



# **Intellectual Capital: The Role of Green Accounting on Corporate Social Responsibility**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## **ABSTRACT**

This study aims to determine whether there is an effect of green accounting on CSR disclosure and Intellectual Capital, the effect of Intellectual Capital on CSR disclosure, green accounting on CSR disclosure with Intellectual Capital as a moderating variable and CSR disclosure in Islamic Commercial Banks from an Islamic perspective. The population in this study are all Islamic Commercial Banks registered with ojk.go.id for the 2017-2022 periods. There are 14 banks with a sample of 84 companies. The sampling methodology employed in this study involved the utilization of purposive sampling and saturation approaches. This study used panel data regression model analysis, i.e., fixed effect regression and random effect regression. The results of this study showed green accounting have no effect on CSR, Intellectual Capital have no effect on CSR, Green Accounting influences Intellectual Capital, Intellectual Capital moderates the effect of Green Accounting on CSR. The implication of this study is that companies making CSR disclosures are influenced by several factors, one of which is green accounting. The results of this study can be taken into consideration for companies, especially for managers to determine their satisfaction in terms of CSR disclosure. For the community and stakeholders, the results of this study will provide

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information on the level of corporate social responsibility disclosure that can influence the decision making of stakeholders. Stakeholders will decide to invest in companies that have a high level of corporate social responsibility disclosure, because it indicates that the company has conducted and managed the company adequately. This research employs secondary data, so the study cannot control and supervise the possibility of errors in data processing calculations.

**Keywords:** Green accounting; CSR; Islamic Commercial Banks; intellectual capital.

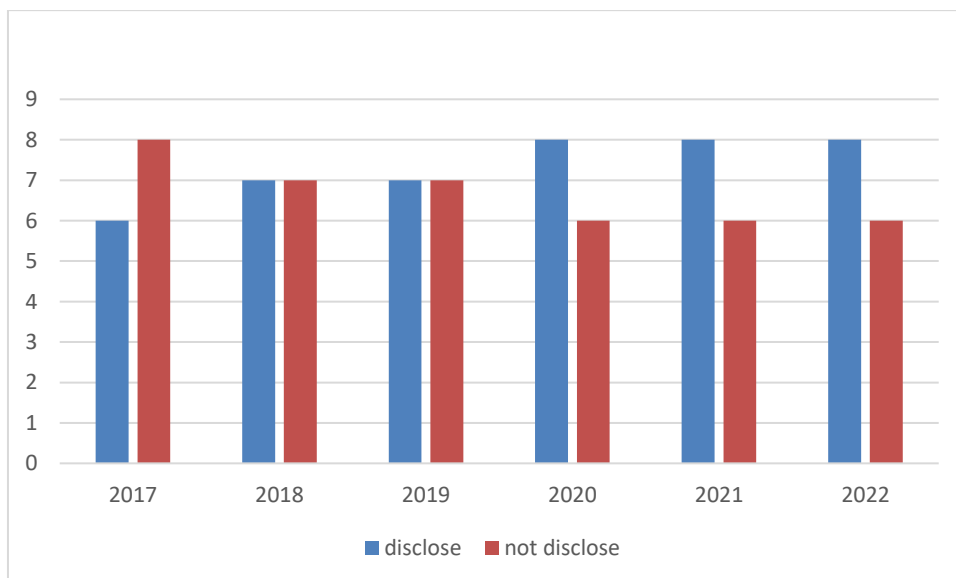
## 1. INTRODUCTION

Corporate Social Responsibility (CSR) refers to a company's obligation to safeguard the environment and promote social well-being, while also considering its own capabilities. In this article, we shall use the term CSR to refer to this concept. Meanwhile [1] argues that CSR is a form of cooperation between companies (not only limited liability companies) and all parties (stakeholders) who interact directly or indirectly with the company to continue to ensure the existence and sustainability of the company.

Chart 1 illustrates the status of environmental cost disclosure among the 14 Sharia commercial banks in Indonesia. The blue colour represents banks that reveal environmental costs to their companies, while the red colour represents banks that do not disclose such charges. The development of Islamic Banks in Indonesia which reported that their environmental costs experienced a significant increase from 2017-2022. The factor that causes the increase in environmental cost reporting at Islamic banks in

Indonesia is that basically disclosure of an entity's social responsibility aims to show the public the social activities carried out by the entity and its impact on society. Stakeholders are categorised into two groups: internal parties and external parties. The internal stakeholders comprise shareholders, management, and staff. External parties refer to investors, creditors, consumers, suppliers, society, and the government [2]. This disclosure is also one of the strategies for maintaining relationships between stakeholders and shareholders of an entity through CSR disclosures which provide information about the entity's economic, social, and environmental performance. With this disclosure, it is hoped that the entity will be able to meet the information needs needed to obtain support from stakeholders who influence the survival of the entity [3].

CSR disclosure has an impact on expenses which will ultimately become expenses that reduce income so that the entity's profit level will decrease. However, by implementing CSR, the



**Chart 1. Number of sharia commercial banks in Indonesia from 2017-2022 which disclose costs related to environmental activities**

Source: Annual Report of 14 Islamic Commercial Banks in Indonesia

entity's image will improve so that consumer loyalty will be higher (Ibrahim et al., 2015). One of the CSR disclosure concepts that is developing in Indonesia is the Global Reporting Initiative (GRI). The GRI Guidelines were initially introduced in 2000. Subsequently, in 2016, the GRI GSSB commenced the implementation of GRI Standards, which were officially launched in Indonesia in 2017. The GRI Standards come into effect on July 1, 2018.

