Drivers of Voluntary Intellectual Capital Disclosure in Agriculture Company Listed in IMT-GT Countries

Abstract

Purpose - This study intends to examine the drivers of disclosing intellectual capital for a sample of agriculture firms listed in Indonesia Malaysia Thailand – Growth Triangle (IMT-GT) countries. This study highlights firm indicators in a firm namely size of firm, concentration of ownership, leverage, profitability and auditor type on three measurements of intellectual capital disclosure: structural capital, human capital and relational capital.

Design/methodology/approach – Research is conducted using a sample of 47 companies from agriculture industries listed in Indonesia Stock Exchange (IDX), Malaysia Stock Exchange (MYX) and Stock Exchange of Thailand (SET) from 2013 to 2017. The authors examine the annual reports by analyzing the content and use quantitative data from Bloomberg terminal.

Findings – The research finds that firm size and type of auditor plays an important role as the intellectual capital disclosure drivers in the annual report. Furthermore, ownership concentration shows partial influence towards the extend of disclosing intellectual capital. However, contrary to earlier studies, the paper finds no relation between leverage and profitability towards all three components.

Research implications – It is revealed that there are factors affecting the disclosure of intellectual capital within the agriculture industry listed in IMT-GT such as firm size, ownership concentration and auditor type, while leverage and profitability does not prove to have any significance to intellectual capital disclosure. This is an original paper with valuable implications for the management of company's intellectual capital. Through the findings, it helps accounting regulators to understand better and use the factors that explain the company's intellectual capital disclosure in the development of future recommendations. Moreover, companies should put more attention in firm characteristics that influence their disclosure, as disclosure is gaining more attention.

Originality/value – The study uses combination of checklists to ensure completeness as opposed to earlier studies that used limited to one source, which makes the results more reliable. Moreover, it is the first to explore the Indonesia Malaysia Thailand – Growth Triangle (IMT-GT) relationship for intellectual capital disclosure topic. The cooperation has provided positive signals to the economic growth, thus made it interesting to look further at the businesses operating in those countries. The findings validate some previous research as well as provides understanding of the company specific factors that clarify the disclosure of intellectual capital.

Keywords Firm Size, Type of Auditor, Leverage, Profitability, Ownership Concentration, Intellectual Capital Disclosure, Agriculture Industry, IMT-GT

Paper type Research paper

1. Introduction

No single person can stand to live without food, and no further confirmation is needed for this issue. In addition to food supplied by nature, that is obviously not adequate to support the global population, agriculture should bridge the gap and provide enough food for the community that is constantly growing. However, agriculture has not received the consideration it deserves, despite the critical role (Lakitan, 2018). In 2008, the strong rise in prices of food in East and South Africa had caused serious food shortages and hunger (Mason et al., 2011). This phenomenon had stirred policymakers over the globe to give more consideration and intensify efforts to guarantee the availability of foods in their particular countries, along with Southeast Asian countries, where rice was their primary staple food.

The continuously growing population is driving higher demand for food supply; thus, it is very important to increase the production of food. The current climate change that is unpredictable has contributed to the problem and made it even harder to achieve the demanded food production. The possible option for increasing production of food is by increasing the productivity. The role of science and technology in agriculture has promoted growth and improved quality (Naseem et al., 2010). In order to maximize agricultural productivity, technological innovation should be essential. Therefore, technology is vital in increasing food production. Rehman et al. (2016) pointed out that technology is required in agricultural sector as it play an important role to increase productivity.

In today's economy, intellectual capital has become an organization's crucial resource. In order to cope with the changes and high market competition, businesses should make an ongoing investment to update its employees ' knowledge and skills development to be able to compete in in the market (Tarigan et al., 2019). Companies become dependent on how management manages the owned resources in creating the company value thus making it as its own competitive advantage. Along with that development, companies began to use sophisticated technology to make the production process more efficient. In the knowledge-based business practice, intellectual capital has gained tremendous attention from researchers, academics, practitioners, and entrepreneurs. Some researchers, such as Sharabati et al. (2016) and Shahzad (2014) found that intellectual capital (IC) turned out as the most important asset for the company's auspicious prospect.

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Rashid et al. (2012) stated that intellectual capital is an important resource for generating future profits for the company, in addition to the physical and financial capital. Moreover, Ellis and Seng (2015) in their research also state that intellectual capital is an important component in creating value other than physical assets. They see it as an important resource in creating success, economic benefits and adding value to the company.

The agriculture industry in Indonesia for example, have been experiencing the impact of intellectual capital. Agriculture Minister Amran Sulaiman claimed that for the past few years, the development of modern agricultural techniques and human resource has managed to boost the country's agricultural production (The Jakarta Post, 2016). Moreover, in Thailand, where agriculture has always been one of Thailand's main economic activities, with its government support, is currently integrating intellectual capital to help transform its agricultural industry (Christopher, 2018). Thai governments also worked with the industry to ensure a sufficient supply of highly educated and skilled workers (Thailand Board of Investment, 2012). This effort has brought many Thai farmers in this digital age improving their productivity and quality (Thailand Board of Investment, 2018). In the other hand, Malaysia's agriculture sector is set to undergo significant modernization. It seeks to increase mechanization, human resources and improving technological and scientific inputs and outputs, as well as a strong focus on green, sustainable growth (Oxford Business Group, 2017). This modernization is belief to be able to drive growth in the agriculture sector.

