



Mapping Sustainability Reporting Disclosure Based on Determinants and Its Impact

Sofwan Farisyi^(✉), M. Al Musadieq, Hamidah Nayati Utami,
and Cacik Rut Damayanti

Brawijaya University, Malang, Indonesia
sofwanfarisyi@student.ub.ac.id

Abstract. The purpose of this study is to cluster analyses on Disclosure of Sustainability Reporting and Corporate Values and looks at the characteristics of companies that are more concerned about environmental and social issues. This research was conducted using a quantitative approach. Relevant data were obtained from 110 public companies in Indonesia that made sustainability reporting in 2020. Data analysis was carried out using a statistical method, namely Cluster Analysis. The results of this study are grouping of companies based on corporate governance structure, firm size, ownership structure, corporate posture, board qualification, and experience, sustainability reporting regulations, sustainability reporting disclosure, and firm value. The results obtained in cluster 1 consist of 49 company members, while in cluster 2 it consists of 61 company members.

Keywords: Clustering · Sustainability Reporting Disclosure · Firm Value

1 Introduction

Rapidly growing urbanization and industrialization pose sustainability problems worldwide [1]. It also raises the problem of depletion of natural resources, climate change, poverty, global warming and a series of environmental tragedies that occur in various parts of the world, such as Minamata (Japan), Bhopal (India), Chernobyl (Soviet Union), Shell (Nigeria) [1, 2]. Another cause of this problem is that the company's activities in carrying out their activities are only oriented to maximizing profits without paying attention to the impact of the company's activities, especially in the environmental field, resulting in environmental pollution and social problems [2].

The struggle to create a sustainable world took quite a long time before reaching an agreement in 2015. "The History of Sustainable Development Goals" said history began in 1962, when Rachel Carson wrote a book entitled "Silent Spring" which warns the world about the harmful effects of pesticide use on the environment and humans [3]. Rachel Carson provides evidence of how harmful pesticides can be to people and the environment.

The United Nations established the World Commission on Environment and Development (WCED) or what is often called the Brundtland Commission in December 1983, under the leadership of Dr. Gro Harlem Brundtland (Norway) and Mansour Khalid

(Sudan) as deputy leaders. April 1987, the Brundtland Commission published a book entitled “Our Common Future”. In the book, the World Commission on Environment and Development defines the term sustainable development. Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Based on survey data conducted by KPMG International Limited (or simply KPMG) on the 2020 Sustainability Reporting, it shows that 80% of companies in the world produce Sustainability Reporting Reports. Meanwhile, based on data obtained through the 2020 Voluntary National Report, only 14% of publicly listed companies in Indonesia have prepared a Sustainability Report. This indicates that Indonesian companies that prepare Sustainability Reports are very small when compared to the results of a survey conducted by KPMG which stated that on average 80% of companies in other countries have prepared Sustainability Reports.

Sustainability Reporting is practically a measurement, disclosure, and accountability of organizational performance in achieving sustainable development goals to internal and external stakeholders [4]. Some of the advantages of making Sustainable Reporting based on several previous studies are that companies voluntarily provide information about the economic, environmental and social impacts of company activities [5]. This will reduce information asymmetry and increase the transparency of the company’s sustainability activities [6]. In addition, the increased transparency of the information provided will make it easier for investors to evaluate and direct their investment to companies that have a positive impact [5]. In addition, it can make companies more competitive [7] and gain an advantage in the market or industry [8]. Thus, sustainability reporting reports are needed by investors to make investment decisions, because investors tend to want to invest in companies that are more concerned with the environment and social, this is shown by making sustainability reporting.

Based on data, in Indonesia and developing countries, regarding reporting on sustainability reporting which is still low and the cause of low Sustainability Reporting Disclosure is still relatively difficult to obtain, it is interesting to do research on this matter. Inventory and mapping of variables related to sustainability reporting in Indonesia is carried out through a systematic literature review in all developing countries. Considering that this research was conducted in Indonesia, which is a developing country.

