Enterprise Risk Management and Firm Value: The Case in Emerging Market

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The business world that continues to grow requires companies to be able to make decisions related to risk and to manage the risk within limits set by the company. This study tries to obtain empirical evidence related to the effectiveness of Enterprise Risk Management (ERM) implementation on firm value. Panel data with the period of research data collection from 2013 to 2017 in manufacturing companies listed on the Indonesia Stock Exchange are used as the data type in this study. The data used in this study are also quantitative data sourced from secondary data, namely annual reports and financial reports obtained from the Indonesian Stock Exchange. This research shows that the implementation of the effectiveness of ERM implementation has a positive effect on firm value. The ERM implementation in the company is carried out to prove that the managers of the company are trying to protect the interests of stakeholders. In this research, it is proven that the ERM effectiveness implementation has a significant positive effect on the firm value. The evidence confirms that the effective implementation of ERM in a company is believed to give a good reaction to the company performance. So, it will impact the increase of firm value.

Key words: *Enterprise risk management, firm value, emerging market.*

Introduction

Risk governance in companies has received attention in recent years among academics and practitioners, especially those who are in the financial and risk departments. This global attention arises as a result of several corporate scandals and financial crises (Aebi, Sabato, & Schmid, 2012). One of the causes is failure and weakness in corporate governance, particularly in the implementation of risk management (Isaksson & Kirkpatrick, 2009). As a form of reaction, regulators, auditors, boards, and risk assessment agencies jointly encourage

companies to implement more structured and integrated risk management as a way to improve a better risk management system. The implementation of the risk management system is then called Enterprise Risk Management or ERM (Lundqvist, 2015).

Enterprise Risk Management (ERM) is a strategy used to manage and evaluate every company risk. According to Meizaroh & Lucyanda (2011), one of the signals given by companies in implementing good corporate governance is the implementation and disclosure of ERM in companies. Brown, Steen, & Foreman, (2009) argued that each business entity must be able to develop a policy with a comprehensive assessment of the company' risk and continue to develop related to the company' operational procedures in response to changes in the business environment that can occur at any time. Recently, there has been a paradigm shift related to management oversight responsibilities over the company' risk portfolio, where ERM has now become a key mechanism for increasing stakeholder value.

The complexity of the company due to developments in the business world makes the company faced with various risk exposures. Supervision and handling of risk exposures to the company' business processes are one of the most basic requirements in the implementation of risk management processes (Djohanputro, 2013). The implementation of an effective risk management process is critical for companies to reduce the undesirable impact on the company' business performance both now and in the future. Lack of supervision and handling of risk exposures can have a negative impact on the company. One of them is the occurrence of impairment in the company.

BI Regulation Number 8/4 / PBI / 2006 updated by BI Regulation No. 8/14/2006 regarding the implementation of Good Corporate Governance (Bank Indonesia, 2006) is a positive response from the Indonesian state in addressing the importance of the issue of risk management. In addition, it is a serious concern for Commercial Banks to form a Risk Monitoring Committee. This was also strengthened again by the Financial Services Authority (OJK) through Regulation number 18 / POJK.03 / 2016, which obliged Commercial Banks to form a Risk Management Committee (OJK, 2016). It means that, with this regulation, the Risk Management Committee must be implemented in all commercial banks in Indonesia. However, the regulation has not yet touched other industrial sectors and is limited to the banking sector even though all businesses in any industry sector are very vulnerable to risks. One of them is the manufacturing industry sector. According to data from the Central Statistics Agency (BPS), the national GDP growth in Indonesia in 2017 amounted to 5.07% in which the manufacturing industry sector contributed significantly to the Gross Domestic Product (GDP) of 20.16%. It shows that manufacturing industry has the highest contribution to GDP compared to other sectors. The magnitude of the role of manufacturing companies is in line with their business risks. Therefore, it is important for manufacturing companies to effectively implement enterprise risk management to increase firm value.