As the economy is growing rapidly with a lot of investment in intangible assets, Ellis and Seng (2015) found that accounting failed to fully recognize those assets, thus it can be said that traditional financial reports have lost their relevance in providing precise information and reflecting the company's actual performance. In an attempt to solve the problem in the framework of traditional financial accounting, researchers have tried to discover IC reporting measurement models and methods such as IC Index, Intangible Assets Monitor, Skandia Navigator or Technology Broker (Bruggen et al., 2009). These models, however, are often regarded as being too firmly specific (Bontis, 2001). There are no clear reporting and measurement standards of IC. Indeed, the complexities of measuring IC make it hard to put it together with the accounting framework (Hassan & Marston, 2010).

The previously mentioned drawbacks of financial accounting standards and existing IC practices lead to discussions on the idea of standardize IC disclosure. Practically, standardizing intangibles is very hard. Furthermore, due to the current rapid change in intellectual capital, a voluntary standard would be more suitable. Zeghal and Maaloul (2011) argue that intangible accounting conservatism makes regulators have little chance of developing an intellectual capital standard. Bontis (2001) argued that mandating the disclosure of IC is unlikely. In support of the arguments, Vergauwen and Alem (2005) argue that limiting the definition of assets in current accounting regulations can possibly increase the chance of material misstatement. Thus, the voluntary disclosure of IC is a suitable way for businesses to meet the needs of information by stakeholders.

Despite the adversity associated with IC disclosure, however, firms have several reasons to disclose intellectual capital information. Bruggen et al. (2009) stated that IC assists companies reduce information asymmetry. In addition, it can improve the accuracy of financial statements. Disclosure of intellectual capital can also increase the trust and loyalty of employees as well as other stakeholders (Ferreira et al., 2012).

Prior studies also examined the drivers for IC disclosure. Hereinafter, this study is the first to cover the cooperation of Indonesia Malaysia Thailand – Growth Triangle (IMT-GT). This cooperation was an agreement between Indonesia, Malaysia and Thailand and was first established in 1993. Its main objective is to improve the welfare and development of economy of the countries in IMT-G (IMT-GT, 2019). This cooperation is interesting as it has recorded several important achievements for its member during the past years. The achievement includes economic growth that reached 4.4% in 2016 and GDP per capita that recorded a value of USD 14,557 in 2016 from USD 11,508 in 2011 (Irawan, 2018). The industry being examined is specifically in agriculture sector company because this sector is one of the priority areas that the IMT-GT cooperation is trying to develop (Centre for IMT-GT, 2017). It has recorded as the largest contributor to Indonesia and Thailand GDP, accounting for 22.6 percent and 24 percent in 2014, respectively. Moreover, the agriculture sector in Malaysia has develop and settled industries taking part in a wide scope of downstream activities (Centre for IMT-GT, 2017). The sector has also set to undergo significant modernization (Oxford Business Group, 2017), thus reflecting that more intellectual capital is being invested in the business.

The results of this research are expected to be considered by company who is currently aware of the new economic developments, by giving more attention on company's characteristics to be develop, thus help increasing its intellectual capital disclosure that is useful for the stakeholders. Company should also consider the importance of disclosure about non-financial information, for example, intellectual capital to adapt in the current economy and achieve competitive advantage. The findings can assist accounting regulators to utilize the factors that explain company's intellectual capital disclosure in the development of future recommendations.

2. Literature review and hypothesis

2.1 Intellectual capital disclosure

Intellectual capital is a non-monetary asset or intangible asset includes technology, employees, knowledge, management processes in an organization that is helpful in operational activities including corporate value creation (Hatane et al., 2019). Nowadays, intellectual capital has gained tremendous attention from stakeholder with the increase of knowledge-based companies in the market (Malkawi, 2018). It is because intellectual capital as an intangible asset can possibly increase the value of the company (Ferraro & Veltri, 2011). Currently, IC is viewed as one of the major contributors in creating company's value and performance (Bhatti & Zaheer, 2014).

In general, intellectual capital consist of 3 main components, which are human capital (HC), structural capital (SC), and relational capital (RC) (Ellis & Seng, 2015).

Human capital can be defined as not only the knowledge, skills and experience of each individual but also the willingness of the individual to share these attributes among other members within the organization to create a value within the organization (Ellis & Seng, 2015). Thus, measuring human capital is not only measured by the expertise or even its contribution in productivity for the organization, but it is also measured by how knowledge and its contribution have successfully impacted the values of an organization.

Structural capital relates to structure, process, procedure or mechanism in a company that includes the culture and organization passion, copyright, trademark, patent, internal database and computer system that process the knowledge (Gamerschlag, 2013). It can be seen as the supporting infrastructure to do the innovation in the company. It can help company to create value to the organization (Chu et al., 2011).

