

## Implementation of Enterprise Risk Management in Medium-Sized Priority Sector Companies in East Java

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### ABSTRACT

Enterprise Risk Management (ERM) has the benefit of enhancing organizational effectiveness, risk reporting, and improving business performance. The maturity measurement of ERM implementation is crucial in deducing risk management conditions and disparities within the company as means to achieve a more targeted ERM pursuance, one which is beneficial in assessing the company's condition. This study used sixteen criteria of ERM Maturity Models, to measure the maturity level of ERM implementation carried out by medium-sized industrial companies in priority sectors in East Java. Data were obtained from 137 company directors or managers of Medium Industry companies dispersed across 38 districts/cities in East Java among 6 priority sectors. Results showed that 43.5% and 46.6% of companies that experienced sales growth and an increase in net profit, respectively, are companies with optimal implementation of ERM. Meanwhile, 67% of companies that underwent a decline in sales performance and net profit turned out to be companies with weaker ERM implementation levels.

**Keywords:** Enterprise Risk Management; implementation of ERM; ERM maturity level; ERM maturity measurement model; medium-sized industrial enterprises; priority sector.

### INTRODUCTION

Risk is a variable that causes deviations from expected results [42]. For companies to be able to anticipate risk, effectuating a risk management framework as well as generating its standards are necessary to be done. Risk management holds vital importance to enhance a company's image among stakeholders, boost ease of communication, ensure right decision making, improve efficiency, and even provide assurance of how risks have been identified and handled properly. Furthermore, it also provides accurate as well as detailed information [32]. One of the risk management frameworks is Enterprise Risk Management (ERM), also known as strategic risk management, integrated risk management, and holistic risk management. ERM is a comprehensive, integrated framework for managing risk to achieve business goals, minimize fluctuations in retained earnings, and maximize company value [42].

In managing a company's operations, ERM enactment plays significant roles such as a solid benchmark in their decision makings, compass deliberations of short-term and long-term influences, encouraging managers in making decisions and avoiding financial losses, and minimizing company's risk of loss [8]. The implementation of ERM

contributes to achieving goals and improving performance and quality of employment. The maturity measurement of ERM implementation is crucial in deducing risk management conditions and disparities within the company as means to achieve a more targeted ERM pursuance, one which is beneficial in assessing the company's condition [50]. Moreover, it also serves to achieve effective strategies, processes, and projects, as well as operations [32].

Measuring the maturity level of ERM implementation perchance assists companies in assessing company conditions, strengths, and weaknesses in their implementation [46]. The tool for measuring ERM maturity levels used in this study is ERMMs (ERM Maturity Models) adopted by [46]. These ERMMs include sixteen criteria that adopted fuzzy theory to avoid biased, subjective, and improper judgment, one that is strongly tied to the maturity of ERM. These ERMMs models are quantitative to measure individual linguistic aspects of group decision-making. From the results of [66]'s research, it was obtained that this ERM criterion has been proven to be reliable and is eligible to describe the maturity level of ERM implementation. Therefore, this study was conducted to measure the maturity level of ERM implementation carried out by medium-sized industrial companies in 6 priority

sectors and how it impacts the sales and profit growth of companies.

Nevertheless, there is not much empirical evidence of how ERM affects corporate performance, particularly in Indonesia's medium-sized industries. Several studies on ERM and its effect on the company value had been conducted in Indonesia and are researched with companies listed on the Indonesia Stock Exchange (public companies) as their sample, omitting the focus on middle-scaled companies. In addition, ERM studies that have been carried out are mainly for companies engaged in banking and financial institutions but studies outside the bank and financial institutions sector are still limited [3], [20], [26], [35]. The argument researchers often put forward emphasizes the main purpose of ERM, that is, to reduce the likelihood of financial distress and allow the company to continue its investment strategy by reducing the impact of lower-end yields, either in the form of income or cash flow caused by unexpected events. Having smoother revenues, stable profits, and positive cash flow performance allow companies to increase leverage, pursue more growth options, and be more likely to turn a profit. Smaller companies generally do not have access to the capital markets and must provide valid evidence of a debt and capital management in applying for credit to banks. Research conducted by [63] shows that although the size of the company is different and the markets vary, the degree of application of ERM has a significant positive effect on the value of the company, the size of the company, and the profitability of the company. This is in line with research conducted by [28] and [31] who found that the implementation of ERM has a significant positive effect on the financial performance of companies. Companies that implement ERM tend to have optimal financial performance. The results of the study of [33], [63], [30]; [52] state that there is a significant relationship between ERM and value creation for companies. Several other studies [31], [30] found the positive impact of risk management on the value of the company. Meanwhile, several empirical studies showed the opposite result. [48] stated that ERM is an excessive risk management practice and is not significantly related to company value [16], [53], [14], [62]. Even [53] found that some companies that adopted ERM experienced a decrease in profit volatility despite the impact of ERM adoption on various company variables. In non-financial companies, it was also found that the application of risk management was not more efficient than in companies that did not apply risk management [56].

Most of the studies related to medium-scale enterprises are fragmented in terms of risk management and the development of new products. Research in risk management in medium-scale companies mostly explores the action strategies

carried out but not the impact of the implementation of risk management in the development of business performance, especially financial performance [39], [29], [5]. Therefore, subsequent studies or research on risk management should be directed to confirm that the implementation or application of risk management does have an impact on the company's performance.

