

Analyze Enterprise Risk Management Implementation: Empirical Study on Financial Performance and Market Reaction in Indonesia

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Abstract:

Background: The importance of corporate risk management makes its application not only in banking companies but also beginning to be applied in other companies. This is an interesting concern for academics to examine the effects of Enterprise Risk Management (ERM) implementation and test whether companies that implement ERM are observing results that are consistent with the benefits originally claimed from ERM. This research looks at financial performance-related impact toward market performance with enterprise risk management (ERM) Implementation as a moderator variable. This research aims that financial performance has positive impacts on market performance. The impact of financial performance toward market performance organization with ERM is higher than organization non-ERM, and financial performance organization with ERM is higher than organization non-ERM.

Sample and Methods: Based on published data in Indonesia Stock Exchange (BEI) 2007-2019, The companies that are implementing ERM were consisting of 20 non-bank finance companies and 15 banking companies. This study used event study for market reaction and panel regression for relationship financial performance, ERM toward market performance using stata14.

Results: This study bolster the hypothesis. The analyzed outcome demonstrates that statistically, market performance is affected by financial performance accomplishment. Financial performance impacts over the company with ERM have indicated a higher positive connection than company non-ERM toward market performance.

Conclusion: Statistical test results represent, the first hypothesis is supported, and the second hypothesis is supported. It can say that the results of the testing revealed that the market reacted to the implementation of ERM, and companies implementing ERM had better market performance and financial performance compared to companies that did not implement ERM.

Key Word: ERM, Risk, Financial Performance, Market Performance, Financial Institution.

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I. Introduction

In the business sector happens at present, the company begins to realize the importance of risk management. Risk management is on the separate risk of company management and the companies' risk management strategy thoroughly and inter-related. The companies' risk management is an exciting strategy to evaluate thoroughly and arrange all the risks faced by the companies[1]. One method used by enterprise risk management is to use the company's risk appetite to determine what risks should be accepted and what risks should be avoided or reduced. The increasing attention of practitioners in the use of Enterprise Risk Management (ERM) in the last few years, making academic research related to ERM began to emerge specifically about the consequences of implementing ERM on company performance^[2,3,4,5,6].

Beasley, Clune, and Hermanson (2005) states that each level of organization causes the importance of the company to develop the ERM properly in each level because of the occurred default. In this case, Schmidt (2020) states the financial crisis example in 2008, and the research found that even though the chief risk officer has reminded the decision-maker. Still, they did not respond to it, thus the financial company occurred considerable default investment have on crisis toward the company. At present, some companies in the world are starting to implement their ERM system, starting with setting up a special department that handles ERM.

ERM is said to provide benefits to shareholders by reducing the volatility of stock prices and income, costs of external capital, increasing capital efficiency, and making synergies between different risk management activities[9]. Based on Beasley and Frigo (2007), in general, ERM introduces attention to risks and opportunities

that can be translated into better operational and strategic decisions. In Indonesia Enterprise Risk Management, it was explicitly seen starting in governance corporate banking reports. Bank Indonesia required banking companies to report on their corporate governance. In this case, corporate governance contained specific points regarding risk management.

The importance of corporate risk management makes its application not only in banking companies but also beginning to be applied in other companies. This is an interesting concern for academics to examine the effects of Enterprise Risk Management (ERM) implementation and test whether companies that implement ERM are observing results that are consistent with the benefits originally claimed from ERM. In other words, researchers are looking to test whether ERM works in improving company performance. Liu (2019) stated, "we believe that our work is essential and timely because even though many surveys have revealed the advantages of implementing ERM, there is little empirical evidence about how ERM affects the company."

This research aims to test the implication of the ERM program. It focuses on two concerns: market reaction occurred when the company implemented the ERM, and performance changing happened after the company implemented the ERM. When the company issue or indicate to implement the ERM, the investor will be optimistic toward information given by the company. Thus, the market will provide a positive reaction toward a signal from that company. The existence can know the response of positive abnormal return of the company. The performance changing of a company that implemented ERM can see from the influence of financial performance toward market performance company with ERM is higher than company non-ERM, and market performance company with ERM is more heightened than company non-ERM.

