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Sustainable finance disclosure in ASEAN's banking industry: Do board independence and diversity matter?

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ABSTRACT

This paper aims at investigating the relation between board independence and diversity (gender diversity and nationality diversity) on sustainable finance disclosure (SFD) in ASEAN's banking industry. We collected the SFD data from the sustainable finance report. The board independence variable is measured using the percentage of independent board members, while the board diversity is measured using Blau's index. This paper uses data with a total of 276 observations from 2017 to 2019 using two panel data regressions: fixed effect and random effect. The result of the study indicates that the SFD in ASEAN is at a low level because there are only 34 banks that implement SFD. SFD has a positive association with the board's independence. While the gender diversity on the board is not significantly affecting the SFD. The board's nationality diversity is negatively associated with SFD. The results of this study can be useful in evaluating the implementation of SFD for each banking organization in Southeast Asia. Furthermore, we expect the results of this research to assist ASEAN financial regulators and banking associations in optimizing SFD as a means of addressing the issue of climate change.

Contribution/Originality: To achieve sustainable performance, the results suggest structuring the board's composition with a proportional number of independent boards. Furthermore, this study can be used as additional support for agency theory and resource-based view theory, providing a new guideline to measure sustainable finance disclosure.

1. INTRODUCTION

The climate change issue that occurs today poses an economic threat, especially to developing countries (Kant, 2020). Based on the observations conducted by the World Meteorological Organization, climate change and air pollution occur in developing countries and have a negative impact on economic aspects (Laj, Andrade, Sokhi, Volosciuk, & Tarasova, 2019). Southeast Asian countries are the most affected by climate change. Recently, the Global Climate Risk Index 2021 proved that Myanmar, the Philippines, and Thailand are among the top 10 countries affected by climate change from 2000 to 2019, while Cambodia and Vietnam are included in the top 20 (Eckstein, Künzel, & Schäfer, 2021). The United Nations responded to the threat of climate change by setting the minimum carbon budget requirement, which is 1.5°C through Paris Agreement (United Nations, 2015). Generating electricity and heat by burning fossil fuels produces carbon dioxide and nitrous oxide. A recent study by the Oxford Sustainable Finance Program reveals that on average, 90.7% of fossil fuel plant assets planned by the 10 largest power plants in Southeast Asia do not meet the Paris Agreement (Caldecott, McCarten, & Triantafyllidis, 2018). Financial institutions, especially banks, take part in financing the assets of these fossil fuel plants. This makes the problem of climate change in Southeast Asia worse. The Association of Southeast Asian Nations (ASEAN) is committed to mitigating problems of climate change that occur in Southeast Asia by implementing a financing mechanism (ASEAN, 2021). ASEAN's financial regulators and banking associations have collaborated with the World Wildlife Fund (WWF) to create a sustainable region in Southeast Asia. ASEAN's financial regulators and banking associations continue to force banks in the Southeast Asia region to integrate Environmental and Social (ES) considerations into their banking business strategies. The attempt is conducted as a form of commitment by banks to supporting climate change mitigation. The support of banks for climate change mitigation can be achieved through environmentally friendly banking products, such as preparing funding or investments by applying prudential principles. The sustainable finance report must disclose several items, including these actions.

Climate change mitigation must be done as soon as possible because if it is delayed, it will have an impact on Gross Domestic Product (GDP) of ASEAN countries. A study from the Asian Development Bank states that delaying climate change mitigation for 10 years will have an impact on a decline in GDP, which is estimated to reach 60% (Raitzer et al., 2015). In this case, the role of banks in dealing with the problem of climate change is urgently needed. Based on reports from The Development Bank of Singapore Limited (DBS) and the United Nations Environment Inquiry, the need for green finance to mitigate climate change in the ASEAN region is estimated at US$ 2.3-US$ 3 Trillion (United Nations Environment & DBS, 2017). Green finance that is implemented by banks can be disclosed in a sustainable finance report, as a form of social and environmental responsibility. Banks disclosure of sustainable finance contributes to creating a sustainable region.

This research is motivated by the need to optimize banks' sustainable finance in Southeast Asia to support climate change mitigation and create a sustainable ASEAN region (Zhuang, Edwards, Webb, & Capulong, 2002). It is also because the existence of the board of directors is inseparable from the sustainable finance report that is conducted by the bank. This is supported by research of Ludwig and Sassen (2022) which states that board diversity and board independence are two categories that are often researched and associated with sustainability research. The inconsistency of previous research results and the lack of research in Southeast Asia are also the reasons for conducting this research. Therefore, this paper aims at studying whether the board's independence and diversity influenced sustainable finance disclosure in ASEAN's banking industry.

This research makes several distinct contributions to the existing literature. First, this study contributes to expanding knowledge and practice regarding board independence, board diversity (including gender diversity and nationality diversity), and sustainable finance disclosure. Second, it uses sustainable banking assessment (SUSBA) framework that refers to ESG indicators as a guideline, meaning that the indicators used in assessing disclosure are more relevant to banking activities and products. While, previous research used guidelines from Global Reporting Initiative (GRI). Thirdly, the actual disclosure of sustainable finance will assist ASEAN financial regulators and banking associations in making further decisions related to climate change issues. Therefore, this research is important because it concerns the sustainability of human life and health.

The rest of the paper is organized as follows: Section 2 presents a literature review and theoretical framework. Section 3 describes the hypotheses development. Section 4 details the research methodology. Section 5 discusses the main results. Finally, Section 6 provides conclusion, implications, and limitations.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1. Sustainable Finance Disclosure

World Bank (2021) states that sustainable finance disclosure is a disclosure about investment decisions that leads to a sustainable economic project by considering environmental, social, and governance (ESG). Environmental factors, for example, cover climate crisis mitigation, social factors, such as human rights, and governance factors refer to management (Bakken, 2021). Sustainable finance disclosure contains actions taken by banks related to ES responsibility. Creating sustainable regions is currently the focus of countries around the world, including the Southeast Asia region. ASEAN financial regulators and banking associations continue to strengthen ES integration into banking operations.

