RISK MITIGATION USING INTEGRATION ENTERPRISE RISK MANAGEMENT AND BALANCED SCORECARD MODEL (A Case Study in a Consulting Services Company in Indonesia)

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ABSTRACT
Risk is the uncertainty of events that can hurt organizational goals. The risks that exist in the company need to be managed or controlled to reduce risk pressure on the goals the company wants to achieve. ERM is an integrated or holistic strategic risk management that manage risk more comprehensively. Meanwhile, the Balanced scorecard is a tool used to help companies measure performance based on financial and non-financial perspectives. The purpose of this study is to determine the extent to which companies can apply ERM based on the balanced scorecard perspective and how the integration of ERM and balanced scorecard can help managerial decisions. This research conducted at a consulting service company using semi-quantitative methods. The results showed 36 events identification. Risk management is carried out based on the level and amount of risk that has been evaluated and made in a risk priority map. Handling risk three strategies, apply namely accept, share and reduce under capabilities, and resources the company has in managing risk. Implementation of ERM and Balanced Scorecard companies can reduce existing risks, and assist stakeholders in making decisions related to risk management.

INTRODUCTION
Modern economic development dynamically requires companies to increase innovation. Companies need to make the right strategies formulation, effectiveness implementation, and performance evaluation can cope with change (Kurniawati, 2017). Every company wants good quality of the business journey. The companies superior performance is a representation that the business processes in the companies are well executed. Performance measurement of companies is needed to interpret the vision, mission, and strategy of the company. Organizational performance of the organization elements such as customer service, cost management, quality, productivity and asset management (Durst et al., 2019). To achieve strategic goals, vision, and
mission as performance improvement, the company experiences obstacles that are not free from risks, which can disrupt the stability of the company to achieve the desired goals. Risk is a natural phenomenon that can't be eliminated (Rasid et al., 2017). Risk is the uncertainty of an incident that could result in a positive or negative impact on the organization's objective. The risks involved in the company need to manage or control to reduce the risk pressure objective the company wants to achieve. Modern economic developments also require organizations to apply risk management to reduce the uncertainty of complex growth and system sustainability.

Enterprise risk management (ERM) is the process of managing all risks in an integrated or holistic manner, by controlling and coordinating every risk throughout the company (Berry-Stölzle & Xu, 2018). Unlike the traditional "silo" approach, the ERM approach takes all parts of the company in identifying, assessing, and managing risks (Kleffner et al., 2003). ERM focuses on systematically improving "silos" to coordinate and control corporate risk by consistently gathering information frameworks to exploit risk naturally (Berry-Stölzle & Xu, 2018; Farrell and Gallagher, 2019). In 2004, The Committee of Sponsoring Organizations of the Treadway Commission (COSO) developed and launched the concept of ERM, not only involving top management, but all employees to achieve and fulfill the vision and mission of the company (Suttipun et al., 2018). In practice, ERM not only improves company performance but can also reduce various types of risk pressures (Florio & Leoni, 2017), more growth opportunities for companies because it allows companies to attract and retain investment in highly competitive industries (Khan et al., 2016).

Many studies conducted by previous researchers were related to ERM, such as (Ahmed and Manab, 2016); (Mohd-Sanusi et al., 2017); (Waseem-Ul-Hameed et al., 2017); (Lundqvist and Vilhelmsson, 2018); (Mahmod et al., 2018); (Lechner & Gatzert, 2018); (Bohnert et al., 2019); and (Anton & Nucu, 2020), highlight the factors in ERM adoption and implementation which include personnel perceptions of risk management and the need for a risk awareness culture at all organizational levels before adopting ERM. Oliveira et al. (2019), identified ten critical factors that can influence the successful implementation of ERM in an organization. Nowadays, ERM is importantly to business activities because it facilitates companies to control internal systems and business competitiveness (Yang et al., 2018). Berry-Stölzle & Xu, 2018, stated that the application of ERM reduces the companies capital costs. The application of ERM in companies is importantly to help companies identify, analyze, evaluate, and respond to risks effectively and efficiently. Simultaneously, ERM can reduce operating costs and improve company performance. Some companies experience problems in the implementation of ERM, this is due to the inadequacy and inability of management to implement ERM (Waseem-Ul-Hameed et al., 2017).

The relationship between ERM and company performance is introduce (Soltanzadeh et al., 2016); (Ahmed & Ahmed, 2016); (Ali et al., 2019); (Shad et al., 2019) and (Nasr et al., 2019). Results study of (Annamalah et al., 2018) is a significant and positive relationship between ERM and business performance. ERM meets the needs of stakeholders to realize broader management in ensuring a well-managed organization (Rasid et al., 2017). Stakeholders have a social responsibility for company performance, and risk management mediation the relationship between social responsibility and company performance (Naseem et al., 2020). However, implementation weak of ERM adversely affects revenue can affect the company in the long term (Wang et al., 2018).

