

# Is Disclosure of Information Technology (IT) Internal Control Weaknesses Worthwhile for Firms?

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**Abstract---** This study investigated the effect of disclosing internal control weaknesses in implementing information technology and the mediating effect of intellectual capital (IT-ICW) on the value of information technology companies. The population in this study was companies in Southeast Asia that were listed on the New York Stock Exchange (NYSE) during the period 2006–2017. The data were analysed using a partial least square method. The results showed that IT-ICW affected the value of the company. The capital employed and the human capital strengthened the positive link between IT-ICW and the value of the company, while structural capital had no mediating effect. Intellectual capital is an intangible asset of a company. This paper describes the relationship between changes in information technology and corporate value and the mediating effect of intellectual capital. The readiness of intellectual capital for dealing with rapid technological changes can be seen in the changes in corporate value.

**Keywords---** Information Technology, Internal Control Weakness, SOX, Intellectual Capital, Value.

## I. Introduction

The internal implementation of information technology (IT) within a company can increase the efficiency and effectiveness of business processes (Al-zwyalif, 2013). External use of IT can support the improvement of service quality (Klamm & Watson, 2009). An attempt to accommodate IT internal control disclosures on financial statements was included in the Sarbanes-Oxley Act (SOX). SOX was passed by the U.S. Congress in 2002 to enhance the usefulness of information reported in financial statements, to protect investors and other stakeholders, to strengthen internal controls, and to prevent financial statement fraud. SOX ensures that the process of internal controls designed by corporate governance provides reasonable assurance to investors that the company can achieve its objectives (Al-zwyalif, 2013). For example, SOX Section 302 requires that companies disclose internal control weaknesses that are material, including IT systems. Also, SOX Section 404 requires companies to disclose their internal control procedures and structures on financial statements, while providing an assessment of the level of IT effectiveness, and the auditor must provide their opinion of the effectiveness of internal control procedures (Damianides, 2005). Zhang, Zhou, and Zhou (2007) proposed that most shortcomings are found in the financial statements process, accounting reconciliation, the rate of supply, supervision, and IT systems. The more complex the business, the greater the need for the use of IT and internal controls (Ashbaugh-Skaife, Collins, & Kinney, 2007).

In contrast, Amani, Vidiyastutik, & Hudzafidah (2017) proposed that the need for IT in a company also generates risks in the efforts to control it and requires individual adjustments to the latest IT applications. Therefore, the use of IT should be followed by the relevant management capability to achieve the objectives of internal control. Boritz & Lim (2008) showed that internal IT controls and knowledge of IT affect the company's financial performance. Knowledge of IT is an intangible asset and is part of the intellectual capital (IC). IC contributes to a company by creating enterprise value that is added through tacit knowledge (Pulic, 1998). Li, Pike, and Haniffa (2008) defined IC as the experience, skills and professional knowledge, intimate relationships, and the quality of the applied technology that provides competitive value to the organization. Bollen, Philip, and Schnieders (2005) showed that concern with the development of IC could affect the long-term performance of a company. Financial statements are not able to describe changes in the value of assets, which increases the information asymmetry. IC provides a more precise assessment of corporate performance and reduces the uncertainty of future opportunities.

A reporting scheme based on SOX Sections 302 and 404 requires management to disclose the internal control weaknesses in the company. This disclosure is to provide relevant information for investors and other stakeholders. Therefore, the implementation of IT as a system that supports the efficiency and effectiveness of business processes is one way in which companies try to implement transparent corporate governance (Kusumaningtyas, Ludigdo, Irianto, and Mulawarman, 2016). IT can improve the performance of a company through the continuity of individual intelligence companies, represented in the IC. Conversely, IT implementation can become a bottleneck due to a lack of preparation in introducing and using the IT systems, leading to poorer performance and a decrease in the company value.

## **II. Literature Review**

### ***2.1 Stakeholder Theory***

Stakeholder theory proposes that the various parties associated with a company have a significant impact on the sustainability of the company (Edward, 1986; Freeman, Wicks, & Parmar, 2004). Therefore, management must be able to balance the interests of each stakeholder if they want the company to succeed in the long term (Fontaine, Haarman, & Schmid, 2006).