This study analyzes the relationship between Enterprise Risk Management and the firm value for two reasons. First, manufacturing companies, as the company that its value being studied, are companies that are vulnerable to risks related to the production cycle that they go through. Second, enterprise risk management is something that has not been required so far in Indonesia. Furthermore, this research tries to get empirical evidence related to the extent of the implementation of enterprise risk management in manufacturing companies in Indonesia. There is a sample of 110 manufacturing companies listed on the Indonesia Stock Exchange in 2013-2017 used in this study. The dependent variable of this research is the firm value which is proxied by Tobin's Q ratio. The independent variable of this study is the effectiveness of ERM implementation based on the risk management framework formulated by COSO. COSO (2009) highlights four points as the leading indicators of the role of the board of directors that can support the implementation of a good ERM in the company. To strengthen the effectiveness of the implementation of ERM on firm value, audit quality moderation variables used in this study. If the company is audited by Big 4 Public Accounting Firm, it will be assumed that the company has a good audit quality and be expected to have an impact on the effectiveness of ERM implementation that can increase firm value. Therefore the purpose of this study is to prove that the effectiveness of ERM implementation in manufacturing companies has an influence on the firm value, where audit quality as a moderating variable can strengthen the effect of the effectiveness of the implementation of ERM on firm value.

This research is expected to contribute to regulators in considering policies in manufacturing companies related to the obligation to implement enterprise risk management. It is because manufacturing companies are complex companies with production cycles that have high risk in each activity. With the existence of empirical evidence related to the implementation of ERM, it is expected that all manufacturing companies in Indonesia will realize the importance of risk management, implement ERM effectively and efficiently, and gradually increase the firm value.

Literature Review and Hypotheses

Stewardship Theory

This theory is designed to test the condition of executive or management behaviour as managers (stewards) of the company. Based on this theory, executives or management as company managers will be motivated to act as best as they can in the interests of their principals. Stewardship theory assumes that there is a strong relationship between principal satisfaction and organizational success. Stewards will try to protect and maximize stakeholder welfare through excellent company performance so that stakeholders can assess that the company management functions are optimal.

The management behaviour in stewardship theory tends to be oriented to the long-term interests of the company. In this condition, company management always tries to evaluate company performance and conduct risk management to minimize all possibilities that can threaten the company business sustainability (Dickhaut & McCabe, 1997). According to Dickhaut & McCabe, (1997), it can also be concluded that stewardship theory is one of the effective theories to explain the implementation of ERM in companies. Effective implementation of ERM in a company will help company managers or management in achieving company goals, such as increasing firm value.

Agency Theory

Jensen and Meckling (1976) explained agency theory as the relationship between principals as owners and agents who are delegated responsibility for implementing business processes and authority in making decisions. The main concept of agency theory is that agents and principals have different preferences or goals. This is what can create agency conflict. Based on the agency conflict, the principal needs to design an internal control system in monitoring the opportunistic behaviour of the agent, which can harm the principal. This internal control system is then developed into a risk management system that covers all aspects of the company so that the company risk management system can be more comprehensive in seeing the company as an overall entity by considering various risks that may occur and intended to achieve the company vision.

In addition, according to Byrd et al. (1998), the quality of agent decisions depends not only on their abilities but also on the form of incentives offered to them. If agents tend to try to maximize their own interests and do not belong to the principal, agency conflicts will arise. Spake et al. (1999) suggested that the agency conflict arises because agents and principals have different risk preferences and goals. Therefore, both of them have different actions. Each party carries out the best in themselves to maximize their respective satisfaction.

Enterprise Risk Management

COSO (2004) defined ERM as a process in which the involvement of all elements in the entity, from high to lower levels, such as the board of directors, management, employees, and others without exception. Then, it is implemented in the formulation of company strategy and is comprehensive throughout the company, which is implemented to detect all potentials that can have a negative impact on the company, as well as to manage risks to the level of risk/ risk appetite planned. So, it is expected to create a reasonable guarantee in the process of achieving company goals.

Furthermore, according to Lam (2014), ERM is a comprehensive, systematic and integrated framework that is carried out by all company tools to manage all risks either from the internal company or from external companies. Therefore, the risk is at the limit or at the level of risk desired. It is with the aim that the achievement of business objectives is not hampered and to maximize the firm value.