Implementation of a performance measurement system has succeeded in assisting the company in controlling various activities. Balanced Scorecard (BSC) is a tool for measuring performance, which was popularized by Kaplan and Norton 1992. The balanced scorecard has the main perspective and objective of providing strategic business views and control based on the company vision and mission, including measuring financial and non-financial performance. The relationship between risk management and performance measurement (balanced scorecard) has been described by (Nagumo, 2005); (Beasley et al., 2006); (Calandro & Lane, 2006); (Wood, 2007); (Thekdi & Aven, 2016); (Bourne & Mura, 2018); and (Yang & Lee, 2020). Hafez (2015) finding integrates six sigma with a balanced scorecard in conducting internal audits to be more effective and efficient in risk management. (Khameneh et al., 2016) examines more deeply about
the performance management of key risk indicators, using a balanced scorecard as a strategy to improve ERM performance. Results of (Rasid et al., 2017) finding the relationship between ERM and the company performance measurement system (balanced scorecard) cannot integrate simultaneously. Cheng et al. (2018), finding that evaluating the results of integration information on risk strategies and a balanced scorecard does not help as a driver of performance improvement. Besides, (Suttipun et al., 2018) risk assessment activities of goal setting, control, and monitoring have a positive and significant impact on the performance SMEs as measured by the BSC, while risk identification has a negative effect. The result of integrating risk management with BSC is not reducing risk pressures, measurable potential losses, but rather to understand risk issues in work orientation (Thekdi & Aven, 2016).

Innovative industrial risks arise due to uncoordinated and balanced innovative projects, which are accompanied by the emergence of various stochastic effects that have an impact on innovative processes of complex economic systems (Ponikarova & Kadeeva, 2020). Implementation ERM is most important for various sectors, banks, insurance and non-financial companies, especially SMEs (Anton & Nucu, 2020). Other studies on the relationship between risk management and balanced scorecard in service banks (Elkhouly et al., 2015); and (Ratri & Pangeran, 2020). Looking at the various advantages of the ERM integration model with the balanced scorecard, this study aims to find out the extent to which the company can explore the ERM in conducting risk identification, risk assessment, and risk response based on the perspective of a balanced scorecard. How the integration of ERM and balanced scorecard can help managerial in decision making regarding strategic management applied to improve the company performance, achieve the desired goals of the company. A case study in a consulting company in Indonesia is conducted.

Risk is an uncertainty factor that can hinder the achievement of organizational goals (Olivia, 2016). Risk management can create value at either the company or business unit level (Khameneh et al., 2016). Enterprise Risk Management (ERM) is a company management process that involves risk identification and collective risk assessment that can affect firm value and how companies implement risk management strategies (Meulbroek, 2002). The ERM analyzes the portfolio risk process faced by companies ensuring that the effects caused by these risks are within acceptable tolerance limits (Beasley et al., 2008). ERM includes the methods and the processes that organizations use risk and seize the opportunities outside achieve their goals (Rasid et al., 2017). ERM is a fundamental and comprehensive model that has evolved from a traditional system, a holistic and integrated system (Nasr et al., 2019). This can provide a greater awareness of the company about the risks that increase and the company's ability to respond to risk effectively, thereby increasing the efficiency and effectiveness of the company's operations (Ali et al., 2019).

The Committee of Sponsoring Organization of the Treadway Commission (COSO) 2004 explains, risk management as a process engaged in the board of directors, management and other personnel entity, applied determination of strategies and design company, to identify potential impacts and managed the risks could affect entity not lose risk appetite provide reasonable assurance entity regarding the fulfillment of the objectives. The COSO ERM aims to provide a risk management framework included as an importantly part of directing organizational goals. The COSO ERM has become a standard and de facto risk management framework for large companies (Weeserik & Spruit, 2018). The COSO ERM consists of eight components, namely the determination of the risk context (objectives), risk assessment, event identification, risk assessment, risk response, control activities, information and communication, and monitoring, meanwhile the traditional risk management system consists of five components, namely identification, analysis, evaluating, managing and monitoring risk (Annamalah et al., 2018). According to (Frigo, 2009) three ERM COSO elements relate to the strategy ERM deals directly with the determination of the strategy and becomes effective if embedded and connected directly with the development of the company strategy, ERM design to identify events that may affect the company strategy performance; the objective of ERM is to assure that the company achieves the
strategic objective. ERM practice is most important for organizations in the current era because it facilitates companies to control their internal business systems (Yang et al., 2018).

