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Measuring the Banking Performance Based on Corporate Social Responsibility Achievement: Decision Support System Adoption

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Abstract. Corporate Social Responsibility (CSR) discloses the social responsibility of a company in contributing to the quality improvement of the community and society. Currently, the banking industries put into concern on this social responsibility as well as CSR report as environmental issues that leveraging the economic business performance through the application of the Global Reporting Initiatives (GRI) framework. The number of the organization using this framework has increased. Unfortunately, several weaknesses have been reviewed on the adoption of this framework as a sustainability report. Therefore, this study tried to strengthening the GRI model by elaborating on the indicators and sub-indicators of GRI-4 to measure the priority weighted-based indicators thus it is utilized to rank the banking performance. Herein, the decision support system-based analytical network process (ANP) is applied to assess standard criteria of the GRI sustainability report as a side of economic, social, and environmental aspects. Three banking companies in Indonesia have been selected as alternatives and then analyzed based on its sustainability report as well as performance measurement. Twenty-four experts from academicians and practices have been asked their quantitative perspectives and weighting score of the criteria through the dissemination of the questionnaire. This study reveals the performance of banking companies following the realization of the CSR position. Thus, the financial services authority of Indonesia (OJK) as an Indonesian government agency is advised on the decision-making on the potential banking performance that more pay attention to environmental sustainability. Besides, the employment of the ANP method in this study can strengthen and accomplish the shortcoming of the GRI model in determining the sustainability report.

INTRODUCTION

Corporate Social Responsibility (CSR) of companies has been a hot topic in the last three decades in modern societies, and a subject of numerous studies by academia [1]. CSR refers to the enterprise to create profits and to bear the legal responsibility of shareholders, at the same time, to pay attention to the production process of human value, and the contribution to the environment, consumers, and society [2]. Bowen defines CSR as the obligations of businessmen to pursue the policies, to make decisions, or to follow the lines of action which are desirable in terms of

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the objectives and values of society[3]. Subsequent studies of CSR were presented by Davis (1960), McGuire (1963), and Network (1975), where they specified the concept and content of social responsibility [4][3]. The evolution of CSR in Indonesia has increased significantly and in line with the global trend in CSR practices. It has been practically adopted mostly in mining and manufacturing companies instead of other industrial businesses. Nevertheless, the banking industry currently has been an account of its social responsibility aspects in its sustainability reports periodically. Moreover, Indonesian Financial Services Authority (OJK) equips the unification of regulation and supervision of the financial services sector at the ministry of finance, Bank Indonesia (BI), capital market supervisory agency, and financial institution including the assessment of CSR practices as well as the sustainability disclosed by the company [5].

Since 2012, many banks company are following the guideline of the Global Reporting Initiative (GRI) standards for their sustainability document. GRI was established place on the concept of the triple bottom line of Green Banking as a key driver for sustainability management strategy [6]. The financial sector divulges the green information to be legitimate in society and improves their value, reputation, sustainability, and the competitiveness of their company thus the banks are engaged with financing manufacturing and non-manufacturing organizations and are directly and indirectly involved in environmental issues as their responsibility for green and sustainable strategy [7]. GRI guidelines develop into the most common and widely used sustainable reporting framework for analyzing, presenting, and reporting sustainability performances in developed and developing countries [8][9]. The GRI framework provides the company standard information on economic indicators, environmental compliance, labor practices, human rights, society, and product responsibility thus each company is facilitated by the flexible reported document on issues of sustainability assurance as to the most prestige for the company and its stakeholders [10]. GRI guidelines have been used extensively due to their wide range of visibility, acceptance, and sustainable policy formulation that associated to several international reporting standards, such as ten principles of UNGC and multinational enterprise guideless of OECD [11], International Integrated Reporting Council (IR) framework, the Sustainability Accounting Standards Board (SASB) guidelines [12]. Thus, GRI guidelines have been adopted by more than 500 companies due to its diversity of stakeholders and accountability of the corporate leaders. The advancement of GRI is continually explored from GRI-3 up to GRI-4.

Despite the spacious admittance of GRI, several weaknesses emerge as encumbrances towards the success of sustainability practice viz. the absence of trust and transparency in GRI reporting, the lack of using GRI reporting as a marketing tool to communicate with stakeholders and society, the unreported negative events in GRI [13][14], the lack of understanding on the stakeholders' engagement processes in decision making which is disclosed to data and verified of reporting, and inadequate analysis and weighting of interdependence among framework elements [15].