The use of IT is crucial as it can affect the interests of stakeholders. Every decision influences the business environment, and the company is required to consider any policy that increases the value to the stakeholders (Fontaine et al., 2006). Stakeholder theory helps the management to assess the costs and benefits of each activity, including the use of IT.

Stakeholders have the right to obtain returns on their investments resulting from the use of IT. The level of stakeholder satisfaction is determined by the success of management in implementing appropriate technology to improve efficiency and effectiveness (Damianides, 2005; Klamm & Watson, 2009).

To achieve these objectives, management strives to maximize the potential of their human resources. Individuals who have unique potential advantages are intangible assets or investments, which are known as intellectual capital (IC). IC is related to the company's resources and includes, for example, experience, knowledge, skills, and expertise to create value (Bontis, Keow, & Richardson, 2000). We used the value-added intellectual coefficient (VAICTM) method to measure IC in this study. The VAICTM methods include structural capital (SC), capital employed (CE), and human capital (HC). SC shows the effectiveness of management in providing a corporate structure to support the creativity of human resources. CE indicates the success of the management in processing assets and increasing value for stakeholders. HC is the collective competence of the human resources that generate solutions and services.

### ***2.2 Sarbanes-Oxley Act and Internal Control in Information Technology***

The rapidity of the changes in IT requires companies to reorganize themselves to deal with the risks that arise from these changes. Human resources are forced to adapt to IT changes. However, IT development requires internal control as one of the important factors in implementing good corporate governance.

SOX is an effort to convince stakeholders of the integrity of a company's financial statements after the onset of the financial scandal, which involved conspiracy between management and auditors. One issue raised is by SOX sections 302 and 404. SOX Section 302 requires management to disclose the company's internal control weaknesses if they are material. SOX Section 404 states that the company is obliged to assess the effectiveness of its internal control structure and procedures and to disclose this assessment in financial statements. SOX Section 402 also requires the auditor to provide an opinion on the management's assessment.

IT internal control weaknesses (IT-ICW) are material and need to be disclosed by the company. Material, in this case, is significant resulting in misstatements that cannot be prevented or detected and influence decision-making. Examples of disclosure of these weaknesses include (a) the integrity of the data processing, (b) the security system access security systems, (c) the structure and use of the system, and (d) the documentation and process development (Ge & McVay, 2005; Li et al., 2008).

### ***2.3 The Company's Value and Profitability***

The value of a company is shown by both its financial and non-financial performance. The non-financial performance arises from its IC. Companies that successfully manage their IC can improve their performance through innovative creativity in research and development and, hence, increase their value. IC can be measured using the VAICTM method, giving an objective parameter to indicate the success of the company in creating value (Bollen et al., 2005). This measure supports corporate objectives that emphasize the essence of science is to produce value

added (Pulic, 1998). The VAICTM method is a composite figure of CE, HC, and SC (Poh, Kilicman, & Ibrahim, 2018). Return on assets (ROA) represents the value of the company and is a measure of the efficiency of the management in managing assets, including intangible assets such as IC.

## **2.4 The Relationships between the Variables**

### **2.4.1 IT Internal Control Weaknesses on the Value of the Company**

Al-zwyalif (2013) showed that the presence of IT in a company helped to provide information for making decisions that ultimately affected the company's financial performance. Boritz & Lim (2008) found that greater disclosure of internal control weaknesses for IT indicated a decrease in the company's performance. This finding was consistent with the work of Li et al. (2008) and Kuhn, Ahuja, & Mueller (2013), who reported that disclosure of internal control weaknesses for IT indicated weakness in the control of management, shortcomings in applying IT, and operational inefficiencies. Al-zwyalif (2013) found that IT internal control weaknesses indicated that management conducted a periodic evaluation of the application of IT in the company. In light of this study, we proposed hypothesis H1: Disclosure of IT control weaknesses has a positive effect on ROA.