Firm Value

Firm value is a perception held by market participants for the company (Devi, Budiasih, & Badera, 2017). Companies that can make broad disclosures have a better assessment in the eyes of market participants because they are considered capable of implementing the principle of transparency. Companies that implement the ERM program will certainly get more value from market participants due to an increase in the information disclosed related to the company' risk profile (Hoyt & Liebenberg, 2011).

The main purpose of the company is to maximise the welfare of stakeholders, which are all parties concerned with the company, such as management, employees, shareholders, creditors, consumers, and suppliers. This research itself defines firm value as market value. The price of shares traded on the exchange, for companies that issue shares in the capital market are an indicator of firm value. Thus, the higher the firm value, the greater the wealth received by shareholders.

Relationship between ERM Implementation and Firm Value

In accordance with stewardship theory which states that company managers will act in the common interest, the implementation of ERM in companies is one of the pieces of evidence that can be carried out by company managers in protecting the interests of stakeholders, especially company owners. In the implementation of ERM, management will endeavour to minimize all company risk exposures so that the company' goals are not compromised.

In addition, increasing firm value is one of the main objectives of the company. This is in line with the research of Shin & Stulz (2000) in which corporate risk-taking is believed to have a positive influence on firm value. Thus, if managers reduce risk-taking, the firm value will be estimated to decrease. An opinion supports this and stated that high risk is high return, where the greater the risk generated, the higher corporate value will be produced.

Some theories state that corporate risk-taking which is defined as the selection of several projects that have variations in uncertainty from expectations of future cash flows is on average in increasing firm value (Jensen & Meckling, 1976; Shin & Stulz, 2000). The implementation of ERM is expected to certainly be able to reduce the uncertainty variations

found in companies in making decisions, so as to enhance the firm value further. From this background, a hypothesis can be formulated from this research that there is a positive relationship between the effectiveness of the implementation of ERM on the firm value.

Research Method
Research Model

The regression model used in this study can be described as follows:

$$FV_{it} = \beta 0 + \beta 1\ ERM_{it} + \beta 2\ Lev_{it} + \beta 3 ROA_{it} + \beta 4 Size_{it} + \varepsilon_{it}$$

Where:
 FV   = *Firm Value*
 ERM   = Effectivity of ERM Implementation
 Lev   = *Leverage Ration*
 Size   = Company Size
 ROA   = *Return on asset*
 ε   = *Error*

Operationalization of Research Variables
Dependent Variable

The dependent variable used in the study is firm value. The firm value is proxied by the Tobin's Q ratio. The description related to the firm value proxy using Tobin's Q ratio in this study is as follows:

$$Tobin's\ Q = \frac{Total\ Market\ Value + Total\ Book\ Value\ of\ Liabilities}{Total\ Book\ Value\ of\ Assets}$$

Where:
Total Market Value = *Total Outstanding Shares x Current Share's Price*

Tobin's Q is the market value of outstanding shares and corporate debt towards the replacement cost of the company' assets.

Independent Variable

In this study, the independent variable used is the effectiveness of the implementation of ERM. The effectiveness variable in implementing ERM in this study is measured by assessing the extent to which the points related to the criteria of the role of the board of

directors in achieving the objectives of effective ERM implementation based on the risk management framework formulated by COSO.

COSO (2009) highlighted four points that are the leading indicators of the role of the board of directors that can support the implementation of a good ERM in the company, which can be described as follows:

a. There are assessment activities to understand the philosophy of risk that is aligned with the company' risk appetite.
b. The board of directors knows the extent to which the company' management has implemented an effective ERM for the company.
c. A review of the entire risk portfolio is carried out by considering the company' risk appetite.
d. There is the vigilance of significant risks by handling appropriate risks.

Based on the four indicator points above, the independent variable is measured by evaluating the fulfilment of each criterion for the effectiveness of the implementation of ERM in companies using a rating system with a range of values 1-3. The provisions are if poor implementation criteria are given a value of 1; medium (fair) is given a value of 2, and good (good) is given a value of 3 based on the disclosure of information presented in the company' annual report. Companies that do not meet the effectiveness criteria that are determined by COSO will get a minimum value of 4, and companies that meet the effectiveness criteria set by COSO will get a maximum value of 12.

