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The Effect of Green Intellectual Capital, Good Corporate Governance, and Growth Options on Sustainability Performance

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ABSTRACT

Global climate change, deforestation, plastic pollution, and other environmental issues have made sustainability performance an increasingly researched topic. This study investigates the impact of green intellectual capital, good corporate governance, and growth options on the sustainability performance of primary consumer goods sector companies in Indonesia. Additionally, it examines the moderating role of public ownership. We measure sustainability performance using a composite index based on the sustainability balanced scorecard and the G4 Global Reporting Initiative's sustainability reporting disclosure framework. To our knowledge, this study is the first to employ this specific measurement method. Using a random effects estimator on 144 observations, we estimated our models. The findings indicate that good corporate governance, growth options, and public ownership positively influence sustainability performance, while green intellectual capital does not. Furthermore, the study reveals that public ownership strengthens the effects of green intellectual capital and growth options on sustainability performance. This suggests that in companies with low public ownership, green intellectual capital alone may not sufficiently enhance sustainability performance.

ABSTRAK

Perubahan iklim global, deforestasi, polusi plastik, dan isu lingkungan lainnya telah membuat kinerja keberlanjutan menjadi topik yang semakin banyak diteliti. Studi ini menyelidiki dampak modal intelektual hijau, tata kelola perusahaan yang baik, dan opsi pertumbuhan terhadap kinerja keberlanjutan perusahaan sektor barang konsumsi primer di Indonesia. Selain itu, studi ini juga mengkaji peran moderasi kepemilikan publik. Kami mengukur kinerja keberlanjutan menggunakan indeks komposit berdasarkan balanced scorecard keberlanjutan dan kerangka pengungkapan pelaporan keberlanjutan G4 dari Global Reporting Initiative. Sejauh yang kami ketahui, studi ini adalah yang pertama menggunakan metode pengukuran khusus ini. Dengan menggunakan estimator efek acak pada 144 observasi, kami mengestimasi model kami. Temuan menunjukkan bahwa tata kelola perusahaan yang baik, opsi pertumbuhan, dan kepemilikan publik berpengaruh positif terhadap kinerja keberlanjutan, sementara modal intelektual hijau tidak berpengaruh. Selain itu, studi ini mengungkapkan bahwa kepemilikan publik memperkuat efek modal intelektual hijau dan opsi pertumbuhan terhadap kinerja keberlanjutan. Hal ini menunjukkan bahwa pada perusahaan dengan kepemilikan publik yang rendah, modal intelektual hijau saja mungkin tidak cukup untuk meningkatkan kinerja keberlanjutan.

1. INTRODUCTION

The issue of corporate sustainability performance (SP) is gaining significant attention from scholars, policymakers, and companies due to rising carbon emissions and environmental damage (Aliyu et al., 2017). According to Oyaneder et al. (2016), companies across all industries should implement SP practices. A company's SP is a tangible demonstration of its efforts to protect the environment (Papoutsi & Sodhi, 2020). Effective SP can reduce a company's environmental impact while enhancing its profit growth (Crutzen, 2013). Elking-

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ton (1998) defines SP as comprising the triple bottom line: economic performance (ECP), environmental performance (EP), and social performance (SOCP). Staniškis & Arbaciauskas (2009) further include communication performance (CP) as a dimension of SP. Li et al. (2019) suggest that a company's SP generates economic value that benefits the company and its social environment. Moreover, SP supports various strategies such as environmental conservation, innovation, management systems, knowledge development, environmental responsibility, sustainable supply chains, environmental collaboration, green marketing, and overall company performance (Bezerra et al., 2020).