Performance measurement is a method developed to measure performance indicators and relate them to contextual factors to measure performance (Weeserik & Spruit, 2018). The balanced scorecard is an organizational management performance control system popularized by Kaplan and Norton. The balanced scorecard is a management system that provides a framework for interpreting the company's vision and mission into a coherent set of performance measures (Kaplan & Norton, 1996). The balanced scorecard explains fact importance of non-financial factors in determining strategic goals (Kotze et al., 2015). The balanced scorecard has four main perspectives that identify whether the company performance is good or not, namely finance, customers, internal business, learning, and growth. Stakeholders establish key performance indicators (KPIs) to achieve their strategic goals. Key performance indicators are used to measure and evaluate organizational performance in achieving strategic objectives. Khameneh et al (2016), used 19 KPIs for risk management system performance.

Performance measurement directs the company to a more viable and profitable future, while risk management is how the company avoids impacts that can harm and destroy business (Bourne and Mura, 2018). Risk management related to company performance aims to grow the company and prepare the basis for decision-making (Klučka & Grűnbichler, 2020). The balanced scorecard is used for organizational performance strategies in achieving goals, while ERM helps company leaders think about positive and negative factors that affect the achievement of goals (Beasley et al., 2006). Studies conducted (Beasley et al., 2006) and (Wood, 2007) combined ERM with BSC as a corporate control strategy to strengthen goal achievement. ERM and balanced scorecard complement each other. For example, the Balanced Scorecard creates strategic work for everyone in the entity from top to bottom, as well as ERM, which shows that everyone in the entity has a responsibility in managing company risk (Nagumo, 2005). A balanced scorecard and ERM can be implemented simultaneously because of the division of elements and are an ongoing process related to company strategy (Kotze et al., 2015). The integration of ERM with the Balanced Scorecard also strengthens the balanced scorecard process of capturing more information about risk management objectives, and actors become more aware of risks and the need to manage risks, thereby enhancing learning and growth (Beasley et al., 2006).

Nagumo (2005), combines 8 risk management components in COSO ERM and a balanced scorecard into a mapping chart (see Figure 1). Internal environment refers to the top management commitment using a balanced scorecard with the ERM system to enhance the security and safety of the organization. COSO has four categories a strategic, operations, report and compliance in order to achieving goals. Strategic objectives in the perspective of the balanced scorecard closely related to the achievement of the company vision and mission. While other objectives are closely related to the internal business, financial, customer and growth and learning processes, both in operations, reporting and policies set by the company.

![Figure 1. Mapping chart](source: Nagumo, 2005)
Strategy of executing the risk management process starts from risk identification, risk assessment, risk management and control activities in carrying out risk management. Development of COSO ERM and a balanced scorecard reduce the risk impact that could interfere in achieving organizational objectives. A COSO ERM practice with a balanced scorecard as a single package that cannot be separated. Although according to (Calandro and Lane, 2006) the use of COSO ERM with a balanced scorecard can be done separately, but integrating the two will have a potential impact because management will balance risk measurement and risk management measurement.

RESEARCH METHOD

This research is semi-quantitative in nature, and the subject of this research is a consulting, training, and certification service company located in the Special Region of Yogyakarta. The company provides four types of services, public training, in-house training, certification, and consulting. Clients of this company consist of more than 800 state-owned, private, educational, and non-government institutions. The training fields offered include various including Human Resources and Development, Business and Management, Engineering, Oil and Gas, Electricity and Energy. Information Technology, Finance, Law, and The risk management framework used in this study is based on the ERM balanced scorecard model see (figure 1). The implementation of strategic risk management based on (figure 1), with the following explanation.

1. Event identification is the identification of internal and external events that affect the organization reaching the goal. Event identification was conduct using key indicators performance balanced scorecard defined by the companies and an in-depth interview to collect related information to potential risks and impacts that affect the company performance. Data collected by distributing questionnaires from departments such as finance, operational, marketing, and information technology. The Validation and reliability of the questionnaire based on expert opinion.

2. Risk assessment: A scenario to calculate likelihood, consequences and potential risks. The risk assessment consist of two activities;
   a. Risk Analysis
      Risk analysis aims to understand the nature of risk and its characteristics including suitability and level of risk. Risk analysis is carried out in a semi-quantitative manner by determining the magnitude of the likelihood and consequences of the risk, so that the magnitude and level of risk are obtained. The magnitude and level of risk are known from a combination of likelihood and the consequences of risk on the risk matrix. Then the risk is mapped based on the level of risk. In this study the magnitude of the level of probability, impact of risk and risk level can be seen in tables 1 – 3 (BSN, 2018). Risk map is shown in figure 3 adopt from (Cox, 2008) the dotted line shows the acceptable risk tolerance limit.

