DOES INTELLECTUAL CAPITAL MODERATE THE RELATIONSHIP BETWEEN ENTERPRISE RISK MANAGEMENT AND MARKET PERFORMANCE? EVIDENCE FROM INDONESIAN BANKING INDUSTRY

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Abstract

Despite an increasing number of studies on the link between enterprise risk management (ERM) and market performance which are still debatable, the literature has predominantly focused on relationship between them without considering moderating factors. This study not only introduces intellectual capital as a moderator variable that potentially moderates the ERM-market performance relationship, but also uses a comprehensive list of ERM measurement. This study analyzed degree of enterprise risk management (DERM) using Lundqvist's comprehensive list of ERM measurement and Pulic's value added intellectual coefficient (VAICTM) for intellectual capital in 99 banking companies that listed in Indonesia stock exchange for 2015 to 2017. The result suggests that there is a positive significant relationship between DERM and market performance in Indonesian banking sector, by using comprehensive ERM measurement. Partially, leverage is the variable that has significant impact to market performance. Intellectual capital as moderating variable is also significant yet has weakening effect. The notable implication of this study is that the importance of comprehensive enterprise risk management and intellectual capital must be highly concerned by management as it will affect shareholder's perception to the company.

Keywords: enterprise risk management, intellectual capital, market performance, Indonesia

INTRODUCTION

A major shifting occurred from silo-based risk management to a holistic approach, named Enterprise Risk Management (Hoyt et al., 2010). This big step was taken due to some major cases related to fraud and accounting scandals (Enron, Worldcom, Lehman Brother Bank), which led the stakeholders globally to explore further risks faced by an entity, the internal control, and risk management system (Paape et al., 2012).

Enterprise Risk Management (ERM) helps organizations to understand the overall risks faced by the current business environment (Gordon et al., 2009), which is intended to contribute to protect and increase shareholder's value (Hoyt & Liebenberg, 2011). Banking sector is the industry with high potential risks, compared to other industries. This sector holds vital role in Indonesia, because of some critical points. First, banking

institution is dominantly trusted by most Indonesian citizen to manage their money. The role of this sector could reach approximately almost 80% of Indonesia financial sector. Second, banking is an intermediary institution (Indonesian Banking Law No. 10 year 1998), which collect funds and distribute it into the real sector and impact the economic growth (agents of development). Third, banking has a role as the agent of services, which provides services in the financial sector and payment system. Because of those critical roles, government then committed to support and maintain the stability of banking industry, by highly regulating the risk management implementation.

The importance of ERM attracts academics and researcher to investigate its impact to firm performance, as the main goal of risk management is to maximize shareholders' value (COSO, 2004; Beasley et al, 2008; Pagach and Warr, 2011; Hoyt and Liebenberg, 2011). However, the results are still inconclusive, caused by several possibilities. Beasley et al. (2010) stated that COSO Framework as the most adopted ERM framework is too ambiguous, highly theoretical, thus difficult to define. Lundqvist et al. (2014) found that companies even use more than one framework to adopt. These could lead to uncertainty, which then affect the result of empirical studies regarding ERM (Beasley, Clune, & Hermanson, 2005a, 2005b; Beasley, Pagach, & Warr, 2008; Desender, 2007; Gates, Nicolas, & Walker, 2009; Gordon, Loeb, & Tseng, 2009; Hoyt & Liebenberg, 2011; Liebenberg & Hoyt, 2003; McShane, Nair, & Rustambekov, 2011; Pagach & Warr, 2010, 2011). Second, the inconsistency of ERM measurement and identification make it impossible to compare one company to others, apple to apple. Third, proxies used to measure ERM is not comprehensive yet (Lundqvist et al., 2014). For instance, a simple proxy such as the appointment of Chief Risk Officer (Beasley, Pagach, & Warr, 2008; Liebenberg & Hoyt, 2003; Pagach & Warr, 2010, 2011), survey information ((Beasley et al., 2005a; Beasley, Clune, & Hermanson, 2005b; Gates, Nicolas, & Walker, 2009), both are still act as imprecise identifiers (Lundqvist et al, 2014). Gordon et al. (2009) uses ERM index and consider the complexity of ERM, but still need to be analyzed from a more consistent ERM definition because the measures used are vary. McShane et al. (2012) uses S&P risk management rating to measure ERM but can only be used for insurance industry. Thus, it is needed to investigate ERM of a company by a more consistent and comprehensive measurement to finally come into its effect to firm performance.