Several countries in Southeast Asia have also responded positively by issuing guidelines for sustainable finance as a form of financial institution support for ESG integration (WWF, 2019). The State Bank of Vietnam issued Instruction 03/CT-NHNN as a form of promoting green credit growth and ES risk management for activities of credit granting, also published Decree 1604/QD-NHNN to approve a scheme to develop a green bank. Then, Otoritas Jasa Keuangan issued Regulation No.51/POJK.03/2017 concerning the implementation of sustainable finance for commercial banks in Indonesia. Furthermore, the Association of Banks in Cambodia issued the principles and implemented guidelines for sustainable finance. Also, The Thai Bankers' Association, supported by the Bank of Thailand, issued the sustainable banking guidelines-responsible lending.

Moreover, Bank Negara Malaysia published the value-based intermediation financing and investment impact assessment framework for Islamic banking. Then, The Association of Banks in Singapore issued guidelines for responsible financing. Later, The Monetary Authority of Singapore announced its plan to make guidelines for environmental risk management for consultation. Bangko Sentral ng Pilipinas announced that it would publish a regulatory framework for sustainable finance soon. Even though the Philippine Banking Regulator has not issued a sustainable banking framework, Sustainable Energy Finance was first introduced in the Philippines to support private banks in funding projects related to energy efficiency. These efforts have received support from the International Finance Corporation, Bank of the Philippine Islands, and Binder Dijker Otte.

2.2. Board's Independence and Diversity

The board of directors is an important organ in a company, because they represent shareholders. The board of directors began to be popular in Southeast Asia after the financial crisis in 1997-1998, regarding the issue of good corporate governance practices. The sector most affected by the financial crisis in 1997-1998 was banking (Lukviarman, 2016). According to Minciullo (2019) the board of directors is the governing body that has an important role and responsibility to ensure that corporate governance is carried out properly in a company. This encourages researchers to conduct research on the board of directors, both in terms of independence and diversity (Al-Qahtani & Elgharbawy, 2019; Almaqtari, Elsheikh, Abdelkhair, & Mazrou, 2023; Liao, Luo, & Tang, 2014).

The independent board is a non-executive board that comes from outside the company and has no interest in the company other than providing independent judgement (Fernando, 2011). This independent judgement includes information about resources, performance, and issues of strategy (Cadbury, 1992). Meanwhile, the diversity in board composition represents a variety of values and new ideas going forward (Khan, Khan, & Senturk, 2019). Diversity on a board can be better in making decisions because many perspectives and views emerge in the analysis process (Dess, Mcnamara, & Eisner, 2016). The independence and diversity of the boards can influence strategic decisions taken regarding sustainable finance.

Most countries in Southeast Asia use a one-tier (unitary) board structure, except for Indonesia, which adheres to a two-tier board structure. In a one-tier board structure, all boards are on a single board, consisting of executive directors and non-executive directors (Fernando, 2011). Meanwhile, in the two-tier board structure the board system is divided into two levels, namely the executive board and the supervisory board. In a one-tier board structure, the board of directors' role is to provide company management with advice. In a two-tier board structure, supervisory duties and providing advice to management are carried out by commissioners (Lukviarman, 2016).

2.3. Board Independence, Board Diversity, and Sustainable Financial Disclosure

ES responsibility activities that are carried out by companies are inseparable from good corporate governance (Fernando, 2011). Based on that statement, the board of directors has an important role inachieving good corporate governance. Here, the board of directors plays a role in providing advice to management regarding strategic decisions and company performance. The benefits of having independent boards and board diversity can create an effective management system. This effective management system will increase the company's social responsibility goals (Dess et al., 2016). The board of directors also has a role in providing accountability to shareholders and other related parties regarding company operations. Sustainable finance disclosure is a form of corporate accountability to shareholders that requires approval from the board of directors. Sustainable finance disclosure is also a disclosure made by financial services companies as a form of ES responsibility. Several studies have examined the effect of board independence and diversity on corporate social disclosure.

A previous study conducted by Barako and Brown (2008) concluded a significant positive relationship between board independence and women's representation in corporate social reporting in the Kenyan banking sector. Meanwhile, in the Kenyan banking sector, the proportion of foreign board members does not have a significant relationship with corporate social reporting. Then, Mehedi, Maniruzzaman, and Akhtaruzzaman (2024) state that independence directors and foreign directors have a significant positive relationship with corporate social responsibility in Bangladesh's banks. Furthermore, Orazalin (2019) stated that the presence of diverse genders among the board of directors member had a positive effect on the disclosure of corporate social responsibility in Kazakhstani banks. These studies are also in line with Khan et al. (2019) which revealed a positive influence of gender and national diversities on promoting quality corporate social responsibility disclosure in Pakistan. Adamu, Yusuf, and Jinjiri Bala (2024) who conducted research in the Nigerian Banking Industry, also revealed that female directors have a significant positive impact on sustainability reporting. Meanwhile, Manita, Bruna, Dang, and Houanti (2018) find no significant relationship between board gender diversity and corporate social responsibility disclosure in the United States.