The study focused on six priority sectors by noting that those included (food and beverage, chemical, textile and clothing industries, automotive, electronics, pharmaceuticals, and medical devices), contributed more than 60 percent of the national GDP which is expected to support Indonesia to become the world's top 10 strongest economies by 2030 [38]. In addition, the contribution of priority sectors is the largest in Indonesia's GDP in 2019 - 2021 [12], it also provides the largest added value in 2017 - 2019 [10], and absorbs the largest proportion of Indonesian labor from 2018 - 2020 [11]. The sample in the study is a medium-sized industry company in East Java because that East Java province is the second largest regional PDRB contributor in Indonesia [12] and has the highest growth of Medium Industry (MI) compared to other industries [37]. These facts consequently allow mid-sized industry companies in this priority sector to not only understand the risk management literature, but also the importance of being able to implement integrated risk management through the implementation of ERM.

### Enterprise Risk Management (ERM)

Enterprise risk management (ERM) is defined as risk competence within a company or organization. An ERM is an organization's ability to understand and control the level of risk taken in managing business strategies, coupled with accountability for the risks taken. The main benefit of ERM is that it adds perspective and focuses on risk management across the company's lines. ERM is defined as the process of identifying and analyzing risks from a broad and integrated corporate perspective. It is an organized and structured approach related to strategy, process, humans, technology, and knowledge to evaluate and manage the uncertainties facing the company to create corporate value [41], [65].

The ERM facilitates companies to develop unique strategies to minimize potential losses and the open chance for exploitation of new opportunities [38]. ERM helps top management to manage different types of risks effectively [9]. ERM also generates higher value for shareholders by introducing a company's risk profile (or portfolio) and maintaining some risks while reducing others. ERM offers a more comprehensive approach to companies related to risk management than the

concept of risk management based on traditional perspectives. By adopting a consistent and systematic approach or process for managing all risks confronted by the organization, ERM is assumed to lower the total risk of business failure and improve the company's performance, and in turn, will increase the value of the company.

### **Risk Management Maturity Level Assessment**

The maturity of ERM reflects the sophistication of ERM implementation. A company's ERM maturity level can begin with an assessment of the risk management practices currently implemented by the company in question [46]. The level of risk management maturity or risk maturity level needs to be measured to find out whether the implementation of risk management in the organization is successful or not. Assessment of the maturity level of risk management is very important for the company because it allows the company to get a clearer picture of the company's position, strengths, and weaknesses of its ER implementation. Based on the results of the assessment, the management staff of the company concerned can measure and prioritize the company's resources for the development of the weak ERM implementation area. In addition, conducting an assessment allows the company to identify the strengths and weaknesses of the company that can be used to improve corporate governance and organizational risk management.

The ERM maturity measurement model has been widely used as a tool for the assessment of ERM maturity levels, including Standard & Poor's evaluating ERM implementation in insurance companies based on five criteria and the assessment results lead to weak, sufficient, strong, and very strong [59]. There is also [21] who developed an ERM maturity measurement model for banking. This model contains eight criteria that are broken down into 123 elements, categorized in the maturity scale as very weak, weak, sufficient, good, and optimal. RIMS added a zero level, called nonexistent, with levels from 1 to 5 and has the terms ad hoc, initial, repeatable, managed, and leadership. RIMS (2008) issued a RIMS Risk Maturity Model (RMM) that can facilitate the measurement of ERM maturity levels through planning, communication, and monitoring and control guidelines [57]. RIMS developed an ERM maturity measurement model with 25 driving competencies related to good practice. This RMM equips ERM practitioners by combining the best elements of important models and standards. This model can be applied to all industries and different types of risks, and measures how well implemented risk management is and how deep it is in the organization. The maturity level is determined in each attribute and the maturity of the ERM implementation is

determined by its weakest link. Aon (2010), as a leading provider of risk management, insurance, and insurance brokerage, human resources, and outsourcing services developed a self-assessment ERM maturity measurement model that can be applied to all types of industries. In this model, ERM maturity is assessed against nine criteria that can be seen as the advantages of advanced ERM programs, and their implementation is categorized into weak or less, basic, defined, operational, and advanced levels. Aon also issued a survey in 2013 entitled "2013 Risk Maturity Index Report – Building a Robust Framework and Realizing Value from Risk Management". Some of the results of the survey present a brief overview of the level of maturity of risk management in several countries. The results of this survey show that each region has a bell-curve distribution pattern that is almost similar overall.

Aon also conducted a survey to compare the company's views on the maturity level of the company's risk management with other similar industries in its territory. Companies in the Asia Pacific, which have a maturity level of risk management below 3, consider their companies not mature enough to carry out risk management.

Different ERM maturity measurement models may use different terminology in explaining maturity levels. These terminologies are usually vague and incorrect. In addition to these provisions, maturity criteria that can reflect the characteristics of the success of the ERM program are also critical factors in the ERM maturity model [15],[27]

Based on a comprehensive literature review, [66] identified the existence of 16 criteria for ERM maturity. These criteria have been used in existing ERM maturity measurement models or have been recognized as characteristics of ERM practice success. The study conducted by [66] identified the best ERM practices from the literature reviewed for adoption and was the first study or pilot study. Unlike existing measurement models, the model created by [66] adopts a fuzzy set theory that can deal with problems related to ambition, subjective, and improper judgment, all of which are not contained in the assessment of ERM maturity and cannot be handled by classical theory. In addition, fuzzy set theory can measure linguistic aspects of data for individual and group decision-making [54]. This [66] model is quantitative, in contrast to most other existing models that are qualitative models.