### **2.4.2 Intellectual Capital on the Value of the Company**

Bollen et al. (2005) reported that IC affected the performance of a company, but Kuryanto & Safruddin (2008) suggested that IC did not affect company performance. These contrasting results show the need for further investigations into the effect of IC on company performance. According to stakeholder theory, the management tries to manage the company in the interest of all parties. To achieve these objectives, the management effectiveness of the IC can be a positive influence and improve company performance.

Razafindrambinina (2011) studied companies listed on the Indonesian Stock Exchange and found that the CE affected company performance. This finding was consistent with work by Bontis, Janošević, & Dženopoljac (2015), who researched hospitality services in Serbia, and Ousama & Fatima (2015), who examined the influence of IC on Islamic banking. After considering the findings of these studies, we proposed hypothesis H2: Value added by CE (VACA) mediates the effect of disclosure.

Razafindrambinina (2011) found that HC did not play an important role in contributing to the productivity and profitability of a company, but Bollen et al. (2005), Bontis et al. (2015), and Ousama & Fatima (2015) reported that HC played a bigger role than CE and SC on the productivity and profitability of the company. Consideration of these studies led us to propose hypothesis H3: Value added by HC (VAHU) mediates the effect of disclosure.

Razafindrambinina (2011) found that SC was the most important element affecting a company's performance in Indonesia. Similar results were reported by Bollen et al. (2005), Bontis et al. (2015), and Ousama & Fatima (2015). Consideration of these studies led us to propose hypothesis H4: Value added by SC (STVA) mediates the effect of disclosure.

## **III. Method**

This study used a quantitative method and secondary data drawn from the financial statements of companies listed on the New York Stock Exchange (NYSE). Disclosure of the internal control weaknesses in financial reports is still voluntary in several developing countries, including Indonesia. Because of these limitations as well as efforts to expand generalization, the sample in this study were companies in the Southeast Asia region that were listed on the NYSE in the years 2006-2017, and which reported internal control weaknesses in information technology in accordance with SOX Sections 302 and 404. Six companies from the 49 Asian countries had serial listings on the NYSE: Aluminum Corporation of China Limited (China), China Petroleum and Chemical Corporation, or Sinopec (China), Dr. Reddy's Laboratories Limited (India), PT Telekomunikasi Indonesia (Indonesia), Philippine Long Distance Telephone Company (Philippines), and China Yuchai International Limited (Singapore).

### **3.1 Research Variables**

A. Disclosure of IT internal control weaknesses is required in financial statements (SOX Sections 302 and 404). Any such disclosures indicate the use of IT systems in the company.

B. IC is a mediating variable that affects the company value and can be measured by the VAIC<sup>TM</sup> method. This method includes VACA, VAHU, and STVA.

1. VA is the difference between output and input ( $VA = OUT - IN$ )

2. VACA is each contribution unit to improve VA Companies ( $VACA = VA/CE$ )
3. VAHU is the contribution of every dollar of resources development to VA Companies ( $VAHU = VA/HC$ )
4. STVA is a structural contribution to the VA company ( $STVA = SC/VA$ )

C. A company's performance is realized as the return on assets (ROA), which describes the productivity of a company's assets in generating profits. ROA is the return in excess of tangible assets as intangible assets such as intellectual capital. ROA is calculated from the net profit after tax divided by the total assets

### 3.2 Data Collection and Analysis

Data were collected through online searches of annual reports, articles that support the analysis, and information relevant to the theme of the research. VAIC<sup>TM</sup> consists of CE, HC, and SC, as described by Firer and Mitchell Williams (2003). Data analysis was performed using the partial least squares (PLS) method. PLS was used to identify any latent variables in the measurements of IC. Ghozali (2006) stated that the PLS could be applied at all scales of the data and did not require many assumptions or large sample sizes. PLS has two steps:

#### 1. Assessing the Outer Model

The three criteria in this stage are convergent validity, discriminant validity, and composite reliability. For convergent validity, the size of individual reflexive was considered adequate if the loading value was  $> 0.5$ . For discriminant validity, size reflexive rated on a cross-correlation variable loading. Cronbach's alpha and internal consistency were used to measure composite reliability.