Several studies regarding ERM to firm performance for banking sector have mixed result. Agustina & Baroro (2016) find insignificant effect of ERM to market performance, for Indonesian banking sector period 2011-2013. Sanjaya & Linawati (2015) use keyword of "Enterprise Risk Management","Chief Risk Officer", "Risk Committee", "*Manajemen Risiko Strategis*", "*Manajemen Risiko Konsolidasi*", "*Manajemen Risiko Holistik*", "*Manajemen Risiko Terintegrasi*", find no significant effect to market performance of Indonesian financial sector period 2010-2013. While Tahari & Razali (2011) find no significant effect of ERM to market performance for Malaysian public companies' period 2007. In developed countries, Pagach & Warr (2010) use financial and utility sector in US found that ERM (proxied by assignment of CRO) does not have significant effect to firm performance.

Several researchs also investigate the effectiveness of risk management and found that ERM might be interpreted as mere obedience (Arena, Arnaboldi, dan Azzone, 2011, 2010; Power, 2009). Beasley et al. (2008) do an event study and find that shareholders react to the announcement of CRO occurred in companies with low financial slack and huge non-financial companies with fluctuating earnings, huge intangible assets, low leverage. Gordon et al. (2009) use US companies in EDGAR US Security and Exchange Commission database with ERM index (*strategy, operation, reporting,* dan *compliance*), show that ERM can create firm value, yet depends on firm characteristics. Farrell & Gallagher (2014) find that companies with mature ERM will have higher firm value because of embedded risk culture in the company, the integration of risk management within the organization, and the view that risk management is a component of strategy and planning activites. On the contrary, Lin et al. (2012) investigate US insurance and property companies show negative significant between ERM adoption with firm value. Kommunuri et al. (2014) find that for some companies, ERM implementation is a high-cost practices and negatively impact market and operating performance. Those mixed results drive this study to investigate more the impact of ERM to firm performance.

Beside the inconclusive results, there is a possibility of another variable that could strengthen and weaken the impact of ERM to firm performance. ERM is a systematic approach to alleviate the negative consequences of certain uncertainties or specific events (Mohammed and Knapkova, 2016). This approach allows for risk aversion, for only one type of risk or the whole risks. In fact, the existence of risks that arise is closely attached

to the presence of opportunities, so that the elements in the organization must be sufficiently intelligent in managing risk, not only to take advantage of the opportunities today but also for the sustainability of the company's business. This study argues that the implementation of a comprehensive ERM provide a stronger positive influence on the firm performance, if the company emphasizes the importance of intellectual capital. This research is intended to give several contributions.

First, looking at the effect of the degree of enterprise risk management on market performance (Tobin's Q), using banking sector in Indonesia. This could bring a view of the result from developing country perspective, answer the criticism about the impact of ERM on firm performance that is still inconclusive, so that the results obtained can provide benefits to many parties, one of which is investors as their investment decisions. The second contribution in this study is testing the effect of degree of ERM on firm performance, using a comprehensive proxy, referring to Lundqvist (2016). This research uses content analysis with a total of 83 items from Enterprise Risk Management dimensions, referring to Lundqvist (2016), where lists were adapted from Desender (2011) and Lundqvist (2014). The two adapted proxies are strongly influenced by the framework of COSO (2004) and Hoyt & Liebenberg (2011). Desender (2011) and Lundqvist (2014) examine the lists to professionals in the ERM field to ensure completeness and dimensions that do not need to be used. Therefore, all items in the dimensions constructed are relevant and suitable for use in measuring the level of ERM (Lundqvist, 2016). This dimension of 83 items strongly reflects the eight important components in the COSO 2004 framework on ERM, which states that if these components can be presented and functioned accordingly, then any entity of any size can have effective ERM (COSO, 2004). Third contribution of this study is the moderating role of intellectual capital, by using VAIC^{TM} (Pulic, 2000) as a method to analyze. This research is the first study that examines the role of intellectual capital as a moderating variable, so that it is expected to contribute in many ways, especially to add to the knowledge literature.

A total of 99 companies in banking sector are used in this study, for period 2015-2017. The results show that degree of enterprise risk management (DERM) has significant impact on market performance (Tobin's W), with intellectual capital play as a moderating variable, but weakening effect.