Relational capital covers aspect in terms of how company generate revenue from external. This is part from the human and structural capital that involved within the relationship of the company with its stakeholder (investor, creditor, customer, supplier, etc.), as well as perception about the company (Ellis & Seng, 2015).

Most research on intellectual capital disclosures were using the annual report to analyze such disclosure. Specifically, intellectual capital disclosure explains information such as the level of the consumer loyalty, the competence of employees, employees' training in order to increase the competence and knowledge-related jobs their innovations as well as over the network and information systems. Intellectual capital disclosures play an important role because it can expand the knowledge of investors regarding the company's value added, which is intangible assets. However, as intellectual capital is still in the form of voluntary disclosure, it is not presented in the balance sheet as there is no regulations stating about disclosing intellectual capital. Therefore, the disclosure of intellectual capital is difficult to be counted and measured.

2.2 Evidence of drivers for intellectual capital disclosure

Bruggen et al (2009) consider 125 publicly listed companies with different size of industry to examine voluntary disclosure of IC in Australia. Based on content analysis framework for IC categorization, Bruggen et al. discovered that IC are communicated more in larger firms rather than smaller one and that no specific framework for reporting IC has been set up. This as well align with the agency theory underlying the relationship between firm size and disclosure. Regardless of its commitment to IC literature in Australia, the research is limited only to 125 out of more than 1,600 Australian stock exchange listed companies.

Several studies have been conducted using the same methodology as Bruggen et al. (2009) in different countries (White et al., 2007; Ferreira et al., 2012; Kateb, 2014; Kamath, 2017). While all these researches show the absence of framework for reporting ICD, some differences can be found across companies as far as the degree of IC disclosure. For instance, in White et al. (2007), the presence of IC - related items was low in the sample of 70 publicly listed Australian companies than in the sample of Bruggen et al. (2009). Their sample, however, is smaller, so the results need to be considered carefully. Likewise, different extents of IC items (structural capital, human capital and relational capital) are found in Sri Lanka contrasted with those found in Bruggen et al. (2009). The researches utilize a similar structure; in any case, the outcomes are different, which can be due to test sizes, country regulations, time contrasts and culture.

Another research conducted by Rahim et al. (2011) in Malaysia shows that firm size and auditor type are not identified as the drivers of ICD. In contrast, research conducted by Ferreira et al. (2012) in Portugal shows that type of auditor and firm size significantly affect the level of ICD. Even so, the ownership concentration, profitability, industry type and the level of IC did not altogether impact the disclosure of intellectual capital (Ferreira et al., 2012). In other hand, study conducted by

Taliyang et al. (2011) in Malaysia shows that ownership concentration and growth rate influence the disclosure of intellectual capital.

In view of above discussion, it ends up evident that the IC exposure drivers are not yet obviously known. Similar to studies by White et al. (2007), Bruggen et al. (2009) and Taliyang et al. (2011), however, author suggest that size of the firm is an imperative factor in the disclosure of ICs as intellectual capital is more important in larger companies, thus it is important information for investors. This results in the first hypothesis:

H1a: Firm Size affect Human Capital Disclosure

H1b: Firm Size affect Structural Capital Disclosure

H1c: Firm Size affect Relational Capital Disclosure

In addition, ownership concentration could play a significant role in disclosing intellectual capital information to a company. The less control shareholders have over a company's management, which is an indication of low ownership concentration, the more critical the disclosure such as intellectual capital information becomes.

H2a: Ownership Concentration affect Human Capital Disclosure

H2b: Ownership Concentration affect Structural Capital Disclosure

H2c: Ownership Concentration affect Relational Capital Disclosure

In Malaysia (Haji and Ghazali, 2013) and Australia (Oliveira et al., 2013, Bruggen et al., 2009, White et al., 2007) and, the positive connection between leverage and ICD has been confirmed. While in Portugal, leverage is not a critical factor of ICD (Oliveira et al., 2006; Ferreira et al., 2012). This result however was affirmed by Kang and Gray (2011), who showed a negative connection among ICD and leverage, based on a sample of large firms belonging to develop markets. With the varying results, thus author state third hypothesis:

H3a: Leverage affect Human Capital Disclosure

H3b: Leverage affect Structural Capital Disclosure

H3c: Leverage affect Relational Capital Disclosure

The findings of previous research on the ICD and profitability relationship are inconclusive. A positive and significant relationship was proved in studies conducted by Haji and Ghazali (2013), Ferreira et al. (2012) and Garcia - Meca et al. (2005). Negative relationship was affirmed by other researcher (Williams and Firer, 2003).