#### 2. Assessing the Inner Models

This stage investigated the correlations between the variables using the R squared value and the significance in the research model. The R squared value was used to assess the substantive effect of the independent, moderating, and dependent variables.

## IV. Results

### 4.1 Descriptive Analysis

The companies used in this study were from diverse business sectors (Table 1).

Table 1: Companies in the Study Sample

No.	Company name	Type of activity
1	Aluminum Corporation of China Limited (Chalco/ACH)	An integrated aluminum company with bauxite and coal mining; international logistics and trading power plants heat energy (thermal).
2	China Petroleum and Chemical Corporation (Sinopec/SNP)	Energy (oil and natural gas distribution along the transport), chemicals (petrochemicals, coal, and fiber synthesis), and is the largest in China.
3	Dr. Reddy's Laboratories Limited (RDY)	Pharmaceuticals.
4	PT Telekomunikasi Indonesia (TLK)	Telecommunications services, multimedia, property, and finance.
5	Philippine Long-Distance Telephone Company (PHI)	Telecommunications and digital services.
6	China Yuchai International Limited (CYD)	Major manufacturers of high-value, environmentally friendly automotive engines.

Source: web-related companies.

The six companies in this study had different types of business activities and successful serial listings on the NYSE for 12 years (2006-2017). There are 49 countries in Asia, but only five countries were able to compete internationally on the NYSE: China, India, Indonesia, Philippines, and Singapore.

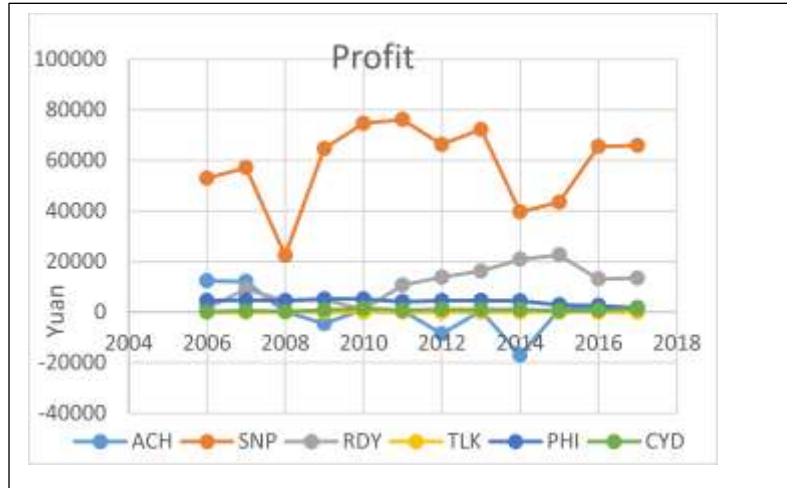


Fig. 1: Company Profit

Source: Processed data

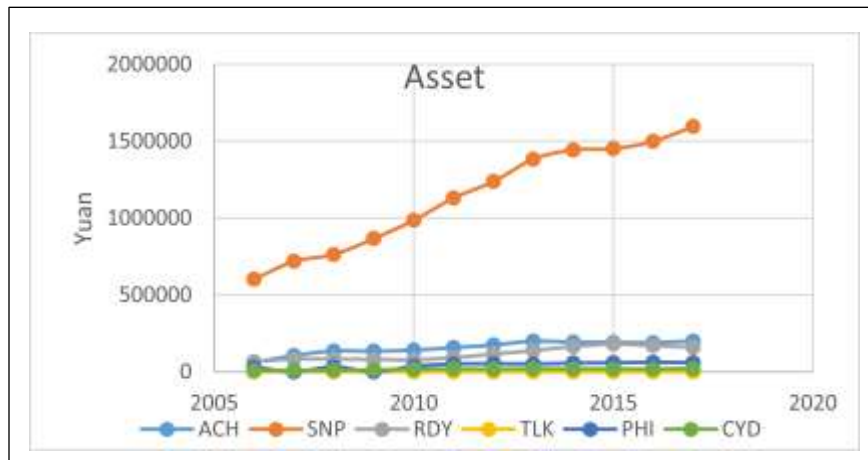


Fig. 2: Company Assets

Source: Processed data

Figures 1 and 2 show that China Petroleum and Chemical Corporation (Sinopec/SNP) recorded the highest profit and had the highest value of assets. In contrast, another Chinese company in the study, Aluminum Corporation of China Limited (Chalco/ACH), experienced losses in 2009, 2012 and 2014. The four other companies studied had an average profit increase of 19% per year.