This assessment method duplicates and modifies the method used by Edmonds et al., (2015) in research measuring the effectiveness of ERM. Edmonds et al., (2015) included all samples of companies, including companies that did not implement ERM. Meanwhile, in this study, companies that did not implement ERM are not included in the sample because this study focuses on the effectiveness of manufacturing companies in Indonesia in implementing ERM.

Control Variable

This study uses three control variables. The explanation of which is as follows:

a. *Leverage*
Leverage ratio is a ratio that describes how much the use of external party funds by companies to finance the expansion and operation of the company. The high debt to asset ratio shows that the company has a high risk of not being able to pay off the interest or principal of the debt. Companies with high levels of leverage can indicate that the management of financial risk carried out by the company has not been run optimally (DeFond

& Hung, 2003). Therefore, the higher leverage ratio of companies negatively affects the firm value.

b. *Firm Size*

In this study, the firm size is assessed by the natural logarithm of the total assets owned by the company. Companies are faced with the complexity of risk. An increase in company size is related to an increase in the number of risks which tends to result in a higher possibility of implementing ERM. In addition, large companies make more investments in implementing ERM programs (Lechner & Gatzert, 2018) and larger companies need more efficient risk management systems as a result of increasing scope and complexity of risk (Gatzert & Martin, 2015). Therefore, the greater the size of the company, the more positive the effect on the firm value. It is because a larger company is considered to have more resources in implementing its ERM program.

c. *Return on Asset*

One of the profitability ratios used in this study is Return on Assets (ROA). This ROA ratio is useful to measure the level of efficiency of a company in maximising its assets to generate profit (net income). Return on assets (ROA) is an indicator related to management's efficiency in using its available assets to generate profits. Companies with increased ROA are more likely to fund the financial resources needed to implement ERM (Lechner & Gatzert, 2018). Thus, ROA has a positive effect on firm value.

Data Types, Population, and Research Samples

Panel data types with the research data collection period from 2013 to 2017 are used in this study. The data used in this study are quantitative data sourced from secondary data, namely annual reports and financial reports obtained from the Indonesian Stock Exchange. The population in this study includes manufacturing companies listed on the Indonesia Stock Exchange from 2013 to 2017. The sample used in this study is a manufacturing company in Indonesia as one of the emerging market countries.

The selected sample details are as follows:

Table 2: Observation Total

Information	Total
Manufacturing companies listed on the Indonesia Stock Exchange in 2013-2017	144
Manufacturing company with incomplete data	(34)
Manufacturing companies used as samples	110
Research Period (2013-2017)	5
Total observations (110 companies x 5 years)	**550**

Result and Discussion
Outlier Test

This test is carried out to find out whether or not there are outlier data in the study. To find outlier data, researchers used winsorization techniques. The technique determines the lower and upper limits of data from the average formula $\pm$ (3 × standard deviations). In this study, there are some outlier data, namely the variables FV, LEV, and ROA. Outlier test results can be seen in the following table 3 & table 4.

Table 3: Before Winsorization

Variable	Observ	Mean	Standard Dev	Min.	Max.
FV	550	1,819	5,297	0,156	113,607
LEV	550	0,257	0,210	0,000	1,351
ROA	550	0,0427	0,115	-1,279	0,716

Table 4: After Winsorization

Variable	Observ	Mean	Standard Devi	Min.	Max.
FV	550	1.631	2.288	0,156	17,710
LEV	550	0.255	0.201	0,000	0,887
ROA	550	0.043	0.094	-0,302	0,388

Based on the results of the outlier test, the outlier data are modified according to the upper and lower limits of each variable by the winsorization method. After the outlier data is modified according to the upper and lower limits, an outlier test is reconducted, and the results can be seen in table 4.