H4a: Profitability affect Human Capital Disclosure

H4b: Profitability affect Structural Capital Disclosure

H4c: Profitability affect Relational Capital Disclosure

Based on the varying results of White et al. (2007), Ferreira et al. (2012) and Kateb (2014) with type of auditor as the determinant for IC disclosure, author state fifth hypothesis:

H5a: Type of Auditor affect Human Capital Disclosure

H5b: Type of Auditor affect Structural Capital Disclosure

H5c: Type of Auditor affect Relational Capital Disclosure

3. Research methodology

3.1 Sample

To achieve the aim of this study, an Ordinary Least Squares (OLS) analysis is done through a collection of secondary data, testing of hypothesis and identification of correlation. The sample firms involve listed agriculture companies in IMT-GT. The agriculture industry is being examined because currently it is one of the focus industries that the cooperation is trying

to develop and for the past years the industry has giving great contribution to the economy of the countries member (Centre for IMT-GT, 2017). The IMT-GT cooperation itself, has bring positive impact to its members reflected by the increased in economy. The data is retrieved from three stock exchange which are Malaysia Stock Exchange (MYX), Indonesia Stock Exchange (IDX) and Stock Exchange of Thailand (SET) from 2013 until 2017. It should be companies running their business in the agriculture industry sector. This study uses all secondary data sufficiently provided by annual reports and Bloomberg.

Table I Summary of the sample observed

Sampling Criteria	Number of Observations
Companies in agriculture industry listed in IDX, MYX and SET from 2013-2017	76
Companies with incomplete annual report	(11)
Companies without 31st December financial year end	(18)
Total companies as the population	47
Total period (in years)	5
Number of reports / samples	235

Eventually, as seen in Table I, the final sample is made up of 47 firms for 5 years, which is 235 firm-year. The steps of analysis are as follows: First, content analysis is used to examine the IC reporting practices of the companies. Then, to test the hypothese, Ordinary Least Square (OLS) regression model is used.

3.2 Measurement

Dependent variable. The intellectual capital disclosure is divided into 3 variables consist of disclosure of structural capital, human capital and relational capital. The checklist is a combination from Yan (2017) and Cabrita et al. (2017), as it is better to have more than one source to ensure completeness. There are total of 44 items contains of human capital 20 items, structural capital 12 items and relational capital 12 items.

The formula to calculate the disclosure is as follow:

Intellectual Capital Disclosure = items disclose in annual report over maximum number of disclosure items that should be disclosed multiply by 100%

Independent variables. Independent variable is a variable which provides the foundation of estimation (Lind et al., 2015). Independent variable can be interpreted as a variable that influences and causes the existence of other variables, which serve as the basis for the result estimated in a research. There are 5 variables, namely size of firm, concentration of ownership, leverage, profitability and auditor type. Size of firm is calculated by natural log of total assets. Ownership concentration is calculated by dividing the shares owned by the major shareholders with the total outstanding shares. Meanwhile, leverage is calculated from the total debt divided by total equity. While profitability is measuring the return on assets which is net income over total assets. Lastly, type of auditor sees the external auditor conduct audit for the company.

Table III Definitions of variable and source of data

Variable(s)	Definitions	Data Source
Firm Size (SIZE)	Natural log of total assets	Annual Report and Bloomberg
Concentration of Ownership (OWN)	Percentage of share held by major shareholder over total outstanding share	Annual Report
Leverage (LEV)	Total liabilities over total assets	Annual Report and Bloomberg
Profitability (PROF)	Net income over total assets	Annual Report and Bloomberg
Auditor Type (AUDITOR)	Auditor responsible to audit the company financial report	Annual Report
Human Capital Disclosure (HCD)	Human capital items disclosed by company based on the checklist	Annual Report
Structural Capital Disclosure (SCD)	Structural capital items disclosed by company based on the checklist	Annual Report
Relational Capital Disclosure (RCD)	Relational capital items disclosed by company based on the checklist	Annual Report

3.3 Model

This paper would like to show whether firm possessed characteristics has an impact towards intellectual capital disclosure components (structural capital, relational capital and human capital). A details examination is conducted to see the correlation between the characteristics and disclosure. Regression models are formulated as follows.

$$HCD = \alpha + \beta 1 SIZE + \beta 2 OWN + \beta 3 LEV + \beta 4 PROF + \beta 5 AUDIT + \varepsilon it$$

(1)

$$SCD = \alpha + \beta 1 SIZE + \beta 2 OWN + \beta 3 LEV + \beta 4 PROF + \beta 5 AUDIT + \varepsilon it$$

(2)

$$RCD = \alpha + \beta 1 SIZE + \beta 2 OWN + \beta 3 LEV + \beta 4 PROF + \beta 5 AUDIT + \varepsilon it$$

(3)

Where,

HCD	= Human Capital Disclosure;
SCD	= Structural Capital Disclosure;
RCD	= Relational Capital Disclosure;
α	= Constanta;
SIZE	= Firm Size;
OWN	= Concentration of Ownership;
LEV	= Leverage;
PROF	= Profitability;
AUDIT	= Auditor Type;
ε	= Error;
$\beta 1, \beta 2, \beta 3, \beta 4, \beta 5$	= Coefficient regression of each variable

Validity and Reliability

It is necessary to perform the classical assumption test in the regression model. The tests include multicollinearity test and heteroscedasticity test. Reliability of variables must be examined by looking at full collinearity variance inflation factor (VIF) values. Multicollinearity test is conducted to examine the linear correlation between independent variables and regression model. High association between the independent variables will cause disturbance that threaten reliability of data (Wooldridge, 2012). To fulfil the multicollinearity test, VIFs must be less than10 in a more relaxed criterion (Wooldridge, 2012). As pictured below in Table III, all variables have passed the multicollinearity.