### **Company Financial Performance**

[22] states that organizational performance can be further realized by measuring accounting returns, stock markets, and growth. Organizations are seen as effective if they can meet the stated goals [43]. But goals, such as profitability and growth or

increased employee wages and lower prices, are often contradictory. Other studies have also combined a variety of different measurements labeled almost the same dimensions [47], [64], [58]. Nevertheless, some similarities can be seen among the identified dimensions. First, each study points to accounting returns (e.g., ROA) as part or whole of one or more dimensions. Second, there is preliminary evidence that growth is a different dimension. Specifically, two studies combine the measurement of sales growth and accounting returns.

[22] analyzed organizational performance measurements that are widely used in research articles published in SMJ (Strategic Management Journal). Selection in SMJ because of the reputation of high impact publishing (high impact publishing) of SMJ in the domain of strategic management [60]. In all, there are 56 different measurements to describe operational or organizational performance. Of the 374 studies assessed, 238 empirical studies took performance measurements 450 times. Referring to [22] analysis, the measure of financial performance of medium-sized industrial companies in this study uses the accounting return and growth dimensions (ROA and sales growth) which occupy the highest percentage of indicators used in each dimension.

### Hypothesis Development

There is a consensus among risk management practitioners that the implementation of ERM improves the performance of the company. The introduction and development of ERM systems can reduce the direct and indirect costs of financial hardship and income variability, as well as the negative influence of financial markets [28]. The implementation of ERM is a portfolio of risk management and increases efficiency due to coordination of various business lines and creating pure protection throughout the company [33], [34]. The implementation of ERM enables adequate monitoring and management of the company's entire risk portfolio and enables the company to achieve a long-term competitive advantage considering the benefits and costs [33], [34], [49], [52]. Efficient capital allocation due to proper internal decision-making makes companies that have implemented ERM invest in projects whose current value is greater to improve the company's performance [33], [34]. The ERM reduces revenue fluctuations by increasing the likelihood of companies investing in profitable projects that can be funded internally [44]. [45] showed that ERM can improve capabilities and performance through risk control at the enterprise level, supported by risk management departments, risk management procedures, external services, and corporate culture. Likewise, [52] posit

that ERM practices create value that allows senior management to measure and manage the return of risks facing the entire company. Furthermore, [61] note that instilling a structured approach to corporate risk management in medium-scale enterprises can yield benefits including enabling organizational alignment with its vision.

In the context of small and medium-sized enterprises, according to [4] ERM is a form of micro risk management and a comprehensive approach that addresses risks in all functional areas and is also an effective proactive risk prevention tool. The management commitment component becomes an internal company factor that supports good organizational governance, leading to improved performance. Companies that have already implemented ERM will be able to make resource allocation effective, improve efficiency, capacity, and return on capital thereby improving performance [31]. Risk identification allows management to be able to consider the benefits and costs to improve the quality of decision-making. The right management decision is expected to improve operational efficiency so that management's ability to generate profits also increases. The benchmark of the company's success in carrying out its business activities is seen from the company's performance in making a profit. The company's ability to generate profit can be seen from the probability ratio which summarizes the results of the combination of various decisions and policies and provides a reflection of liquidity, asset management, and debt ratios, and affects the company's operations [18]. Return on Asset (ROA) can be assessed based on how efficiently the company empowers assets to generate profits. Consistent with this argument, the researcher suspects that the implementation of ERM will increase the company's profit which will ultimately affect the company's ROA.

H<sub>1</sub>: Implementation of ERM has a positive effect on the company's return on assets (ROA)

On the other hand, companies that implement ERM are expected to experience stable sales growth and tend to increase, which means that companies can maintain a long-term competitive advantage and be able to adapt to various risks. Given that the medium-scale industrial financial performance measurement model more accurately focuses on the main items in the profit and loss statement, which relate to business practices that mostly affect financial performance, then consistent with the above literature, researchers suspect that optimally implementing ERM will improve business efficiency which will have an impact on company sales.

H<sub>2</sub>: ERM implementation positively affects the company's sales growth

## RESEARCH METHOD

### Sample

The quota sampling method used in this research involved all medium-sized industrial companies of priority sectors in 38 districts/cities and a minimum of 1 medium-sized industry company representing each sector. Data is obtained directly from company managers (directors, managers) through questionnaires and interviews.

**Table 1.** Sample Selection

Detail	Total
Number of distributed questionnaires	151
Number of questionnaires that do not meet the criteria and are incomplete	14
Number of questionnaires that can be processed	137

**Table 2.** Samples by Priority Sector

Priority Sectors	Total	Percentage
Food & beverage	43	31,39%
Chemistry	24	17,52%
Textiles & clothing	33	24,09%
Automotive	13	9,49%
Pharmaceuticals	14	10,22%
Electronic	10	7,30%
Total sector	137	100,00%

### Operationalization of Variables

One way to find out the integrated risk management carried out by the company can be seen from the maturity level of implementing its risk management system. The maturity level of application of ERM in companies was measured using 16 indicators each representing 1 criterion in the study [66], [50]. The value of each statement has a scale with gradation values from very negative to very positive. The assessment system is used to determine the respondent's response and for each statement, the respondent is asked to approve according to the facts applicable to his company using the 4-point Likert scale, where the value of 1 indicates a strongly disagreed attitude and a value of 4 indicates a strongly agreeable attitude to the statement that measures the level of maturity or level of application of erm. Respondents' answers are then transformed using scoring, where the larger score indicates a stronger or optimal level of ERM implementation in the company and vice versa.