Analytical Network Process (ANP) as one method of multi-attribute decision making (MADM) introduced by Saaty (1996) that furnishes a new mechanism of performance analytical as the preference of Analytical Hierarchy Process (AHP) [16][17]. Many decision problems omitted the structured hierarchically and the interaction embarrassment and addiction amongst elements [18]. Meanwhile, ANP works out the problem of dependence among alternatives and criteria and allows the multiple indexes that hard to be quantified by considering the association between variables and sub-variables within a set of variables thus it reflects and describe the decision problem more realistically [19]. The previous researches have been successfully implementing ANP in various fields of study, including Lin et al (2020) who analyzed the factors influencing adoption intention of internet banking by integrating DEMATEL and ANP [20], Gyusun et al (2020) integrated ANP and AHP for measuring the performance of manufacturing operation management [21], Eko et al (2019) develop a sustainable supply chain performance measurement model by combining a balanced scorecard (BSC) with decision making trial and evaluation laboratory (DEMTEL) and ANP [22]. The above studies complied that ANP has been flourishingly in investigating the business excellence models for extracting analysis of related indicators thus it revealed the capability of ANP in structuring and evaluating their performance measurement. Considering the decision-making process by ANP furnished the effective utilization of this approach as decision support tools as well as a decision support system (DSS).

DSS is an application that aids managers in making a reasonable decision through the understanding of knowledge-based components in performance, attitude, and behavior. DSS enhances the effective role of stakeholders and key actors in making decisions [23]. One DSS application development is model-driven DSS that uses algebraic decision analytic, financial, optimization, and simulation models for decision support, including the multi-criteria decision analysis using the ANP method [24].

In a nutshell, this study tried to overcome the inappropriate of the GRI in understanding the stakeholder's involvement that concern on the weighting analysis of the framework's indicators measured. As stated by Alberto (2010) the GRI framework required mechanism in mediating the stakeholder's engagements as qualified external sustainability assurance as well as the embracing of new methods to integrate sustainability performance [15]. Herein,

DSS based on ANP analytical assesses and weights the standard criteria of the GRI sustainability document from the perspectives of economic, social, and environment. The involvement of external and internal stakeholders is covered by the disseminating of ANP questionnaires as the expert's judgments in verifying the sustainability assurance. Thus, the embracing of DSS-ANP in the GRI framework significantly advance the utilization of this framework in deceiving the sustainability picture and directly engaging the stakeholder's responsibility. To scope this study three Indonesia banking GRI reports are resolved and highlighted as alternatives banking performance measurement.

RESPONSE SURFACE METHODOLOGY

The Formation of Criteria and Sub-Criteria Data

The evolution of the GRI report was initiated by the launching of GRI-1 guidelines that informed economic, environmental, and social performance at the side of financial accounting tradition [25]. The G1 guidelines were revised by including transparency, inclusiveness, auditability, relevance, clarity, and timelines to ensure a balanced economic, environmental, and social performance towards sustainability development [26]. Next, the introduction of the GRI G3 generation brought the adoption of three standard disclosures to be more pay attention to the strategy and profile, management approach, and performance indicators at the organization [27]. The upgrading of G3 into the G3.1 guideline provided the revised guideline on local community impacts, human rights, gender, and sustainability report clarification [28]. The GRI G4 guidelines were established to offer a user-friendly guideline, eliminate the ambiguities perceptions, and identifying material issues [38] that describing the sustainability maturity level of the organization report. The GRI-4 has developed 149 disclosure requirements for sustainable purposes with 58 general standards and 91 specific standards [29]. Considering the three significant aspects of GRI-4 standards viz economic, environment, and social, the formation of criteria and sub-criteria defines based on the disclosure requirements of the GRI report 2017 in Indonesia banking (Bank X, Y, and Z). Economic aspects consist of criteria Economic Performance (A) with sub-criteria A1-A4, criteria Market Presence (B) with sub-criteria B1-B2, criteria Indirect Economic Impact (C) with sub-criteria C1 and C2, criteria Procurement Practices (D) with sub-criteria D1. Detail formation of criteria and sub-criteria can be depicted in Figure 1.

