Disclosure of enterprise risk management in ASEAN 5: Sustainable development for green economy

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Abstract. The purpose of this study is to analyze the disclosure of Enterprise Risk Management (ERM) and identification of risk, including sustainable development-related risks in ASEAN 5 countries (Indonesia, Malaysia, Thailand, Singapore, Philippines) based on industry, country, and disclosure trends every year. ERM disclosures were examined through a content analysis of the 2014-2018 (5 years). The results show that ERM disclosure quality has been increased every year, and the disclosure of ERM is followed by sustainability development-related environmental, social, and governance (ESG) risk. Based on the type of industry, manufacturing and financial industries are the highest in performing ERM disclosures. Based on the country, Thailand and Malaysia make better ERM disclosures. Our results recommend for government to make regulations in ensuring compliance with ERM disclosures. Increased ERM disclosure has responses to globalization and regulation; companies are required to analyze ESG risks through ERM disclosures.

1. Introduction
Companies must analyze the problems through an Enterprise Risk Management (ERM) disclosure [1-4]. ERM disclosure is crucial because each company must provide value to stakeholders, plan the company strategies through management decisions, respond to globalization and regulatory pressures [4]. Globalization makes the economic linkages around countries [5], as ASEAN has been proven by the implementation of the ASEAN Economic Community (AEC) in 2015. Among the AEC countries, ASEAN 5 are the countries with the highest economic growth and promising great potential investment. Based on data from the International Monetary Fund (IMF) [6] through an article in the World Economic Outlook 2020, the ASEAN 5 region's economic growth is predicted to increase by 4.8% in 2020 compared to that of 2019, which is only 4.7%. However, the high economic growth in ASEAN 5 still presents various risks and uncertainties that could weaken the growth prospects. Some of these risks include the political conditions of each country (governance risk), droughts and floods hurt agriculture (environmental risk), low energy prices (social risk), and slow growth in China (social risk) [7].

Accordingly, this study is motivated by two aspects. First, Keynes's Theory in financial management which says that 'High-Risk High Return.' ASEAN 5 are the countries with higher economic growth and proportional to higher risk. However, high return is not only the valuation factor that investors want. The investor also considers the risk because a higher investment usually carries a higher risk value. Then, the author would like to investigate the risk through ERM disclosure in ASEAN 5. However, to the best of the researchers' knowledge, research ERM disclosure in ASEAN 5 is limited. Moreover, the author selected ASEAN 5 because they are the five largest countries in ASEAN. In addition, these countries possess similarities in terms of their geographical location and
social contexts. ASEAN countries have undergone strong economic growth in recent years but still lag behind developed countries. However, this economic growth has a negative effect of increasing environmental problems, such as emission, water pollution, etc. ASEAN also plays an important role in future world energy demand in the coming years due to its fast-growing economy as well as a large population. These characteristics have increased the sustainability issues among ASEAN countries [8], [9].

Second, ERM disclosure plays a significant role in the company's sustainable development through identification, measurement, and management of risk, including sustainability development-related risks [4]. However, changes in the business environment, globalization, and technological developments are continued to alert globally. With governments currently looking for effective ways to lead their countries out of this related crisis while also considering the boundaries of the planet, a green economy has been proposed as a means to catalyze the development of renewed national policies and international cooperation and support for sustainable development through the environment, social and governance (ESG) aspects. The risks related to the environment, such as weather events, water crises, natural disasters, and the failure of mitigation and adaptation to climate change, dominate the top risks for companies. Social issues such as unemployment, income inequality, health and security problems, discrimination, employee welfare, and work safety. While for governance issues related to issues such as corporate transparency, corruption, bribery, company efficiency is the highest issue in ASEAN 5 [10]. The transition of ESG performances poses a challenge to managers in integrating sustainability risk factors into existing ERM Frameworks [11]. Reporting of the information regarding business sustainability-related ESG activities and ERM responds to the growing expectations of the stakeholder. For instance, Jeff et al. [12] said ESG helps forecast future statistical risks up to five years later, where the deterioration of ESG score is associated with about a 1% increase in risk. Stakeholders might be able to utilize ESG performance as sustainable development to glean additional insights about their investments’ riskiness.