2.4. Theoretical Framework

Agency theory focuses on analyzing the problems that occur between the principal (shareholders) and the agent (management) in a company (Heath, 2009). These two parties have different interests so it creates agency problems (Wheelen & Hunger, 2012). In accordance with agency theory, the role of the board of directors is to monitor the opportunistic behavior of managers, which is useful to reduce agency costs and information asymmetry (Gleason, Kim, & Kim, 2012; Mudiyanselage, 2018). In such a case, the board of directors should be able to protect shareholders' interests by setting the corporate social agenda and developing strategies for sustainable business (Arayssi, Jizi, & Tabaja, 2020; Jizi, 2017). It is supported by Fuhrmann, Ott, Looks, and Guenther (2016) who state that disclosure of the ES responsibilities can reduce information asymmetry between managers and shareholders.

According to resource-based view theory, a more diverse board of directors can increase a long-term competitive advantage (Barney, 1991). In this case, the role of the board of directors is to provide effective control over the managers (Díaz, Idowu, & Molyneux, 2018). Board composition is one of the factors that affects the ability of the board of directors to handle ES issues (Minciullo, 2019). Board diversity can increase the effectiveness of the board of directors in the decision-making process, including information on corporate social responsibility (Katmon, Mohamad, Norwani, & Farooque, 2017).

3. HYPOTHESES DEVELOPMENT

3.1. Board Independence and Sustainable Finance Disclosure

According to agency theory, the presence of independent boards in a company reduces the conflicts of interest between the company and its shareholders (Khan, 2016). Independent boards play a role in protecting the interests of shareholders and ensuring that the company operates efficiently (Majumder, Akter, & Li, 2017). The duties of independent boards are related to achieving good corporate governance, specifically to ensure that the company can comply with the international sustainability regulations (Shrivastava & Addas, 2014) including the regulation related to the disclosure of sustainable finance. Arayssi et al. (2020) state that the more independent boards in a company can increase ESG disclosure. An identical result was stated by Ong and Djajadikerta (2018) that the higher percentage of independent boards in a company leads to increased sustainability disclosure. The agency theory and previous research results predict that board independence will boost sustainable finance disclosures. Therefore, it is hypothesized that:

H_1: Board independence has a positive effect on sustainable finance disclosures.

3.2. Board Gender Diversity and Sustainable Finance Disclosure

According to resource-based view theory, the synergy between female and male boards can create a competitive advantage for the company (Gallego-Álvarez, García-Sánchez, & Rordíguez-Dominguez, 2010). The presence of female board members creates diversity in the board structure. The presence of female boards influenced the ESG disclosure (Khan et al., 2019). Female boards have a higher sensitivity to ES issues (Alazzani, Hassanein, & Aljanadi, 2017) which makes them avoid disreputable business practices that may pose a risk to the company. Nadeem, Zaman, and Saleem (2017) state that board gender diversity has a significant positive relationship with ESG disclosure in Australian Securities Exchange-listed firms. The explanation above is in line with the empirical findings by Harjoto, Laksmana, and Lee (2015) on the United States firms in which there was a positive relationship between gender diversity and corporate social responsibility. Referring to the resource-based view theory and prior research, gender diversity is expected to increase sustainable finance disclosure. Thus, we hypothesize that:

H_2: Board gender diversity has a positive effect on sustainable finance disclosure.

3.3. Board Nationality Diversity and Sustainable Finance Disclosure

The presence of foreign board members on the company's board creates diversity in the nationality of the board. The foreign board creates quality company resources for better performance of board members (Estélyi & Nisar, 2016). According to resource-based view theory, the presence of a foreign board member is critical to strengthening international experience that aims to achieve competitive advantage (Katmon et al., 2017). The differences in experience, knowledge, norms, religion, language, and culture of foreign boards affect the quality of decision-making (Ruigrok, Peck, & Tacheva, 2007) including the decision to undertake corporate social responsibility. Muttakin and Khan (2015) also confirm the statement above by providing empirical evidence that foreign boards in a company can increase the disclosure of corporate social responsibility. Then, Ibrahim and Hanefah (2016) state that the board nationality diversity has a significant positive relationship with corporate social responsibility in Jordan. The resource-based view theory and the results of previous studies, board nationality diversity is expected to increase for sustainable finance disclosure. The following hypothesis is formulated:

H_3: Board nationality diversity has a positive effect on sustainable finance disclosure.

4. METHODOLOGY

4.1. Research Design

This study used panel data regression analysis to test the hypotheses. We estimate using panel data because we have two combinations of data: time series and cross section. The software tool used in this research is the STATA 14.0 statistical program. In the beginning, chow test and Hausman tests were conducted to select the best panel regression estimation model between pooled least squares (OLS), fixed effects, and random effects. The best panel regression estimation was random effects with the *P*-value less than 0.05. The regression model described the relationship between board independence and diversity and sustainable finance disclosure, as follows:

$$SFD_{it} = \alpha + \beta_1 IND_{it} + \beta_2 GEN_{it} + \beta_3 NAT_{it} + \beta_4 SIZ_{it} + \beta_5 NPM_{it} + \beta_6 INV_{it} + \beta_7 CPI_{it} + \varepsilon \quad (1)$$

Description:

SFD = Sustainable Finance Disclosure; IND = Board Independence; GEN = Board Gender Diversity; NAT = Board Nationality Diversity; SIZ = Bank Size; NPM = Net Profit Margin; INV = Investor Protection; TI = Transparency International; α = constant; β1-β7 = regression coefficient; ε = residual (error).

4.2. Population and Samples

The population of this study comprises listed banks in Southeast Asia, namely the Indonesia Stock Exchange, Philippine Stock Exchange, Stock Exchange of Thailand, Bursa Malaysia Berhad, Ho Chi Minh Stock Exchange, and Singapore Exchange throughout 2017-2019. This study employs the purposive sampling method to determine the number of samples. There are four criteria for selecting the samples, which are: 1. listed on the Stock Exchange of each country; 2. issuing annual report in 2017-2019; 3. issuing annual reports in English; 4. having complete data related to the variables analyzed in this research. Based on these criteria, our samples comprise 92 banks with a total of 276 observations, manifested in a set of balanced panel data. Table 1 presents the number of sample banks and the distributions of observations for each country.