Profitability is a representation of the goal of each organization and is the organization's ability and capacity to generate profits, where profitability is one of the determinants of the company's involvement in the implementation of ERM [33], [34].

Referring to [22]'s organizational performance measurement model, it states that organizational performance can be further translated into accounting returns measurements, hence the first proxy of the company's financial performance in this study using ROA. [7] stated that organizational performance can be further translated into growth measurement, while according to [13], growth can also show the operational performance of all business practices adopted by the company, so the researcher uses sales growth as the second proxy of the company's financial performance in this study.

### Model Analysis

To answer the research hypothesis, two linear regression analysis models were developed as follows

$$ROA = \alpha + \beta ERM + e \quad (1)$$

Where:

ROA : ROA of medium-sized Industry Companies

$\alpha$  : Constant

$\beta$  : Regression coefficient

ERM : Enterprise Risk Management implementation

$e$  : error component

$$\Delta SALES = \alpha + \beta ERM + e \quad (2)$$

Where:

$\Delta SALES$  : sales growth of medium-sized industrial companies

$\alpha$  : Constant

$\beta$  : Regression coefficient

ERM : implementation of Enterprise Risk Management

$e$  : error component

### Data Analysis Techniques

The questionnaires in this study used a scaled assessment of 1 - 4 by eliminating medium/ medium options. The Likert scale is used to assess questionnaire answers related to the implementation of ERM used within the company.

**Table 3.** ERM implementation assessment scale

Score	Indication of answer
1	strongly disagree, meaning that the situation has never happened in the company
2	disagree, meaning that the situation sometimes or the probability of the occurrence of the situation in the company is 50%
3	agree, it means that the situation often occurs or the probability of the occurrence of the situation in the company is 75%
4	Strongly agree, meaning that the situation always occurs in the company

Crosstabulation is carried out to find out more in-depth information about the level of ERM implementation that occurs in the company and the financial performance achieved. Hypothesis testing criteria for both  $H_0$  reject equation models when the significance value  $< 5\%$  and fail to reject  $H_0$  if the significance value  $\geq 5\%$ .

## RESULTS AND DISCUSSION

### Statistical Description

Table 4 shows that the overall value of ERM implementation indicators in medium-sized industrial companies in priority sectors in East Java is optimal. This shows that risk management in Medium Industry in East Java is carried out thoroughly with principles and processes that have been integrated into business processes. The risk

supervision and implementation system has been updated periodically accompanied by risk management training.

Table 5 shows the optimal implementation of ERM in each sector. This means that the priority sector of the Medium Industry in East Java has implemented risk management thoroughly with principles and processes that have been integrated into business processes. Compared to other sectors the value of ERM implementation in the food & beverage sector is the lowest.

### Cross Tabulation Analysis

The results of cross-tabulation between the level of implementation of ERM and the growth of company assets showed that 97% of the 23.4% of companies that experienced increased assets had implemented ERM optimally. While 96.6% of the

**Table 4.** Total ERM Implementation score

No	Statement	Rating Scale				Total
		1	2	3	4	
ERM 1	The company's management determines or makes decisions by considering the risks in the implementation of the company's projects/transactions/business consistently	3	3	18	113	458
ERM 2	When there is a risk in the company the owner of the responsibility to make decisions is with the highest leadership (highest person in charge) in each part/project	2	1	53	81	428
ERM 3	The company can run several activities at once.	5	7	37	88	423
ERM 4	Everyone in the company understands the benefits of a risk management process in the company.	5	17	43	72	406
ERM 5	The company's management provides the necessary budget, time, human resources, systems, and technologies as support and commitment to risk management activities	2	5	31	99	440
ERM 6	The company identifies all categories of potential risks from both internal and external sources of risk that will be faced by the company.	2	10	43	82	421
ERM 7	The risk management process (including monitoring, identifying, and assessing risks that may arise due to environmental changes) is carried out repeatedly and continuously.	4	14	32	87	419
ERM 8	Companies can take advantage of opportunities by assessing possible losses and benefits to increase competitive advantage.	9	7	36	85	419
ERM 9	All staff have access to relevant and accurate information and communicate it to determine response strategies.	1	11	44	81	411
ERM 10	All personalities in the company understand well the terms or language associated with risk management.	7	31	36	63	374
ERM 11	The company has implemented or is considering using information technology (it could be one of these: application/computerized/register machine/barcode)	17	21	32	67	385
ERM 12	The Company has sent staff or anyone in the company to attend seminars or training or learn about risk management.	43	23	20	51	309
ERM 13	The company has indicators that are easy to measure and monitor to identify the occurrence of risks within the company.	14	11	29	83	410
ERM 14	All activities related to the company's main business processes are carried out based on the risk management framework and are carried out consistently by all staff and company owners.	5	8	25	99	438
ERM 15	All company staff/employees know the purpose of the company in running its business and understand the performance measures of each company's goals.	5	6	25	101	441
ERM 16	The company's management periodically measures the progress of risk management, and plans, and monitors the suitability of policies and plans with the framework of risk management.	4	4	24	105	450
MEAN					414.5	