Companies in the primary consumer goods sector are considered to be among the most affected by climate change and environmental damage. Climate events like the current Super El Niño particularly impact the products of these companies. According to Sutanto et al. (2023), El Niño harms the profits of companies in Indonesia's primary consumer goods sector. Consequently, these companies should prioritize improving their SP. Unfortunately, SP often does not receive the attention it deserves. Many company leaders and managers focus more on financial performance than environmental performance (Renaldo & Augustine, 2022). Additionally, Graha et al. (2023) report that the level of sustainability performance disclosure among manufacturing sector companies in Indonesia is only around 40%.

Several scholars assert that SP is influenced by green intellectual capital (GIC) (Malik et al., 2020; Renaldo & Augustine, 2022; Wang & Juo, 2021; Widyastuti et al., 2021; Yong et al., 2022; Yusliza et al., 2020), good corporate governance (GCG) (Holiawati et al., 2020; Hussain et al., 2016; Lu, 2020; Salo, 2008; Sar, 2018), growth options (GO) (Artiach et al., 2010; Puspita & Daljono, 2014; Ruhiyat & Holiawati, 2020), and public ownership (PO) (Ardyaningsih & Oktarina, 2022; Julekhah & Rahmawati, 2019; Melnyk et al., 2003; Ruhiyat & Holiawati, 2020; Sumarta et al., 2023). However, the impact of these variables is not always consistent, leading to theoretical debates. For instance, some scholars, such as Zalfa & Novita (2019) and Sahid & Henny (2023), found no effect of GIC on SP. This inconsistency suggests a trade-off between environmental and economic performance (Wang & Juo, 2021). The costs associated with improving environmental strategies, including GIC, can negatively impact financial performance (Caracuel & Mandojana, 2013). According to Hart & Dowell (2011), environmental strategies include pollution prevention, product stewardship, clean technology, and initiatives based on the environmental strategy pyramid. These strategies correspond to three dimensions of GIC: green human capital (GHC), green structural capital (GSC), and green relational capital (GRC) (Lajara et al., 2022). This implies that while GIC aims to enhance environmental sustainability, it may also reduce overall SP.

Scholars have found that the dimensions of GIC have varying effects on the dimensions of SP. For example, Widyastuti et al. (2021) found that only the GHC and GRC dimensions of GIC impacted SP. In contrast, research by Renaldo & Augustine (2022) found that GIC affects only the economic performance (ECP) dimension, as measured by financial performance (FP). This is consistent with findings from Yadiati et al. (2019), Asiaei et al. (2022), Lajara et al. (2022), Shah et al. (2021), and Boso et al. (2023), who found a positive effect of GIC exclusively on the environmental performance (EP) dimension. These findings suggest that the relationship between GIC and SP should be studied more comprehensively, considering the individual dimensions of both GIC and SP. The effect of GCG on SP is similarly complex. For instance, Husnaini & Basuki (2020) argue against a positive effect of GCG on SP, suggesting that GCG mechanisms primarily aim to prevent fraud and information asymmetry rather than to enhance SP. The heterogeneity in the effects of GIC and GCG on SP is a primary motivation for this study. To address these inconsistencies, we use PO as a moderating variable. We hypothesize that the effects of GIC, GCG, and growth options (GO) on SP are significantly influenced by the level of PO. A high percentage of PO can incentivize companies to improve their SP.

While most previous studies use cross-sectional data, this study examines the effect of GIC on SP using panel data. We measure GIC through a composite index derived from the disclosures of GHC, GSC, and GRC among primary consumer goods sector companies in Indonesia. For the SP variable, we use a composite index based on Epstein & Wisner's (2001) Sustainability Balanced Scorecard (SBSC) framework and sustainability reporting disclosures (SRD) as per the G4 Global Reporting Initiative (GRI) guidelines. To our knowledge, no prior study has used this methodology to measure SP in the context of Indonesian consumer goods sector companies.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

The resource-based view (RBV) theory by Barney (1991) and the natural resource-based view (NRBV) theory

by Hart (1995) are frequently used by scholars to explain the effect of GIC on SP. According to RBV theory, GIC is an intangible asset that can be leveraged to enhance a company's SP (Todericiu & Stanit, 2015). RBV theory posits that an organization or company is a combination of human, physical, and organizational resources (Malik et al., 2020). From this perspective, the key to achieving excellence and sustainability lies in the effective utilization of these resources (Yadiati et al., 2019). RBV suggests that a company's resources must be valuable and difficult to imitate to serve as a primary driver of excellence and sustainability (Barney, 1991). In this context, human capital is a resource that other companies cannot easily replicate (Rosini et al., 2020). Therefore, GIC is instrumental in guiding a company towards achieving excellence and sustainability.