The performance of these companies implied that the assets were not sufficient to help increase the company performance without the support of human resource development as a core activity within the company. Figure 2 shows that the increase in a company's assets did not follow the rising corporate profits shown in Figure 1. We concluded that other factors contributed to increasing profits, one of which was human resources.

#### 4.2. PLS Analysis

Dynamic business changes require technological innovation to be sustainable. Such innovation requires a knowledge-based business, the business character of science as internal resources (Sawarjuwono & Kadir, 2003) known as intellectual capital. The results of the PLS analysis are shown in Table 2.

Table 2 shows that the variable IT-ICW was responsible for 25.6% of the ROA, and the other 74.4% of the ROA was the result of other variables. IC can moderate the effect of IT-ICW on ROA, but only VACA and VAHU affected the ROA as mediating variables. STVA did not act as a moderating variable.

Table 2: Test Results of PLS

	<b>IT-ICW</b>	<b>VACA</b>	<b>VAHU</b>	<b>STVA</b>
<b>P values</b>	0017	0022	0005	<b>0057</b>
<b>effect size</b>	0058	0088	0123	0031
Average adjusted R-squared (AARs) = 0258, P = 0.005				

Source: Processed data

### 4.3. Discussion

The company's goal is to realize a knowledge-based added value. The use of IC in value creation in six Asian companies was measured by the VAIC<sup>TM</sup> method. This study focused on each component of the VAIC<sup>TM</sup> method (VACA, VAHU, and STVA). IC can be used in the implementation of information technology in business processes.

#### 4.3.1 The Effect of IT-ICW on Corporate Value

IT-ICW disclosure indicates that a company's internal control is sufficient because the company maintains the quality of its business processes through periodic evaluations of its application of technology. The disclosure describes the company's efforts to protect its information assets from leaking and how management has improved operational efficiency. ROA is used as a measure of the company's value because it allows the efficiency of the management of tangible and intangible assets to be assessed. IC is an intangible asset that provides added value to the implementation of IT for business processes.

The empirical analysis revealed that IT-ICW disclosure affected the company value. This disclosure implied that companies were implementing IT governance to provide quality information for decision making (Al-zwyalif, 2013). Stakeholders appreciated the transparency of a statement of the weakness of technology for business processes. This means that management can reduce the asymmetry of information and can perform a careful internal evaluation (Li et al., 2008).

#### 4.3.2. VACA Moderating the Effect of IT-ICW on ROA

Value-added capital employed (VACA) is the new value created by investing in total equity. VA and CE indicate the ability of internal capital to increase the value of a company. The greater the CE used, the greater the value generated. VACA measures the contribution of investments in equity that create value.

Our analysis showed that the CE strengthened the relationship between IT-ICW and ROA. Firer and Mitchell Williams (2003) stated that ROA was an instrument for assessing the profitability of companies. In finance, profitability can be viewed as a parameter for success, whereas accounting is responsible for calculating returns. We found that the management of ASEAN companies was able to direct the wealth invested by shareholders to create added value for stakeholders. These findings were consistent with those of Appuhami (2007), Bollen et al. (2005), Mitchell Firer and Williams (2003), and Hapsari, Haryadi, & Wiratno (2015), who found that VACA affected company value.

#### 4.3.3 VAHU Moderating the Effect of IT-ICW on ROA

Value-added human capital (VAHU) is at the essence of life companies (Anderson, 2010). HC is the knowledge, abilities, and skills of the individuals in a company that produce services or provide solutions for the company. If the value of human capital is collectively, then the value of the company will increase. This contribution is reciprocal, regular support from the company to maintain the effectiveness of its human capital, for example, through recruitment, training, and personality development. VAHU measures the contribution of investment companies at every dollar to human capital to have an impact on the creation of company value.