**Table 5.** Implementation of ERM Based on Priority Sectors

No	Statement	Food & Beverage	Chemistry	Textiles & Clothing	Automotive	Pharmaceuticals	Electronic
ERM 1	Commitment of the Board of Directors and Senior Management	3,65	3,73	3,75	4,00	3,80	3,92
ERM 2	Ownership of ERM	3,51	3,64	3,29	3,71	3,60	3,77
ERM 3	Risk Appetite and Tolerance	3,35	3,45	3,75	3,64	3,70	3,54
ERM 4	Risk-Conscious Culture	3,05	3,36	3,50	3,71	2,80	3,85
ERM 5	Resources	3,47	3,64	3,79	4,00	3,40	3,92
ERM 6	Identification, analysis, and risk response	3,40	3,45	3,46	3,64	3,70	3,69
ERM 7	Iterative and Dynamic Process Stages of ERM	3,40	3,36	3,58	3,50	3,30	3,92
ERM 8	Utilization of Risk as An Opportunity	3,26	3,27	3,50	3,93	3,40	3,85
ERM 9	Risk Communication	3,33	3,52	3,46	3,64	4,00	3,54
ERM 10	Common Risk Language	2,98	2,88	3,67	3,43	2,40	3,54
ERM 11	Risk Management Information System	2,95	2,39	3,50	3,86	3,10	3,69
ERM 12	Training Program	2,33	2,12	3,17	3,07	2,30	3,15
ERM 13	Key Risk Indicator (KRI= key risk indicator)	3,07	3,24	3,54	3,64	3,30	3,62
ERM 14	Integration of ERM on Business Processes	3,33	3,76	3,71	3,79	3,50	3,69
ERM 15	Destination Settings	3,51	3,55	3,83	3,79	3,40	3,77
ERM 16	Supervision, review, and improvement of the ERM framework	3,51	3,73	3,71	3,93	3,70	3,77
Mean		3,25	3,32	3,58	3,71	3,34	3,70

64.2% of medium-sized industrial companies whose asset performance is stable, have also implemented ERM optimally.

The results of cross-tabulation between the level of implementation of ERM and the company's sales growth showed that as many as 41.6% of respondents who experienced an increase in sales had implemented ERM optimally. Of the 31.4% of respondents whose sales performance is stable, 99.9% have implemented ERM optimally. Meanwhile, of the 27% of respondents who experienced a decline in sales, 67% of them were at a weak ERM implementation level.

### Hypothesis Testing

**Table 6.** First equation t-statistical test results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Result
	B	Std. Error	Beta			
1 (Constant)	1,440	0,445		3,238	0,002	Sig
Total ERM	-0,020	0,008	-0,212	-2,524	0,013	
N				137		
R square				0,212		

**Table 7.** Second equation t-statistical Test Result

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Result
	B	Std. Error	Beta			
2 (Constant)	-0,933	0,204		-4,58	0,000	Sig
Total ERM	0,293	0,06	0,385	4,851	0,000	
N				137		
R square				0,385		

The results of hypothesis testing on both equations showed significant results (a sig value of < 0.05) indicating that ERM implementation had a significant effect on ROA and sales growth.

The results of hypothesis testing on both equations showed significant results (the sig value < 0.05). Thus the first hypothesis (H1) stating that the implementation of ERM positively affects ROA is accepted. Likewise, the second hypothesis (H2) stating that the implementation of ERM positively increases sales in medium-sized industrial companies is declared accepted.

### Discussion

#### *Implementation levels of ERM and Return on Assets*

The results of this study prove that the implementation of ERM has a significant negative effect on Return on Assets. Based on the results of the hypothesis test, high implementation of ERM will lead to a low ROA value. This is because the increased level of implementation of ERM will lead to additional costs needed to improve the quality of risk management frameworks in the company. This additional cost will reduce net profit. Implementation of ERM requires no small cost, thus impacting the reduction of net profit. In risk management theory, there is a risk management transfer technique by paying insurance premiums and hedging with derivative contracts. The cost of handling risk management is included in handling consumer complaints, or compensation for risk. Risk handling measures incur costs such as receivable collection

costs, warehouse supervision costs, work accident costs, training costs, machine maintenance costs, product quality improvement costs, raw material storage costs, and other operational costs.

In addition, due to the impact of the pandemic, there are additional costs that must be incurred such as inspection costs, health benefits costs, and disinfectant spraying costs. Most of its medium-sized industry assets also remain stable and hope that after the pandemic the situation will improve (increased sales) so that many assets are not utilized as they should during the pandemic (decrease in sales). This research was conducted in 2020 - 2021 which is a pandemic period, where the economy is still recovering, so companies tend to use their money to buy assets rather than expansion. This can be a positive signal that the company is still growing because assets are one of the company's investments and are a good signal for creditors indicating that the company has a greater asset guarantee.

### ***ERM implementation rate and Sales Growth***

The results of this study prove that the implementation of ERM has a significant positive effect on sales growth. If the company has implemented ERM optimally then sales increase. This is evidenced by the results of the crosstabulation test that Medium Industries whose implementation is optimal tend to experience increased sales, increased net profit, and stable assets. Sales growth is the company's goal and a key business process. The company's activities related to sales and business sustainability are also determined by sales. A growing company will experience sales growth. The implementation of ERM is closely related to financial performance because it can reduce internal and external risks that lead to financial losses. Implementation of ERM can reduce uncertainty, making it easier for management to manage overall business activities to increase sales. The results proved that although the economy is still recovering due to the impact of the pandemic, a medium-sized industry whose optimal ERM implementation is experiencing sales growth, which is a positive signal that the company can handle risks well. Sales growth is also the company's goal to make a profit and is an indicator of the company in maintaining a competitive advantage in the future. Sales growth is a positive signal for creditors, governments, and investors.