II. Hypothesis Development and Methods

The increasingly stringent conditions and conditions of the business world in competition, funding, and applicable regulations, also managing various resources make business risks continue to increase. Risk is a fact that cannot be separated from multiple company activities and decision-making. And now it is realized that risk is not only a matter of physical or financial but also in operational and strategic terms^[1,8,12,13]. The ability to face, manage, and minimize today's risks is a very urgent and necessary need for sustainable business growth. Capabilities and methodologies are needed to see and measure overall risk in a company, both financially and operationally, and its effect on capital allocation, thus ensuring adequate and multiple returns to the company's investment^[14]. For this reason, companies need to develop a process and structure that ensures that these risks are managed effectively by implementing enterprise risk management^[15].

The risk is a fact that cannot be apart from various company activity and making the decision. It is not only physical or financial but somewhat operational and strategic. The ability to face, manage, and minimize the risk is to be pressure need and need for ongoing business development. It requires the knowledge and methodology to measure the risk thoroughly in a company, both financial and operational, and its effect on capital allocation, thus ensuring there is sufficient and long-term return toward company investment^[16]. Stand from it. The company needs to develop a process and structure to ensure that that risk is managed effectively by implementing enterprise risk management.

Enterprise Risk Management (ERM) takes a point of view thoroughly from risk management and effort to reduce the possibility from total income and negative cash flow by coordinating and controlling the risk that occurred in the company. COSO framework^[12,17] defines the ERM as follows:

"Enterprise risk management is a process influenced by entity of director, management and other personnel, its implementation into strategy setting and applies for company, designed to identify the potential events which influence the entity and managing the risk in order to be part of risk to make reasonable guarantee about objective achievement of entity".

COSO (2017) includes the ERM as. "Assist an entity to the wanted to be placed and avoids the trap and shock along the process." Even though there are many variances to define the ERM, the primary theme is ERM, mainly as a road to measure the understanding and control of the company's risk.

Hypothesis Development

Based on previous studies or studies, only a few studies have considered empirical evidence from ERM. Many studies prioritize testing the effects of values from specific forms such as hedging. For example, research conducted by Bromiley, Rau, and McShane (2014) provides detailed reviews of 30 years of existing academic research covering traditional risk management value propositions. This study considers interest rates and risk management using samples of industrial and financial companies^[3,10,13,14]. The author concludes that management-based on industry-related risks can make a company not miss a valuable investment opportunity, thereby increasing the performance and value of the company.

In this study, the researchers examined whether ERM implementation resulted in market reactions and the company's fundamental reaction. The measurement was in the form of company performance. In measuring market reaction, researchers used abnormal returns. At the same time, they were calculating the fundamental

reaction of researchers using market performance (market performance using PBV) and financial performance (financial performance using efficiency and ROE) as a form of measurement.

Researchers assume that if ERM works appropriately and correctly, it will alleviate the problem and maximize the potential of companies that implement ERM so that the company's performance will be better. Based on this, investors will appreciate companies that can manage their risk well. When the company provides ERM, the market will positively signal the company reflected in the abnormal return and volatility of stock returns. The market provides information about the extent to which the company's equity benefits from reducing costs in the expected costs related to financial distress.

Previous research [7,15,16,17,18] has tested the market reaction to the implementation of ERM. Based on the research, the researchers tested abnormal returns that occurred around the announcement of information on ERM implementation.

Hypothesis 1: There is a positive abnormal return around the announcement of information on the implementation of ERM.

When a company applies ERM, and the market captures that information, the market will give investors a positive abnormal return if the investor reacts to this information. Investors assume that implementing ERM companies can improve their performance and maximize profits from the risk opportunities they have. Carefully review the literature based on the value relevance of risk management [12,19]. Although their study examines four specific questions, their research will focus on the relationship between the use of risk management and the value of the company, and this study is one of the relevant ones in this study.

Researchers are fully aware that corporate risk management or ERM may work effectively and may not be in a comprehensive implementation process. It is not only with an observation period of two or three years after the implementation of ERM. Therefore, the research conducted by researchers specifically focuses on events or variables related to ERM or the initial process that signals the implementation of ERM impacts the variables tested, namely efficiency, ROE, and PBV.