This study has several contributions. First, various studies [13-18] have analyzed ERM disclosure. However, this research is limited to the countries of the United States, Canada, Australia, Malaysia, and Germany, not in ASEAN 5. Second, the study belongs to Etikah et al. [19] purpose to highlight the disparity between the disclosures of risk governance categories ASEAN 5 countries. The study has limited research, its only analysis governance risks in the aspect, while this study considers governance risk and the environment and social risks. Third, in 2018, COSO and WBCSD [20] published guidance entitled "Enterprise Risk Management: applying enterprise risk management to environmental, social and governance-related risks," but to best our knowledge, this guidance has not been researched. There is a study from Muhammad et al. [4], but his research is limited to analysis of a conceptual framework of the relationship between enterprise risk management (ERM) and sustainability disclosure, whereas in our study, consider an ESG performance instead of just disclosure. Last, in research methods, this study uses seven aspects of ERM measurement from the combination of Cristina and Giulia [3], which considers aspects of risk governance and risk assessment, and Clara et al. [21], which consider the ERM standard, namely COSO ERM. This study contributes to adding new variables that refer to the use of the ISO 31000 standards to improve the ERM measurement.

The theory, which is the basis in this research, is agency theory. Michael and William [22] explain that agency theory is the concept where one or more people (principal) involve another person (agent) to perform several services on their behalf appropriate with the contract. According to this theory, conflicts arising from agency problems can be minimized by management (agents) reporting to owners (principals) as a form of transparency in management activities. ERM disclosure is a way to mitigate conflicts of interest between managers (agents) and stakeholders (principal). ERM disclosure is a form of company responsibility in anticipation of various risks that companies can carry out and can decrease agency costs.
2. Method
The method includes the description of ERM disclosure in ASEAN 5. ASEAN 5 was chosen because it has the highest economic growth value than other ASEAN countries and is proportional to higher risk. Moreover, the higher risk in ASEAN is related to ESG issues. In this method, the author will explain the background of ASEAN 5, data collection, and analysis procedures.

2.1. Description of ASEAN 5
ASEAN is one of the regions in the world known for its sustainable and growing economies. Trading and investment flows have continued to increase in the last decades, and ASEAN's economic prospects have been positive and promising for many years. Considering the introduction developed in the previous section, this research was conducted in ASEAN 5 countries. Based on data from the World Bank [23], ASEAN 5 having a trade ratio towards economic growth led by Singapore at 326.2%, Malaysia at 132.3%, Thailand at 123.3%, the Philippines at 76.1%, Philippines 76.1%, and Indonesia in the last position of 43%.

2.2. Data collection and analysis
This study will analyze the practice of ERM disclosures and map them based on industry, country, and disclosure trends every year. The basis for selecting the research years (2014-2018) because of the amount of strong development in ASEAN 5 countries regarding ERM disclosures related to environmental, social, and governance issues in early 2014 [10]. ERM disclosure is assessed using seven aspects: the Chief Risk Officer, Risk Committee, Frequency Risk Assessment, Risk Assessment Level, Risk Assessment Method, COSO ERM, and ISO 31000. ERM measurement is a multi-dimensional and complex measurement concept [3], [21], and until now, there has been no research that explains how to measure the quality of the ERM system that can be used. In general [2], [5], [24]. For example, some studies only look at whether a company applies an ERM system or not based on 'keyword search' whether or not the words ERM, CRO, or risk management committee appears [5], but these measurements cannot describe the level of ERM quality. Other studies have also measured the rate of ERM adoption using survey-based scales [2], [24]; unfortunately, the studies only allow cross-sectional analysis. In addition, other studies analyze ERM using Enterprise Risk Management guidelines [17]; it turns out this is not able to describe ERM measurements across companies with different sectors. Considering the limitations of the previous measurements, the author relates the concepts of ERM governance and operational mechanisms that focus on frequency, depth, risk assessment methodologies, and standard of ERM [3], [21].

The scoring for each element of the seven factors is analyzed and given a value of 1 if it meets the criteria and 0 otherwise. ERM disclosures will be grouped and analyzed by industry, country, and trend every year to assess the level of ERM disclosure. Industry categories include 11 types, i.e., Communication Services, Consumer Discretionary, Consumer Staples, Energy, Financials, Health Care, Industrials, Information Technology, Materials, Real Estate, and Utilities. For the country categories, the author uses ASEAN 5 countries, including Indonesia, Malaysia, Thailand, Singapore, and the Philippines. Then, every year, the author will analyze the practice of ERM disclosures for five years, namely 2014-2018. The basis for selecting the research years was the amount of strong development in ASEAN 5 countries regarding ERM disclosures related to environmental, social, and governance issues in early 2014 [10]. This research focuses only on risks related to environmental, social, and governance (ESG) issues. The author obtains data on companies that have ESG information through Thomson Reuters. From sampling was chosen by purposive sampling technique; at the end of 2018, there were 1,670 public companies in ASEAN 5. These companies did not have ESG data around 1,528 companies. After the criteria are applied, the final research sample is 142 companies, according to table 1.
Table 1. Selection of sample.