| Scale | Description | Probability level |
|-------|-------------|-------------------|
| 1     | Very rare   | 1 time in 1 month |
| 2     | Rare        | 2 times in 1 month|
| 3     | Likely      | 3 times in 1 month|
| 4     | Most Likely | 5 times in 1 month|
| 5     | Almost certainly | >6 times in 1 month|
Table 2. Consequences Level

| Scale | Description                           | Consequences level                  |
|-------|---------------------------------------|-------------------------------------|
| 1     | Insignificant                         | No effect on increasing profits and productivity |
| 2     | Minor                                 | The effect on profit and productivity is low |
| 3     | Moderate                              | The company may suffer losses       |
| 4     | Large                                 | Inhibit in increasing profits and low productivity |
| 5     | Very Large                            | Inhibit in increasing profit and very low productivity |

Table 3. Level dan Magnitude of Risk

| Risk level   | Magnitude |
|--------------|-----------|
| Very low (1) | 1-5       |
| Low (2)      | 6-11      |
| Moderate (3) | 12-15     |
| High (4)     | 16-19     |
| Very High (5)| 20-25     |

Figure 2. Matrix of Risk Maps

Source: http://international.fhwa.dot.gov/riskassess/images/figure 12.htm

b. Risk Evaluation

Risk evaluation is done by comparing the results of risk analysis with established risk criteria. This risk evaluation includes setting priorities for risk and determining key risks. The purpose of risk evaluation is to support the decision making process in risk mitigation.

3. Risk response is a plan to address the risk, either by avoiding, accepting, reducing or dividing the risk.

4. Control activities are policies and procedures set up to help the company effectively and efficiently respond to risks.

RESULTS AND DISCUSSION

A. Event Identification

The purpose of implementing the ERM balanced scorecard is to help managers achieve strategic goals in accordance with the vision or mission. Implementation of risk management is carried out in accordance with existing resources. Event identification is carried out by identifying KPIs based on the BSC that have been assigned by the company. From the results of interviews and questionnaires, there are 20 indicators obtained and there are 36 risk events that are grouped into four perspectives namely financial, customer, internal business and learning. The types of risks are shown in Table 4.

1. Risk Assessment

The event risk is analyzed based on the probability and impact of the risk to determine the level of risk.

\[
RL = L \times C
\]
Where: \( RL = \text{Risk Level} \)
\( C = \text{Consequence} \)
\( L = \text{Likelihood} \)

Determination of the level of probability and risk impact using a likert scale (see table 1-3) with the magnitude of the risk level can be seen in Table 5.

### Table 4. Risk Identifications.

| Code | Category | Indicator | Risk Event |
|------|----------|-----------|------------|
| E1   | Financial perspectives | Increased profits | Target Sales Training not achieved |
| E2   | Total Cost | High rent cost of training venue | Administration fee exceeds the specified target |
| E3   | ROA | Lack of existing asset maintenance | The operational use of assets is not maximized |
| E4   | ROE | Receivables Uncollected | Delayed payment from clients |
| E5   | Calculating financial and tax reports is incorrect | |
| E6   | Customer perspective | Customer Satisfaction | Training facilities do not support |
| E7   | Training material does not update | |
| E8   | Trainers are not communicative | |
| E9   | An Internal business perspective | Response time | Lack of marketing response |
| E10  | Lack of development of new syllabus | |
| E11  | Number of new syllabus | | |
| E12  | Number of IHT Deal | Lack of negotiation skill | |
| E13  | The Training offered does not meet the client's needs | |
| E14  | Number of Public Training Deal | Data Partnership not recorded properly | |
| E15  | Number of partnerships | | |
| E16  | Number of certificates | Error printing name in certificate | |
| E17  | Website | Lack of skill in IT | |
| E18  | Social Media | Displayed ads are not appealing | |
| E19  | Email/Lead | Blasting email Is not effective yet | |
| E20  | SEO | Lack of skill in SEO | |
| E22  | Traffic/Visitor | Website cannot be accessed | |
| E23  | Instructor availability | No availability of instructor for specific topic | |
| E24  | The instructor has another agenda | |
| E25  | Training on schedule | The client cancels the training when the schedule is determined | |
| E26  | The number of participants does not meet minimum participant | |
| E27  | Number of complaints against Training organization | Handling complaint is slow | |
| E28  | Responsiveness and ease of communication | Employees do not assist clients in managing documents after training | |
| E29  | Learning Perspective | Employee satisfaction | Uncomfortable workspace |
| E30  | Network problematic telecommunications | |
| E31  | High level of Communication among co-workers | |
| E32  | The benefits provided by the company is partial coverage | |
| E33  | Work too monotonous | |
| E34  | High overtime hours | |
| E35  | Lack of human resources development | |
Table 5 Risk level