Green accounting aims to conserve the environment by encouraging organisations to voluntarily comply with government rules while conducting their business. The study carried out by Puspita et al. [4]; Mustofa et al. [5]; Fernaldi et al. [6] indicates that green accounting has a positive effect on CSR. The research conducted by Khoirina [7]; Faizah [8] suggest that green accounting has a detrimental impact on corporate social responsibility (CSR). Conversely, the research conducted by Mariani [9], (Perbankan, 2020) and [10] indicates that green accounting does not influence the disclosure of CSR.

The phenomenon of this study is the significant impact of sustainable development in major Indonesian cities on environmental stability. Heightened urbanisation will result in amplified ecological repercussions. This scenario highlights the necessity of implementing measures to regulate and mitigate environmental effects [11]. Darwin (2007) argues, as stated in [5] The purpose of include information on the company's environmental, social, and financial performance in annual reports or separate reports is to demonstrate corporate accountability, responsibility, and transparency to investors and other stakeholders. The objective of this disclosure is to facilitate strong and effective communication between the company and the general public, as well as other interested parties., regarding the company's incorporation of CSR and the social environment in all facets of its activities. CSR disclosure is influenced by several factors. One of them is green accounting. Green accounting refers to the practice of identifying, quantifying, assessing, and disclosing the expenses related to an organisation's environmental initiatives [2]. Various entities utilise green accounting to generate quantitative evaluations of the burdens and impacts associated with environmental protection. There are several reasons why entities need to consider implementing green accounting as part of the entity's accounting

system, including: allowing to reduce and eliminate environmental burdens, improving the entity's environmental performance and supporting the success of the entity's business [12].

Management of CSR funds at Islamic Banks presents its own problems because there are no specific rules for reporting their social expenditures. Islamic bank CSR funds are still managed as one unit with Zakat, Infaq and Sadaqah (ZIS) funds. CSR funds taken from profit (profit) are then combined with ZIS (Zakat, Infaq and Sadaqah) funds. After the funds are managed into one, then they will be distributed by considering the 8 ashnaf (Fakir, Poor People, Amil, Converts, Riqab, Gharimin, Fisabilillah, Ibnu Sabil) recipients of ZIS (Zakat, Infaq and Sadaqah) first, then the remaining funds will be distributed for social activities in the areas where Islamic Banks operate. Reporting on the use of CSR funds at Islamic banks is still integrated with reporting on the use of ZIS (Zakat, Infaq and Sadaqah) funds. The management of CSR funds in Islamic Banks which still overlaps with ZIS (Zakat, Infaq and Sadaqah) funds hinders the effectiveness of distributing CSR funds for productive activities. This is because whatever amount of CSR funds provided will be distributed first to mustahik zakat, then the remaining funds are used for CSR program activities. Management (collection and distribution) of CSR funds using the ZIS (Zakat, Infaq and Sadaqah) management pattern has implications for reporting on the accountability of financial use (social costs) that have been issued by Islamic banks. Until now, there are no standard provisions or guidelines for reporting the use of CSR funds in the banking sector, including Islamic banks. This makes Islamic banks experience difficulties in reporting the social costs that have been incurred, so they feel safer if the reporting is identical to the ZIS (Zakat, Infaq and Sadaqah) fund report [13].

This study examines the influence of green accounting on CSRDi and Intellectual Capital, as well as the impact of Intellectual Capital on CSRDi, green accounting on CSRDi with Intellectual Capital as a moderating variable and CSRDi in Islamic Commercial Banks from an Islamic perspective. This research is a development research by Mustofa et al. [5] about the effect of green accounting on CSR in Islamic Commercial Banks (BUS) in Indonesia with financial performance as an intervening variable. The difference between this study and research

by Mustofa et al. [5] lies in the implementation of novel advancements. Specifically, this study aims to substitute the intervening variables while incorporating the Value-Added Intellectual Coefficient™ (VAIC™) test as a moderating variable for Intellectual Capital. Additionally, the sampling methodology employed in this study involves selecting Islamic Commercial Banks registered at ojk.go.id within the timeframe of 2017 – 2022, adhering to specific criteria. The findings of this study are relevant for companies, particularly for managers, in assessing their level of satisfaction with regards to CSR disclosure. The study's findings will offer insights to the community and stakeholders regarding the extent of corporate social responsibility disclosure, which has the potential to impact stakeholders' decision-making processes. Stakeholders will choose to invest in organizations that demonstrate a significant degree of transparency in their corporate social responsibility practices, since it signifies that the company has effectively and responsibly handled its operations.

## **2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT**

### **2.1 Literature Review**

#### **2.1.1 Stakeholder theory**

The term "stakeholder" was initially coined by the Stanford Research Institute (SRI) in 1984, when Freeman introduced stakeholder theory, according to which stakeholders are individuals or groups that influence each other due to their activities [14]. Stakeholder theory relies heavily on the practice of CSR because the information in CSR contains information about CSR that stakeholders and the surrounding community need. Essentially, CSR disclosure aims to show the public the social activities carried out by the entity and their impact on society. Stakeholders can be classified into two distinct groups: internal entities and external entities. The internal stakeholders consist of shareholders, management, and staff. External parties refer to investors, creditors, consumers, suppliers, communities, and the government [15].