Table IV Collinearity Test

	Size	Ownership	Leverage	Profitability	Auditor
Full Collinearity VIFs	1.229	1.201	1.067	1.104	1.044

Source: Author's compilation

Heteroskedasticity is a condition when the variances of errors are not the same with all observations (Wooldridge, 2012). Heteroskedasticity is an issue for research. Therefore, the test need to be conducted in order to test the variability, whether it is equal and exist within the range of a second variable or not. When the p-value is less than 5%, the implication is the model contains heteroscedasticity. If there is heteroscedasticity issue, weighted least square must be conducted to overcome the heteroskedasticity problem. As shown below in Table IV, the regression models has heteroskedasticity issue.

Table V Heteroskedasticity Test

	HCD	SCD	RCD
p-value	0.000395	0.000877	0.000026

Source: Author's compilation

Panel diagnostic is used to determine the regression model used in this research. Panel Diagnostic yield FE estimator, Breusch-Pagan Test and Hausman Test. The result of panel diagnostic is shown in Table V. From the table below, the result shows that fixed effect is suitable for the model. However, the previous test show that the regression models has heteroskedasticity issue. It means that fixed effect cannot be used. Therefore to overcome the problem of heteroscedasticity, researchers used WLS (Weighted Least Square).

Table VI Panel Test

	HCD	SCD	RCD
Fixed Estimator	6.13524e-43	1.88942e-51	6.13524e-43
	Fixed effect	Fixed effect	Fixed effect
Breusch-Pagan test	1.14675e-54	9.75957e-6	1.14675e-54
	Random effect	Random effect	Random effect
Hausman test	0.0368289	0.0232947	0.036828
	Fixed effect	Fixed effect	Fixed effect
Conclusion	Fixed effect	Fixed effect	Fixed effect

Source: Author's compilation

4. Research Results and Analysis

4.1 Sample Description

Table VI explain the descriptive statistics for the variable, consist of the mean, minimum, maximum, and standard deviation value.

Table VII Descriptive statistics

Variable	Mean	Min	Max	Standard Deviation
Firm Size	10.444	8.181	13.524	1.817
Concentration of Ownership	0.373	0.018	0.972	0.215
Leverage	0.721	-20.390	27.192	2.428
Profitability	0.028	-0.433	0.280	0.070
Auditor Type	0.651	0	1	0.478
HCD	0.669	0.400	0.900	0.125
SCD	0.664	0.333	1.000	0.168
RCD	0.670	0.333	0.917	0.141

Source: Author's compilation

Firm size as independent variable shows an average value of 10.444 and standard deviation of 1.817. The minimum value of 8.181 is obtained from SHL in Malaysia which shows this company has the smallest return of assets. While, the maximum value of 13.524 is obtained from SIMP in Indonesia which shows that SIMP give the maximum return on its assets. Ownership concentration has an average value of 0.373 and standard deviation of 0.215. It means that in average there is no one major owner within the companies as the average value is below 50%. The standard deviation shows the dispersion of data is 21.5%. The minimum value is 0.018 belongs to UNSP and the maximum value is 0.972 belongs to SMAR both are companies from Indonesia. Leverage as independent variable has average value of 0.721 and standard deviation of 2.428. The average is quite high, shows that companies have more dependency towards debt. The minimum value of -20.390 is from UNSP from Indonesia. On the other hand, the maximum value of 27.192 is from CPRO from Indonesia. The leverage ratio is the most disperse data reflected from the minimum and maximum value, thus the standard deviation is more than 100%. Profitability as independent variable has average value of 0.028 and standard deviation of 0.070. The minimum value of -0.433 is obtained from GZCO from Indonesia. In contrast, the maximum value of 0.280 is obtained from HARN from Malaysia. Type of auditor as independent variable has average value of 0.651 and standard deviation of 0.478. The minimum value of 0 is derived from 7 companies. On the other hand, the maximum value of 1 is derived from the other 40 companies. This shows that more of the agriculture listed companies are using top external auditors to do the auditing job.

4.2 Hypothesis and Research Result

Table VIII Panel regression

	HCD	SCD	RCD
Firm Size	<0.0001 ***	<0.0001 ***	<0.0001 ***
Ownership Concentration	<0.0001 ***	<0.0001 ***	0.6063
Leverage	0.4764	0.2535	0.7203

Profitability	0.5187	0.1755	0.1122
Tyepe of Auditor	<0.0001 ***	0.0091 ***	0.0010 ***
P-Value (F)	0.000	9.29e-97	1.24e-51
Adjusted R-Square	0.501	0.860186	0.652341

Notes: statistical significance at the following levels: *** = 1% (highly significant); ** = 5% (significant); * = 10% (weakly significant)

Source: Author's compilation

Each hypothesis is divided into 3, which is a, b and c. a represents the disclosure of human capital, b represents structural capital disclosure, and c the disclosure of relational capital.