We found that VAHU strengthened the link between IT-ICW and ROA. This implied that ASEAN companies were able to increase productivity through the optimal and effective distribution of human resources. ASEAN companies provided balance by focusing on both tangible assets (CE) and intangible assets (HC). Our findings were consistent with those of Mitchell Firer and Williams (2003) and Hapsari et al. (2015), who found that VAHU moderated and affected the company value.

#### 4.3.4. STVA Moderating the Effect IT-ICW on ROA

The IC resulting from individuals in companies requires the support of an efficient and effective corporate structure. The right systems and procedures will help people to optimize their performance. Structural Capital Value Added (STVA) is an indicator of the success of companies in providing appropriate facilities for increasing the

energy and creativity of its employees. Convenience and corporate structural support for human resources can ultimately increase company value.

Our analysis showed that SC did not moderate the relationship between IT-ICW and ROA. This means that the companies did not consider their corporate structure when ensuring the stability of its resources. This finding was consistent with those of Ashbaugh-Skaife et al. (2007), who found that can be caused by common internal problems in the company, such as frequent changes, complex company operations, high-risk accounting policies, and a high turnover of auditors.

The results of this study can be described by the research model shown in Figure 3.

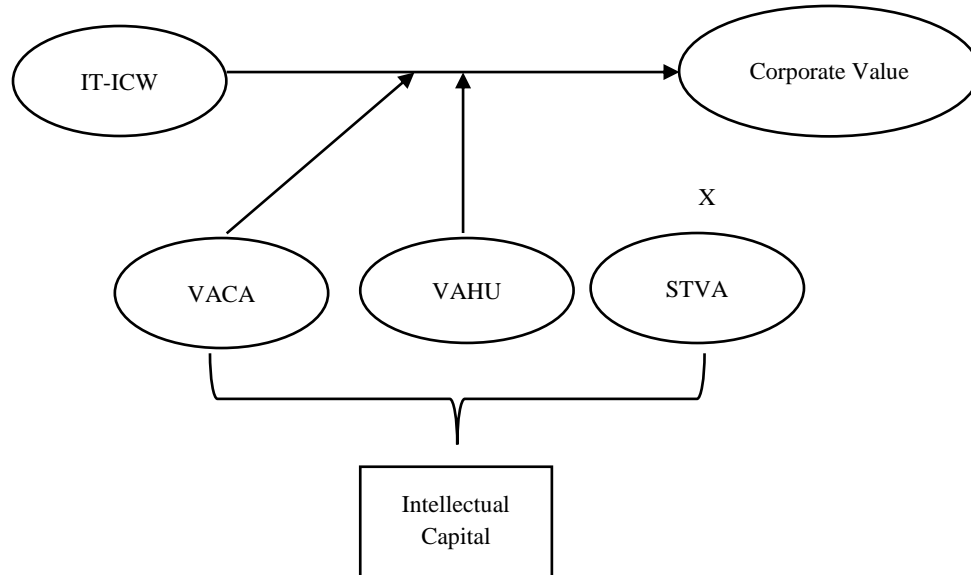


Fig. 3: Research Model

IT-ICW affected ROA, showing that transparency in the application of technology can increase stakeholder trust. Shareholders believe that their investments will be used effectively by management to increase the potential of human resources. The corporate structure had no significant impact on ROA, but this was not necessarily an obstacle to the company's human resources because they can support the company through their creativity, leading to an increase the value of the company.

## V. Conclusion

Disclosure of IT-ICW by ASEAN companies that complied with SOX Sections 304 and 404 increased the value of the company in the view of stakeholders. This study found that ASEAN companies were able to harmonize the use of tangible assets, in the form of capital employed, and intangible assets, in the form of human capital to increase to company value, but structural capital did not affect the company value. IC is an intangible company asset that is the main support for business processes. The management should focus on all the components (CE, HC, and SC) of IC in a balanced way. This balance requires consistency from management to provide an organizational structure that maintains and improves the effectiveness of resources.

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