This theory also posits that entities have a social obligation to take into account the interests of all parties affected by the entity's operations. One of the strategies to maintain relationships between stakeholders and shareholders of an entity is to disclose CSR, providing information about the

economic, social, and environmental performance of the entity. Through this disclosure, it is envisaged that the entity will be able to meet the information demands essential to garner support from stakeholders that affect the entity's existence. CSR disclosure impacts costs that will eventually become costs that reduce revenue, causing the unit's profit level to decrease. However, by implementing CSR, the image of the entity will be better, thus consumer loyalty will be higher [15].

The Global Reporting Initiative (GRI) is an emerging idea of CSR disclosure in Indonesia. The GRI Guidelines were initially introduced in 2000. Subsequently, in 2016, the GRI GSSB commenced the implementation of the GRI Standards. The GRI-standards encompass two distinct categories of standard disclosures: general disclosures and particular disclosures. General disclosures encompass several factors such as entity strategy and analysis, entity profiles, identification of material aspects for entities, relationships with stakeholders, report profiles, and entity governance. Meanwhile, special disclosures include disclosures regarding economic performance, environmental performance, and social performance [16]. Entities contribute to societal welfare and environmental preservation through the disclosure of CSR data included in their yearly reports. These reports cover various aspects including the economy, environment, and society [14]. In this situation, firm management is responsible for overseeing intellectual capital, which encompasses all resources owned by the company, such as personnel (human capital), tangible assets (physical capital), and structural capital. If all sources. Intellectual Capital in the view of stakeholder theory is considered as an organizational capability to create, transfer and implement knowledge. In addition, this theory considers that organizational accountability should not only report information regarding finances but also information regarding non-finance. In the company's annual financial report two types of information are provided, namely mandatory information (mandatory) and information that is voluntary. One of voluntary information is information about capital intellectual [3]. The information is revealing there is an added value owned by the company as a result of its existence management of intellectual capital itself [17]. Efficient resource management yields increased value for the organization, hence influencing its financial performance [18]

**Chart 2. Previous research**

No	Title, Author and Year	Independent Variable (Y)	Dependent Variable (X)	Method	Research result
1.	Mustofa et al. [5]	CSR	Green Accounting	Multiple linear regress on analysis	1) Green accounting has a positive and significant effect on CSRDi and intellectual capital, intellectual capital has a positive and significant effect on CSRDi, 2) intellectual capital is not an intervening variable in green accounting for CSRDi, green accounting for CSRDi 3) Sharia Commercial Banks are in accordance with the Islamic perspective both in their implementation and assessment.
2.	Erlangga et al. [10]	CSR	The value of the company	Multiple linear regression analysis	1) Green Accounting has no direct or indirect influence on Corporate Social Responsibility Disclosure through the Company's Financial Performance as intervening variables. 2) Public Share Ownership has an effect on performance but has no effect on CSR 3) Publication of Corporate Social Responsibility has no effect on Corporate Social Responsibility Disclosure either directly or indirectly through performance finance.
3.	Fernaldi et al. [6]	CSR	Green accounting	Multiple linear regression	1) Green accounting has a positive effect on economic performance. 2) Environmental disclosure has a negative effect on economic performance. 3) There is no influence direct green accounting towards economic performance through information asymmetry. 4) There is no indirect effect of environmental disclosure on economic performance through asymmetry information.
4.	Faizah[8]	Performance finance, CSR	Green accounting	Regression Multiple linear	Green accounting has no effect on financial performance as measured using net profit margin.
5.	(Perbankan, 2020)	CSR	Green Accounting	Regression multiple linear	Implementation of Green Accounting has no effect on CSR Disclosures, Audit Committee Size has a positive effect on CSR Disclosures, Audit Committee Meetings have a positive effect on CSR Disclosures, Directors' National Diversity has a negative effect on CSR Disclosures, Directors' Gender has no effect on CSR Disclosures.
6.	Khoirina,[7]	CSR	Green Accounting	Regresion multiple linear	The implementation of Green Accounting affects disclosure CSR at Semen Gresik Hospital.
7.	Dewi & Edward Narayana[11]	CSR	Green Accounting	Regresi linear berganda	The results of this research show that the influence of green accounting has a positive effect on company value, this is obtained from a significance value of 0.003 with a beta coefficient value of 0.228. Profitability also has a positive influence on