According to a meta-analysis by Crook et al. (2011), human capital is one of the internal resources most strongly linked to company performance. Yusliza et al. (2020) also affirm that human capital is crucial for achieving company excellence and sustainability. From the perspective of the NRBV theory, GIC is an internal resource and capability that can impact SP. Rosini et al. (2020) support this view, explaining that companies must optimize their capabilities to enhance SP. The NRBV theory aligns with the logic of the RBV theory (Verde et al., 2014), but the two differ in their perspectives on resource utilization. RBV theory posits that a company's resources and capabilities are essential for achieving high performance, whereas NRBV theory emphasizes using resources in an environmentally sustainable manner (Anders, 2021). Based on both RBV and NRBV theories, several studies, including those by Malik et al. (2020), Yadiati et al. (2019), Wang & Juo (2021), Lajara et al. (2022), and Asiaei et al. (2022) have found a positive effect of GIC on SP. In addition to the RBV and NRBV theories, the intellectual capital-based view (ICV) theory by Castro et al. (2011) can also explain the effect of GIC on SP. This theory highlights the strategic importance of intangible assets, such as committed and talented employees, cultural values, and the company's relationships with customers and suppliers, in promoting corporate sustainability (Castro et al., 2011). Based on this premise, ICV theory suggests that GIC can enhance a company's SP. This theory is supported by studies from Chen (2008) and Yong et al. (2022), who demonstrated the positive impact of GIC on SP. Utilizing the theoretical frameworks of RBV, NRBV, and ICV, we hypothesize that:

H1. GIC affects SP positively.

Next, GCG is also recognized as a factor that can influence SP. This assertion stems from agency theory proposed by Jensen & Meckling (1976). According to this theory, GCG mechanisms arising from agency costs can enhance company performance. Stakeholder theory, as outlined by Freeman (2010), is another theoretical perspective often used to examine the impact of GCG on SP. According to stakeholder theory, management should implement GCG practices to fulfill the expectations of various stakeholders, including investors, government entities, employees, and the broader social community. Therefore, effective GCG implementation aims to align the interests of these stakeholders, thereby fostering improvements in SP. The significance of agency and stakeholder theories in understanding the relationship between GCG and sustainability performance has been validated by numerous researchers. For example, Munir et al. (2019) discovered a strong association between GCG and SP. Similarly, several other studies, including those by Holiawati et al. (2020), Sar (2018), Lu (2020), Salo (2008), Hussain et al. (2016), and Chandrakant & Rajesh (2023), have identified a positive impact of GCG on SP. Consequently, we propose the following hypothesis:

H2. GCG affects SP positively.

Subsequently, GO is another factor that contributes to enhancing SP. According to Aksoy et al. (2020), companies demonstrating environmental consciousness tend to earn a favorable reputation among investors, which can influence their growth options. The measurement of a company's growth options often involves the market-to-book value (MBV) ratio, as explained by Brigham & Daves (2019). MBV represents investors' perception of a company's growth prospects. A higher MBV indicates that the market values the company more than its book share value, suggesting greater growth opportunities. Investors often perceive companies with strong sustainability performance as having promising growth prospects, establishing a relationship between GO and SP. Signaling theory, proposed by Spence (2002), elucidates how investors interpret company signals to make investment decisions. Consequently, companies proactively disclose information to attract investor attention (Mensah, 2016). One such form of disclosure is SRD, which can influence the perception of a company's GO. This relationship has been validated by Lourenc et al. (2012). Numerous studies, including those by Artiach et al. (2010), Puspita & Daljono (2014), and Ruhiyat & Holiawati (2020), have confirmed the positive impact of GO on SP. These studies suggest that firms with robust GO exhibit higher SP. Based on these insights, we propose the following hypothesis:

H3. GO affects SP positively.