| Total public companies in ASEAN 5 in 2018 | 1670 |
| Companies in ASEAN 5 that do not have ESG data | (1528) |
| **Final Sample** | **142** |

3. Results and discussion

Analysis based on the level of ERM and ESG disclosure in ASEAN 5 is explained in Figure 1. It can be seen, the trend of ERM and ESG disclosures is increasing every year, especially in 2016. The high ERM disclosure, followed by ESG, shows that the risks associated with ESG, i.e., environmental, social, and governance issues are the highest risks and require internal and cultural oversight related to ERM [10].

![Figure 1. ERM and ESG disclosure in ASEAN 5 (Source: Processed data).](image)

Table 2 explains the average level of ERM disclosures per country each year. The quality of ERM disclosures in each ASEAN 5 country has increased each year. Indonesia experienced a total increase from 2014 to 2018 by 14 percent (36 percent to 50 percent), Malaysia 14 percent (44 percent to 58 percent), Philippines 14 percent (36 percent to 50 percent), Singapore 6 percent (47 percent to 53 percent), and Thailand 5 percent (49 percent to 54 percent).

Table 2. ERM disclosure rate per country.

| Year | Indonesia | Malaysia | Philippines | Singapore | Thailand |
|------|-----------|----------|-------------|-----------|----------|
| 2014 | 36%       | 44%      | 36%         | 47%       | 49%      |
| 2015 | 42%       | 48%      | 39%         | 49%       | 51%      |
| 2016 | 44%       | 52%      | 37%         | 51%       | 52%      |
| 2017 | 46%       | 58%      | 41%         | 52%       | 53%      |
| 2018 | 50%       | 58%      | 50%         | 53%       | 54%      |
| **Total** | **44%** | **52%** | **41%** | **50%** | **52%** |

Source: Processed data.

From this increase, a slightly different result was shown by Malaysia from 2017 to 2018, where the average ERM disclosure remained or did not show an increase of 58 percent. In addition, Philippines countries decreased from 2015 to 2016, which was 2 percent (39 percent to 37 percent). This decline is thought to be hand in hand with the slowdown in economic growth in the Philippines, caused by El Nino and La Nina external risk problems between February 2015 to July 2016 [25], which cannot be addressed well and make a negative global impact. However, despite showing a decline, in 2017, the
Philippines' ERM disclosure increased quite high by 4 percent from 37 percent to 41 percent. If seen from the total average ERM disclosures of each country, it can be seen that the countries of Thailand and Malaysia make disclosures better than other ASEAN 5 countries, namely 52 percent for each, then Singapore 50 percent, Indonesia 44 percent, and the Philippines by 41 percent.

The state of Thailand underwent a period of mourning for a year towards the late King Bhumibol Adulyadej, who died in October 2016. This mourning period has been viewed as a governance risk (political stability) with negative sentiment by many Thai industries. Thai international media reported that investors left the Thai capital market with a value of $514 million in 2016 after the death of the King [27]. Many industries closed and suffered losses thereafter, resulting in increased risk disclosure for various industries in setting their policies. While in Malaysia, the country's economic growth showed the highest rate in 2017 at 5.8 percent for the last four years [27]. Deputy Prime Minister of Malaysia, Senator Datuk Seri SK Devamany, said that Malaysia was significantly more resistant to external shocks and financial instability after learning from the various turmoil of the crises of 1998 and 2008. After these crises, Malaysia undertook successive reforms that participated in various matters, including increasing the disclosure of ESG risk aspects, thus helping to change the country's economy for the better.

Further analysis shows that the ERM disclosure is based on the type of industry. Based on industry categories from Thomson Reuters, the companies analyzed included 11 types, i.e., Communication Services, Consumer Discretionary, Consumer Staples, Energy, Financials, Health Care, Industrials, Information Technology, Materials, Real Estate, and Utilities.