| Code | L | C | RL | Code | L | C | RL |
|------|---|---|----|------|---|---|----|
| E1   | 1 | 4 | 4  | E19  | 1 | 1 | 1  |
| E2   | 2 | 3 | 6  | E20  | 2 | 3 | 6  |
| E3   | 3 | 3 | 9  | E21  | 2 | 2 | 4  |
| E4   | 2 | 4 | 8  | E22  | 2 | 2 | 4  |
| E5   | 3 | 3 | 9  | E23  | 1 | 1 | 1  |
| E6   | 1 | 2 | 2  | E24  | 2 | 4 | 8  |
| E7   | 2 | 4 | 8  | E25  | 3 | 3 | 9  |
| E8   | 4 | 3 | 12 | E26  | 2 | 4 | 8  |
| E9   | 1 | 4 | 4  | E27  | 3 | 4 | 12 |
| E10  | 2 | 4 | 8  | E28  | 2 | 3 | 6  |
| E11  | 2 | 4 | 8  | E29  | 1 | 2 | 2  |
| E12  | 2 | 4 | 8  | E30  | 1 | 2 | 2  |
| E13  | 3 | 3 | 9  | E31  | 2 | 2 | 4  |
| E14  | 3 | 4 | 12 | E32  | 2 | 3 | 6  |
| E15  | 3 | 4 | 12 | E33  | 1 | 2 | 2  |
| E16  | 2 | 2 | 4  | E34  | 2 | 3 | 6  |
| E17  | 2 | 3 | 6  | E35  | 1 | 2 | 2  |
| E18  | 2 | 3 | 6  | E36  | 2 | 3 | 6  |

Based on the results of risk level in Table 4 above, then the risk is mapped to facilitate the determination of risk evaluation. Risk map can be seen in figure 3.

![Figure 3. Risk maps before mitigation](image)

From the risk maps above, risks are grouped based on the level of risk. Risk priorities are grouped into three, namely, the main risk E8, where this risk has the highest magnitude of risk, then risk groups E14, E15 and E27, and finally risk groups E3, E5, E13 and E25. Risk groups that are below the dotted line are not included in the priority risks that must be addressed because these risks can still be tolerated.

2. Risk Response

The next step is to treat risk. Treat risks according to the policies and capabilities resources of the organization in dealing with existing risks. Decisions in managing risks are also seen from the resources that the organization has. In this study, the risk management strategies adopted are reducing, sharing, and accepting. Risks accepted (accept) are that risks have an impact not harmful and threatens the operational and management of company, and do not require special treatment for handling risk. Share strategies are carried out by sharing risk with third parties. Strategies that be applied are selecting suppliers and making contractual agreements with suppliers, involving suppliers in discussions in developing modules, learning processes, evaluating and controlling indoor activities. Establish cooperation with hotel suppliers or other place service providers to provide alternative places, if there a sudden change in schedule or high level of demand, that in scheduling training, the operational team has no difficulty finding and providing a strategic place.
for training. Collaboration is also to reduce operational costs in providing training venues. Reduced strategy is applied to reduce the likelihood or impact of risks by improving operational procedures, making new policies, improving financial accounting systems, providing training to employees, and giving invoices earlier to clients. Risk mitigation undertaken in this study see in Table 6.

| Code | Risk Event | Risk Mitigation | Risk Treatment |
|------|------------|-----------------|----------------|
| E8   | Delayed payment from clients | Make a payment bill in advance | Reduce |
| E14  | Lack of development of new syllabus | Conducting FGD with the speaker for periodic development of new syllabus | Reduce |
| E15  | No agreement in training venue and training time between instructors and clients | Make an early deal with clients and instructor, provide several alternative schedules, conduct communication schedules and more alternative training venue | Share |
| E27  | The number of participants does not meet minimum participant | Find a training venue e according to the number of participants | Accept |
| E3   | High rent cost of training venue | Find alternative of training venue | Share |
| E5   | Lack of existing asset maintenance | Perform asset inventory periodically | Reduce |
| E13  | Lack of skill of marketing staff | Training for marketing staff | Reduce |
| E25  | The instructor has another agenda | Provide more availability of alternative instructor | Reduce |
| E4   | Administration fee exceeds the specified target | Perform a range of re-operations and periodically improved book keeping system | Reduce |
| E7   | Receivables Uncollectible | Billing early payments to clients | Reduce |
| E10  | Training facilities do not support | Find alternative Hotel suppliers as a training venue | Share |
| E11  | Training material does not update | Conducting material evaluation from clients and conducting FGD with Instructors | Share |
| E12  | Training speakers are not communicative | Conduct evaluation and assessment | Share |
| E24  | No availability of client-based speaker requests | Create a network of speakers all over the region | Share |
| E26  | The client cancels the training when the schedule is determined | Rescheduling | Reduce |