Hypothesis 2: financial performance toward market performance with ERM is significantly higher than company non ERM.

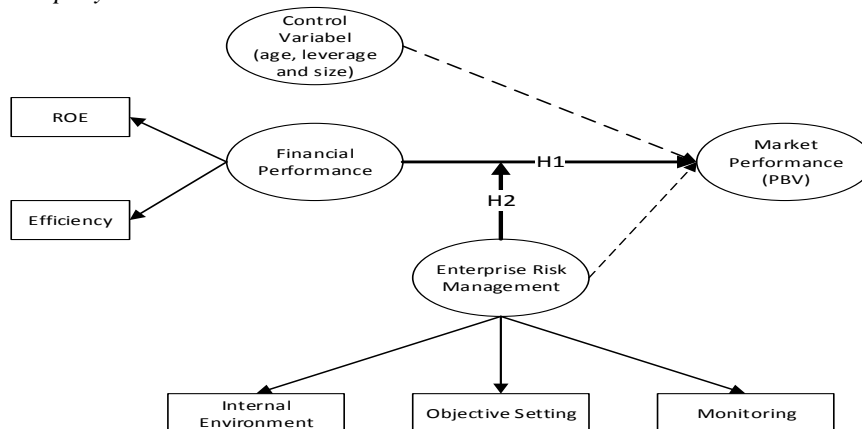


Figure 1. Hypothesis Framework

Methods

The sample used in this research was the financial company that implemented the ERM, and the financial company did not implement the ERM. The sample criteria of this research are:

- a. The certified company and its share traded in Indonesian Stock Exchange from 2007 to 2019.
- b. The company that have complete data needed by this research.

The data used are secondary data originating from the database of the Indonesia Stock Exchange during the study period 2007-2019, eikon database and company annual reports. The data used in this study are stock return data, market returns, ROE, efficiency, total assets, leverage, size, ROA, MVE and PBV.

In this study, researchers [9,16] used the same method to determine the market reaction. Namely using the proxy appointment of chief risk officer (CRO) or risk management committee, and for ERM measurement, using measurements based on several factors applied in ERM framework, using the Desender (2010) research dimension score assessment as follows:

Table 1. ERM Scoring Index

Dimension of Enterprise Risk Management Framework	
<i>Internal environment</i>	
1.	Information of training and education program related to ERM
2.	Information of management board's responsibility relate to ERM
3.	Information of audit committee's responsibility related to ERM
4.	Information of CEO's responsibility relate to ERM
<i>Objective setting</i>	
5.	Information of company's mission related to ERM
6.	Information on company strategy relate to ERM
7.	Information on company business object relate to ERM
<i>Monitoring</i>	
8.	Information of internal audit related to ERM
9.	Information of monitoring process relate to ERM
10.	Information of ERM implementation budget
Total scoring ERM implementation	

The information has the same weight if it has a connection to enterprise risk management to get one score. If not, it has an association with enterprise risk management to get a 0. Will make the score in percentage from the ERM variable will have a maximum value of 100% and a minimum value is 0%. Then the researcher makes a divide based on the level of High and Low ERM.

The researcher divides into two categories: a). to reduce the bias caused by companies that have not been in the phase of ERM implementation; b). the first phase of drafting the implementation of ERM; because ERM is a process, every company will be different in its implementation and different in determining. How many years the company can be said to have implemented ERM perfectly, so the authors classify the level of ERM or ERM level based on the ERM value of the company.

III. Result

This research assesses the effect on company risk management over market reaction and company performance. The companies that are implementing ERM were consisting of 20 non-bank finance companies and 15 banking companies. Based on the published data, Bank Central Asia is characteristic of a higher score related to ERM. In comparison, Kresna Graha Securindo is characteristic of a lower score related to ERM.

The first hypothesis stated there is an abnormal return around the RRM application information; in other words, the average abnormal return during the event period is different from zero. Before implementing the test toward data, it carried out a normality test using the Kolmogorov-Smirnov test.