First hypothesis stated that firm size has impact towards structural capital disclosure, human capital disclosure, and relational capital disclosure. The analysis resulted that firm size has significant relationship toward all three components of intellectual capital disclosure. Hence, hypothesis 1a, b and c is accepted. This result is consistent with Eddine et al. (2015) that found size of firms has impact toward disclosure of intellectual capital. The larger a company, the higher the chance company will disclose more information including intellectual capital (IC). This is in the grounds that bigger organizations will in general have more assets and activities to be disclosed. In addition, large companies involved more complex relationships between agents and principals so that disclosures are needed. Stakeholders usually give extra attention and supervision to larger companies. Therefore, company choose to disclose information about its capital to try fulfilling the interests of stakeholders through the information provided. These results supported the previous research done by Taliyang et al. (2012) and Ferreira et al. (2012).

Second hypothesis stated that ownership concentration has impact towards disclosure of human capital, structural capital and relational capital. The analysis resulted that ownership concentration has relationship towards human capital and structural capital disclosure and no impact with relational capital disclosure. Hence, hypothesis 2a and 2b are accepted and hypothesis 2c is rejected. This finding is appropriate with Zhang (2012) and Nurunnabi et al. (2011), which demonstrates that bigger size of firms with higher concentration of ownership will in general unveil more data about their intellectual capital, but different from Taliyang et al. (2011) finding. It probably happen because the major shareholder instead put pressure to the managers to disclose information, namely information on intellectual capital rather than limiting manager to disclose important information. Thus, the more concentrated share ownership will increase supervisory actions and pressure on managers in disclosing intellectual capital information.

Third hypothesis stated that leverage has impact towards disclosure of human capital, structural capital and relational capital. The analysis resulted that leverage has insignificant relationship toward all three components of intellectual capital disclosure. Hence, hypothesis 3a, b and c are rejected. This result is consistent with Ferreira et al. (2012), Taliyang et al. (2011) and Whiting & Woodcock (2011) however not quite the same as the research directed by Rashid et al. (2012) and Kamath (2017). This might happen because creditors tend to put more attention in company's financial reports more than IC disclosures. It is because the financial statements can better reflect the financial data and the risks the company has. Therefore, nonfinancial data such as IC became unattractive to the creditor. In addition, the existence of contracts such as debt covenants that monitor manager activity is one reason the ICD is not a solution to the conflict of interest between debt holders and management (Nazir et al., 2012; Silva et al., 2013). It is possible that companies use other media for communication with the debt holder to mitigate conflicts and reduce agency costs (Ousama et al., 2012).

Fourth hypothesis stated that profitability has no impact towards disclosure of human capital, structural capital and relational capital. Hence, hypothesis 4a, 4b and 4c is rejected. For profitability in spite of the fact that organizations are roused to unveil extra data to help the quality of earnings in high performing year, however there might be some information protected because it contains corporate secret (Zhang, 2012). Thus, the result can be differ between the strategy of the companies. Thus, the profitability variable can be explore further.

Fifth hypothesis stated that type of auditor has impact towards human capital disclosure, structural capital disclosure and relational capital disclosure. Therefore, hypothesis 5a, 5b and 5c is accepted. This outcome is consistent with Whiting & Woodcock (2011) and Ferreira et al. (2012). Companies hired an associated big four audit firm are proven to have higher ICD. It is because the large audit firms have that they need to maintain, urging their clients to provide more wilful disclosure instead of limiting exposure.

5. Conclusion and limitation

This paper intends to examine further the drivers of intellectual capital disclosure using content analysis for 235 annual report of agricultural industry listed in Indonesia Malaysia Thailand – Growth Triangle (IMT-GT). The period is within 2013-

2017. Intellectual capital disclosure (ICD) is being examined in detail based on three components which are human capital disclosure (HCD), structural capital disclosure (SCD) and relational capital disclosure (RCD). The drivers chosen are firm size, ownership concentration, leverage, profitability as well as type of auditor. The results demonstrate a high rate of IC disclosure, about 67% from all the samples. The outcome indicates that most of the companies know about the importance of disclosing intellectual capital. Within 5 variables tested, 2 are identified as an important drivers for IC disclosure and 1 only have partial involvement. The factors are firm size and concentration of ownership, while type of auditor only has partial impact. This findings support outcomes from Bruggen et al. (2009), White et al. (2007) and Ferreira et al. (2012), who expressed that size of firms, ownership concentration and type of auditor are important in determining the of IC disclosure.

This research contributes to previous studies related to IC, especially in the sector of agriculture that have not been put enough attention. This research used several years observation, thus contributing to previous research which use only single year. With the greater IC disclosure, it enables company to create transparency with its stakeholders and give confidence to potential investors. Therefore the government can begin to encourage business players to disclose IC through implementing regulations. In order to face the competitiveness in facing business competition.

At last, the results in this paper is subject to certain limitations. A defined checklist of IC items might not able to capture the whole ICD practices. Future studies might probably consider additional method such as interviewing managers on their rationale for disclosure as well as distributing questionnaires. A greater sample may help further enhance the results extrapolation. Lastly, it is possible for the next research to consider the relationship between ICD and other possible drivers to extend the area of analysis.

References

Bhatti, W. A., & Zaheer, A. (2014). The Role of Intellectual Capital in Creating and Adding Value to Organizational Performance: A Conceptual Analysis . *The Electronic Journal of Knowledge Management*, 12(3), 187-194.