This paper is structured as follows. A review of the literature and the development of the research hypothesis in the second section will be presented after the introductory section is presented in the first section. Third, the research methodology used will be discussed, followed by the results exposure and analysis in the fourth section. Finally, the conclusions on this study along with the implications, limitations, and suggestions for subsequent research will be presented in the fifth section.

THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

As the concept in COSO-ERM (2004), effective risk management must lead to an increase in operating and market performance (Tonello, 2007; Florio and Leoni, 2017; Callahan et al., 2017). One of the information needed by investors is information related to the company's ERM, how the company manages the risk, because that information can help investors monitor the activities and behavior of management. Thus, the possibility of fraud or fraud will be avoided or minimized, because it can harm investors. The important role of ERM in banking is to maintain the stability of the company, so that the existence of an effective ERM also reflects the maintenance of the internal control system and the existence of good corporate governance. According to Baxter (2012), firm value and firm performance increase with the presence of quality ERM, because of the positive perceptions of market participants towards the company, then encourage them to provide high prices and cause high firm value (Devi et al., 2017). As research by Hoyt & Liebenberg (2006) and Hoyt et al. (2008), who found that information on the implementation of ERM can increase firm value and there is a significant positive relationship.

ERM implementation in companies can be said to be costly (Soliman & Adam, 2017), because there is a need for significant changes in the philosophy of risk management, culture, business strategy, internal processes, and company technology (Arena et al., 2010 and Eckles et al., 2011 in Soliman & Adam, 2017). On the other hand, the big advantage is that it can help companies deal with risks that may occur effectively and coordinated, so as to reduce the volatility of stock prices and profits, minimize costs that may occur due to losses that must be borne, and increase efficiency, which leads to improvement in firm performance and firm value (COSO, 2004; Beasley et al., 2008; Gordon et al., 2009; Hoyt et al., 2010; Arena et al., 2010; Pagach et al., 2010, 2011; Paape et al., 2012). According to Florio & Lioni (2017), firm performance that improved in

companies which adopt ERM is because ERM helps to reduce or mitigate various types of risks faced by companies. The successful practice of ERM helps companies improve firm value and manage risk in an effective way (Lechner & Gatzert, 2018). According to Eckles et al. (2014), an increase in profitability occurs because the implementation of ERM can reduce marginal and operational costs and the uncertainty of stock market returns. This is an advantage for companies that implement high ERM, compared to companies with less implementing ERM (Callahan & Soileuau, 2017), because managers are strongly motivated and work in accordance with the ERM concept so that it impacts on improving performance or company value (Lajili et al , 2009).

In this study, Lundqvist (2016) used Degree of Enterprise Risk Management (DERM) which consisted of 83 content analysis items, which were tested in a banking sample (78 of the world's largest banks), so that they were expected to be able to provide appropriate measurements with this research which also took banking samples. Looking at the ERM concept as evidenced by previous studies that its application can improve the performance and value of the company, first, this study wants to examine the effect of ERM on market performance (company value) first, so the first hypothesis in this study is:

H1a: The degree of enterprise risk management has a significant positive effect on market performance

In the case of changes in environmental and economic conditions, some companies can still generate returns that are even higher than others (Jafari et al., 2011), so the question arises, about the reasons behind these good achievements; whether it is directly influenced by the implementation of ERM, or there are other factors that can influence ERM towards this achievement. Jafari et al. (2011) found in his research that if companies invest in their intellectual capital, and increase resources that are unique, valuable, rare, and difficult to replace, then they will have better performance and gain competitive advantage. When the risk of bankruptcy increases, investors will not commit in the long term and even decide not to invest in the company so that it impacts on the loss of resources that can increase the appreciation of the company (Jafari et al., 2011), that is, especially if the company's specific assets are things that can increase the profitability and appreciation of the company. So, if the company's capital is used for other things, then the related company will lose potential opportunities (Wang and Reuer,

2005). The failure of the company in building relationships with other companies to improve its business operations, the existing resources will be spent on other activities. Effective risk management will reduce the probability of this happening and reduce the possibility of losses to investors (Jafari et al., 2011). Therefore, risk management can actually function to "persuade" investors to invest in company-specific assets, such as the process of producing specific products that use special technology in industries that use knowledge in their production and service processes. Such investments require the capability of employees, maintaining relationships with customers and suppliers, etc., which have "value", as a basis for increasing economic value and achieving competitive advantage.