No	Title, Author and Year	Independent Variable (Y)	Dependent Variable (X)	Method	Research result
					company value, this is indicated by a significance value of 0.000 with a beta coefficient value of 0.724. The influence of corporate social responsibility on company value also shows a positive direction, as shown by the significance value of 0.011 with a beta coefficient value of 0.210 which is positive.
8.	(Rakesa & Werastuti, 2022)	CSR	Green Accounting	Regresi linear berganda	The research results show that: the implementation of green accounting has a positive effect on corporate sustainability. This happens because when a company implements green accounting, stakeholders will obtain information on the extent to which the company contributes to environmental management, thus attracting stakeholders' interest in using the company's green products and buying shares company.
9.	(Olabode & Chidozie, 2022)	CSR	Company performance	Multiple regression analysis	The research results explain that CRS is positively correlated with organizational innovation and company performance due to mediation between the target variables reviewed.
10.	(Kholmi & Nafiza, 2022)	CSR	Green Accounting	Multiple regression analysis	Green accounting has no influence on profitability, while Corporate Social Responsibility has a positive influence on profitability.
11.	Puspita et al. [4]	CSR	Green Accounting	Multiple regression analysis	The research results explain that CRS has a positive influence on green accounting
12.	(Oktapriana et al., 2022)	CSR	Green accounting	Multiple regression analysis	<p>1. The implementation of green accounting has a significant effect on company value. With the implementation of green accounting it is possible provide positive value for investors regarding the company's business performance which is not only profit-oriented.</p> <p>2. Social responsibility performance through disclosure of sustainability reports has no effect on company value. This shows that social responsibility performance is not able to increase investors' interest in investing so it does not have an influence on company value.</p>

## 2.2 Hypothesis Development

### 2.2.1 Application of green accounting on CSR

The relationship between green accounting and CSR is significantly facilitated and strengthened by stakeholder theory. Green Accounting serves as a means of communicating with the public and stakeholders about the expenses that result from the company's responsible actions, which have an economic impact. The application of Green Accounting provides data and information that can be used as material for financial management reviews in decision making to determine the amount of social and environmental responsibility costs that must be incurred for the next period. Apart from that, the information presented in financial reports using Green Accounting can be used as material for stakeholder assessment. Green Accounting can be a consideration for making ecological improvements, controlling costs, investing in environmentally friendly technology, and developing clean production processes [11].

Companies really need to report company activities. In reporting policy information and targets environment, programs being implemented and costs which occurs because of the aim of preparing and disclosing risks environment. Where is the disclosure of the company's environmental activities as an embodiment of CSR can be included in financial reports, notes to financial reports and also non-reports finance, for example in the form of sustainability reports reporting [19]. According to a prior study conducted by Puspita et al. [4] it was shown that green accounting had a beneficial impact on CSR. According to Mariani [9] research, it was found that green accounting does not have any impact on CSR. Given the information provided, we can develop the following hypothesis:

**H<sub>1</sub>: Green Accounting influences CSR**

### 2.2.2 Effect green accounting on intellectual capital

Green Accounting is a medium for communication with the public and stakeholders regarding costs that arise as an economic impact from responsible activities conducted by the firm, this is consistent with stakeholder theory. The application of Green Accounting provides data and information that can be used as material for

financial management reviews in decision making to determine the amount of social and environmental responsibility costs that must be incurred for the next period. Apart from that, the information presented in financial reports using Green Accounting can be used as material for stakeholder assessment. Green Accounting can be a consideration for making ecological improvements, controlling costs, investing in environmentally friendly technology, and developing clean production processes.

Nowadays, people are starting to realize the importance of environmental conservation. Consumers will be more interested in and accept environmentally friendly products because they are considered safer. So the company's investment in environmentally friendly products can be considered profitable because it gets a positive response from the public in using environmentally friendly products. This will positively influence the growth of firm sales and enhance the company's financial performance. By accurately allocating environmental costs to products, valuable managerial insights can be obtained, enabling the determination of a product's profitability. Mustofa et al. [5]. According to research conducted [5] the impact of Green Accounting on Intellectual Capital can enhance firm performance. Given this information, we can develop the following hypothesis:

**H<sub>2</sub>: Green Accounting influences Intellectual Capital**

### 2.2.3 Effect of intellectual capital on CSR

According to the stakeholder theory, companies that disclose CSR, are expected enhance their social credibility and optimise its financial resilience in the future. This subject suggests that corporations that adopt CSR anticipate a favourable reaction from market participants. According to research Gantino & Alam [20], Intellectual Capital positively impacts CSR. Therefore, by providing financial institutions with environmental performance information in their financial reporting, this study also anticipates a favourable impact of Intellectual Capital on CSR Disclosure in sharia banking. Given the information provided, it is possible to develop the following hypothesis:

**H<sub>3</sub>: Intellectual Capital influences CSR**

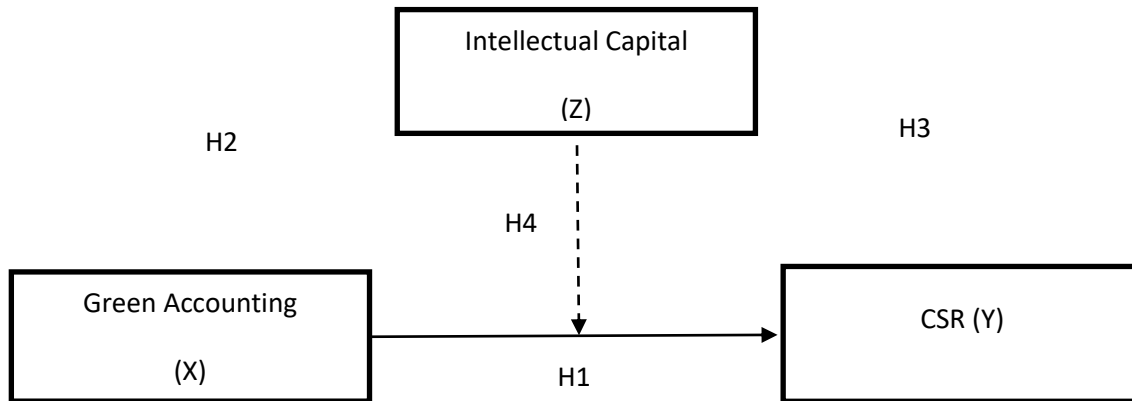


Fig. 1. Conceptual framework

### 2.2.4 Intellectual capital moderate the effect of green accounting on CSR

According to the stakeholder theory, companies that implement green accounting or sustainability reporting will disclose more social and environmental activities, so that they will indirectly attract investors and can help companies improve their financial performance. By divulging environmental-related financial information, financial reports will become more appealing to users, thereby enhancing the company's economic performance, Strengthening the workers and enhancing the firm's capabilities, promoting economic prosperity, enhancing corporate value, and assuring robust financial performance to maintain its position. The aim is to enhance the competitiveness of the relevant parties, thereby generating greater interest from stakeholders and readers of financial reports, ultimately resulting in an increase in the company's worth. The research undertaken by Mustofa et al. [5] suggests that Green Accounting has an indirect impact on CSR via affecting financial performance. The fourth hypothesis in this investigation is derived from this foundation: The fourth hypothesis in this investigation is derived from the aforementioned foundation:

**H<sub>4</sub>: Effect of Intellectual Capital moderate Green Accounting on CSR**

## 3. METHODOLOGY

### 3.1 Research Types and Data

This study utilizes quantitative research methodologie s, namely utilising descriptive and

verification techniques. The research methodology employed involves the utilisation of statistical methodologies for delivering a quantitative analysis of existing data, hence enabling the determination of variable characteristics. Additionally, this method also involves conducting tests to ascertain Whether the theory is rejected or accepted. The data obtained were in the form of secondary data, specifically financial statements, annual reports, sustainability reports and documents related to the name of this study.

### 3.2 Sample

The study focuses on 14 registered commercial sharia banks in Indonesia, which are regulated by the Financial Services Authority (OJK), the following are the names of Sharia banks in Indonesia: Aceh Sharia Bank, BPD Sharia Bank, Indonesian Muamalat Bank, Victoria Sharia Bank, BRI Sharia Bank, BJB Bank, BNI Sharia Bank, Mandiri Sharia Bank, Mega Sharia Bank, Panin Dubai Sharia Bank, Bukopin Sharia Bank, BCA Sharia Bank, BTPR Sharia Bank, and Maybank Sharia Bank Indonesia. The sampling methodology employed in this study involved the utilization of purposive sampling and saturation approaches. meaning that data collection was governed by criteria previously determined by the researcher. This study uses a method on Stata 17 software, with validitas and reabilitas testing and hypothesis testing.

The criteria employed in this study are delineated as follows:

1. The Sharia general banking firm is registered on ojk.go.id for the period of



2017-2022. This timeframe selection is based on observations researcher made by previously in previous articles such as [5,9] that found several years that were relevant to use as timeframe for this research, as well as to see the comparative progress between the years.

2. Provide annual reports, financial reports, and one report each on environmental costs, operational costs related to the environment, costs of product recycling, and costs of environmental development and research.
3. Islamic Commercial Banks that apply Green Accounting in accordance with the Environmental Indicators in GRI CSR disclosure version 3.0 in 2006

### 3.3 Operational Definition and Variable Measurement

This study uses the green accounting variable as an independent variable to replace the dummy method as an indicator. While CSR is the dependent variable represented by Global Reporting Initiative (GRI) version 3 in 2006. CSR refers to the concept and actions undertaken by a company to fulfil its corporate responsibility towards the social and environmental aspects of its operating environment. This includes engaging in activities that enhance the well-being of the local community and contribute to environmental preservation [21]. CSR initiatives encompass activities such as granting scholarships to disadvantaged youngsters in the region, financing the upkeep of public amenities, and contributing funds towards the establishment of socially advantageous villages or community facilities for the local populace, particularly those residing in proximity to the company's location. Intellectual capital refers to the comprehensive aspects of a firm, including its customer interactions, staff, and supportive procedures, which are developed through innovation, the adaptation of existing knowledge, knowledge transfer, and ongoing learning. These factors all contribute to enhancing the value of the organisation [22]. During his investigation [23] The iBVAIC (Islamic banking value-added intellectual coefficient) is an IC performance evaluation methodology specifically designed for Islamic banking. The iBVAIC model was developed by utilising financial statement data, reporting standards, and relevant legislation specific to Islamic banking. This model also involves the identification of accounts inside Islamic bank financial statements [24]. The

procedure for calculating iBVAIC is determined based on the outcomes of the focus group discussions (FGD) carried out. The steps involved in the calculation are as follows:

#### 3.3.1 iBValue Added (VA)

To begin, it is necessary to compute the iBValue Added (iBVA). The initial relationship, iBVA, pertains to the interplay between VA (value added) and key financial factors such as OP (operation profit), EC (employee expense), D (depreciation), and A (amortisation). This relationship serves the purpose of generating value within the organisation. The relationship is expressed in the following manner:

$$iBVA = OP + EC + D + A$$

#### 3.3.2 iBValue Added Capital Employed (iBVACA)

Next, it is necessary to compute the Value-Added Capital Employed (iBVACA). The second association between VA is with physical capital (CE), referred to as Capital Employed Efficiency (CEE). CEE is a metric used to measure the value added (VA) produced by physical capital units. The formulation of CEE is as follows:

$$iBVACA = VA/CE$$

#### 3.3.3 iBValue Added Human Capital (iBVAHU)

iB-VAHU demonstrates the amount of iBVA that can be produced from the expenditure on labor. According to Ulum [23], the aggregate expenditure on salaries and wages can serve as a measure of human capital (HC) because market forces determine these payments based on a company's performance. Therefore, it would be reasonable to assess the success of HC using the same criteria. The link between the variables VA and HC is expressed in the following manner:

$$iBVAHU = VA/HC$$

#### 3.3.4 Structural Capital Value Added (iBSTVA)

This ratio quantifies the quantity of SC required to generate a single unit of currency (rupiah) from iBVA, serving as a gauge of the SC's effectiveness in generating value. The calculation of SC in the VAIC model involves subtracting VA from HC. The more limited the role of human capital in generating value, the more significant

the role of social capital becomes. The link between VA and SC is determined using the following equation:

$$iBSTVA = SC/VA$$

### 3.3.5 Value Added Intellectual Coefficient (iBVAICTM)

The term iBVAIC™ refers to an organization's intellectual capabilities, which can also be referred to as BPI (Business Performance Indicators). The ultimate stage involves determining the company's comprehensive intellectual capacity. This computation is the result of adding up the coefficients indicated earlier using the formula:

$$iBVAIC^{TM} = IB-VACA + IB-VAHU + IB-STVA$$

A greater value-added intellectual coefficient (VAIC), which is determined by the combined sum of human capital efficiency (HCE), structural capital efficiency (SCE), and capital employed efficiency (CEE), indicates a higher level of value generated per unit of monetary investment. Consequently, organizations who have higher values for Intellectual Capital Efficiency (ICE) and Value added Intellectual Coefficient (VAIC) would utilize their intellectual capital resources more effectively [25].

### 3.3.6 Control variable

This study employed control variables, more precisely, the variable of interest is Firm Size (FSize). The size of a firm is established by calculating the natural logarithm of the total assets of the firm at year t. [26].

**Table 1. Variable measurement**

No	Indicator	Measurement
1.	Green Accounting	The evaluation of Green Accounting can be conducted utilizing the dummy approach, which involves checking if a company includes specific components related to environmental costs, such as environmental operational costs, product recycling costs, and research costs in environmental development, in its Annual Report. If these components are present, the company will be assigned a value of 1 (one); but if it does not have an environmental cost component in the annual report (Annual Report) it is given the number 0 (zero). The measurement method above is based on measurements carried out by (Mariani, [9]).
2.	CSR	$CSRDI = \frac{\sum X_{ij}}{n_j}$ <p>Where:                      CSRDI = CSR Disclosure Index                      X<sub>ij</sub> = Dummy variable; 1 = if 1 item is disclosed, 0 = if 1 item is not disclosed, thus 0 ≤ CSRDI ≤ 1. 1. n<sub>j</sub> = Number of items for company j, n<sub>j</sub> ≤ 91                      Then the calculation of the social responsibility disclosure index is carried out [9]).</p>
3.	Intellectual Capital	iBValue Added (VA) $iBVA = OP + EC + D + A$ Information: OP: operating profit EC: employee costs (beban karyawan) D: depreciation (depresiasi) A: amortization (amortisasi) iBValue Added Capital Employed (iBVACA) $iBVACA = VA/CE$ Information: iBVACA: Value Added Capital Employed: ratio of iB-VA to CE iBVA: value added CE: Capital Employed: available funds (total equity)

No	Indicator	Measurement
		iBValue Added Human Capital (iBVAHU) $iBVAHU = VA/HC$ Information: iBVAHU: <i>Value added Human Capital</i> : ratio of iB-VA to HC iB-VA: <i>Value added</i> HC <i>Human capital</i> : employee burden  Structural Capital Value Added (iBSTVA) $iBSTVA = SC/VA$ Information: STVA: <i>Structural Capital Value Added</i> : ratio of SC to IB-VA SC: <i>Structural capital</i> : IB-VA – HC IBVA: <i>Value Added</i>  Value Added Intellectual Coefficient (iBVAICTM) $iBVAIC^{TM} = IB - VACA + IB - VAHU + IB - STVA$
4.	SIZE	Total assets of the firm at year t and computing the natural logarithm (Hariyanto, 2020).

### 3.4 Statistical Testing

This study applied a regression model utilizing panel data analysis. Panel data analysis is employed to investigate the correlation between green accounting and CSR, with intellectual capital acting as a moderating element. Panel data analysis involves the application of OLS (ordinary least squares) regression models, FE (fixed effects) models, and RE (random effects) models., as stated by Baltagi [27]. The study utilized Breusch and Pagan's Lagrangian multiplier tests to compare ordinary least squares regression models with random effects regression models. The Chow test is employed to compare ordinary least squares models with fixed effects models, whereas the Hausman test is utilized to determine the best suitable panel data regression model between the fixed effects model and the random effects model. The regression coefficient is obtained by taking into account two main objectives. The main objective is to minimize the disparity between the actual value and the predicted value of the dependent variable by leveraging the available data [22]. Consequently, the analytical model can be expressed in the following manner:

$$CSR = \alpha + \beta_1 GA + \beta_2 IC + \epsilon \dots \dots \dots (1)$$

$$CSR = \alpha + \beta_1 GA + \beta_2 IC + \beta GA * IC + \epsilon \dots \dots (2)$$