This study applied the standard deviation test in answering hypothesis test 1, standard deviation test involved because, in the non-parametric statistic, there is testing to compare different before-after events. To carry out the test toward a hypothesis, conducted observation and analysis to conduct the daily abnormal return average from the company stock sample. This hypothesis test was carried out appropriate to the data processing procedure, which is included in the chapter research methodology. Based on the statistical test finding, generally, there is no significant average abnormal return in the preceding period and when the ERM (Enterprise Risk Management) was published.

Table 2. AAR CAAR Results during Event Period

	AAR	t count	CAAR	t count
-10	0.0221	0.6681	0.0221	0.8868
-9	-0.0162	-1.4213	0.0058	0.6534

-8	-0.0008	-0.1027	0.0050	0.4261
-7	-0.0113	-0.4022	-0.0062	-0.4800
-6	0.0323	0.7573	0.0260	0.9706
-5	0.0013	0.5079	0.0273	0.9414
-4	-0.0132	-0.4974	0.0142	0.5250
-3	-0.0096	-0.7538	0.0046	0.8816
-2	-0.0007	-0.8777	0.0039	0.8713
-1	0.0298	1.9159	0.0337	1.6995
0	0.0041	1.0608	0.0377	1.8402
1	-0.0073	-1.0744	0.0305	1.3588
2	0.0034	2.1041*	0.0338	1.6909
3	0.0283	1.8967	0.0621	2.3129*
4	-0.0001	-0.5003	0.0620	1.7764
5	0.0069	2.0715	0.0689	2.0535
6	-0.0033	-1.7840	0.0655	1.4437
7	0.0124	0.6925	0.0780	1.8513
8	0.0011	0.5282	0.0791	2.0925
9	-0.0002	-1.1038	0.0789	2.3518*
10	-0.0028	-0.1625	0.0762	2.4406*

Note: * $\alpha=10\%$, ** $\alpha=5\%$ and *** $\alpha=1\%$

Significantly average abnormal return occurred after H+2 of information day. Significant AAR after information day shows no information leak before information publication of ERP application or before an event occurred. After ERM publication, a significant average abnormal return in H+2 is 0,0034, with a significant level of 95%. It means that there is a positive market response of 0.34% in the day. Significant AAR in H+2 shows that after publication, the market responded in the second day or H+2. It means that duplicated ERM applications give a positive response to the market.

Suppose the analysis is done based on the cumulative average value abnormal return (CAAR). In that case, it appears that CAAR has a pattern different from the average pattern of abnormal returns during the event period. Can use cumulative average abnormal return (CAAR) to measure an increase in abnormal stock returns. Positive cumulative abnormal average returns occur due to ERM events, though this cannot be used as an indication of reaction due to the announcement of ERM implementation.

Second hypothesis examination was carried out using simultaneous regression analysis (F test), R square Value, and independent t-test. F and R square used to test models 1 and 2 that represent hypothesis 2. Meanwhile, a t-test was used to explain the relationship between financial performance and ERM with market performance.

Table 4. Determinant Coefficient and Regression Test Result

Model	R Square	Adjusted R Square	F	Sig.
1	0.651	0.639	33.619	0.000
2	0.724	0.694	23.150	0.000

Variables	Model 1		Model 2	
	Beta	t	Beta	t
Constant	0.632	6.995***	-0.153	-1.227
ERM	0.103	2.816***	0.101	2.081**
Eff	0.037	1.249	0.082	0.814
ROE	0.554	8.007***	0.081	2.814***
Eff*ERM	-	-	0.385	3.223***
ROE*ERM	-	-	0.136	3.147***

- Note: a. Model 1 Predictors: (Constant), Eff, ROE, ERM and Control Variables
b. Model 2 Predictors: (Constant), Eff and ROE with ERM Moderation
c. Model 1 and 2 Dependent Variable: PBV
d. * $\alpha=10\%$, ** $\alpha=5\%$ and *** $\alpha=1\%$

The second hypothesis explained that financial performance toward market performance with ERM is significantly higher than company non-ERM. On this hypothesis 2, the comparison is used. Three steps could test the second hypothesis: first seeing the mean value of each variable, then seeing the significant F Levene's test that must show the significant value < 0.05 . afterward, do the t-test by comparing the R square. If the R square model with moderation is less than a model without moderation, it could not support hypothesis 2. If the t quantity smaller than the t table, it could not support hypothesis 2. But if the t quantity is bigger than the t table, it can support hypothesis 2.