Several studies on VAIC^{TM} and firm performance have been carried out several times. The results of Chen, Cheng, and Hwang (2005) which examine public companies in Taiwan provide empirical evidence that there is a significant effect of intellectual capital on firm performance. Investors place a higher value on companies with better intellectual capital efficiency, and better intellectual efficiency companies gain greater profitability and revenue growth both this year and the following years. This study argues that a high level of ERM will provide a stronger positive influence on the market performance of a company, if the company emphasizes the importance of intellectual capital. At the same time answering the inconclusive relationship between risk management and market performance and operations as explained earlier, then, the second hypothesis in this study is:

H1b: Intellectual capital strengthens the positive effect of the degree of enterprise risk management on market performance

RESEARCH METHODOLOGY

This research uses quantitative approach with Ordinary Least Square (OLS) regression to test the hypotheses. Secondary data were taken from the annual report, Indonesia capital market website www.idx.co.id, company website, Data Stream, Thomson Reuters database. Some intellectual capital data (such as depreciation, salary expenses) are not available in the database, so data need to be collected one by one from the bank's financial statements. There are 99 samples used in this study for period 2015-2017, after eliminating 27 firm-year with incomplete data. Thus, almost 80% of total listed banking companies in Indonesia for period 2015-2017 are included as sample of

this study. The dependent variable in this study is market performance as proxied by Tobin's Q. Tobin's Q is a measurement used in many studies for measuring market performance in the ERM empirical study (Kommunuri et al., 2014), because it can see market perceptions of the value of actions taken by companies, in this case the application of ERM (Hoyt & Liebenberg, 2011). In addition, the use of Tobin's Q as a proxy for market performance can also reflect market expectations and is relatively free from managerial manipulation (Lindenberg and Ross, 1981).

The independent variable in this study is the degree of enterprise risk management (DERM). This study uses text-based searches in the annual report to measure the degree of enterprise risk management, using content analysis with 83 dimensions of comprehensive lists of Enterprise Risk Management dimensions referring to Lundqvist (2016), where lists were adapted from Desender (2011) and Lundqvist (2014). Both are strongly influenced by the framework of COSO (2004) and Hoyt & Liebenberg (2011). Desender (2011) and Lundqvist (2014) have examined the lists to professionals in the field of ERM to ensure completeness and dimensions that do not need to be used. Therefore, all items are relevant and suitable to use for measuring the degree of enterprise risk management (Lundqvist, 2016). This dimension of 83 items strongly reflects the eight important components in the COSO 2004 framework of enterprise risk management, which states that if these components can be presented and functioned accordingly, then any entity of any size can have effective enterprise risk management (COSO, 2004). All searches for combinations of words in these dimensions will be coded or value 1 if it has at least 1 hit, and besides 0. The entire sum of these values is referred to as the the degree of enterprise risk management (DERM) for each firm-year. The number of ERM implementation values can range between 0 and 83. The measurement proxy with 83 dimensions can provide an overview of risk management disclosures, risk management in general, and even disclosure levels in general (Lundqvist, 2016).

The moderating variable in this study is intellectual capital. Referring to Berzkalne and Zelgalve (2014), this study uses Value Added Intellectual Coefficient (VAIC^{TM}) which is a method introduced by Pulic (2000), to assess the efficiency of value added as a result of a company's intellectual ability, based on accounting figures. In other words, intellectual measurements are not measured directly. The VAIC^{TM} model is used to measure the extent to which companies produce added value based on the efficiency

of intellectual capital or intellectual resources (Stahle, Stahle, and Aho, 2011). VAIC^{TM} is a measurement that is easy-to-calculate, standardized, and consistent, which enables effective comparative analysis for all companies and countries (Firer and Williams, 2003). This study uses an approach by Clarke et al. (2015) which refers to A. Riahi-Belkaoui (2003), namely value added (VA) is calculated as VA = NI + T + DP + I + W (NI is net income after tax, T is taxes, DP is depreciation; I is interest expense, and W is employee wages and salaries. The main components of VAIC^{TM} consist of:

1. Human capital (HC): interpreted as employee expenses and Human Capital Efficiency (HCE) is calculated by dividing VA (Value Added) with HC (Human Capital).
2. Structural capital (SC): is a difference from produced added value (VA) and human capital (HC). Structural capital efficiency (SCE) is calculated by dividing SC (structural capital) with VA (value added);
3. Capital employed (CE): interpreted as financial capital and capital employed efficiency (CEE) is calculated by dividing VA (value added) by CE (capital employed).
4. Value added intellectual coefficient VAIC^{TM} is the sum of HCE, SCE and CEE.