A study conducted by Liu et al. (2019) and Salehnezhad et al. (2023) delves into how the ownership structure of a company influences its sustainability performance. Liu et al. (2019) underscored that higher government ownership of a company's shares can incentivize the company to enhance its sustainability performance. Conversely, research by Clò et al. (2017) suggests that PO serves as the predominant share ownership structure in shaping a company's SP. This notion is reinforced by Manning & Reimsbach (2018), who assert that PO can impact a company's SP. However, several studies, including those by Aksoy et al. (2020), Rahmawati et al. (2019), and Meutia & Titik (2019), have reported contrary findings, finding no positive effect of PO on SP. The relationship between PO and SP is rooted in legitimacy theory, as proposed by Dowling & Pfeffer (1975). This theory suggests that higher levels of PO lead to increased public pressure on companies to demonstrate greater commitment to social and environmental concerns. Numerous empirical studies have corroborated the impact of PO on sustainability performance, including those by Melnyk et al. (2003), Ruhiyat & Holiawati (2020), Sumarta et al. (2023), Julekhah & Rahmawati (2019), and Ardyaningsih & Oktarina (2022). Based on these insights, this study hypothesizes that:

H4. PO affects SP positively.

Despite being affirmed by numerous scholars, the impact of GIC, GCG, GO, and PO on SP is notably intricate. For instance, the influence of GIC on SP varies depending on the specific dimensions of GIC owned by the company (Chaudhry et al., 2016). This implies that not all dimensions of GIC consistently enhance a company's SP, a notion supported by findings from Zalfa & Novita (2019) and Sahid & Henny (2023), who found no significant effect of GIC on SP. Moreover, as noted by Caracuel & Mandojana (2013), companies' environmental strategies may lead to a reduction in their financial performance, highlighting a trade-off between environmental and economic benefits (Wang & Juo, 2021). To address this trade-off, the public needs to exert pressure on companies to heighten their environmental awareness and consequently improve their SP. According to stakeholder theory, pressure from public stakeholders plays a crucial role in increasing SP. Ruhiyat et al. (2022) discovered that stakeholder pressure significantly influences SP disclosure. One manifestation of this stakeholder pressure is through public stakeholders, characterized by the composition of a company's PO. At this juncture, we posit the following hypothesis:

H5. PO moderates the effect of GIC on SP.

Moreover, the relationship between GCG and SP is not consistently robust. The agency theory fails to provide a clear explanation for the impact of GCG on SP (Hussain et al., 2016). For example, Tjahjadi et al. (2021) identified varying effects of GCG mechanisms on SP. When GCG is measured through the size of the board of commissioners, it exhibits a positive influence on economic performance (ECP) and environmental performance (EP) but a negative impact on social performance (SOCP). Conversely, when GCG is measured by the education level of the board of commissioners, it has a positive effect on ECP and EP but a negative effect on SOCP. This suggests that the effect of GCG on SP is contingent upon the measurement approach used. Furthermore, several studies, including those by Husnaini & Basuki (2020), have found no significant effect of GCG on SP. According to stakeholder theory, a company's sustainability performance, particularly its environmental performance, is influenced by the significance of its stakeholders (Adams, 2002). These stakeholders encompass both internal and external entities, with external stakeholders comprising the community, government, and investors. Stakeholder theory posits that companies consider the interests of these stakeholders when formulating organizational direction and policies, thus reflecting stakeholders' concerns (Buchholz & Rosenthal, 2005). Meanwhile, stakeholder theory suggests that the composition of a company's share ownership influences the direction of GCG practices. If managers or families hold most shares, GCG may prioritize enhancing the company's financial performance. Conversely, if the public holds the majority of shares, other aspects of performance, including environmental and social dimensions, are also considered, aligning with sustainability performance objectives. Given these insights, stakeholder theory implies that high GCG alone may not enhance a company's sustainability performance. The impact of GCG on SP is contingent upon the ownership composition of the company. Therefore, PO needs to be examined as a moderator variable, capable of either mitigating or amplifying the effect of GCG on SP. In light of this perspective, we propose the following hypothesis:

H6. PO moderates the effect of GCG on SP.

Viewed through the lens of signaling theory, SRD serves as a signal aimed at attracting investors, particularly public investors. SRD is a proxy for voluntarily disclosed SP (Aksoy et al., 2020). Consequently, SP is intricately linked with GO. Elevated SP tends to correlate with heightened GO; conversely, diminished SP may correspond with decreased GO. However, the impact of GO on SP can be contingent upon the level

of PO. Even if a company boasts relatively high GO, its effect on SP may not be fully realized if not balanced by PO. In this regard, we propose the following hypothesis:
H7. PO would also moderate the effect of GO on SP.

3. RESEARCH METHOD

This study analyzes companies operating within the primary consumer goods sector that are listed on the Indonesian stock exchange. The rationale behind this focus stems from the sector's susceptibility to environmental challenges, making it imperative for these companies to enhance their sustainability performance. Data for this study were sourced from company financial reports and corporate sustainability reports, utilizing the G4 GRI framework. Employing a purposive sampling method, outlined in Table 1, 12 companies were selected as samples, with data collected semi-annually over a period spanning from 2017 to 2022. Consequently, the total number of observations for this study amounted to 144.

This study focuses on the dependent variable, SP. SP is assessed using a combination of the SBSC framework developed by Epstein & Wisner (2001) and SRD based on the GRI G4 guidelines. Epstein & Wisner (2001) identify four crucial perspectives within the balanced scorecard that reflect a company's sustainability performance: financial, customer focus, internal business processes, and learning and growth. In this study, the financial perspective is gauged by return on assets (ROA), the customer focus perspective by sales growth (SG), the internal business process perspective by operational profit margin (OPM), and the learning and growth perspective by profit to employees' ratio (PER). Regarding SRD, this study adopts a content analysis approach to quantify the disclosed items according to the GRI G4 indicators. Subsequently, after determining the ratios for each dimension of SP, this study amalgamates these dimensions into a single SP composite index using the principal component analysis (PCA) method.

The independent variables examined in this study comprise GIC, GCG, and GO. Additionally, PO is introduced as a moderator to assess its influence on the relationship between GIC, GCG, and GO on SP. A content analysis approach is employed to scrutinize GIC disclosures within company annual reports for a given year (t) to measure GIC disclosures. GIC disclosure encompasses three dimensions: GHC, GSC, and GRC. However, rather than creating a composite index using PCA, GIC is assessed by tallying the total disclosed GIC items and dividing it by the total number of GIC items. Companies are typically required to disclose 17 items about GIC. Among these, five items correspond to GHC, seven to GSC, and five to GRC.

This study assessed the GCG variables through content analysis of 185 items sourced from the ASEAN Corporate Governance Scorecard (ACGS). Each disclosed item was assigned a value of 1. Subsequently, we calculated the ratio of total disclosed items to 185 ACGS items. This method of analyzing GCG through ACGS disclosures is recognized for its comprehensive nature, offering more detailed insights than traditional GCG mechanisms like audit committees. Noteworthy studies employing ACGS for GCG measurement include Justina & Simamora (2017), Bintara (2020), Ramli & Setiany (2021), Husnaini & Basuki (2020), and Putri et al. (2020). For assessing GO, this study employed the MBV index. As for PO, we compared the proportion of shares owned by the public to the total outstanding shares.