Figure 2 shows that the category of Financials, Industrials, and Consumer Staples are the industries with the highest ERM disclosure, i.e., 23 percent, 16 percent, and 13 percent, respectively. Financials are companies involved in banking, mortgage financing, consumer finance, finance, asset management and storage, corporate loans, insurance, and financial investments. Industrials are companies that are dominated by activities such as manufacturing and distribution of goods, construction, engineering, and building products, electrical equipment and industrial machinery, then companies providing commercial services and supplies, including printing, employment, environmental and office services, and companies that provide transportation services, including airlines, couriers, sea, road, and rail or transportation infrastructure. Consumer Staples is a manufacturer and distributor of food, beverages, and tobacco and manufacturers of household goods and personal products that are not durable, such as food and drug retailers and consumer shopping centers. In practice, the category Industrials and Consumer Staples are included in the group of manufacturing companies because of their nature, which processes raw material into a finished product.
This shows that if compared with other industries, these three industries have a high risk of carrying out their business activities and thus require greater ERM disclosure. Industrials and Consumer Staples, a group of manufacturing industries, tend to negatively impact the environment due to waste and pollution from operational activities and cause serious health problems for employees and the surrounding community [28]. The most significant economic growth engine for ASEAN 5 countries is a foreign direct investment [29], and foreign investment that contributes to economic growth is in the manufacturing sector [30]. The high value of a foreign investment will impact the neglect of environmental degradation and easing various legal obstacles that inhibit investment from accelerating economic growth [31]. As a result, there is a trade-off between economic development and environmental degradation that conflicts with each other with the concept of sustainability. As in the ASEAN, SME Policy Index data of the [32], the manufacturing and construction industries contribute more environmental risks in the form of CO2 emissions by contributing 30.1% of total emissions per capita.

While the Financials conduct business activities requiring a high level of trust from stakeholders, it tends to require transparency to reduce information asymmetry between various parties through enterprise risk management disclosure [5], [33]. The World Economic Forum [34] states that in addition to environmental risks, various industries currently face risks related to technology in the form of Cyberattack. However, this risk has the potential to threaten the financial and banking industry compared to other industries. Cyberattacks are a social risk (product security) as an attempt by cybercriminals to access, change, or damage the target computer system or network, which can result in downtime of sites and applications, as well as theft of funds and data [34]. The financial industry, especially banking, is always vulnerable to these risks by targeting customer data and funds in the form of theft of credit card information and bank account details and the bank's core system. With ASEAN 5 GDP data reaching 2.6 trillion [23], the ASEAN 5 region is the seventh-largest in the world market and is fast becoming an economic force to be reckoned with [35]; besides, internet users in ASEAN 5 is the fastest growing in the world. With 125,000 new internet users every day, the ASEAN digital economy is projected to grow significantly, adding around $1 trillion to regional GDP over the next ten years (2015-2025). Thus, ASEAN 5 countries are at risk of experiencing cyberattacks due to significant contributions from information and communication technology in various industrial sectors. Based on data from IBM Security [36], the manufacturing, financial, health, technology, and information sectors are the sectors most affected by the cyberattack. On the other hand, the manufacturing and financial sectors are responsible for ASEAN 5 GDP contributions [30], [37], so ERM disclosures in both industries are must be high.

![Figure 3. ERM disclosures per industry and country (Source: processed data).](image)

If seen from the data per country, it is known that the highest ERM disclosure in Indonesia is for the Consumer Staples sector, Malaysia, and Thailand for the Financials sector, the Philippines, for the
Industrials sector. A different matter was given by Singapore, where the highest ERM disclosure was the Real Estate sector. The real estate sector in Singapore started to rise from 2009. Many transactions in Singapore's property sector sustain real estate agents. Most Singaporeans usually use agents to assist them in property transactions. However, not all agents performing duties diligently. Some clients believe that agents get away with immoral behavior, such as misrepresenting information and using pressure tactics. Business ethics as a governance risk is important in the real estate industry because it is likely to be the single biggest investment for Singapore consumers. The lack of stringent regulation over the conduct of housing agents led to growing complaints to the ministry. In mid-2013, The Monetary Authority of Singapore (MAS) introduced the Total Debt Servicing Ratio (TDSR) framework for banks' property loans. TDSR limits the total amount that can be borrowed when applying for property loans to banks. Under this framework, repayments of monthly loans plus other debts cannot exceed 60 percent of monthly income [38]. TDSR was put in place to prevent the Singaporeans from over-leveraging (accumulating debt to buy a property). This was triggered during the 2008 global financial crisis. Many Singaporeans took large amounts of property loans that were unable to repay them. However, this regulation is detrimental and increases the risk of the property industry in Singapore and negatively impacts the pace of property sales. When there are no loan restrictions, investors tend to buy more property, and property prices often go up. TDSR indirectly helps to keep property costs under control, but on the one hand, reduces the demand for property purchases. Government measures are undertaken to cool the market had exacerbated the competition amongst agents to close deals. The increased competition for the few remaining deals led to more complaints and shifted the focus to real estate deals' ethical issues.