Previous research has been conducted by Farisyi et al. [9] researching Systematic Literature Review: Impact of Sustainability Reporting in Developing Countries, found that research related to Sustainability Reporting currently focuses on nine aspects (variables), namely: Company Size, Profitability, Financial Leverage, Governance Structure Company Management, Ownership Structure, Company Age, Industry Sector, Company Posture, and Management Qualifications and Experience. However, from this study, it was found that there was an inconsistency in the results. There are results indicating that the impact has a significant effect on company sustainability, but there is also research which obtains the final result that the relationship between the two variables is not significant. So, this research is a continuation of previous research.

The purpose of this study is to analyse the Clusters on Disclosure of Sustainability Reporting and Corporate Values and to see the characteristics of companies that are more concerned about environmental and social issues.

2 Theoretical

2.1 Corporate Governance Structure

Corporate Governance Structure are company organs that have an important role in the implementation of good corporate governance. Corporate Governance Structure A company can play an important role in Sustainability reporting behaviour [10, 11]. The Corporate Governance Structure is measured from the indicators of Board Independence, Board Size and Age of Board [12].

2.2 Firm Size

Firm Size is a fairly important factor affecting *sustainability reporting* because the bigger the company, the bigger the impact, more visible to *stakeholders*, so it will be more monitored by *stakeholders*, more attention from the media, more potential to be regulated [12] To obtain the maximum possible profit, sufficient company growth is needed. Company growth in this context is a large increase in the company (*Firm Size growth*), with various indicators such as assets and sales [13].

2.3 Ownership Structure

The shareholding structure is the proportion of management, institutional, and public ownership, and the ownership structure is a mechanism for reducing conflict between management and shareholders [14] The Ownership Structure variable is measured by three indicators, namely [15].

2.4 Corporate Posture

Company posture can also take various forms. Researchers have categorized this posture in different ways. Miles & Snow [16], for example, uses defenders, reactors, analysers, and prospectors' typologies. Combined the terms advocate and adaptive organization into a conservation classification of entrepreneurship, which focuses on the risks top management is willing to take to bring about change, innovation, and gain competitive advantage [17].

2.5 Board Qualification and Experience

Experience can also be interpreted as episodic memory, namely memory that receives and stores events that occur or are experienced by individuals at a certain time and place, which functions as an autobiographical reference. Experience is an observation which is a combination of sight, smell, hearing and past experience [18]. From some of these opinions it can be concluded that experience is something that has been experienced, lived or felt which is then stored in memory. Board Qualification & Experience according to Arman [19] is measured based on multi-national experience and fulfilment of qualifications as a director.

2.6 Sustainability Reporting Regulation

The reporting regulation is that a mandatory regime can result in cost savings for the economy as a whole. For example, standardizing company reporting can make it easier for users to process information and compare between companies. Likewise, mandatory regimes can save costs for companies if they require disclosure which almost all companies are willing to provide voluntarily.

2.7 Sustainability Reporting Disclosure

Reported that companies with high costs of equity capital in the previous year had a high tendency to disclose corporate social responsibility reports [20].

To identify Sustainability Reporting Disclosure, it is calculated based on a pattern from The Global Reporting Initiative Framework, which consists of 3 categories, namely economic indicators, environmental indicators, and social indicators, all of which are calculated based on content analysis to obtain a disclosure score [21].

2.8 Firm Value

The value of the company is the price that a potential buyer can pay when the company is sold. When a company is open or has offered shares to the public, company value is defined as an investor's perception of the company itself.

Firm Value as investors' perception of the company, which is often associated with stock prices. The main purpose of the company according to the theory of the company is to maximize the wealth or Firm Value. Maximizing the value of a company is very important for a company, because by maximizing Firm Value, one also maximizes shareholder wealth which is the company's main goal [22].

There are several methods that can be used to measure the value of the company [23].

3 Methods

This study uses a method in the form of *cluster analysis*. *Cluster analysis* is a multivariate analysis that is used to classify objects of observation into several clusters based on the size of the similarity between objects [24]. The number of groups that can be identified depends on the number of data objects. The characteristics of a good group are internal homogeneity, namely the similarity between members in one group and external heterogeneity, namely the differences between one group and another. The purpose of cluster analysis is to group objects that have the same characteristics into the same cluster. The determination of the number of clusters formed is based on the difference in each stage. The stage with the maximum difference indicates the stage with the optimal number of clusters formed.