Table 1. Sample distribution.

Country	Number of banks	Total observation	%
Indonesia	42	126	45.65
Philippines	15	45	16.30
Thailand	11	33	11.96
Malaysia	10	30	10.87
Vietnam	9	27	9.78
Singapore	5	15	5.44

The study uses ASEAN countries that include Indonesia, the Philippines, Thailand, Malaysia, Vietnam, and Singapore as samples. The assessment of the sustainable finance principle in Cambodia precluded the use of other four ASEAN countries as research objects. Meanwhile, the banking associations in Laos, Myanmar, and Brunei Darussalam did not issue regulations or guidelines relating to sustainable finance disclosure.

This research requires annual report data from 2017 to 2019 obtained from the respective websites of banks. In addition, this research uses data from the sustainable banking report 2017 to 2019 of each bank, which was obtained from the SUSBA. The reason for choosing the year from 2017 to 2019 is because the SUSBA has only been carried out since 2017. Then the researchers conducted research until 2019 because in 2020, there was a Covid-19 pandemic, so the data in 2020 to the best of our knowledge, could not be compared with the previous year.

4.3. Variables

The measurement of sustainable finance disclosure uses a scoring technique derived from the sustainable finance report published by WWF. A value of 1 is given to banks that disclose an item, and a value of 0 is given to those who do not disclose it. Then, the number of items disclosed is divided by the total number of required disclosure items. ESG integration consists of 6 pillars, 11 indicators, and 57 sub-indicators. Board independence is measured using the percentage of independent boards in the board structure. Board diversity (gender diversity and nationality diversity) is measured using the Blau index by following the practices of former researchers (see (Alkayed, Shehadeh, Yousef, & Hussainey, 2024; Khidmat, Bin, & Ullah, 2020; Muhammad & Migliori, 2023)) this study adopts.

We can interpret diversity as difference, separation, or variation. The definition of diversity that has been determined influences the measurements that will be used. Board diversity is included in the definition of diversity as variety because there are categorical differences between group members. This study measured board diversity using the Blau index, as it serves as a suitable measure for variety. Blau index is calculated with the following formula:

$$BI = 1 - \sum_{i=1}^{k} Pi^2 \qquad (2)$$

BI shows the Blau Index, then *Pi* is the proportion value of each board diversity (gender diversity and nationality diversity), and *k* indicates the number of categories. Each board's diversity is divided into two categories. Gender diversity consists of women and men. Nationality diversity consists of foreign boards and domestic boards. Blau index shows the extent of the diversity index in a group. The result of the diversity index for each category is 0 to 0.5 $\left(\frac{k-1}{k}\right)$ because the category is divided into 2. If the value of *BI* = 0, it indicates homogeneity in the group. When the *BI* value is getting closer to 0.5, it means that the diversity is getting higher or more diverse.

Table 2. The operationalization of variables.

Variable	Operationalization	References
Dependent variable		
Sustainable finance disclosure (SFD)	Sustainable banking assessment (SUSBA) framework that refers to ESG indicators $SFD = \frac{\sum Items\ that\ disclosed}{Total\ items\ required}$	WWF (2019)
Independent variables		
Board independence (IND)	$IND = \frac{\sum independent\ board}{Total\ board\ of\ directors}$	Arayssi et al. (2020) and Ong and Djajadikerta (2018)
Board gender diversity (GEN)	Blau index	Khidmat et al. (2020); Khan et al. (2019); Alazzani et al. (2017) and Katmon et al. (2017)
Board nationality diversity (NAT)	Blau index	
Control variables		
Bank size (SIZ)	Log(Total assets)	Issa and Fang (2019)
Profitability (NPM)	$Net\ Profit\ Margin = \frac{Net\ profit}{Total\ revenue}$	Hermawan and Mulyawan (2014)
Investor protection (INV)	World bank investor protection index "ease of doing business"	The World Bank (2021)
Transparency international (TI)	Transparency international corruption perception index (CPI) score	Transparency International (2021)

The measurement of the board is based on the one-tier board structure, while the Indonesian board, which implements the two-tier board structure, is measured by the board of commissioners. Control variables used in this study are bank size and profitability as controls of the firm; investor protection and transparency internationally as controls of the country. The summary of variables' operational definitions is presented in Table 2.

4.4. Validity Tests

To ensure the validity of the instruments, we conducted a Pearson correlation. Table 3 describes the results of the Pearson correlation between all variables used in this study. It can be seen that the board independence and board nationality diversity show a positive correlation, which provides initial support for the hypothesis that has been made. The results reported in Table 3 state that there is no multicollinearity problem in this study. A serious multicollinearity problem occurs when the coefficient value between variables exceeds the limit of 0.8 (Gujarati & Porter, 2009). This statement is also supported by the results of the variance inflation factor (VIF) values which is below 10. The results of this study indicate that the highest correlation coefficient occurs between the independent variables, namely transparency international and investor protection (0.69; p-value 0.01).

Table 3. Pearson correlation coefficient, VIF.

N = 276	SFD	IND	GEN	NAT	SIZ	NPM	INV	TI	VIF
SFD	1								
IND	0.09	1							1.38
GEN	-0.02	0.13**	1						1.04
NAT	0.03	0.13**	-0.02	1					1.07
SIZ	0.64***	-0.16***	-0.00	0.13**	1				1.80
NPM	0.29***	-0.11*	-0.01	-0.03	0.54***	1			1.48
INV	0.37***	0.30***	0.10*	0.15**	0.41***	0.25***	1		2.32
TI	0.39***	0.39***	0.01	0.15**	0.24***	0.21***	0.69***	1	2.16

Note: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

SFD = Sustainable finance disclosure; IND = Board independence; GEN = Board gender diversity; NAT = Board nationality diversity; SIZ = Firm size; NPM = Net profit margin; INV = Investor protection; TI = Transparency international.