Value Added Capital Employed (VACA) shows how much successful value added is created by a unit of a company's physical assets. Value Added Human Capital (VAHU) describes the ability of a company's human resources to create firm value. Structural Capital Value Added (STVA) shows how the structural resources of a company can create firm value. The measurement uses a value-added approach because the company's main goal in a knowledge-based economy is to create value added. Pulic (1998) also states that VAIC^{TM} shows how physical capital and intellectual potential have been efficiently utilized by the company.

Value Added Intellectual Coefficient (VAIC^{TM}) is the sum of Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE); where Human Capital Efficiency (HCE) = Value Added (VA) / Human Capital (HC), Structural Capital Efficiency (SCE) = Structural Capital (SC) / Value Added (VA), Capital Employed Efficiency (CEE) = Value Added (VA) / Capital Employed (CE).

The control variables used in this study related to market performance are (a) Size (SIZE). According to Liebenberg & Sommer (2009), McShane & Cos (2009), companies

with large sizes will have better operating performance because they have the available resources to conduct their operations. Another opinion also states that larger companies are more likely to implement ERM because their operations are more complex than smaller companies. In addition, these companies are expected to have a lot of resources to invest in the ERM program (Beasley, 2005). This study expects that company size will positively influence company performance. Referring to previous studies, as a proxy for company size, this study also uses the natural logarithm of total assets; (b) Leverage (LEVERAGE). According to Kommunuri et al. (2014), companies with high leverage will have a lower return, so investors will be less confident about the company's operations. However, when the company has a good ERM system, it is likely that they will reduce the level of leverage because they make decisions to reduce financial risk. This has an impact on increasing the level of investor confidence and influencing the increase in perceived value of the company. Leverage is measured by the natural logarithm of total liability to total equity. In this study, the leverage variable is predicted to have a negative effect. (c) Revenue Growth (REVGROWTH). In this study, revenue growth is used as a control variable for market performance. Revenue growth is measured by delta revenue from period t-1 to t, divided by revenue t-1. Referring to Kommunuri et al. (2014); Soliman & Adam (2017), revenue growth has a positive effect on the company's market performance, as in this study. We test the research hypotheses by estimating the following regression:

$$Q_{i,t} = \beta_0 + \beta_1 DERM_{i,t} + \beta_2 VAICTM_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEVERAGE_{i,t} + \beta_5 REVGROWTH_{i,t} + \varepsilon_{i,t}$$

$$Q_{i,t} = \beta_0 + \beta_1 DERM_{i,t} + \beta_2 DERM*VAICTM_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEVERAGE_{i,t} + \beta_5 REVGROWTH_{i,t} + \varepsilon_{i,t}$$

where Q = Total Assets (Market Capitalization + Total Liabilities); DERM = Degree of Enterprise Risk Management; VAICTM = Value Added Intellectual Capital; SIZE = Total Assets; LEVERAGE = Debt to Equity ratio ; REVGROWTH = Revgrowth is revenue growth of the companies

RESULTS

The result of descriptive statistic can be found in the Table 1. First, the mean Q of 1.03 illustrates that on average, the shares of banking sector listed on the Indonesia Stock Exchange for 2014-2016 are overvalued, because it is higher than 1. For the maximum value of the Q variable, which is 1.524, it belongs to BEKS (Bank Pembangunan Daerah

Banten Tbk.) which occurred in 2016. This is due to the change in the use of business licenses on behalf of PT. Bank Pundi Indonesia Tbk. become a business license on behalf of PT. (Bank Pembangunan Daerah Banten Tbk., in line with the acquisition of Bank Pundi by the Banten provincial government on July 29, 2016. Information of the acquisition plan has been disclosed to the public in the end of 2015 annual report.