Figure 4 shows a risk map after risk management is carried out. Some of the risks that are prioritized for risk management have reduced levels of likelihood and impact so that they do not threaten the company's survival. From the map, it can be seen that there are significant and positive changes after risk mitigation. Risk management with the integration of the balanced scorecard and ERM can reduce the risks that occur in the company more strategically. In addition, management can also be careful in taking action both in improving performance and risk management. This integration also makes it easier for management to control and monitor all elements of the organization. This is in line with the results of research from several namely (Ratri & Pangeran, 2020); (Lamanda & Võneki, 2015); (Leech, 2013) and (Hilson & Webster, 2011). Each element of the organization can easily carry out operations and reports to superiors with policies that facilitate the sharing of information at every level.

ERM integration and balanced scorecard will balance the improvement of company performance and risk management. This integration can help managerial in obtaining overall information and strategic decision making in achieving company goals based on the company's vision and mission (Suttipun et al., 2018); (Nagumo, 2005); (Beasley et al., 2006) and (Frigo, 2009). Companies can improve performance and reduce the possibility of risks that affect the
company as a whole. The integration of ERM with the balanced scorecard has a positive influence in reducing existing risks (Wisutteewong & Rompho, 2015).

| Likelihood          | Consequence       |
|---------------------|-------------------|
| Almost Certainly Occur | Insignificant | Minor | Moderate | Major | Catastrophic |
| Often Occurs        |                   |       |          |       |              |
| Maybe Occur         | E8                |       |          |       |              |
| Rarely Occur        | E14 E15 E4        |       |          |       |              |
| Almost No Occur     | E5 E7 E10 E25 E12 E24 | E3 E27 E11 | E11 E26 | E13    |              |

Figure 4. Risk maps after mitigation

CONCLUSIONS
This study can identified 36 risk events based on four balanced scorecard perspectives. These risks are then analyzed and evaluated to obtain risks that are a priority to be addressed. Managing risks, the researcher can apply a share, reduce and accept strategy based on the level and magnitude of the risk. Risk acceptance strategy carried out for risks that have low level and do not require special treatment, do not have impact and threaten the company survival. Share and reduce risk is a priority to be addressed. Type of risk management corresponds to the category and event of the risk. Share strategy carried out by sharing the risk with third parties. The integration between ERM and balanced scorecard could balance the improvement of company performance and risk management. This integration makes it easier for management to control and monitor all elements of the organization.

REFERENCES
Ahmed, I., Ahmed, N.A. (2016). Moderating role of board equity ownership on the relationship between enterprise risk management implementation and firm performance: A proposed model. International journal of Management Research & Review, 6(1), 21-30.
Ahmed, I., Manab, N.A. (2016). Influence of Enterprise Risk Management Success Factors on Firm Financial and Non-financial Performance: A Proposed Model. International Journal of Economics and Financial Issues, 6(3), 1-7.
Ali, M., Hamid, N.S.A., Ghani, E.K. (2019). Examining the Relationship Between Enterprise Risk Management and Firm Performance in Malaysia. International Journal of Financial Research, 10(3), 239-251.
Annamalah, S., Raman, M., Marthandan, G., Logeswaran, A.K. (2018). Implementation of Enterprise Risk Management (ERM) Framework in Enhancing Business Performances in Oil and Gas Sector. Economics, 6(4), 1-12.
Anton, S.G., Nucu, A.E.A. (2020). Enterprise Risk Management: A Literature Review and Agenda for Future Research. Journal of Risk and Financial Management, 13(11):281.
Badan Standar Nasional. (2018). Grand Desain Penerapan Manajemen Risiko di Badan Standar Nasional (2018-2023). Badan Standar Nasional.
Beasley, M., Pagach, D., Warr, R. (2008). Information conveyed in hiring announcements of senior executives overseeing enterprise-wide risk management processes. Journal of Accounting, Auditing & Finance, 23(3), 311-332.
Beasley, M., Chen, A., Nunez, K., Wright, L. (2006). Working hand in hand: balanced scorecard and enterprise risk management. Strategic Finance, 87(9), 49-55.
Berry-Stölze, T.R., Xu, J. (2018). Enterprise Risk Management and the Cost of Capital. The Journal of Risk and Insurance, 85(1),159-201.
Bonhert, A., Gatetz, N., Hyot, R.E., Lechner,P. (2019). The Drivers and Value of Enterprise Risk Management: Evidence from ERM Ratings. The European Journal of Finance, 25(3), 234-255.
Bourne, M., Mura, M. (2018). Performance and Risk Management. *Production Planning and Control the Management of Operations, 29*(15), 1221-1224.