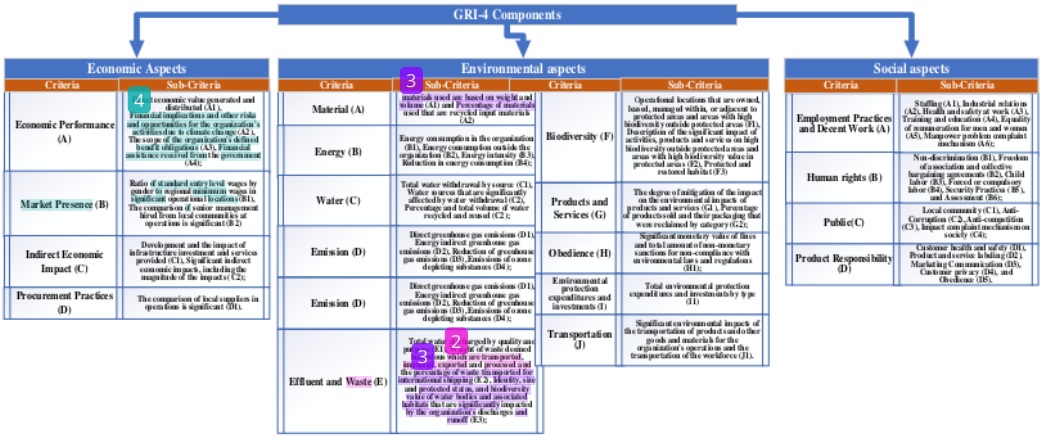

FIGURE 1. Formation of Criteria and Sub-Criteria based on GRI-4.

Design of Experiment Setup

The research is carried out with a series of activities, starting with the problem identification, formulation of criteria and sub-criteria, DSS-ANP analysis, and design. Problem identification was conducted through a thorough literature review related to CSR, GRI guidelines, the theory of performance measurement, ANP methods, and the DSS approach. Then, the formulation of criteria and sub-criteria are defined place on the GRI-4 standards disclosures that are adapted as Indonesia banking sustainability report for 2017. Three conventional banking are selected as alternatives for further

sustainability performance measurement. In order to preserve the credibility and confidentiality of the companies, Bank X, Y, and Z are designated as a case study. Twenty-four respondents are asked for their perspectives and appraisement on the significant values of indicators proposed by GRI-4 standards through the dissemination of questionnaires. The respondents are derived from five academicians background in economic, social politics, and environment; five expertise from OJK; and fourteen top-level management from bank X, Y, and Z. The questionnaire is designed by following the Saaty (2008) [30] formatted for ANP. Following this, the analysis of DSS-ANP is operated by pursuing the practice below [31].

1. Identifying criteria, sub-criteria by referring GRI-4 disclosure, and alternatives from Bank X, Y, and Z then creating a network structure.
2. Make pairwise comparisons of the ANP criteria and sub-criteria using a verbal scale expressed on a numerical scale of 1-9 by following the questionnaire designed.
3. Perform calculations to find the eigenvector value.

$$A.w = \lambda \max.\, w \tag{1}$$

Where:
A : Pairwise comparison matrix
λmax : The largest eigenvalue of A.
W : Eigenvector

4. Checking the inconsistency ratio (CR) and the consistency index (CI) of a comparison matrix by the formula:

$$CI = \left(\frac{\lambda\, maks - n}{n-1}\right) \tag{2}$$

Where:
N : number of elements/criteria
λ max : the sum of the results of multiplying the number of columns with eigenvector
If CI = 0, it indicates that the matrix is consistent

$$CR = \frac{\mathrm{CI}}{RI} \tag{3}$$

5. Performing pairwise comparison to determine criteria priorities.
6. Performing pairwise comparison to determine alternatives priorities concerning each criterion.
7. Determining overall priority for each alternative.
8. Select the Banking alternative with the highest priority.

The final stage of the proposed methodology is determining the rankings of Banking alternatives as to the highest sustainability performance.

RESULTS AND DISCUSSIONS

Results

The DSS-ANP model analysis was scrutinized from the views of main CSR components as well as economic, environmental, and social thus one of the network structures was exemplified in Fig. 2.