Moreover, this study will examine two models to assess the moderating role of PO. As outlined by Baron & Kenny (1986), testing the moderating effect involves two analysis steps: assessing the impact of the independent and moderator variables on the dependent variable and evaluating the effect of the interaction variable between the independent and moderator variables (Independent * Moderator) on the dependent variable.

Table 1. Purposive sampling criteria

	Total primary consumer goods sector companies in Indonesia on the IDX as of 2022	86
	Less by inclusion criteria	
1	Companies that have not published their financial reporting from 2017-2022 consistently	-10
2	Companies that use foreign currency in their financial reporting	-30
3	Companies are experiencing losses during the 2017-2022 observation year	-10
4	Companies with inadequate financial information	-24
i	Number of Selected Companies/Total Sample Companies	12
t	Number of Observation Periods (twice a year)	12
	Total Observations (i x t)	**144**

Therefore, the first model to be tested is outlined in equation (1). In this equation, SP represents the sustainability performance of company i at time t. The α value signifies the constant or intercept, while β1 to β4 represent the coefficients of each independent variable. GIC refers to green intellectual capital, which is measured based on the PCA composite index of ROA, SG, OPM, PER, and SRD.

$$SP_{it} = \alpha + \beta_1 GIC_{it} + \beta_2 GCG_{it} + \beta_3 GO_{it} + \beta_4 PO_{it} + \varepsilon_{it} \quad (1)$$

Next, GCG represents good corporate governance, assessed through content analysis from ACGS. GO denotes growth options, measured by MPBV, while PO signifies public ownership, serving as both an explanatory and moderator variable. ε represents the error term. To examine the moderating role, the second model to be estimated is outlined in equation (2). In this equation, GIC * PO represents a new variable indicating the interaction between GIC and PO. Similarly, GCG * PO is an interaction variable between GCG and PO, aimed at testing the moderating effect of PO on the influence of GCG on SP.

$$SP_{it} = \alpha + \beta_5 (GIC_{it} * PO_{it}) + \beta_6 (GCG_{it} * PO_{it}) + \varepsilon_{it} \quad (2)$$

This study utilized panel data, necessitating the selection of three estimators to estimate models 1 and 2, as advised by Baltagi (2005). These estimators include ordinary least squares (OLS), fixed effects (FE), and random effects (RE). The study employed the Chow test to determine whether to use the OLS or FE estimators. Subsequently, the Hausman test was utilized to ascertain the superior estimator between FE and RE. For the OLS and RE estimators, the Breusch-Pagan Lagrange Multiplier (BP-LM) test was conducted. If the OLS estimator is chosen, the data is assumed to be non-panel and must adhere to the assumptions of BLUE (best linear unbiased estimator), including normality, heteroscedasticity, multicollinearity, serial correlation, and endogeneity (Daniels & Minot, 2020). In contrast, if the FE estimator is selected, it assumes that the intercept value remains constant over time, necessitating the inclusion of dummy differential intercepts in the estimation. Conversely, when the RE estimator is chosen, it assumes that errors affecting individual i (in this context, companies) occur randomly.

Gogineni et al. (1995) delineated two types of moderation effects: full and quasi. Complete moderation manifests when the variable (Independent * Moderator) is significant, yet the effect of the moderating variable is not. For instance, if β1 in Equation 1 and β5 in Equation 2 are significant, but β4 in Equation 1 is not, it indicates complete moderation. In such cases, the moderating variable solely strengthens or weakens the independent variable concerning the dependent variable, without independently affecting the dependent variable. In contrast, quasi-moderation occurs when the independent variable, the variable (Independent*Moderator), and the moderator variable significantly influence the dependent variable. For instance, if the effects of β1 and β4 in Equation 1 and β5 in Equation 2 are significant, it suggests quasi-moderation. In this scenario, the moderator variable not only moderates the effect of the independent variable on the dependent but also independently impacts the dependent variable.