The DERM variable that shows the Degree of Enterprise Risk Management as measured by the 83-item comprehensive list of ERM (Lundqvist, 2016) shows an average of 52.35%. This means, the banking sector in Indonesia has implemented the mainly concept of enterprise risk management in accordance with the COSO framework, of which the majority are carried out by banks categorized as Bank Buku 3 and Bank Buku 4, totaling approximately 13 banks. Bank Buku 3 is a bank with equity of at least five trillion rupiah up to less than thirty trillion rupiahs, while Bank Buku 4 is a bank with equity of at least thirty trillion rupiah (Indonesian Financial Service Authority Regulation No. 6/POJK.03/2016). Furthermore, the Intellectual Capital (VAIC^{TM}) variable has a maximum value of 19.64195, owned by BBNI (Bank Negara Indonesia Persero, Tbk.). The high value of Intellectual Capital at the bank is due to the high component of Human Capital Efficiency as measured by Value Added divided by Human Capital. Therefore, it can be said that with funds issued for human capital, BBNI is able to obtain high value added.

Whereas the lowest VAIC^{TM} value is BEKS in 2016. This is related to the previous explanation, BEKS in 2016 did a corporate action, so that it might affect Net Income. On average, VAIC^{TM} for banking companies on the IDX in 2014-2016 is 6.65, which means that the banking sector is included in the Top Performers category due to more than 3 VAIC^{TM} scores (Mavridis (2005).

Table 1

Descriptive Statistic of the Market Performance Model

Variabel	N	Mean	Std. Dev.	Minimum	Maximum
Q	99	1.0372	0.1795	0.2508	1.5242
DERM	99	0.5235	0.0962	0.3373	0.7349
VAICTM	99	6.6541	2.9493	1.2510	19.1469
SIZE	99	141.967.185	242.017.256	1.641.425	1.038.706.009
LEVERAGE	99	6.3627	2.6329	0.7281	18.2074
REVGROWTH	99	0.0954	0.2037	-0.9873	0.5958

Notes: Q = (Market Capitalization + Total Liabilities) / Total Assets; **DERM** = Degree of Enterprise Risk Management (Lundqvist, 2016) ; **VAICTM** = Value

Added Intellectual Capital (Pulic, 2000) ; **SIZE** = Ln Total Assets ; **LEVERAGE** = Ln Debt to Equity ratio ; **REVGROWTH** = delta revenue t-1 until t, divided by revenue t-1

Using Fixed Effect model as the best model, following by classical assumption test, it is known that there are multicollinearity, heteroscedasticity, and autocorrelation problem in research model, but it had been solved by using Generalized Least Square (GLD) function in the regression model. Therefore, it can be concluded that the research model has met all the classical assumption test.

Table 2

Regression Result

Variable	**Prediction**	**MARKET PERFORMANCE (Tobin's Q)**	
		1(a)	**1(b)**
Intercept			
DERM	**+(H1a)**	**0.5923****	**0.71884*****
VAICTM	+	-0.0166***	
DERM*VAICTM	**+(H1b)**		**-0.02356*****
SIZE	+	-0.02055	-0.01969
LEVERAGE	-	0.10176***	0.10197***
REVGROWH	+	0.01597	-0.00404
N			99
Prob. F-Statistik			0.0001

Significance level: * p<0.10; ** p<0.05; *** p<0.01

Notes:

DERM = *Degree of Enterprise Risk Management* (Lundqvist, 2016);
VAICTM = *Value Added Intellectual Capital* (Pulic, (2000);
DERM*VAICTM = moderating variable *Intellectual Capital*; **SIZE** = *Ln Total Assets*; **LEVERAGE** = *Debt to Equity ratio*; **REVGROWTH** = delta revenue t-1 until t, divided by revenue t-1

Based on the results of regression testing, the table above shows that the first hypothesis in this study (H1a) is proven. The test results are consistent with agency theory proposed by Desender (2007), that the application of enterprise risk management (ERM) can reduce agency costs and prevent fraudulent reporting. The existence of ERM system, which includes supervision or monitoring of directors, internal control, and other components, can protect the interests of investors as principal from management's conflict of interest. Consistent with research by Beasley et al. (2008), Gordon et al. (2009), Hoyt et al. (2010), Arena et al. (2010), Paape et al. (2012), as well as the COSO framework (2004), that the application of ERM can help companies to effectively and coordinated in