Calandro, J., Lane, S. (2006). Insight from the balanced scorecard An Introduction to the enterprise risk scorecard. *Measuring Business Excellence, 10*(3), 31-40.

Cheng, M.M., Humphreys, K.A., Zhang, Y.Y. (2018). The Interplay Between Strategic Risk Profiles and Presentation Format on Managers' Strategic Judgments using the Balanced Scorecard. *Accounting, Organization and Society, 70* (C), 92-105.

COSO (Committee of Sponsoring Organizations of the Treadway Commission). (2004) Enterprise Risk Management – Integrated Framework. New York.

Cox, L.A.Jr. (2008). Whats wrong with Risk Matrices? *Risk Analysis, 28*(2), 497-512.

Durst, S., Hinteregger, C., Zieba, M. (2019). The Linkage Between Knowledge Risk Management and Organizational Performance. *Journal of Business Research, 105*(2019), 1-10.

Elkholy, S.M., Ibrahim, M.M., Elfrargy, M.M., Kotb, A.S. (2015). Measuring the effectiveness of banking risk balanced scorecard in enhancing bank value. *International Journal of economics and Finance, 7*(6), 139-152.

Farrell, M., Gallagher, R. (2019). Moderating Influences on the ERM Maturity-Performance Relationship. *Research in International Business and Finance, 47*(C), 616-628.

Federal Highway Administration of the U.S. Department of Transportation. (2006). Risk Assessment and Allocation for High way Construction Management. Washington, DC: U.S. Department of Transportation. Available at http://international.fhwa.dot.gov/riskassess/index.htm. (Last accessed, 30-04-2020).

Florio, C., Leoni, G. (2017). Enterprise risk management and firm performance: The Italian case. *The British Accounting Review, 49*(1), 56-74.

Kaplan, R.S., Norton, D.P. (1992). The balanced scorecard measurement that drives performance. *Harvard Business Review, 70*(1), 71-79.

Kaplan, R.S., Norton, D.P. (1996). Using balanced scorecard as a strategic management system. *Harvard Business Review, 7*(1), 75-85.

Khan, M.J., Hussain, D., Mehmood, W. (2016). Why do Firms Adopt Enterprise Risk Management (Erm)? Empirical Evidence from France. *Management Decision, 54*(8), 1886-1907.

Khameneh, A.H., Taheri, A., Ershadi, M. (2016). Offering a Framework for Evaluating the Performance Of Project Risk Management System. *Procrdia- Social and Behavioral Sciences, 226*(2016), 82-90.

Kleffner, A.E., Lee, R.B., McGannon, B. (2003). The effect of corporate governance on the use of enterprise risk management: evidence from Canada. *Risk Management and Insurance Review, 6*(1), 53-73.

Klučka, J., Grünbichler. R. (2020). Enterprise Risk Management- Approaches Determining its Application and Relation to Business Performance. *Quality Innovation Prosperity, 24*(2), 51-58.

Kotze, P.N., Vermaak, F.N.S., Kristen, E. (2015). Including risk in the balanced scorecard: Adoption rate and implementation methods of johannesburg stock exchange listed organisations. *Southern African Business Review, 19*(2), 99-117.

Kurniawati. (2017). Integrasi balanced scorecard dengan COSO enterprise risk management framework. *Jurnal Akuntansi Bisnis, 4* (2), 41-55.

Lamanda., G., Vôneki.Z.T. (2015). Hungry for Risk. A risk appetite framework for operational risk. *Public Finance Quarterly, 60*(2), 212-225.
Lechner, P., Gatzert, N. (2018). Determinants and Value of Enterprise Risk Management: Emprical Evidence From Germany. *The European Journal of Finance, 24*(10), 867-887.

Leech, T. (2013). Board Oversight of Management’s Risk Appetite and Tolerance. *EDPACS: The EDP Audit, Control, and Security Newsletter, 48* (3), 1-13.

Lundqvist, S.A., Vilhelmsson, A. (2018). Enterprise Risk Management and Defelaut Risk: Evidence from the Banking Industry. *The Journal of Risk and Insurance, 85*(1), 127-157.

Naseem, T., Shahzad, F., Asim, G.A., Ur Rehman, L., Nawaz, F. (2020). Corporate Social Responsibility Engagement and Firm Performance in Asia Pacific: The Role of Enterprise Risk Management. *Corporate Social Responsibility and Environmental Management, 27* (2), 501-513.

Nasr, A.K., Alaei, S., Bakhshi, F., Rasoulyan, F., Tayaran, H., Farahi, M. (2019). How Enterprise Risk Management (ERM) can Affect on Short-Term and Long-Term Firm Performance: Evidence from the Iranian Banking System. *Entrepreneurship and Sustainability Issues, 7*(2), 1387-1403.