Following the ANP stages and the algebraic of Equation (1) to (3), the recapitulation of weighted values of each criterion and sub-criteria are elucidated in Table 1. Table 1 indicated that from an economic perspective the most significant indicators concerned by the stakeholders are component (A) Economic Performance: with the value 0.49 following by components (B): Market Presence, component (D): Procurement Practices, and criteria (C): Indirect Economic Impact with weighting values are 0.23, 0.16, and 0.11 respectively. For environment aspects, the stakeholders paying more attention to the considered criteria of sustainability disclosures performance at criteria (F): Biodiversity ensuing by criteria (C), (H), (E), (D), (A), (I), (B), (G), and finally is criteria (J): Transportation with the weighting values are 0.17, 0.15, 0.13, 0.11, 0.10, 0.08, 0.07, 0.05 and 0.03 respectively. Meanwhile, for social aspects, the entire criteria hand over a similar interest by the stakeholders towards successful sustainability.

Simultaneously, the recapitulation of the limit matrix for economic aspects is explained in Table 2. Table 2 points out that Bank Z as the highest priority banking that contributes to the most significant assessment of the sustainability

report at scoring 0.009. It is then followed by Bank X and Bank Y at scoring 0.006 and 0.005 respectively. For environment aspects, the calculation of the limit matrix reveals that Bank Z provides the highest priority banking at scoring 0.009 and it is followed by Bank Y and Bank X at scoring 0.007 and 0.006 respectively. Meanwhile, for social aspects furnishes that Bank Z numbering the most priority banking at scoring 0.050 and it is followed by Bank Y and Bank X at scoring 0.019 and 0.0015 respectively. Graphically the performance of each bank for GRI-4 standards is depicted in Figures 3a, 3b, and 3c.

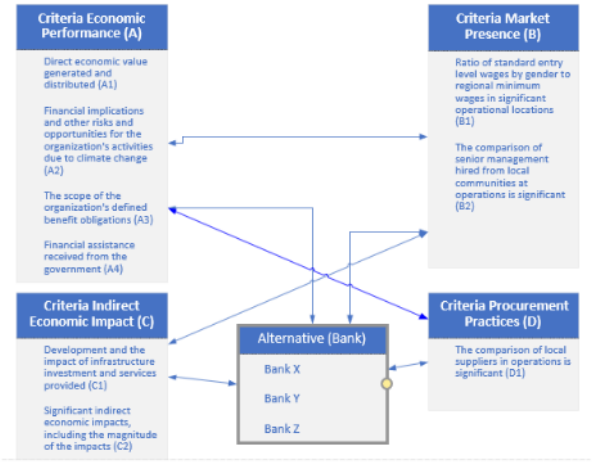

FIGURE 2. Network Structures of DSS-ANP for Economic Aspects.

TABLE 1. The recapitulation of weighted values for three aspects GRI-4.

Economic Aspects		Environment Aspects		Social Aspects	
Criteria	Eigen Vector	Criteria	Eigen Vector	Criteria	Eigen Vector
A	0.49	A	0,08	A	0,25
B	0.23	B	0,07	B	0,25
C	0.11	C	0,15	C	0,25
D	0.16	D	0,10	D	0,25
		E	0,11		
		F	0,17		
		G	0,05		
		H	0,13		
		I	0,07		
		J	0,03		

Investigating the performance of Bank Z for economic aspects at Fig. 3a, Bank Z is required to enhance the recognition of sustainability activities on criteria for component A: Economic Performance, such as Direct economic value generated and distributed (A1), Financial implications, and other risks and opportunities for the organization's activities due to climate change (A2), The scope of the organization's defined benefit obligations (A3), and Financial assistance received from the government (A4). This is due to this component (A) provides as the weightiest disclosures from economic previews. Accumulating the sub-criteria of this component will be linearly rising the general performance of these aspects. Meanwhile, Bank Z has reached the achievement of the standards of components B: Market Presence, D: Procurement Practices, and C: Indirect Economic Impact.

Considering the Bank Z performance on environment aspects at Fig. 3b, it is advised to contribute more awareness and understanding on the significance of sub-criteria in component F: Biodiversity including the operational locations that are owned, leased, managed within, or adjacent to protected areas and areas with high biodiversity outside

protected areas (F1), Description of the significant impact of activities, products and services on high biodiversity outside protected areas and areas with high biodiversity value in protected areas (F2), Protected and restored habitat (F3). Moreover, the concern of Bank Z on the achievement of component C: Water, especially for C2: Water sources that are significantly affected by water withdrawal will automatically increase the overall achievement of environmental aspects. For social aspects (See Fig. 3c), the recommendation given for Bank Z is to preserve the sustainability condition for the entire sub-criteria to perform in this concern.