Information:

- $\alpha$  = Konstan
- $\beta$  = Regression Coefficient

- $\epsilon$  = Term or Residual Errors
- CSR = Corporate Social Responsibility
- GA = Green Accounting
- IC = Intellectual Capital

### 4. RESULTS AND DISCUSSION

Descriptive statistics provide a summary of the distribution of mean main values. The standard deviation is a statistical measure that quantifies the degree to which data points differ from the mean, providing information on the level of data dispersion. A decreased standard deviation indicates that the data points are tightly packed around the mean. The variables utilised in this study are displayed in tabular format, providing descriptive statistics. The average value of the Green Accounting variable is 0.5238095, indicating that the degree of Green Accounting exhibited by 14 banks in Indonesia is comparatively elevated, corresponding to 52.38% or 7 enterprises. The CSR variable has an average value of 0.2935464, indicating that, on average, 29.35% of the company's opportunities to engage in CSR are utilized. In contrast, the average value of Intellectual Capital was 13.5067, suggesting that a significant portion of 1.350% of the enterprises in the sample possessed Intellectual Capital. The mean value of SIZE (Company Size) is 30.40661. The data indicates that the mean value of the company's size is 3.040%. The following table displays the detailed descriptive statistics for each variable.

#### **4.1 Diagnostic Test of Heteroscedasticity and Serial Correlation**

The Modified Wald Test, as proposed by Baum [28]; Oscar [29] is a suitable method for performing heteroscedasticity tests in fixed effect models. The random effect model employs the Likelihood-ratio test, as explained by Sanchez [30]. Heteroscedasticity problems can be detected in the model if the p-value ( $\text{Prob} > \chi^2$ ) is below 0.05. The Wooldridge test, developed by Drukker [31] is a useful tool for conducting serial correlation testing. If the p value ( $\text{Prob} > F$ ) is below 0.05, it can be concluded that the model exhibits serial correlation. The study employed a fixed effect model to examine diagnostic heteroskedasticity and serial correlation. The heteroscedasticity test resulted in a  $\text{Prob} > \chi^2$  score of 0.0004, indicating the existence of symptoms of heteroscedasticity. The Serial Correlation test resulted in a  $\text{Prob} > F$  value of 0.1240, suggesting the lack of any indications of serial correlation.

The outcomes of the heteroscedasticity test and serial correlation test are utilized to guide decision-making while applying the fixed effect model. This model includes a White standard error, which guarantees that the standard error remains unaffected by heteroscedasticity concerns.

#### **4.2 Hypothesis Test Results**

##### **4.2.1 Test Results of the Effect of Green Accounting on CSR**

Conducting an analysis to evaluate the impact of green accounting on CSR as per hypothesis 1. According to Table 4, the Green Accounting variable has a t-value of 1.32, which is statistically significant at a significance level of 5%. These findings suggest that the Green Accounting variables positively influence the CSR variables. With a p-value of 0.208, which is more than the significance criterion of 0.05 ( $P > 0.05$ ), we may infer that the Green Accounting variable does not have a significant effect on the CSR variable. Thus, hypothesis 1, which posits a substantial impact of Green Accounting on CSR, is not confirmed.

Using a quantitative measure of data distribution of 29.35% which means a small level of disclosure of environmental costs through CSR. This research is supported by Mariani, [9] which also has Green Accounting results are not significant to CSR. These statistics illustrate the

concept of stakeholders in relation to the environmental expenses incurred by firms. In cases when the government mandates companies to reveal their environmental costs, these companies are obliged to utilise their earnings for this purpose.

##### **4.2.2 Test Results of the Effect of Green Accounting on Intellectual Capital**

Performing hypothesis 2 to assess the influence of green accounting on Intellectual Capital. Table 5 shows a t-value of 5.79. At a significance level of 5%, this suggests that the Green Accounting variable has a positive influence on the Intellectual Capital variable. Given a P value of 0.014, which indicates that the probability is less than 0.05, this shows that the Green Accounting variable is significant to the Intellectual Capital variable. Therefore, hypothesis 2 which states that the green accounting variable is significant with the Intellectual Capital variable is supported.

The average green accounting disclosure rate of 52.38% indicates that organisations with a high Intellectual Capital worth tend to do well in this area. According to stakeholder theory, the company's performance is contingent upon its effective management of Intellectual Capital, which comprises all assets possessed by the organisation, including individuals (human capital) and tangible resources (physical capital) and structural capital. Efficient resource management generates value for the organisation, hence influencing its financial performance in the context of green accounting. This finding aligns with the study conducted by Afni & Achyani [32] which affirms that green accounting has a positive and substantial impact on Intellectual Capital.

##### **4.2.3 Test Results of the Influence of Intellectual Capital on CSR**

Conducting hypothesis 3 to explore the influences of Intellectual Capital on CSR. According to Table 4, the t-value of -2.15, with a significance level of 5%, indicates that the Intellectual Capital variable has a detrimental effect on the CSR variable. Given a P value of 0.051, indicating that  $p > 0.05$ , the analysis indicates that there is no statistically significant relationship between the Intellectual Capital variable and the CSR variable. Therefore, hypothesis 3, proposing a significant correlation between the Intellectual Capital variable and the CSR variable, is not corroborated.