Descriptive Statistics

Table 5: Descriptive Statistics

Variable	Observ	Mean	Standard Dev	Min.	Max.
FV	550	1.631	2.288	0,156	17,710
ERM	550	9.275	1,293	6,000	11,000
LEV	550	0.255	0.201	0,000	0,887
SIZE (Rp 000)	550	10,269,011,276	333,554,526	89,327,329	295,830,000,000
LNSIZE	550	28,529	1,60	25,216	33,321
ROA	550	0.043	0.094	-0,302	0,388
Variable Dummy					
		% Value 1		**% Value 0**	
AQ		40,73%		59,27%	

Based on empirical tests conducted obtained statistical information that includes the number of observations, the average value (mean), the standard deviation, the minimum value, the maximum value, and the variables and the percentage of dummy variables. The amount of statistical data used in this study is 550 companies.

Descriptive statistics in Table 5 show that the firm value (FV) of the manufacturing industry in Indonesia has an average value of 1.631 of the number of observations. The firm value has the highest value of 17,710 and the lowest value of 0.156. Implementation of enterprise risk management (ERM) has an average value (mean) of 9,275 of the number of observations. Enterprise risk management (ERM) has the highest value of 11,000 and the lowest value of 6,000. Next, leverage (LEV) has an average value (mean) of 0.269. Leverage (LEV) has the highest value of 0.887 and the lowest value of 0,000. Meanwhile, the size of the company (SIZE) measured through the natural logarithm of the total assets owned by the company has an average value (mean) of 28,529. The size of the company (SIZE) has the highest value of 33,321 and the lowest value of 25,216. Return on assets (ROA) which measures how efficiently a company uses assets has an average value of 0.043. Return on assets (ROA) has the highest value of 0.388 and the lowest value of -0.302. Descriptive statistics on dummy variables show that manufacturing companies in Indonesia use more non-Big4 audit services by 59.27% compared to 40.73% of companies that use Big 4 audit services.

Discussion

Table 6 presents the regression results for the research model related to the effect of enterprise risk management (ERM) on firm value. From the output obtained, the results of the coefficient of determination test are tests conducted to determine the extent of the independent variable in describing the dependent variable. Based on the results of the

regression that has been done and summarized in table 6 shows that the resulting R2 value is 29.00%. These results indicate that the independent variables used like ERM, LEV, SIZE, and ROA have the ability of 29.00% to explain the dependent variable, namely FV. Meanwhile, the remaining 71.00% is explained by other factors outside the independent variables used in the study.

Furthermore, based on the result of the research regression test in table 6, it can be seen that the value of Prob > F is 0,0000 (significant at 1% level). This value is smaller than α value, which is 0,01. It indicates that at the confidence level of 99%, simultaneously, the independent variable used in the model which is ERM, and the control variable which are LEV SIZE, and ROA can be able to influence the dependent variable, which is FV.

Table 6: Hasil Pengujian Model 1

Variable	Pred	Coef	Prob	Sig
ERM	+	0.1907355	0.009	***
LEV	-	2.317832	0.000	***
SIZE	+	0.0875811	0.051	***
ROA	+	15.8714	0.000	***
cons		-3.942066	0.010	
N (Number of Observation)		550		
R-Squared		0.2946		
Prob (F-Statistic)		0.0000		

Note: ***, **, * = Significant at the 1%, 5%, 10% significance level

Note: ERM which is an enterprise risk management measured by the effectiveness of ERM implementation; LEV is leverage measured through a debt to asset ratio; SIZE is the size of the company measured by the natural logarithm of total assets; ROA is a return on assets measured through net income divided by total assets. Regression results show that the p-value generated is 0.009, which means that ERM has a significant effect at the level of 1% on FV.

The effectiveness of the implementation of ERM, which is proxied using the criteria for measuring the effectiveness of the implementation of ERM from COSO has a significant effect on firm value. This result can be seen from the p-value resulting from the regression of 0.009, which indicates that the ERM variable has a significant effect at the level of 1% of FV. The resulting direction for the relationship between ERM and FV is positive as predicted. This significant and positive result is consistent with the hypothesis proposed by the authors in this study. The results obtained from this test indicate that the effective implementation of ERM by the company has a positive influence on the firm value. This is supported by Shin &

Stulz (2000) in their research where corporate risk-taking is believed to have a positive influence on firm value. The effective implementation of ERM in a company is believed to give a good reaction to the company performance and will have implications for increasing the firm value.