Hypothesis 2 that the researcher has delivered can be supported. Statistically, the financial performance company with ERM for market performance could not be higher than the company's non-ERM, and the differential was significant. If it has been seen from the adj R square, adj R square with ERM moderation (69.4%) is higher than adj R square without ERM moderation (65,1%).

IV. Discussion

After performing data processing and testing statistically, the results obtained are diverse. The first hypothesis is supported by the idea that shows the results of AAR only in H + 2, which has a significant t value, while the other days are not significant. The second hypothesis is supported by significant testing.

Hypothesis 1 states that there is an abnormal return around the announcement of information on ERM implementation. Research on the relationship between the announcement of information on ERM implementation was previously carried out^[21,22,23,24]. These studies state that the application of enterprise risk management (ERM) is a process for companies that implement it to maximize every opportunity that exists and minimize risks that the company can bear to increase wealth from stakeholders, thus the market will provide a signal positive for company information in implementing company risk management. Investors who react to this information (by buying shares of the company) expect an abnormal return.

In testing hypothesis 1, there is only one positive and significant abnormal return at H + 2. At the same time, the other is not significant, meaning the market gives a positive reaction after implementing enterprise risk management (ERM). It can say that the absorption of information to the market is good because there was no information leak before the announcement of the implementation of ERM. In addition, this study also found the volatility of the average movement of abnormal returns after information on the announcement of the application of ERM was lower than volatility before information on companies. This meant the market gave a reaction to companies implementing corporate risk management.

The second hypothesis proposed in this study is supported, so it can say that these results indicate that ERM statistically does strengthen the influence of financial performance on market performance. Hypothesis 2 can occur because corporate risk management has provided financial value for the company by utilizing new opportunities that arise in risk management compared to investments from the implementation of ERM carried out by the company. Two things are the reasons; first, the company has in the phase of implementing ERM perfectly. This is seen in the ERM descriptive statistics that companies have an ERM valuation average 81% and the two companies have long-term planning on investment in implementing ERM. Second, there is a possibility that the company is in the stage of expecting increasing efficiency and ROE so that the strengthening of the financial performance effect on market performance will be more visible in subsequent periods.

V. Conclusion

Statistical test results represent, the first hypothesis is supported, and the second hypothesis is supported. It can say that the results of the testing revealed that the market reacted to the implementation of ERM, and companies implementing ERM had better market performance and financial performance compared to companies that did not implement ERM. Some previous studies stated that theoretically, ERM (enterprise risk management) could provide added value for companies that implement it, but empirically there is substantial evidence that explains whether or not a company's risk management can provide added value to the company because the ERM is an overall application process that requires a long time and varies according to the conditions, risk appetite company and may also occur failures or errors in the process, so that can use this research as one of the empirical evidence to support that the implementation of ERM provides added value for companies that implement it.