Bontis, N. (2001). Assessing knowledge assets: a review of the models used to measure intellectual capital, *International Journal of Management Reviews*, 3(1), 41-60.

Bruggen, A., Vergauwen, P., & Dao, M. (2009). Determinants of intellectual capital disclosure: evidence from Australia. *Management Decision*, 47(2), 233-245.

Cabrita, M. d., Silva, M. d., Rodrigues, A. M., & Dueñas, M. d. (2017). Competitiveness and disclosure of intellectual capital: an empirical research in Portuguese banks. *Journal of Intellectual Capital*, 18(3), 486-505.

Centre for IMT-GT. (2017, April 29). IMT-GT Implementation Blueprint 2017-2021. Manila, Philippines.

Christopher, M. (2018, July 19). *Smart farming: How Thailand's advancing technology is transforming its agriculture industry*. Retrieved from opengovasia: https://www.opengovasia.com/smart-farming-how-thailands-advancing-technology-is-transforming-its-agriculture-industry/

Chu, S., Chan, K., & Wu, W. (2011). Charting Intellectual Capital performance of The Gateway to China. *Journal of Intellectual Capital*, 12(2), 249-276. https://web.hku.hk/~samchu/docs/Chu-2011-Charting-IC-Performance-of-Gateway-to-China.pdf.

Eddine, C. O., Abdullah, S. N., Hamid, F. A., & Hossain, D. M. (2015). The determinants of intellectual capital disclosure: A meta-analysis review. *Journal of Asia Business Studies*.

Ellis, H., & Seng, D. (2015). The value relevance of voluntary intellectual capital disclosure: New Zealand evidence. *Corporate Ownership & Control*, 13, 863-879. https://doi.org/10.22495/cocv13i1c9p9.

Ferraro, O., & Veltri, S. (2011). The value relevance of intellectual capital on the firm's market value: An empirical survey on the Italian Listed Firms. *International Journal of Knowledge-Based Development*, 2(1), 66-84. https://ssrn.com/abstract=2187229.

Ferreira, A. L., Branco, M. C., & Moreira, J. A. (2012). Factors influencing intellectual capital disclosure by Portuguese companies. *International Journal of Accounting and Financial Reporting*, 2(2), 278-298.

Gamerschlag, R. (2013). Value relevance of human capital information. *Journal of Intellectual Capital*, 14(2), 325-345.

Garcia-Meca, E., Perra, I., Larran, M. & Martinez, I. (2005). The explanatory factors of intellectual capital disclosure to financial analysts. *The European Accounting Review*, 14 (1), 63-94.

Haji, A. A. & Ghazali, N. A. M. (2013). A longitudinal examination of intellectual capital disclosures and corporate governance attributes in Malaysia. *Asian Review of Accounting*, 21(1), 27-52.

Hassan, O., & Marston, C. (2010). Disclosure measurement in the empirical accounting literature: A review article. *Economics and Finance Working Paper Series,* 1-58.

Hatane, S., Rembulan, T., & Tarigan, J. (2019). Intellectual capital disclosure and audit components in non-discretionary income. *Journal of Scientific Management,* 9(1), 124-140.

IMT-GT. (2019). *About IMT-GT*. Retrieved from IMT-GT: http://imtgt.org/about-imtgt/

Irawan. (2018, April). *25 Years of Cooperation, IMT-GT Important Achievements Successfully Achieved*. Retrieved from presidentpost: https://presidentpost.id/2018/04/28/25-tahun-kerja-sama-imt-gt-capaian-penting-berhasil-diraih/

Kamath, B. (2017). Determinants of intellectual capital disclosure: evidence from India. *Journal of Financial Reporting and Accounting*, 15(3), 367-391.

Kang, H. & Gray, J. (2011). Reporting Intangible Assets: Voluntary Disclosure Practices of Top Emerging Market Companies. *The International Journal of Accounting*, 46 (4), 402-423.

Kateb, I. (2014). The determinants of intellectual capital disclosure: Evidence from French stock exchange . *International Journal of Accounting and Financial Reporting*, 4(2), 626-646.

Lakitan, B. (2018). Research and technology development in Southeast Asian economies are drifting away from agriculture and farmers' needs. *Journal of Science and Technology Policy Management*.

Lind, D. A., Marchal, W. G., & Wathen, S. A. (2015). *Statistical Techniques in Business and Economics*. New York: McGraw-Hill.

Malkawi, N. M., Omari, K. A., & Halasa, A. (2018). Intellectual Capital as a Core Competency for Competitive Advantage: A Case Study. *Journal of Digital Information Management*, 16(4), 192-202.

Mason, N., Jayne, T., Chapoto, A., & Donovan, C. (2011). Putting the 2007/2008 global food crisis in longer-term perspective: trends in staple food affordability in urban Zambia and Kenya. *Food Policy*, 36(3), 350-367.

Naseem, A., Spielman, D., & Omamo, S. (2010). Private-sector investment in R&D: a review of policy options to promote its growth in developing-country agriculture. *Agribusiness*, 26(1), 143-173.