In general, cluster analysis is divided into two, namely 1) Hierarchical Clustering and 2) Non-Hierarchical Clustering. The difference between the two methods is in 1) Hierarchical Clustering, the number of clusters is determined later and the grouping of

objects into clusters is carried out in stages; while in 2) Non-Hierarchical *Clustering*, the number of clusters is determined at the beginning and grouping of objects into clusters is done at once.

One of the Hierarchical Clustering methods that is often used is the Ward Method. [25] said the Ward method is a technique for obtaining clusters that have the smallest possible internal variance. For the Ward cluster method, the number of clusters is determined in advance based on the dendrogram formed. In Ward’s cluster method, at each step, every possible cluster pooling is considered, and the two clusters are merged together whose merging results in a minimal increase in information loss. To determine the loss of information Ward uses the “Sum of Square” (ESS) criteria. The grouping process is through the following stages:

- Step 1: It starts with looking at N groups of subjects with one subject per group. SSE will be zero for the first stage because each object or individual will form a cluster.
- Step 2: The first group is formed by choosing two of these N groups which when combined will produce SSE in the value of the objective function.
- Step 3: The N-1 set of groups is then examined again to determine which two of these groups can minimize the goal. Thus, N groups are systematically reduced to N-1, then to N-2, and so on until they become one group.

4 Results

The Dendrogram image is projected using R software as shown below. The dendrogram is used to see the number of clusters formed.

By looking at the longest difference from Fig. 1, it can be seen that the right cut will produce 2 clusters so that the number of suitable clusters in this study is 2 clusters. It

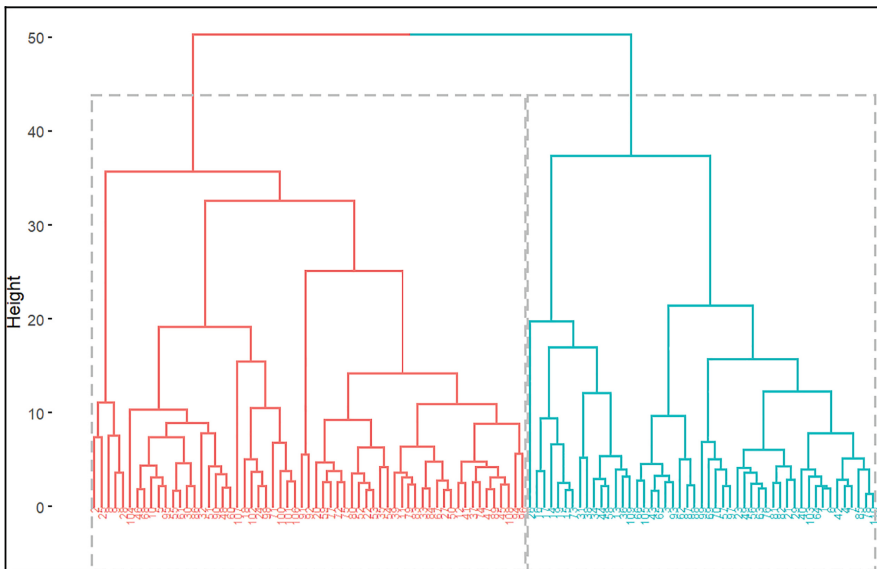


Fig. 1. Dendrogram cutting.

can be seen that the cluster that has the most members is cluster 1 compared to Cluster 2. The results of grouping companies in Indonesia which are used as research objects in this study indicate that cluster 1 consists of 49 company members. Meanwhile, cluster 2 consists of 61 company members. Table 1 below describes the characteristics of each indicator in each cluster. Characteristics are described using the average value of each indicator.

Cluster 1 consists of 49 companies having better *corporate governance structure* characteristics for all indicators compared to *cluster 2*. The second determinant variable of *Sustainability Reporting Disclosure* is *firm size*, this group is companies with a larger size. The composition of *institutional, management, and foreign* shareholdings is less and government ownership is more. On the other hand, it has a lower *Firm Value*.

Companies whose determinants of *Sustainability Reporting Disclosure* are better, are more concerned about *Sustainability Reporting Disclosure*. This is supported by the role of the government with indications of more share ownership than *cluster 2*. This group of companies has a lower *Firm Value*, indicating that the group does not only focus on short-term goals.