5. RESULTS AND DISCUSSION

5.1. Trend Analysis of Sustainable Finance Disclosure in ASEAN

Table 4 contains a list of banks that implemented sustainable finance disclosure items throughout 2017-2019. The average level of sustainable finance disclosure in Southeast Asia is still low. Out of the 11 indicators required, not all banks make complete disclosures. Although the average sustainable finance disclosure in Southeast Asia is still relatively low, the average bank implementing indicators from sustainable finance disclosure are growing annually, at 14.81% in 2017; 17.88% in 2018; and 21.01% in 2019.

Table 4. List of banks that disclose sustainable finance.

Integration of environmental, social, and governance		2017		2018		2019	
		Bank	%	Bank	%	Bank	%
1.1	Sustainability relevance for the organization and its strategy to response sustainability	29	31.52	33	35.86	34	36.95
1.2	Participation in sustainable finance initiatives based on commitment and policy advocacy with regulators	7	7.60	8	8.69	10	10.86
2.3	Public statements about the principles and risks and aspects of ESG	14	15.21	14	15.21	17	18.47
2.4	Sector-specific policies	3	3.26	7	7.60	16	17.39
3.5	Process for assessing ESG risk to clients and transactional approvals	15	16.30	19	20.65	21	22.82
3.6	Procedures for monitoring and client engagement	9	9.78	13	14.13	17	18.47
4.7	Responsibility to ESG	10	10.86	15	16.30	21	22.82
4.8	ES staff competency and performance evaluation	12	13.04	14	15.21	20	21.73
5.9	ESG integration in products and services	17	18.47	22	23.91	19	20.65
6.10	ESG risk assessment and mitigation at a portfolio level	0	0.00	2	2.17	4	4.34
6.11	ESG risk disclosure exposure and target	34	36.95	34	36.95	34	36.95
Average		-	14.81	-	17.88	-	21.01
Total observation		92	-	92	-	92	-

The highest percentage of disclosures was in 6.11 "ESG risk disclosure exposure and target" indicators. Approximately 36.95% of banks in Southeast Asia revealed the indicator, although they did not disclose it completely. Banks in Southeast Asia should provide more detailed disclosures of their portfolios that align with their ES commitments, for example, the details of their energy portfolios. The lowest percentage of sustainable finance disclosure indicators is at 6.10, "ESG risk assessment and mitigation at portfolio level." In 2017, no bank disclosed 6.10, indicators in the sustainable finance report, but in 2018 and 2019 there was an increase in bank disclosure in 6.10 indicators, there were 2 banks in 2018 and 4 banks in 2019. This indicates that the practice of ES portfolio management remains uncommon for banks in Southeast Asia.

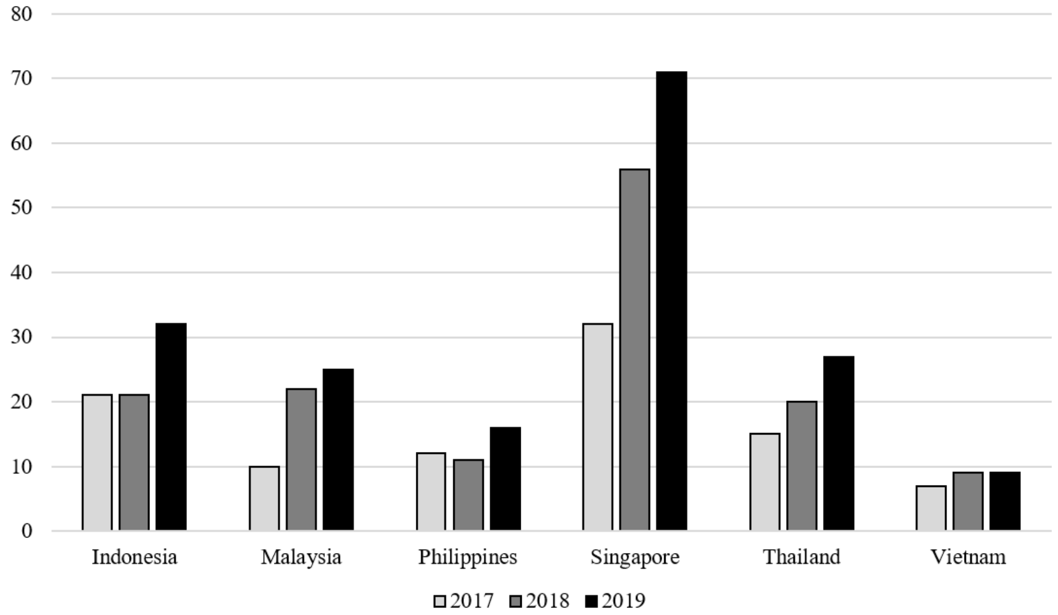

Figure 1. The average sustainable finance disclosure in ASEAN.

Figure 1 report the average disclosure of sustainable finance in each sample country in Southeast Asia during 2017-2019. The average disclosure of sustainable finance in Malaysia (9.58%, 22.29%, 25%); Singapore (32.01%, 55.87%, 70.64%); Thailand (15.26%, 20.05%, 26.62%); and Vietnam (6.94%, 8.75%, 9.31%) increased every year. Meanwhile, the disclosure of sustainable finance in Indonesia (21.25%, 20.54%, 32.17%) and the Philippines (11.61%, 11.46%, 16.20%) fluctuated every year. Among the 6 ASEAN countries sampled, Singapore is the country that has the highest average disclosure of sustainable finance every year. In contrast to Vietnam, this has the lowest average disclosure of sustainable finance every year.