### **CONCLUSION**

Based on the results of the study, it can be concluded that the implementation of ERM has a significant effect on ROA and company sales

growth. The more optimal the company implements ERM, the increase in sales and increased net profit, as well as a minimum of stable assets, will also be achieved by the company. Industries that already implement ERM can increase opportunities, identify, and manage risks, improve positive outcomes, reduce deviations, and create sustainable business systems. The implementation of ERM can reduce the risk of loss, thus making the company maximize opportunities. The risk of loss can be minimized by having quality resources, utilizing them effectively, and improving the quality of performance and decision-making to determine the right response to events that have the potential to be opportunities or threats.

It is hoped that IM companies can further improve and optimize the implementation of ERM. IM managers/managers/owners facilitate staff/employees related to risk such as Chief Risk Officer (CRO), and Risk Committee (RC), to take training on risk management to be able to increase their knowledge, understanding, and expertise in managing risk. This also needs to be sustainable, and reforms need to be held to adapt to the times. Companies need to pay attention so that all members of the company involved in business processes participate in the company's ERM implementation.

This research has limitations, namely the selection of priority sectors based on the Regulation of the Ministry of Industry's Strategic Plan (RPJMN 2020-2024) and there is a possibility that it can be dedendum/changed so that it is expected that researchers can further adjust priority sectors following government regulations. In addition, the financial performance studied is from 2020 - 2021, while this study uses regulations (RPJMN 2020-2024) so this research is expected to be continued in the future.

### **REFERENCES**

- [1] Abd Razak, Noraznira, Zuriah Ab Rahman, and Halimahton Borhan. 2016. Modeling firm resources—Enterprise risk management relationships: An empirical finding using PLS-SEM. *World Journal of Entrepreneurship, Management and Sustainable Development*, 12: 35–49
- [2] Aguirre, Mercedes & Vadiveloo, Jay. (2013). *Enterprise Risk Management – Small & Medium Sized Enterprises*.
- [3] Agustina, L., & Baroroh, N. (2016). The Relationship Between Enterprise Risk Management (ERM) And Firm Value Mediated Through The Financial Performance. *Review of Integrative Business and Economics Research*, Vol. 5, no. 1, 128-138.

- [4] Ahmed, I. and N.A. Manab, 2016. Influence of enterprise risk management framework implementation and board equity ownership on firm performance in Nigerian financial sector: An initial finding. *IOSR Journal of Business and Management*, 18(1): 61-68.
- [5] Altman, E. I., Sabato, G., & Wilson, N. (2010). The Value of Non-Financial Information in Small and Medium-Sized Enterprise Risk Management. *The Journal of Credit Risk*, 6(2), 1-33
- [6] Amalina N, Abdullah M, Zakuan N, Khayon M, and Ariff M.S. 2012. Adoption of Enterprise Risk Management Practices in Organization: A Review. *International Journal Business & Information Technology*, 2(1), 1-9. Retrieved/ from <http://excelingtech.co.uk>
- [7] Aribawa, D. (2016). Pengaruh literasi keuangan terhadap kinerja dan keberlangsungan UMKM di Jawa Tengah. *Jurnal Siasat Bisnis*, 20(1), 1–13. <https://doi.org/10.20885/jsb.vol20.iss1.art1>.
- [8] Ahmad Suhaimi, M. A. (2020). Analisis Manajemen Resiko UMKM Batik Bangkalan Madura di Tengah Pandemi Covid-19. *Jurnal Manajemen Risiko*, 1(II), 141–148
- [9] Annamalah, Sanmugam, Murali Raman, Govindan Marthandan, and Arvin dan Kalisri Logeswaran. 2018. Implementation of Enterprise Risk Management (ERM) Framework in Enhancing Business Performances in Oil and Gas Sector. *Economies*. 6: 4
- [10] Badan Pusat Statistik. (2019). <https://www.bps.go.id/indicator/9/739/1/nilai-tambah-biaya-faktor-produksi-industri-besar-sedang-menurut-subsektor-kbli-2009-.html>
- [11] Badan Pusat Statistik. (2020b). <https://www.bps.go.id/indicator/9/1217/1/proporsi-tenaga-kerja-pada-sektor-industri-manufaktur.html>
- [12] Badan Pusat Statistik PDB indonesia 2017—2021. (2021). <https://www.bps.go.id/publication.html?Publikasi%5BtahunJudul%5D=&Publikasi%5BkataKunci%5D=pdb&Publikasi%5BcekJudul%5D=0&yt0=Tampilkan>
- [13] Bahri, Moujib, Josée St-Pierre, Ouafa Sakka, (2017) "Performance measurement and management for manufacturing SMEs:a financial statement-based system", *Measuring Business Excellence*, Vol. 21 Issue: 1, pp. 17-36, <https://doi.org/10.1108/MBE-06-2015-0034>
- [14] Ballantyne, R. (2013). *An Empirical Investigation into the Association between Enterprise Risk Management and Firm Financial Performance*. Doctoral dissertation, Lawrence Technological University.
- [15] Barton, T., Shenkir, W., Walker, P., 2002. *Making Enterprise Risk Management Pay off*. books.google.com.
- [16] Baxter, R., Bedard, J. C., Hoitash, R., Yezegel, A. 2012. 'Enterprise risk management program quality: determinants, value relevance, and the financial crisis', *Contemporary Accounting Research*, Forthcoming.
- [17] Bogodistov, Yevgen, and VeitWohlgemuth. 2017. Enterprise risk management: a capability-based perspective. *The Journal of Risk Finance* 18: 234–51.
- [18] Brigham, E. and Houston, J. (2007). *Fundamentals of Financial Management*. Thomson outhwestern, Cincinnati
- [19] Callahan, Carolyan, and Jared Soileau. 2017. Does Enterprise risk management enhance operating performance? *Advances in Accounting* 37: 122–39.
- [20] Chairani, C., & Siregar, S. V. (2021). The effect of enterprise risk management on financial performance and firm value: the role of environmental, social and governance performance. *Meditari Accountancy Research*, Vol. 29 No. 3, 647-670.
- [21] Ciorciari, M. & Blattner, P. (2008). Enterprise risk management maturity-level assessment tool. The Society of Actuaries.
- [22] Combs, James G, T. Russell Crook, and Christopher L. Shook. 2005. The Dimensionality of Organizational Performance and Its Implications for Strategic Management Research. *Research Methodology in Strategy and Management*, Vol. 2, 259–286
- [23] COSO. (2004). *Enterprise Risk Management—Integrated Framework*. 16.
- [24] COSO. (2017a). *Enterprise Risk Management—Integrating with Strategy and Performance* (2017). <https://www.coso.org/Documents/COSO-ERM-Presentation-September-2017.pdf>
- [25] COSO. (2017b). *Welcome to COSO*. <https://www.coso.org/Pages/default.aspx>
- [26] Faisal, F., Abidin, Z., Haryanto, H., & Seet-haram, Y. (2021). Enterprise risk management (ERM) and firm value: The mediating role of investment decisions. *Cogent Economics & Finance*, Vol. 9 - issue 1, 1-15.
- [27] Duckert, G. (2011). *Practical enterprise risk management: a business process approach*. Wiley: Hoboken
- [28] Florio, & Leoni. (2017). *Enterprise risk management and firm performance: The Italian case*. <https://www.infona.pl/resource/bwmeta1.element.elsevier-7560dc98-b36e-3229-88a4-e897a00ee647>
- [29] Falkner, E. M., & Hiebl, M. R. (2015). Risk management in SMEs: a systematic review of available evidence. *The Journal of Risk Finance*, 16(2), 122-144.