References

- [1] R. Balakrishnan, E. M. Matsumura, and S. Ramamoorti, "Finding common ground: COSO's control frameworks and the levers of control," *J. Manag. Account. Res.*, 2019.
- [2] M. K. McShane, A. Nair, and E. Rustambekov, "Does enterprise risk management increase firm value?," *J. Accounting, Audit. Financ.*, 2011.
- [3] C. Callahan and J. Soileau, "Does Enterprise risk management enhance operating performance?," *Adv. Account.*, 2017.
- [4] R. E. Hoyt and A. P. Liebenberg, "The Value of Enterprise Risk Management," *J. Risk Insur.*, 2011.
- [5] P. Lechner and N. Gatzert, "Determinants and value of enterprise risk management: empirical evidence from Germany," *Eur. J. Financ.*, 2018.
- [6] D. P. Nugraha, "Efek Enterprise Risk Management (ERM) studi empirik pada reaksi pasar dan kinerja perusahaan." Tesis Universitas Gajah Mada, 2013.
- [7] M. S. Beasley, R. Clune, and D. R. Hermanson, "Enterprise risk management: An empirical analysis of factors associated with the extent of implementation," *J. Account. Public Policy*, 2005.
- [8] C. Schmidt, "Why risk management frameworks fail to prevent wrongdoing," *Learn. Organ.*, 2020.
- [9] D. M. Sprčić, A. Kožul, and E. Pecina, "State and Perspectives of Enterprise Risk Management System Development - The Case of Croatian Companies," *Procedia Econ. Financ.*, 2015.
- [10] M. S. Beasley and M. L. Frigo, "STRATEGIC RISK MANAGEMENT: CREATING AND PROTECTING VALUE. (cover story)," *Strateg. Financ.*, 2007.
- [11] X. Liu, "The role of enterprise risk management in sustainable decision-making: A cross-cultural comparison," *Sustain.*, 2019.
- [12] COSO, "COSO Enterprise Risk Management — Integrated Framework," *Comm. Spons. Organ. Treadw. Comm.*, 2004.
- [13] R. R. Moeller, *Coso Enterprise Risk Management: Understanding the New Integrated Erm Framework*. 2007.
- [14] L. Otero González, P. Durán Santomil, and A. Tamayo Herrera, "The effect of Enterprise Risk Management on the risk and the performance of Spanish listed companies," *Eur. Res. Manag. Bus. Econ.*, 2020.
- [15] Y. L. Chen, Y. W. Chuang, H. G. Huang, and J. Y. Shih, "The value of implementing enterprise risk management: Evidence from Taiwan's financial industry," *North Am. J. Econ. Financ.*, 2020.
- [16] J. Klučka and R. Grünbichler, "Enterprise risk management – approaches determining its application and relation to business performance," *Qual. Innov. Prosper.*, 2020.
- [17] COSO ERM, "COSO Enterprise Risk Management Integrating with Strategy and Performance," *Comm. Spons. Organ. Treadw. Comm.*, 2017.
- [18] P. Bromiley, D. Rau, and M. K. McShane, "Can Strategic Risk Management Contribute to Enterprise Risk Management? A Strategic Management Perspective," *SSRN Electron. J.*, 2014.
- [19] K. Oliveira, M. Méxas, M. Meiriño, and G. Drumond, "Critical success factors associated with the implementation of enterprise risk management," *J. Risk Res.*, 2019.
- [20] A. M. Marchetti, "Overview of Enterprise Risk Management," in *Enterprise Risk Management Best Practices*, 2012.
- [21] M. Beasley, D. Pagach, and R. Warr, "Information conveyed in hiring announcements of senior executives overseeing enterprise-wide risk management processes," *J. Accounting, Audit. Financ.*, 2008.
- [22] R. E. Hoyt and A. P. Liebenberg, "Evidence of the Value of Enterprise Risk Management," *J. Appl. Corp. Financ.*, 2015.
- [23] J. R. Silva, A. F. da Silva, and B. L. Chan, "Enterprise Risk Management and Firm Value: Evidence from Brazil," *Emerg. Mark. Financ. Trade*, 2019.
- [24] H. Jankensgård, "A theory of enterprise risk management," *Corp. Gov.*, 2019.
- [25] D. L. Eckles, R. E. Hoyt, and S. M. Miller, "The impact of enterprise risk management on the marginal cost of reducing risk: Evidence from the insurance industry," *J. Bank. Financ.*, 2014.
- [26] K. A. Desender, "On the determinants of enterprise risk management implementation," in *Enterprise IT Governance, Business Value and Performance Measurement*, 2010.
- [27] S. Annamalah, M. Raman, G. Marthandan, and A. K. Logeswaran, "Implementation of Enterprise Risk Management (ERM) framework in enhancing business performances in oil and gas sector," *Economies*, 2018.
- [28] X. Zou, C. R. Isa, and M. Rahman, "Valuation of enterprise risk management in the manufacturing industry," *Total Qual. Manag. Bus. Excell.*, 2019.
- [29] H. Fauzan and D. P. Nugraha, "Analysis on Financial Performance Influence Toward Market Performance with ERM (Enterprise Risk Management) Implementation Category as Moderator Variable," in *Journal of International Conference Proceedings*, 2018, vol. 1, no. 2.

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