TABLE 2. The limit matrix calculation for economic aspects.

		A				B		C		D	Bank		
		Al	A2	A3	A4	BI	B2	Cl	C2	DI	Bank X	Bank Y	Bank Z
A	Al	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
	A2	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
	A3	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
	A4	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
B	BI	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
	B2	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
C	Cl	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
	C2	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
D	DI	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bank	Bank X	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
	Bank Y	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
	Bank Z	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009

CONCLUSIONS

This study has prevailed in propounding a new mechanism of sustainability performance measurement by applying the DSS-ANP. The DSS-ANP has reformed the analysis of GRI-4 standards disclosures through the active engagement of stakeholders. The stakeholders together delivered their emphasis on weighting the criteria and sub-criteria as well as grading the banking performance as reported by sustainability documents. Thus, the transparency, inclusiveness, auditability, relevance, clarity, and verification of disclosures is preserved. The weighting values of criteria and sub-criteria have been successfully advised the significant standards that stakeholders must be occupied towards sustainability achievement. The study reveals a detailed analysis of bank performance place on the accomplishment of criteria and sub-criteria. Therefore, the external stakeholders including OJK, government, and social environment are recommended to the highest performance of banks that meet the CSR standards. This of course can be used as a guideline in making the decision and conducting the corrective action in approaching the success of CSR. Further research is required in handling the fuzziness of expert judgments on the standards assessment, for example by integrating the fuzzification on the ANP method. Therefore, the calculation of performance develops into more reflected and unambiguous.

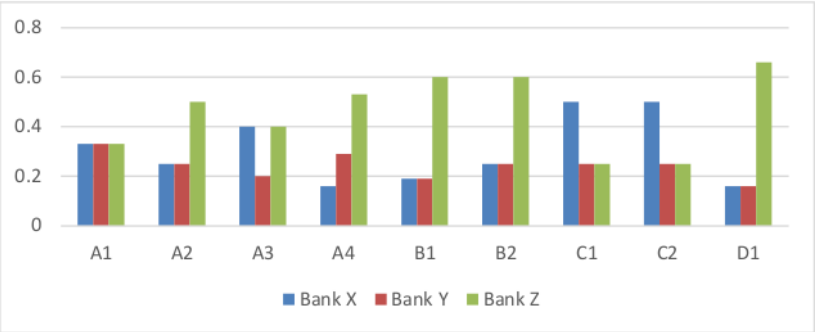

FIGURE 3a. The GRI-4 standards Performance of Banking: Economic Aspects

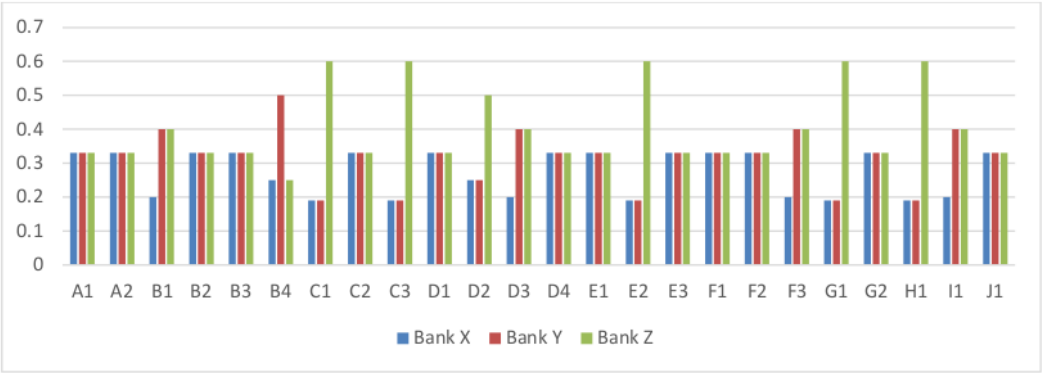

FIGURE 3b. The GRI-4 standards Performance of Banking: Environment Aspects

FIGURE 3c. The GRI-4 standards Performance of Banking: Social Aspects

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