- [30] Gates, N. W. (2012). Enterprise Risk Management: A process for Enhanced Management and Improved Performance. *Management Accounting Quarterly*, 28-38.
- [31] Gordon, L. A., Loeb, M. P., & Tseng, C.-Y. (2009). Enterprise risk management and firm performance: A contingency perspective. *Journal of Accounting and Public Policy*, 28(4), 301–327. <https://doi.org/10.1016/j.jaccpubpol.2009.06.006>
- [32] Hopkin. (2010). *Fundamentals of Risk Management* (5th ed.). <https://www.ebooks.com/en-gb/book/96297616/fundamentals-of-risk-management/paul-hopkin/>
- [33] Hoyt, & Liebenberg. (2011). *The Value of Enterprise Risk Management—Hoyt—2011—Journal of Risk and Insurance—Wiley Online Library*. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1539-6975.2011.01413.x>
- [34] Hoyt, R. E., & Liebenberg, A. P. (2011). The Value of Enterprise Risk Management. *The Journal of Risk and Insurance*, 78(4), 795–822.
- [35] Iswajuni, I., Manasikana, A., & Soetedjo, S. (2018). The effect of enterprise risk management (ERM) on firm value in manufacturing companies listed on Indonesian Stock Exchange year 2010-2013. *Asian Journal of Accounting Research*, Vol. 3 No. 2, 224-235.
- [36] Kadisperindag. (2021). *Kadisperindag: PDRB Jatim 30,6 Persen Ditopang Sektor Industri | Dinas Komunikasi dan Informatika Provinsi Jawa Timur*. <http://kominfo.jatimprov.go.id/read/umum/kadisperindag-pdrb-jatim-30-6-persen-ditopang-sektor-industri>
- [37] *Kemenperin: Kebijakan Industri Nasional*. (2020). <https://www.kemenperin.go.id/artikel/19/Kebijakan-Industri-Nasional>
- [38] *Kemenperin: Pemerintah Optimalkan Peran Industri Pulihkan Ekonomi Nasional*. <https://www.kemenperin.go.id/artikel/22346/Pemerintah-Optimalkan-Peran-Industri-Pulihkan-Ekonomi-Nasional>
- [39] Kim, Young Jun, and Nicholas S. Vonortas. (2014) Managing Risk in the Formative Years: Evidence from Young Enterprises in Europe. *Technovation*, 34.8: 454-465
- [40] Kontribusi PDRB nasional 2020. (2021). <https://www.bps.go.id/indicator/52/289/1/-seri-2010-distribusi-pdrb-terhadap-jumlah-pdrb-34-provinsi-atas-dasar-harga-berlaku-menu-rut-provinsi.html>
- [41] Lai, F.W., F. A. Samad, “Enterprise Risk Management Framework and The Empirical Determinants of Its Implementation,” *Risk*, Vol.6, p. 8, 2010
- [42] Lam, J. (2014). *Enterprise Risk Management: From Incentives to Controls—James Lam—Google Book*. [https://books.google.co.id/books/about/Enterprise\\_Risk\\_Management.html?id=9E50AgAAQBAJ&redir\\_esc=y](https://books.google.co.id/books/about/Enterprise_Risk_Management.html?id=9E50AgAAQBAJ&redir_esc=y)
- [43] Lewin, A., & Minton, J. (1986). Determining organizational effectiveness: Another look, and an agenda for research. *Management Science*, 32(5), 514–538.
- [44] Liebenberg, A. P., & Hoyt, R. E. (2003). The Determinants of Enterprise Risk Management: Evidence From the Appointment of Chief Risk Officers. *Risk Management and Insurance Review*, 6(1), 37–52. <https://doi.org/10.1111/1098-1616.00019>
- [45] Liu X. 2012. Model for evaluating the risk management of trade enterprise with Interval intuitionistic trapezoidal fuzzy information. *Advances in Information Sciences and Service Sciences*, 4(4): 11-17
- [46] Loosemore M., Raftery J., Reilly C., Higgon D. (2006) *Risk management in projects*. London: Taylor & Francis
- [47] Maltz, A., Shenhar, A., & Reilly, R. (2003). Beyond the balanced scorecard: Refining the search for organizational success measures. *Long Range Planning*, 36, 187–204.
- [48] McShane, M. K., Nair, A., & Rustambekov, E. (2011). Does Enterprise Risk Management Increase Firm Value? *Journal of Accounting, Auditing & Finance*, 641-658.
- [49] Meulbroek L. The promise and challenge of integrated risk management. *Risk Management and Insurance Review*, vol. 5, pp. 55-66, 2002
- [50] Misbah, M. (2017). Asesmen Maturitas Manajemen Risiko Perusahaan Pada Kontraktor Kecil Dan Menengah. *Jurnal Teknik Mesin*, 6, 87. <https://doi.org/10.22441/jtm.v6i2.1195>
- [51] Muslih, M. (2019). The Benefit of Enterprise Risk Management (ERM) On Firm Performance. *Indonesian Management and Accounting Research*, 17, 171. <https://doi.org/10.25105/imar.v17i2.4949>
- [52] Nocco, B. W., & Stulz, R. M. (2006). *Enterprise Risk Management: Theory and Practice*. <https://doi.org/10.2139/ssrn.921402>
- [53] Pagach D.P and Warr R.S. 2010. *The effects of enterprise risk management on firm performance*. available at SSRN 1155218
- [54] Pedrycz W, Gomide F (1998). *An introduction to fuzzy sets: Analysis and design*. MIT Press, Cambridge
- [55] Radner, R, and L Shepp. 1996. Risk vs. profit potential: A model for corporate strategy. *Journal of Economic Dynamics Control* 20: 1373–93.
- [56] Ramlee, R., & Ahmad, N. (2015). *Panel Data Analysis on the Effect of Establishing the Enterprise Risk Management on Firms' Performances*. Proceedings of 4th European