The implementation of enterprise risk management (ERM) is increasingly needed mainly due to the increasing complexity of risk and the increasing need for sophisticated methods to identify risks. Implementation of the company' perspective on risk control aims to increase the firm value. Companies with adequate control and good portfolio risk management will increase trust in the company (Lechner & Gatzert, 2018).

According to Gordon, Loeb, & Tseng, (2009), enterprise risk management offers companies a more comprehensive approach to risk management compared to previous risk management. Adopt a systematic and consistent approach in managing company risk. ERM is considered to reduce the risk of company failure which has an impact on increasing the firm value.

Moreover, there are five factors to understand the relationship between enterprise risk management and corporate value. They are environmental uncertainty, industrial competition, company size, company complexity, and monitoring of board of directors. Environmental uncertainty creates difficulties for companies. Companies with high environmental uncertainty, require the implementation of high-risk management. Companies with high environmental uncertainty will implement enterprise risk management optimally and this will add value to the company. Meanwhile, the level of industry competition is related to corporate risk management. The higher the level of competition in an industry, the higher the level of enterprise risk management of a company. By mentioning about company size, there is a positive relationship between company size and the level of enterprise risk management. The greater the size of the company will increase the implementation of enterprise risk management. This further affects the increase in value for companies with large sizes. Next, the complexity of the company will increase the implementation of enterprise risk management. The more complex the situation of a company, then enterprise risk management is needed to handle the significant risks associated with this complexity. Finally, an effective ERM system depends on active participation by the company' board of directors. The proportion of the board of directors is positively related to the adoption of ERM. This increase in ERM adoption will increase firm value (Gordon et al., 2009).

For control variables, the three control variables used in this study, namely, leverage, firm size, and ROA show a significant effect on the company. For leverage, the results show a positive and significant direction to the firm value, and it is different from the initial prediction of the researcher. These findings are in line with research conducted by Wang & Sarkis (2017), which is related to the signalling theory. The results that indicate leverage has

a positive effect on firm value giving a signal to investors that companies with high leverage give signals to investors that the company can meet debt covenant. Moreover, companies with high leverage can signal investors that the company will do something, such as projects or investments from funding through debt.

Furthermore, company size variables show a positive and significant effect on the firm value which indicates that the greater a company, the greater the firm value increases. This is because larger companies are faced with the increasing complexity of risk as well. With increasing complexity and the amount of risk, companies tend to implement ERM. In addition, large companies make more investments in implementing ERM programs (Lechner & Gatzert, 2018) and larger companies need more efficient risk management systems as a result of increasing scope and complexity of risk (Gatzert & Martin, 2015). Therefore, the greater the size of the company, the more increasing the firm value because larger companies are considered to have more resources in implementing its ERM program.

Finally, it is the ROA control variable. ROA test results show a significant positive effect. It means that the greater the ROA ratio of a company, the higher the firm value. According to Lechner & Gatzert (2018) this is because companies with increased ROA are more likely to fund the financial resources needed to implement ERM.

Conclusion, Limitations, and Suggestions

The development of the business world requires every company to be able to make decisions related to risk and manage risk in accordance with the limits set by the company. This study tries to obtain empirical evidence of the effect of the implementation of ERM effectiveness on the firm value. This study takes a sample of manufacturing companies listed on the Indonesia Stock Exchange in 2013-2017 because a company that has a complex production cycle is certainly hand in hand with great risk as well. In this case, ERM is a strategy that can be used to manage risk in manufacturing companies. The results of this study indicate that the implementation of the effectiveness of ERM has a positive effect on the firm value. The implementation of ERM in the company is carried out to prove that the managers of the company are trying to protect the interests of stakeholders. Therefore, it is proven that the implementation of ERM effectiveness significantly positively influences firm value.

This research has limitations that can be an extension for further research that this research is limited to the manufacturing industry used as a research sample. For further research, it can be extended to other industries. Another limitation is that the sample period in this study is limited to 5 years. The time period for further research can be expanded not only 5 years.

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