**Table 2. Descriptive statistical results**

Variables	Mean	Std.Dev	Min	Max
GA	0.5238095	0.5024324	0	1
CSR	0.2935464	0.09286603	0.1447368	0.5394737
IC	13.5067	58.39583	58.39583	523.497
SIZE	30.40661	1.478212	1.478212	34.56818

**Table 3. Heteroscedasticity and serial correlation test results**

	Model 1	Model 2
<b>Full Sample</b>		
<b>Heteroscedasticity</b>		
Chi2	87.78	88.54
Prob > Chi2	0.0000	0.0000
<b>Serial Correlation</b>		
F	2.705	5.681
Prob > F	0.1240	0.0331

**Table 4. Model 1 test results**

Independent Variable	Dependent Variable			
	CSR			
	Coeff.	Std. Err.	t	P>t
Const	-1.618555	0.3209194	-5.04	0.000
GA	0.0182242	0.0137581	1.32	0.208
IC	-0.0000599	0.0000278	-2.15	0.051
SIZE	0.062597	0.0105773	5.92	0.000
R-square within	0.2091			
F	16.63			
Prob>F	0.0001			
Number of obs	84			

\*\*\*significance 1%, \*\* significance 5%, \* significance 10%

**Table 5. Model 2 test results**

Independent Variable	Dependent Variable			
	CSR			
	Coeff.	Std. Err.	t	P>t
Const	-1.622565	0.3319098	-4.89	0.000
GA	-0.0075036	0.0095402	-0.79	0.446
IC	-0.0014157	0.0004897	-2.89	0.013
SIZE	0.0634171	0.0109454	5.79	0.000
GA*IC	0.0013388	0.0004708	2.84	0.014
R-square within	0.2301			
F	17.46			
Prob>F	0.0000			
Number of obs	84			

\*\*\* significance 1%, \*\* significance 5%, \* significance 10%

The results indicate that organisations with strong intellectual capital scores have a significant impact on CSR disclosure, and vice versa. The average score in the descriptive statistics table is 1,350%. The presence of intellectual capital can significantly enhance CSR

transparency within a firm, thereby positively influencing its operations in accordance with stakeholder theory. The findings of this study align with the inquiry carried out by Yelvita [33] the analysis indicates that Intellectual Capital has a negligible influence on CSR.

#### **4.2.4 Effect of Intellectual Capital Moderate Green Accounting on CSR**

Conducting a study to test the fourth hypothesis reveals that the outcomes presented in Table 5 model 2 suggest that Intellectual Capital has a moderating role in the impact of green accounting on CSR. Hypothesis 4, which suggests that the impact of Green Accounting on CSR is influenced by Intellectual Capital, is confirmed.

The presence of intellectual individuals within the organisation will have an impact on the manner in which the disclosure of environmentally-related charges unfolds [32] Intellectual Capital enhances the connection between green accounting and CSR, thereby mitigating corporations' inclination to withhold information about environmental expenses. This is consistent with prior research that yielded comparable findings, namely conducted by Herman et al. [34]; [35].

### **5. SUMMARY, CONCLUSION AND RECOMENDATIONS**

#### **5.1 Conclusion and Recommendations**

Considering the findings of the conducted research and the explained discussion, the integration of Green Accounting and Intellectual Capital does not have a significant influence on CSR. The outcomes of this analysis show that entities that implement Green Accounting, do not necessarily have good environmental performance, and will affect the level of disclosure of CSR of an entity. The implementation of Green Accounting has no impact on CSR Disclosure. The incorporation of green accounting does not impact corporate social responsibility (CSR) since not all organisations reveal the environmental costs associated with their activities as a demonstration of CSR in their annual reports. The impact of Green Accounting on Intellectual Capital is both positive and substantial. Entities with good environmental performance are proven by participating in the Public Disclosure Program

for Environmental Compliance (PROPER) program organized by the Ministry of Environment and Forestry showing that the entity's business activities do not conflict with the Law and carry out environmentally friendly activities. Intellectual Capital strengthens the influence of green accounting on CSR Disclosure. Entities that have high intellectual capital are more driven to disclose more information including information about the entity's environment and social. The results of this study can be taken into consideration for companies, especially for managers to determine their satisfaction in terms of CSR disclosure. The outcomes of this study will furnish the community and stakeholders with insights into the extent of corporate social responsibility disclosure, which can have an impact on the decision-making process of stakeholders. Stakeholders will choose to invest in organisations that exhibit a substantial degree of transparency in their corporate social responsibility reporting, since it signifies that the company has effectively and responsibly handled its operations.

#### **5.2 Limitation and Suggestions**

There are various constraints in this study. Initially, this research employs secondary data, so the study cannot control and supervise the possibility of errors in data processing calculations. The second, the analysis of the hypothesis test in table 4 reveals that there is no discernible impact of the independent variables on CSR. Consequently, it can be inferred that there exist numerous external factors beyond the scope of the research model that influence CSR. Further research it is expected to add other factors as independent variables, because it is very possible that other factors that are not included in this study affect the disclosure of CSR and replace or develop population data and samples that are more diverse and updated today.

#### **COMPETING INTERESTS**

Authors have declared that no competing interests exist.

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