dealing with risks that might occur. In other words, the risks faced can be measured and managed properly to reduce the volatility of stock prices and profits, minimize costs that may occur due to losses that must be borne, and increase efficiency, which leads to an increase in company performance and company value (COSO, 2004; Beasley et al., 2008; Gordon et al., 2009; Hoyt et al., 2010; Arena et al., 2010; Pagach et al., 2010, 2011; Paape et al., 2012). In addition, an increase in company performance in companies implementing ERM is because ERM helps mitigate various types of risks faced by the company (Florio & Lioni, 2017). This test also illustrates that, ERM practices in banks in Indonesia have provided a good perception for investors, so investors respond positively which then reflected in the performance of stock prices. In addition, with the proof of this hypothesis, it can be used as an illustration and a consideration for the company to continue to improve the effectiveness of ERM in the company, because it can be used as a tool so that the company has high and attractive market performance to be chosen as an investment place for investors.

Intellectual Capital as a moderating variable is also proven to have a significant effect, but with a weakening effect, so the second hypothesis (H1b) is not proven. VAIC^{TM} independently has negative effect to market performance as seen in Table 2. This means that, investors do not respond to information regarding intellectual capital since they believe that firm value is affected by factors outside intellectual capital. Besides, management of the company might more consider physical investation compared to intellectual capital since the view that invest in intellectual capital is not visible, where management does not want to bear the burden or risks caused by high investation in intellectual capital. Thus, intellectual capital is not considered as a thing that support the company to achieve sustainability development (Oliveira and Craig, 2008). VAIC^{TM} as moderating variable that weakening the impact of the degree of enterprise risk management to market performance indicates that, intellectual capital is perceived as inefficient by the investors. This could be caused by funds spent to invest in intellectual capital have not provided efficient results. Components to calculate VAIC^{TM} (VACA, VAHU, and STVA) show negative coefficient indicates that value added has no been generated by these three components; for instance, (a) funds invested in human capital have not been able to create value added and reduce the productivity of human capital, unless balanced with training, certification for employees; (b) the physical assets

has not been efficiently managed by the company, and (c) other factors need to be included to calculate structural capital efficiency since it ignores two important things namely innovative capital and relational capital (Chen et al., 2005). While for control variables, leverage (LEVERAGE) is variable that significantly affects market performance. It shows a significant positive effect that can be explained in accordance with agency theory. According to Jensen & Meckling (1976), debt can not only mitigate conflicts between agents and principals or managers and investors, but also reduce the agency cost of equity, one of which is due to the existence of high amounts of debt, there will be an obligation for management to pay the cash the debt, so it will reduce the "free" cash available for managers. Cheng & Tzeng (2011) explained in his research that this can happen if investors do not consider the possibility of bankruptcy and when the quality of the company is good, see the altman z-score. Furthermore, there is a benefit of tax shield for companies with high leverage, and this is favorable for investors.

CONCLUSION

This study aims to examine the effect of the degree of Enterprise Risk Management on market performance, with the moderating role of Intellectual Capital, using the main basis of agency theory. This study uses comprehensive lists of Enterprise Risk Management amounted 83 items refers to Lundqvist et al. (2016), and VAIC^{TM} as proxy for Intellectual Capital refers to Pulic (2000). There are 99 companies taken as sample from listed Indonesian banking industry, for the period 2014-2016

Based on the results, it is known that the degree of enterprise risk management has significant positive effect to market performance, with intellectual capital acts as moderating variable that has weakening effect on that relationship. It is also known that leverage has significant positive effect to market performance on Indonesian banking sector for period 2014-2016.

There are several impliacations of this study. First, for company management, the application of he ERM concept needs to be seriously understood and applied effectively, so that it can become a tool for companies to improve market performance and operations. Companies also need to pay attention to the company's intellectual capital, because intellectual capital is proven to have moderating effect in the relationship between ERM and market performance. Investment in the company's intellectual capital will create a competitive advantage only if it done efficiently. For investors, it is necessary to look

deeper into the implementation of ERM in the company, to ensure that the ERM concept has indeed been implemented effectively and efficiently because the importance of ERM in influencing the performance of the company. For regulators, it is necessary to ensure that the banking sector has truly applied ERM components thoroughly and deeply, because some banks still report their risk management in a non-comprehensive manner. For academics, this research can provide new references, to enrich the literature on corporate risk management on operating and market performance, and the moderating role of Intellectual Capital, particularly in the banking sector. In addition, this research can be used as input for further research in other sectors.

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