These results indicate that Singapore banking is the most enthusiastic about participating in the disclosure of sustainable finance. Three of the five Singaporean banks that we used as research samples always conducted sustainable finance disclosures during 2017-2019. These three banks are DBS Group Holdings Limited, Overseas Chinese Banking Corporation Limited, and United Overseas Bank Limited. They disclose information about ESG integration in the annual reports and the websites. They also disclosed their commitment to contribute to ES issues, including raising awareness of climate change issues. The disclosure of sustainable finance products in their portfolio serves as evidence of this.

Unlike banks in Singapore, banks in Vietnam tend to pay less attention to sustainability and commitment to responsible lending. The number of banks in Vietnam that disclose information related to sustainable finance is still small, compared to banks that do not disclose it. The State Bank of Vietnam continues to place emphasis on prioritizing green project financing and increasing green credit, following Instruction 03/CT-NHNN (WWF, 2019). However, there are still a few banks in Vietnam that have responded to this.

5.2. Descriptive Statistics

The descriptive statistics results are necessary to obtain the description and distribution of data collected from the samples in this study. Based on Table 5, the sustainable finance disclosure has an average value of 0.0774, a minimum value of 0.0000 and a maximum value of 0.7613. This shows a disparity between the minimum and maximum values. If a company discloses all items in its sustainable finance disclosure, it will achieve a maximum value of 1. Based on this value, the average sustainable finance disclosure in Southeast Asia is still low at only 7.74% of 100% of total items that must be disclosed on sustainable finance disclosure.

Table 5. Descriptive statistics.

Variable	Observation	Mean	Minimum	Maximum	SD
SFD	276	0.0774	0.0000	0.7613	0.1488
IND	276	0.4923	0.0000	1.0000	0.1812
GEN	276	0.2395	0.0000	0.5000	0.1760
NAT	276	0.1398	0.0000	0.5000	0.1961
SIZ	276	9.8847	7.6618	11.6330	0.8734
NPM	276	15.8982	-231.8346	62.7802	26.7618
INV	276	68.2636	57.6800	85.2400	7.6676
TI	276	40.8478	33.0000	85.0000	11.3563

Note: SFD = Sustainable finance disclosure; IND = Board independence; GEN = Board gender diversity; NAT = Board nationality diversity; SIZ = Firm size; NPM = Net profit margin; INV = Investor protection; TI = Transparency international.

Based on Table 5, the average value for board independence is 49.23%, with a minimum value of 0 and a maximum value of 100%. This result is lower than the average independent board in the United Kingdom for the years 2007-2016, which reaches 54.57% (Dah & Jizi, 2018). However, this average is higher than the independent board average in Sri Lanka, which is 39% (Shamil, Shaikh, Ho, & Krishnan, 2014). The average value for board gender diversity was 0.2395, with a range between 0.0000 and 0.5000. This value is higher than the average gender diversity of companies listed on Bursa Malaysia, which was reported 0.131 (Alazzani et al., 2017). The average value for gender diversity in this study is almost the same as the average gender diversity in the United States manufacturing firms, which is 0.26 (Bravo, 2018). The average value of 0.1398. Companies listed on the Pakistan Stock Exchange also showed almost similar results, reporting a value of 0.1977 (Khan et al., 2019). The average nationality diversity in non-financial companies listed on Bursa Malaysia shows a lower value, 0.0700 (Katmon et al., 2017).

5.3. Regression Results

Table 6 presents the results of the board independence and diversity (gender diversity and nationality diversity) on sustainable finance disclosure with control variables. The regression result shows evidence that board independence has a significant positive effect on sustainable finance disclosure. However, board gender diversity does not appear to affect sustainable finance disclosure.

Table 6. Regression result.

Models ***Variables***	**1** **RE** ***SFD***	**2** **RE** ***SFD***	**3** **RE** ***SFD***	**4** **RE** ***SFD***
Board independence	0.09** (2.27)			0.10*** (2.62)
Board gender diversity		-0.01 (-0.30)		-0.02 (-0.69)
Board nationality diversity			-0.07*** (-2.36)	-0.08*** (-2.66)
Firm size	0.12*** (12.39)	0.11*** (12.06)	0.11*** (12.43)	0.12*** (12.77)
Net profit margin	-0.00** (-2.10)	-0.00** (-2.28)	-0.00*** (-2.62)	-0.00** (-2.47)
Investor protection	-0.00** (-2.24)	-0.00** (-1.81)	-0.00** (-1.83)	-0.00** (-2.13)
Transparency international	0.00*** (4.90)	0.00*** (5.63)	0.00*** (5.91)	0.00*** (4.98)
Observation	276	276	276	276
R^2	0.4990	0.4895	0.4997	0.5124
F-statistic	268.90	258.94	269.63	281.68
Prob. (F-stat)	0.0000	0.0000	0.0000	0.0000

Note: *t*-statistics in parenthesis; $^{**}p < 0.05$, $^{***}p < 0.01$.
SFD = Sustainable finance disclosure.
RE = Random effect model.

This paper also found that board nationality diversity has a significant negative effect on sustainable financial disclosure. Moreover, two control variables, such as firm size and transparency internationally, have a significant positive effect on sustainable finance disclosure. Meanwhile, net profit margin and investor protection have a significant negative effect on sustainable finance disclosure.

5.4. Robustness Analysis

Researchers use Table 7 to report the results of the robustness test analysis, aiming to achieve robust outcomes. The researcher applied two robustness tests to this research model. The first analysis is carried out by dividing the sustainable finance disclosure variable into 6 dimensions, namely purpose, policies, processes, people, product, and portfolio. We use each of these dimensions as the dependent variable. Next, the writer conducted the test as stated in the section on methodology.

