$$\boldsymbol{ROI_{it} = \beta_1 + \beta_2 VAIC_{it} + \beta_3 KM\_STRA_{it_4} + \beta_4 LN\_TA_{it} + \beta_5 CM_{it} + \varepsilon_{it}} \quad (1)$$

$$\boldsymbol{ROI_{it} = \beta_1 + \beta_2 VAIC_{it} + \beta_3 KM\_STRA_{it} + \beta_4 VAIC_{it} * KM\_STRA_{it} + \beta_5 LN\_TA_{it} + \beta_6 CM_{it} + \varepsilon_{it}} \quad (2)$$

Description:

ROI_{it} = Return on investment of company i in year t

$VAIC_{it}$ = Value added of Intellectual Capital of company i in year t

KM_STRA_{it} = Knowledge management strategy for company i in year t

LN_TA_{it} = Natural logarithm of total aset for company i in year t

CM = Capabilities of market acquition for company i in year t

4. RESULT AND ANALYSIS

The study investigates the moderating effect of knowledge management strategy on the relations between intellectual capital and firm's performance, particularly global performance. The performance is measured by return on investment and returns on asset since the global company invest its capital for going global. Therefore, there were two models tested in this study. First, empirical model of intellectual capital's direct effect on global performance. Second, the moderating influence on the relation. The result is presented below.

4.1. Result

4.1.1. Descriptive statistic

Table 2. Descriptive Statistic

Variable	Obs	Mean	Std. Dev.	Min	Max
ROI	1668	.1919289	1.416616	0	2.91495
VAIC	1668	3.587544	5.873524	1.083044	15.3816
KM_STRA	1668	.7452038	.4358773	0	1
LN_TA	1668	20.20075	1.67636	5.9938	28.33221
CM	1668	9.03e+08	2.84e+08	0	4.69e+10

Source: Stata Result

Table 2 presents the descriptive statistics for this study. The ROI number shows that the companies of this study consist of companies with positive return on investment. While for intellectual capital, companies of this study consider employees as an asset as the VAIC has maximum number of 15.38 with standard deviation number 1.08. From 1,668 data, companies consider knowledge management important for companies, therefore they see employees as valuable.

4.1.2. Model 1

$$ROI_{it} = \beta_1 + \beta_2 VAIC_{it} + \beta_3 KM\_STRA_{it_4} + \beta_4 LN_{TA_{it}} + \beta_5 CM_{it} + \varepsilon_{it}$$

The empirical model for regression one is presented above. The result of the stata showed that the model has to be analyzed with a random effect model. Therefore, the assumption only tested for multicollinearity. The result for the multicollinearity test is shown below.

Table 3. Multicollinearity Test

	ROI	VAIC	KM_STRA	LN_TA	CM
ROI	1.0000				
VAIC	-0.0152	1.0000			
KM_STRA	-0.0111	0.0242	1.0000		
LN_TA	-0.1660	-0.0208	-0.0211	1.0000	
CM	0.2195	0.0101	-0.0219	0.2040	1.0000

Source: Stata Result

There is no correlation between variables, as shown by the correlation numbers below 0.75. Therefore, we can be sure there is no multicollinearity for the model. There is no significant effect of VAIC on firm performance (P>|z|,, 0.341) and the coeficient is negative (-0.0053655) for l, as shown in Table 4. KM_STRA, which measures the firm's technical or human resources strategy, had the same result: It had no significant effect on global performance (P>|z|, 0.687). LN_TA, which represented firm size, and CM, which represented the ability to acquire markets, showed significant results with negative effects for size and positive effects for acquiring markets.

Table 4. The Result from Model 1

$$ROI_{it} = \beta_1 + \beta_2 VAIC_{it} + \beta_3 KM\_STRA_{it_4} + \beta_4 LN_{TA_{it}} + \beta_5 CM_{it} + \varepsilon_{it}$$

Variable	Predicted Sign	Coefficient	Z-Stat	P-Value
Constant	?	3.8827	9.41	0.000
VAIC	+	-0.0054	-0.95	0.341
KM_STRA	+/-	-0.0306	-0.40	0.687
LN_TA	+	-1.8654	-9.25	0.000
CM	+	1.32e-10	11.09	000
R-square: within		0.0963		
R-square: between		0.0928		
R-square: overall		0.0961		
N		1668		

Source: Stata 12 The model

4.1.3. Model 2

$$\boldsymbol{ROI_{it} = \beta_1 + \beta_2 VAIC_{it} + \beta_3 KM\_STRA_{it} + \beta_4 VAIC_{it} * KM_{STRA_{it}} + \beta_5 LN_{TA_{it}} + \beta_6 CM_{it} + \varepsilon_{it}}$$

The empirical model for regression 2 is presented above. The result of stata showed that the model has to be analyzed with a random effect model. Therefore, the assumption only tested for multicollinearity. The result for the multicollinearity test is shown below.

Table 5. Multicollinearity Test

	ROI	VAIC	KM_STRA	VAIC*KM	LN_TA	CM
ROI	1.00					
VAIC	-0.01	1.00				
KM_STRA	-0.01	0.02	1.00			
VAICKM_STRA	-0.01	0.92	0.27	1.00		
LN_TA	-0.16	-0.02	-0.02	-0.02	1.00	
CM	0.22	0.01	-0.02	0.0025	0.20	1.00

Source: Data Stata

There is no correlation between variables, as shown by the correlation numbers below 0.75. Therefore, we can be sure there is no multicollinearity for the model.