- Business Research Conference Imperial College (pp. 1-10). London, UK: Imperial College, London, UK.
- [57] Risk Management. *RIMS Risk Maturity Model: Performance Management*. (2014). Retrieved from <https://www.riskmanagement-monitor.com/rims-risk-maturity-model-performance-management/>
- [58] Rowe, W., & Morrow, J. (1999). A note on the dimensionality of firm financial performance using accounting, market, and subjective measures. *Canadian Journal of Administrative Sciences*, 16(10), 58–70
- [59] Santori, L., Bevan, K., and Myers, C. (2007). *Summary of Standard & Poor's Enterprise Risk Management Evaluation Process For Insurers*. New York, NY: Standard & Poor's
- [60] Shook, C. L., Ketchen, D. J., Cycyota, C. S., & Crockett, D. (2003). Data analytic trends and training in strategic management research. *Strategic Management Journal*, 24, 1231–1237.
- [61] Smith, J.A. (1998). Strategies for startups. *Long Range Planning*, 31(6): 857-872 Society of Actuaries Committee of Sponsoring Organizations of the Treadway Commission (COSO). 2004. *Enterprise Risk Management Framework*. New York: American Institute of Certified Public Accountants.
- [62] Tahir, IM and Razali, AR 2011, The Relationship Between Enterprise Risk Management (ERM) and Firm Value: Evidence From Malaysian Public Listed Companies. *Management*, Vol.1, No.2, pp.32-41
- [63] Waweru, N., & Kisaka, E. (2013). The Effect of Enterprise Risk Management Implementation on the Value of Companies Listed on the Nairobi Stock Exchange. *Journal of Applied Finance & Banking*, 3(3). [https://econpapers.repec.org/article/sptapfiba/v\\_3a3\\_3ay\\_3a2013\\_3ai\\_3a3\\_3af\\_3a3\\_5f3\\_5f7.htm](https://econpapers.repec.org/article/sptapfiba/v_3a3_3ay_3a2013_3ai_3a3_3af_3a3_5f3_5f7.htm)
- [64] Woo, C., & Willard, G. (1983). *Performance representation in business policy research: Discussion and recommendation*. Paper presented at Academy of Management meetings, Dallas, TX.
- [65] Wu, Q. L. Y. and U. Ojiako. 2014. *Enterprise risk management and firm value within China's insurance industry*.