The results of the robust analysis show that there is a significant positive effect between board independence and the sustainable finance disclosure dimensions (Model 5,6,8,9). While, board independence has no significant effect on the processes dimension (Model 7) and portfolio dimension (Model 10). Then, Model 5-10 compactly shows that there is no significant effect between the board gender diversity and all of sustainable finance disclosure dimensions. Meanwhile, the board nationality diversity shows a significant negative effect on all sustainable finance disclosure dimensions, except for the people dimension (Model 8) and portfolio dimension (Model 10).

As for the second analysis, we use the alternative measurement for the board diversity (gender diversity and nationality diversity) by substituting the Blau index measurement with the percentage of the female board and the percentage of foreign board (Model 11). The results of the study in Table 7 have the same result as in Table 6, which states there is a significant positive relationship between the board independence and sustainable financial disclosure. Meanwhile, gender diversity does not affect sustainable financial disclosure. Further, the board nationality diversity has a significantly negative effect on sustainable finance disclosure.

Table 7. Robust analysis.

Models	**5** **RE**	**6** **FE**	**7** **RE**	**8** **RE**	**9** **RE**	**10** **RE**	**11** **RE**
Variables	Purpose	Policies	Processes	People	Products	Portfolio	SFD
IND	0.16** (2.42)	0.07* (1.86)	0.08 (1.37)	0.08* (1.76)	0.13** (2.54)	0.01 (0.59)	0.10** (2.56)
GEN	-0.04 (-0.70)	-0.04 (-1.23)	-0.04 (-0.86)	0.01 (0.24)	-0.00 (-0.20)	0.01 (0.74)	-
GEN (Percentage)	-	-	-	-	-	-	-0.01 (-0.34)
NAT	-0.12** (-2.21)	-0.08** (-2.61)	-0.11** (-2.20)	-0.04 (-0.98)	-0.13*** (-3.02)	-0.02 (-1.46)	-
NAT (Percentage)	-	-	-	-	-	-	-0.10*** (-2.74)
SIZ	0.20*** (12.82)	0.08*** (8.27)	0.13*** (9.42)	0.11*** (9.45)	0.13*** (10.88)	0.05*** (9.25)	0.12*** (12.66)
NPM	-0.00* (-1.78)	-0.00* (-1.87)	-0.00** (-2.23)	-0.00** (-2.30)	-0.00* (-1.90)	-0.00* (-1.89)	-0.00** (-2.39)
INV	-0.00** (- 2.13)	-0.00 (-1.28)	-0.00 (-1.32)	-0.00* (-1.82)	-0.00 (-1.07)	-0.00*** (-2.96)	-0.00** (-2.10)
TI	0.00** (2.09)	0.00*** (4.82)	0.00*** (5.22)	0.00*** (6.37)	0.00 (1.52)	0.00*** (4.99)	0.00*** (4.91)
Observation	276	276	276	276	276	276	276
R^2	0.4651	0.3591	0.4116	0.4428	0.3911	0.3542	0.5127
F-statistic	233.05	21.76	187.45	213.01	172.11	146.98	281.95
Prob. (F-stat)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: *t*-statistics in parenthesis; $*p < 0.10$, $**p < 0.05$, $***p < 0.01$
SFD = Sustainable finance disclosure; IND = Board independence; GEN = Board gender diversity; NAT = Board nationality diversity; SIZ = Firm size; NPM = Net profit margin; INV = Investor protection; TI = Transparency international.
FE = Fixed effect model; RE = Random effect model.

5.5. Discussion of the Findings

Based on the results of the panel data regression analysis, H1 is accepted. Board independence has a significant positive effect on sustainable finance disclosure ($\beta = 0.1079$; $p = 0.009$). A higher level of the independent board provides a positive impact on increasing sustainable financial disclosure. The result of this study is in line with agency theory, which holds that the presence of an independent board can reduce conflicts of interest between the company and its shareholders. The duties of independent boards relating to the achievement of good corporate governance are to get the company to comply with applicable regulations, one of which is that of ASEAN financial regulators and banking associations. Sustainable finance disclosure is set by ASEAN financial regulators and banking associations for banks in Southeast Asia and aims at determining the extent of mitigation efforts undertaken by banks to mitigate climate change.

Moreover, the independence of board in carrying out its duties is considerably strict, especially concerning corporate social responsibility issues. Therefore, the existence of an independent board at a certain level will increase the attention of shareholders and stakeholders to corporate social responsibility disclosure. Our finding is similar to the results of Alkayed et al. (2024); Mehedi et al. (2024); Githaiga and Kosgei (2023); Agarwala, Pareek, and Sahu (2023); Khaireddine, Salhi, Aljabr, and Jarboui (2020) and Arayssi et al. (2020) which state that the independent board has a positive effect on disclosures related to ESG and corporate social responsibility. Meanwhile, the result of this research is not in line with Nguyen, Elmagrhi, Ntim, and Wu (2021) and Beji, Yousfi, Loukil, and Omri (2021) which state that there is an insignificant effect between board independence and environmental performance.

Board gender diversity has an insignificant effect on sustainable finance disclosure ($\beta = -0.0254$; $p = 0.488$), meaning that H2 is declined. The distribution of the research observation shows that the number of female boards in Southeast Asia's banks ranges from one to three for each bank. Yet, this number is not considered significant to describe the gender diversity in the board structure. The existence of one or two female boards in a company is ineffective in the decision-making process within the company as their opinion as a minority is still not properly heard (Konrad, Kramer, & Erkut, 2008). Westphal and Milton (2000) states that the existence of a female board in the board structure does not guarantee that it can influence decision-making. Moreover, sustainable finance disclosure is a disclosure that requires an agreement from a board of directors.