For the model presented in Table 6 there is no significant effect of VAIC on the firm's performance (P>|z|, 0.3912), and the coefficient is negative (-0.0185). KM_STRA, which measured the company's strategy, whether they used the technical or employee approach, they had the same result. Global performance has no significant impact(P>|z|, 0.6143). The moderating effect of VAIC*KM_STRA has no significantly affected the relation between intellectual capital and global performance (P>|z|, 0.4371). LN_TA represented the size of the firms, and CM presented the capabilities of market acquisitions, showing significant results with negative effect for size and positive impact for market acquisitions.

Table 6. The Result from Model 1

$$ROI_{it} = \beta_1 + \beta_2 VAIC_{it} + \beta_3 KM\_STRA_{it} + \beta_4 VAIC_{it} * KM_{STRA_{it}} + \beta_5 LN_{TA_{it}} + \beta_6 CM_{it} + \varepsilon_{it}$$

Variable	Predicted Sign	Coefficient	Z-Stat	P-Value
Constant	?	3.9451	7.82	0.0000
VAIC	+	-0.0185	-0.86	0.3912
KM_STRA	+/-	-0.0615	-0.50	0.6143
VAIC*KM_STRA	+	-0.0177	0.78	0.4371
LN_TA	+	-0.1885	-7.69	0.0000
CM	+	1.30e-10	8.98	0.0000
R-square: within		0.0970		
R-square: between		0.0905		
R-square: overall		0.0949		
F-test		23.74		
N		1668		

Source: Stata 12 The model

4.1.4. Sensitivity analysis

KM_STRA is measured by software development costs and the degree of compensation, and is proxied by whether the enterprise has a technology approach or an employee approach. KM_STRA is 1 if the firm has a technology approach and 0 otherwise. This indicator is taken from Perez and de Pablos (2003). It can be said that there is a possibility that this measure doesn't fit with the purpose of this study, which is to analyse the knowledge management strategy. The success of a knowledge management strategy is a function of the people in the organisation. Therefore, I have proposed a new measure, employee development. Employee growth is measured by subtracting the number of current employees from the number employed in t-1.

Table 7 shows the result. Based on the outcome, GR_EMPLY has a moderate effect (α=10%) on the relationship between intellectual capital and global performance. It can be said that employee growth is a better predictor of the strategy used to manage knowledge. The direct effect on employee growth has a significant impact on global performance.

Table 7. Result from Sensitivity Analysis

$$ROI_{it} = \beta_1 + \beta_2 VAIC_{it} + \beta_3 GR\_EMPLY_{it} + \beta_4 VAIC_{it} * GR\_EMPLY_{it} + \beta_5 LN_{TA_{it}} + \beta_6 CM_{it} + \varepsilon_{it}$$

Variable	Predicted Sign	Coefficient	Z-Stat	P-Value
Constant	?	3.7451	9.18	0.0000
VAIC	+	-0.0028	-0.48	0.0631
GR_EMPLY	+/-	-0.0002	-2.66	0.0080
VAIC*GR_EMPLY	+	-4.68e-6	-0.19	0.0848
LN_TA	+	-1.1812	-8.98	0.0000
CM	+	1.28e-10	10.72	0.0000
R-square: within		0.1033		
R-square: between		0.0994		
R-square: overall		0.1020		
F-test		10.23		
N		1668		

Source: Stata 12 The model

4.2. Analysis of Model

The moderating effect of knowledge management strategy on intellectual capital and global performance was examined in this study. A growing body of literature is devoted to the study of the knowledge economy, with a particular focus on intellectual capital. In the knowledge-based economy, previous research has shown that intellectual capital is important for the firm. Intellectual capital is becoming an increasingly important factor of success in companies (Cuganesan, 2006; Kim & Kumar, 2009). Therefore, the competence of employees in understanding a firm's strategy becomes crucial, although there is a paucity of research that examines the relationship between a firm's strategy and its intellectual capital.

This study aims to contribute to the empirical investigation of knowledge management strategy. It is based on 556 companies from the Southeast Asia region for 2021-2023 from the I/B/E/S database. We found no significant effect of VAIC-representing the firm's intellectual capital-with performance (ROI) based on the results of the variables. The lack of complete data to calculate VAIC can explain the insignificant effect. There are no specific personnel costs for these companies. Personnel costs are the main account for the calculation of VAIC, which may be a limitation of this study. This may be a limitation of this study. The fact that intellectual capital is not essential for managers is another explanation for Southeast Asian companies. They prefer to focus on financial performance rather than human capital. Since intellectual capital is not essential to the manager, the knowledge management strategy becomes less critical. The insignificant moderating effect of knowledge management strategy on the relationship between intellectual capital and global performance supports this assumption. However, when we used a different proxy for knowledge management, we found a negative significant moderation effect. The direct effect of intellectual capital had a negative impact on the global performance of the

firm. Thus, intellectual capital and global performance are strengthened by increasing the number of employees for global business. However, when we used a different proxy for knowledge management, we found a negative significant moderating effect. Global performance was negatively impacted by the direct effect of intellectual capital. Thus, increasing the number of employees for global business strengthens intellectual capital and global performance.

5. CONCLUSION AND LIMITATION

There is no significant effect of intellectual capital on global performance. This result was suggested by the absence of employee costs in the calculation of VAIC.

Knowledge management strategy has no significant moderating effect (measured by software development cost and number of compensation) on intellectual capital and global performance. This result can be explained by the lower importance of intellectual capital for Southeast Asian firms, resulting in a lower importance of knowledge management strategy. There is a moderately significant effect (α=10%) for knowledge management strategy on the relationship between intellectual capital and global performance measured by employee growth. This is a significant contribution to this paper. The previous study can use this measurement.

This study has several limitations. First, the lack of data for the study makes it difficult to analyse and conduct another robustness test to explain the result. Second, the cross-country analysis should control for the cross-country variable, while in this study we only control for market capital. Third, this study doesn't test the sensitivity of the VAIC measure.

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