Cluster 2 is a group of companies that are a little less concerned about *Sustainability Reporting Disclosure* compared to *cluster 1*. These companies are more focused on short-term goals with higher *firm value*. Another important characteristic is having a

Table 1. Characteristics of each cluster.

Variable	Indicator	Cluster 1	Cluster 2
<i>Corporate Governance Structure</i>	X1.1	0.4392	0.4115
	X1.2	13.12	10.15
	X1.3	55.43	50.08
<i>Firm Size</i>	X2.1	31.35	29.19
	X2.2	28.86	27.88
	X2.3	8.746	7.834
<i>Ownership Structure</i>	X3.1	0.1426	0.09568
	X3.2	0.1425	0.1712
	X3.3	0.4473	0.4956
	X3.4	0.2635	0.3322
<i>Corporate Posture</i>	X4	1	1
<i>Board Qualification & Experience</i>	X5	0.9592	0.9672
<i>Sustainability Reporting Regulations</i>	X6	1	0.9836
<i>Sustainability Reporting Disclosure</i>	X7	0.4335	0.3757
<i>Firm Value</i>	X8.1	5.599	5.603
	X8.2	0.3565	0.47117
	X8.3	0.8664	1.0263

composition of *more Institutional, Management, and foreign* shareholdings and less government ownership.

5 Results and Discussion

Based on the results of the cluster analysis in sub-chapter 4, it is known that Cluster 1 consists of 49 companies having better corporate governance structure characteristics for all indicators compared to cluster 2. The average Board Independence indicator (X1.1) in cluster 1 is 0.4392, higher than the average the average in cluster 2 is 0.4115. The average Board Size indicator (X1.2) in cluster 1 is 13.12, higher than the average in cluster 2 which is 10.15. The average Age of Board indicator (X1.3) in cluster 1 is 55.43, higher than the average in cluster 2 which is 50.08. This indicates that in cluster 1 the Corporate Governance Structure variable is better than in cluster 2.

Overall, the firm size variable in cluster 1 is better than cluster 2. The Total Assets indicator (X2.1) has an average of 31.35 which is higher than cluster 1 which is 29.19. Furthermore, the Total Sales indicator (X2.2) has an average of 28.86 which is higher than cluster 1 which is 27.88. Furthermore, the Total Employee indicator (X2.3) has an average of 8,746 which is higher than cluster 1, which is 7,834.

Most of the average values of the four indicators included in the ownership structure variable are higher in cluster 2, compared to cluster 1. The value of the Government Ownership indicator (X3.1) in cluster 1 is 0.1426 greater than in cluster 2 which is 0.09568. on the Institutional Ownership indicator (X3.2) the indicator value in cluster 1 is 0.1425 lower than cluster 2 of 0.1712. In the Management Ownership indicator (X3.3) the indicator value in cluster 2 is 0.4956 higher than cluster 1 of 0.4473. In the Foreign Ownership indicator (X3.4) the indicator value in cluster 2 is 0.3322, higher than cluster 1 of 0.2635.

In the Corporate Posture variable (X4) it can be seen that the average value in cluster 1 and cluster 2 is the same, namely 1. Meanwhile, the average value of Board Qualification & Experience (X5), Price Earnings Ratio indicator (X8.1), Tobin's Q (X8.2), and Market Book Value (X8.3) in cluster 2 is higher than in cluster 1. On the other hand, the variable Sustainability Reporting Regulations (X6) and Sustainability Reporting Disclosure (X7) in cluster 1 has an average value higher than the average in cluster 2.

6 Conclusion and Suggestion

Based on the results of the analysis that has been discussed, it can be concluded that Companies whose determinants of *Sustainability Reporting Disclosure* are better, are more concerned about *Sustainability Reporting Disclosure*. This group of companies has a lower *Firm Value*, indicating that the group does not only focus on short-term goals and Group of companies with *Sustainability Reporting Disclosure* lower shares have *less Institutional, Management, and foreign* shareholdings and more government ownership, indicating that the government plays a role in the company's sustainability. The suggestions obtained are Companies that are more concerned about *Sustainability Reporting Disclosure* should communicate to *stakeholders*, in the hope of increasing *firm*

value and the government is expected to make policies to increase its share ownership in strategic companies.

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