Meulbroek, L.K.A. (2002). Senior manager’s guide to integrated risk management. *Journal of Applied Corporate Finance, 14*(4), 56-70.

Mahmod, M.S., Aziz, K., Yazid, A.S., Rasid, N., Salleh, F., Ghazali, P.L., Mahmood, S. (2018). A Conceptual Framework of ERM Practices among SMEs IN Malaysia. *International Journal of Academic Research in Business and Social Sciences, 8*(11), 1209-1221.

Mohd-Sanusni, Z., Motjaba-Nia, S., Roosle N.A., Sari, R.N., Harjitok, A. (2017). Effects of Corporate Governance Structures on Enterprise Risk Management Practices in Malaysia. *International Journal of Economics and Financial, 7*(1), 6-13.

Nagumo, T. (2005). Aligning enterprise risk management with strategy through the BSC: The bank of Tokyo-Mitsubishi approach. *Balanced Scorecard Report, 41-43.*

Oliveira, K., Mèxas, M., Meiriño, M., Drumond, G. (2019). Critical Success Factors Associated with the Implementation of Enterprise Risk Management. *Journal of Risk Research, 22*(8), 1004-1019.

Olivia, F.L. (2016). A Maturity model for enterprise risk management. *International Journal Production Economic, 173*(2016), 66-79.

Ponikarova, A.S., Zotov, M.A., Kadeeva, E.N. (2020). Balanced Management of Innovative Risk in the Process of Innovative Development. *IOP Conference Series: Materials Science and Engineering, 709* (3).

Rasid, S.Z.A., Golshan, N., Mokhber, M., Tan, G., Mohd-Zamol, N.A. (2017). Enterprise Risk Management, Performance Measurement System and Organizational Performance in Malaysian Public Listed Firm. *International Journal of Bussiness and Society, 18* (2), 311-328.

Ratri, A.M., Pangeran, P. (2020). Relationship balanced scorecard and COSO 2013 risk management to improve performance: A case study on BPR Chandra Mukti Artha Bank. *International Journal of Multicultural and Multireligious Understanding, 7* (1), 566-576.

Shad, M.K., Lai.F., Fatt, C.L., Klemes, J.J., Bokhari, A. (2019). Integrating Sustainability Reporting into Enterprise Risk Management and its Relationship with Business Performance: A Conceptual Framework. *Journal of Cleaner Production, 208*, 415-425.

Soltanizadeh, S., Rasid, S.Z.A., Golshan, N.M., Ismail, W.K.W. (2016). Business strategy, enterprise risk management and organizational performance. *Management Research review, 39*(9), 1016-1033.

Suttipun, M., Siripong, W., Sattayarak, O., Wichianrak, J., Limroscharoen, S. (2018). The influence of enterprise risk management on firm performance measured by the balanced scorecard: Evidence from SMEs in Southern Thailand. *CMU Journal of Social Sciences and Humanities, 5*(1), 33-53.

Thekdi, S., Aven, T. (2016). An Enhanced Data-Analytic Framework for Integrating Risk Management and Performance Management. *Reliability Engineering and System Safety, 156*(2016), 277-287.
Wang, T.S., Lin, Y.M., Werner, E.M., Chang, H. (2018). The Relationship Between External Financing Activities and Earning Management: Evidence from Enterprise Risk Management. *International Review Economics & Finance, 58*(2018), 312-329.

Waseem-Ul-Hameed, F.H., Ali, M., Arif, M. (2017). Enterprise Risk Management (ERM) System: Implementation Problem and Role of Audit Effectiveness in Malaysian Firms. *Asian Journal of Multidisciplinary Studies, 5*(11), 34-39.

Weeserik, B.P., Spruit, M. (2018). Improving Operational Risk Management Using Business Performance Management Technologies. *Sustainability, 10*(3):640.

Wisutteewong, G., Rompho, N. (2015). Linked balanced scorecard and COSO ERM in Thai companies. *Journal of Management Policy and Practice, 16*(2), 127-134.

Wood, M. (2007). Linking risk management to strategic controls: a case study of tesco plc. *International Journal Risk Assessment and Management, 7*(8), 1074-1088.

Yang, S., Ishtiaq, M., Anwar, M. (2018). Enterprise Risk Management Practices and Firms Performance, the Mediating Role of Competitive Advantage and the Moderating Role of Financial Literacy. *Journal of Risk and Financial Management, 11*(3), 1-17.

Yang, C.H., Lee, K.H. (2020). Developing a Strategy Map for Forensic Accounting with Fraud Risk Management: An Integrated Balanced Scorecard-Based Decision Model. *Evaluation and Program Planning, 80*(2020), 101780.