Nazir, M. S., Saita, H. K., Ahmed, I., & Nawaz, M. M. (2012). The impact of financial leverage on agency cost: Empirical evidence from non-financial sector on Pakistan. *Science Series Data Report*, 4(6), 79-94.

Nurunnabi, M., Hossain, M., & Hossain, M. (2011). Intellectual capital reporting in a South Asian country: evidence from Bangladesh. *Journal of Human Resource Costing & Accounting*, 15(3), 196-233.

Oliveira, L., Rodrigues, L. L., & Craig, R. (2006). Firm-specific determinants of intangibles reporting: evidence from the Portuguese stock market. *Journal of Human Resource Costing & Accounting*, 10(1), 11-33.

Ousama, A., Fatima, A., & Hafiz-Majdi, A. (2012). Determinants of intellectual capital reporting: Evidence from annual reports of Malaysian listed companies. *Journal of Accounting in Emerging Economies*, 2(2), 119-139.

Oxford Business Group. (2017). The Report: Malaysia 2016. London, United Kingdom. Retrieved from oxfordbusinessgroup: https://oxfordbusinessgroup.com/overview/modern-field-new-technology-and-techniques-are-being-implemented-help-grow-sector's-viability

Rahim, A., Atan, R., & Kamaluddin, A. (2011). Intellectual Capital Reporting in Malaysian Technology Industry. *Asian Journal of Accounting and Governance 2*, 51-59.

Rashid, A. A., Ibrahim, M. K., Othman, R., & See, K. F. (2012). IC disclosures in IPO prospectuses: Evidence from Malaysia. *Journal of Intellectual Capital*, 13(1), 57-80. https://doi.org/10.1108/14691931211196213.

Rehman, A., Jingdong, L., Khatoon, R., & Hussain, I. (2016). Modern Agricultural Technology Adoption its Importance, Role and Usage for the Improvement of Agriculture. *American-Eurasian Journal of Agriculture & Environmental Science*, 16(2), 284-288.

Shahzad, U. (2014). The Impact of Intellectual Capital on the Performance of Universities. *European Journal of Contemporary Education*, 10(4), 273-280.

Sharabati, A. A. A., Shamari, N. S., & Nour, A. N. I. (2016). The impact of intellectual capital on business performance in Kuwaiti telecommunication industry. *International Journal of Business Performance Management*, 17(4), 428-446.

Silva, V. A. B., Saito, R., & Barbi, F. C. (2013). The role of bond covenants and short-term debt: Evidence from Brazil. *Brazilian Administration Review*, 10(3), 323-346.

Taliyang, S. M., Mustafa, N. H., & Latif, R. A. (2012). The Determinants of Intellectual Capital Disclosure Among Malaysian Listed Companies. *International Journal of Management and Marketing Research*, 4(3), 25-33.

Tarigan, J., Listijabudhi, S., Hatane, S. E., & Widjaja, D. C. (2019). The impact of intellectual capital on financial performance: An evidence from Indonesian manufacturing industry. *Indonesian Journal of Business and Entrepreneurship*, 5(1), 65-76.

Thailand Board of Investment. (2012, April 22). *Thailand to Become a Knowledge-based Economy*. Retrieved from boi: https://www.boi.go.th/tir/issue/201204_22_4/211.htm

Thailand Board of Investment. (2018, June 18). *How Thailand Is Bringing Technology To The Table*. Retrieved from CNBC: https://www.cnbc.com/advertorial/2018/06/18/how-thailand-is-bringing-technology-to-the-table.html

The Jakarta Post. (2016, October 21). *Modern agriculture development boosts production of 11 commodities: Minister*. Retrieved from TheJakartaPost: https://www.thejakartapost.com/news/2016/10/21/modern-agriculture-development-boosts-production-of-11-commodities-minister.html

Vergauwen, P.G.M.C., & van Alem, F.J.C. (2005), Annual report: IC disclosure in The Netherlands, France and Germany, *Journal of Intellectual Capital*, 6(1), 89-104.

White, G., Lee, A., & Tower, G. (2007). Drivers of Voluntary Intellectual Capital Disclosure in Listed Biotechnology Companies. *Journal of Intellectual Capital*, 8(3), 517-537. https://doi.org/10.1108/14691930710774894.

Whiting, R. H., & Woodcock, J. (2011). Firm characteristics and intellectual capital disclosure by Australian companies. *Journal of Human Resource Costing & Accounting*, 15(2), 102-126.

Williams, S. M. & Firer, S. (2003). Association between the ownership structure of Singapore publicly traded firms and intellectual capital disclosures. Conference AFAANZ, Australia.

Wooldridge, J. (2012). *Introductory econometrics: a modern approach (5th ed.)*. USA: Cengaga Learning.

Yan, X. (2017). Corporate governance and intellectual capital disclosures in CEOs' statements. *Nankai Business Review International*, 8(1), 2-21.

Zeghal, D., & Maaloul, A. (2011). The accounting treatment of intangibles – A critical review of the literature. *Accounting Forum*, 35(4), 262-274.

Zhang, M. (2012). Board structure, ownership concentration and intellectual capital.

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