According to Alazzani et al. (2017) female boards are very concerned about climate change and have a crucial role in increasing disclosures related to ES issues. If the number of female boards is only one or two, it cannot significantly influence decision-making, including the decision to implement sustainable finance disclosures. Our results are in line with Al-Jaifi (2020) on the ASEAN banking industry in 2011-2016 whose reveals that there is no relationship between gender diversity and ES performance. Furthermore, Beji et al. (2021); Zaid, Wang, Adib, Sahyouni, and Abuhijleh (2020) and Manita et al. (2018) added that gender diversity on the board of directors does not have a significant effect on ESG disclosure in the United States. The results are not similar to the prior studies conducted by Adamu et al. (2024); Zampone, Nicolò, Sannino, and De Iorio (2024); Khatri (2023) and Muhammad and Migliori (2023) which reveal a significant positive relationship between board independence and sustainability reporting.

The notable result in this study is that board nationality diversity has a significant negative effect on sustainable finance disclosure ($\beta = -0{,}0890$; $p = 0.008$). This phenomenon shows that having board nationality diversity in the board structure can reduce the level of sustainable finance disclosure. The results are not in line with the resource-based theory and expected hypothesis, which state that board nationality diversity can increase the company's awareness of implementing sustainable finance disclosures; therefore, H3 is rejected. The results are also different from prior research (e.g.,(Ibrahim & Hanefah, 2016; Mehedi et al., 2024; Muttakin & Khan, 2015)) that stated that the board nationality diversity had a significant positive effect on corporate social responsibility.

Riordan (2000) states that working with people of different demographics leads to negative outcomes. The presence of foreign boards ignores social disclosure because foreign boards are only considered as protection for foreign investors (Elsakit & Worthington, 2014). Most foreign boards will focus on the progress of their respective countries so that when they work in other countries, they will not pay too much attention to the sustainable finance disclosures that the company discloses. However, this result is in line with research by Katmon et al. (2017) which states that board nationality diversity has a significant negative effect on disclosure of corporate social responsibility in 200 listed firms listed on Bursa Malaysia.

6. CONCLUSION, IMPLICATIONS, AND LIMITATION

This study aims at determining whether board independence and diversity (gender diversity and nationality diversity) affect sustainable finance disclosure in the ASEAN's banking. This paper employs panel data regression to analyze data from a total of 276 observations from 2017 to 2019 using panel data regression. The measurement of sustainable finance disclosure in this study uses the data from the SUSBA framework, which refers to the ESG indicators. Independent board variable is measured using the percentage of independent board members, while the board diversity is measured using Blau's index.

The findings from panel data regression analysis and robustness tests provide evidence that board independence has an important role in sustainable finance disclosure, which is consistent with agency theory. However, board gender diversity has an insignificant effect on sustainable financial disclosure. The number of female boards in ASEAN's banking system is only one or two, meaning that it cannot significantly influence decision-making, including the decision to conduct sustainable finance disclosures. Surprisingly, the board nationality diversity has a significant negative effect on sustainable finance disclosure. The presence of foreign boards tends to overlook social disclosure because most foreign boards will focus on the progress of their respective countries. Moreover, researchers also want to know the extent to which banks in Southeast Asia play a role in mitigating climate change through indicators of sustainable finance disclosure. This study indicates that the average sustainable finance disclosure in Southeast Asia is still low, around 7.73%. There are only 34 banks in Southeast Asia that implemented sustainable finance disclosures in 2017-2019, resulting in low disclosure. Among the six ASEAN countries sampled, Singapore is the only country that has the highest average disclosure of sustainable finance every year. These results indicate that Singapore is the most enthusiastic about participating in the disclosure of sustainable finance.

The study provides insights for different parties. First, we hope that the results of this research will assist ASEAN financial regulators and banking associations in enhancing sustainable finance as a means to address climate change issues. ASEAN financial regulators must strengthen it by requiring board members to carry out training related to monitoring the implementation of sustainable finance. ASEAN financial regulators should ensure the banking industry aligns with green banking principles and complies with the Paris agreement for selection in providing financing. Second, the results of this research can help the community and clients assess the extent to which banks disclose sustainable finance information and fulfill their responsibility to integrate ESG into banking activity. This can improve the good image of banking and increase the community and clients' trust in its performance. Thirdly, the research results can serve as a benchmark for comparing and evaluating the implementation of sustainable finance disclosure across all banking organizations in ASEAN. This comparison can motivate every banking organization in ASEAN to disclose more sustainable financial information. The other countries in ASEAN that have not yet made regulations on sustainable finance, may be encouraged to make the regulations as a form of support for sustainable ASEAN region. Furthermore, banking organizations can observe that independence boards play an important role in sustainable financial disclosure. So, the board's composition should be structured with a proportional number of independent boards to achieve sustainable performance and align with sustainable development goals.

To the best of our knowledge, this is the first paper that uses the SUSBA framework to refer to the ESG indicators as a data. It can be considered the most appropriate way to measure sustainable financial disclosure in Southeast Asia. However, this means that the results of sustainable finance disclosure in our study cannot be compared with previous studies. Therefore, the researchers can only draw comparisons with previous studies on corporate social responsibility that utilized different guidelines. This study has several limitations that can be used to improve future research. First, the study only examines one board characteristic (independence board) and several dimensions of board diversity (gender diversity and nationality diversity). Future studies need to explore the other board characteristics and diversity, and could also use other indices to measure board diversity. The current study focuses on a sample from six countries. Future studies may explore the research with other countries in ASEAN and could attempt the comparative study with other countries in ASEAN. Third, it only uses a quantitative research model, and the reason why banks do not disclose several indicators has not been answered. For further research that should investigate other approaches, qualitative analysis can be added to strengthen the results of the quantitative research model.

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