This study provides additional analysis in the form of ERM disclosure measurements. Measurement of ERM disclosure is a multi-dimensional and complex measurement concept, so as proven until now from several studies, no one has explained how to measure ERM systems that can be used in general [2], [5], [24]. Based on this explanation, this study examines the measurement of ERM disclosure in ASEAN 5 based on seven aspects that are often used in various studies on ERM topics. The seven aspects include Chief Risk Officer (CRO), Risk Management Committee, Frequency of risk assessment, Company level in risk assessment, Risk assessment method, COSO ERM, and ISO 31000: 2009.

Figure 4 shows that the measurement of the quality of ERM disclosures that are often used in various studies is the level of risk assessment, the existence of a risk management committee, and risk assessment methods, which are by 80 percent, 77 percent, and 53 percent, respectively. Another interesting thing is the standard disclosure of COSO ERM and ISO 31000: 2009 gives the lowest percentage compared to all measurement methods used. This shows that even a standard recognized throughout as global does not necessarily indicate the maximum quality of a company's ERM disclosure. The company is more focused on showing a positive impression on stakeholders that the enterprise risk management has been running well, through with or without using these two standards.
The following is an analysis of exposure to ERM disclosures from several companies related to the statement:

**Ayala Land, Philippines (2018):** "In dealing with corporate risk, the author emphasizes the Enterprise-Wide Risk Management (EWRM) program that has been prepared to assess the company's main risk exposures, related risk mitigation efforts and initiatives, and the risk status of mitigation plans. The review was conducted in the context of the company's main responsibility for the risk management process to increase stakeholder confidence."

**AMMB Holding Bhd, Malaysia (2017):** "The company has adopted a coordinated and formal approach to risk management and internal control, which is operationalized through the concept of "Three Lines of Defense." The Business Unit forms the first line of defense, Risk, and Compliance of the second line of defense, while Internal Audit forms the third line of defense. The CRO believes that adequate and effective aspects of risk management and internal control systems can protect shareholder investments, the interests of consumers, regulators and employees, and company assets."

**Surya Citra Media Tbk, Indonesia (2016):** "This risk management process consists of identifying the risks that exist in each unit and combining and analyzing them into a company's overall risk profile and ensuring the adequacy of the risk management system, internal control, and system tools related management information. The whole process from identifying risks to obtaining approval by considering the interests of shareholders and stakeholders."

**Comfort Degel Corporation, Singapore (2018):** "A Risk Management Framework is created and provides a systematic process for Business Units to identify and review the nature and complexity of the risks involved in business operations and prioritize resources to be managed. The company is committed to increasing shareholder value through sustainable and profitable growth while taking measured and well-considered risks."

**TISCO Financial Group, Thailand (2015):** "TISCO Group attaches great importance to risk management and effective control. By setting the overall risk management framework, including the policy objectives for all risk-related transactions, the TISCO Group is able to increase awareness, accountability, and efficiency in risk management throughout the company and maintain high-quality best practices and corporate governance standards to maximize adjusted returns with ongoing risks for shareholders and other stakeholders."

4. Conclusion

Based on the results of the study, it was found that the quality of ERM disclosures in ASEAN 5 has been increasing every year, and the high ERM disclosures were followed by high ESG disclosures, which showed that in the last few years, the risks that the company had obtained were mainly due to environmental, social and governance aspects. Based on the type of industry, it is known that the industrials, financials and consumer staples industries are the industries that obtain the highest results in making ERM disclosures. Based on the statement of IBM Security [36] and the manufacturing and financial industries, the health and information technology industries also risk being exposed to cyberattacks through data retrieval and existing systems. But in reality, the two industries show the lowest percentage for ERM disclosure. In the future, the two industries are expected to increase ERM disclosure. Moreover, the ERM standard, i.e., COSO ERM and ISO 31000 in ASEAN 5, is still low.

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