4. DATA ANALYSIS AND DISCUSSION

Table 2 presents the findings of descriptive statistical analysis, offering an overview of the dataset utilized in this study. The data encompasses observations from all sampled companies over two semiannual periods from 2017 to 2022. Through (PCA, this study amalgamated the OPM, ROA, PER, SG, and SRD variables into a single composite variable, SP. The average SP, depicted in Table 2, appears notably low at 0.001, attributed to the diverse array of dimensions contributing to SP. PER and ROA exhibit the lowest average values among these dimensions, whereas SRD emerges with the highest. SRD encapsulates three dimensions of sustainability performance: environmental, social, and economic.

Before model estimation, this study examined the correlation among the independent variables, as illustrated in Table 3, to identify potential multicollinearity issues. The table reveals that each explanatory variable under scrutiny does not exhibit significant correlations with one another. Notably, the only pair displaying a relatively high correlation comprises GIC and PO*GIC. However, despite this moderate correlation, these variables will not be amalgamated into a single regression model. In this study, a tolerance threshold of 0.7 was set for the correlation coefficient between independent variables. None of the independent variables reached this threshold, ensuring the absence of multicollinearity issues in the forthcoming model estimation.

Table 2. Descriptive statistics of variables

Variable	Obs	Mean	Std.Dev	Min	Max
OPM	144	0.104	0.071	-0.02	0.268
ROA	144	0.071	0.041	0.012	0.172
SG	144	0.103	0.135	-0.202	0.644
SRD	144	0.251	0.081	0.111	0.407
PER	144	0.051	0.006	0.039	0.063
GIC	144	0.255	0.114	0.067	0.671
GCG	144	0.741	0.051	0.632	0.909
GO	144	2.338	1.716	-0.422	6.857
PO	144	0.290	0.152	0.049	0.523
SP	144	0.001	1.675	-2.790	3.909

Notes: OPM = operational profit margin, PER = profit to employees' ratio, ROA = return to assets, SG = sales growth, and SRD = sustainability reporting disclosure. These five variables will be combined into one new variable, namely SP. GIC = green intellectual capital disclosure, while GO = growth option measured by the MBV proxy. As for PO, it is the public ownership ratio.

Table 3. Correlation matrix of explanatory variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GIC (1)	1						
GCG (2)	0.074	1					
GO (3)	-0.078	-0.056	1				
PO (4)	0.013	-0.139	-0.242	1			
PO * GIC (5)	0.698	-0.025	-0.172	0.687	1		
PO * GCG (6)	0.028	-0.003	-0.279	0.989	0.693	1	
PO * GO (7)	-0.028	-0.272	0.717	0.391	0.265	0.334	1

Table 4 displays the results of Model 1, which examined the effect of each independent variable, including the moderator, on the dependent variable. The recommended estimator for Model 1, shown in Table 4, is the RE estimator, suggesting that the data errors are considered random. Analysis of the RE model (column III, Table 4) indicates that GIC does not significantly impact SP. In contrast, GCG, GO, and PO positively affect SP. The Wald Chi-squared statistic indicates that the RE estimator provides a satisfactory goodness of fit. Although the analysis encountered heteroscedasticity and serial correlation issues, these were addressed using robust standard errors.

Based on Table 4, it is evident that GIC does not significantly impact SP. However, GCG, GO, and PO positively influence SP. Specifically, a 1 percent increase in GCG leads to a 6.4-fold increase in SP. Similarly, a 1 percent increase in GO results in a 40.9 percent increase in SP. Additionally, a 1 percent increase in the company's PO percentage raises SP by 7.7 times. This suggests that PO is the most influential factor in enhancing a company's SP. This implies that public investors are more inclined to invest in companies with greater environmental and social responsibility.

Moreover, Table 5 presents the regression analysis results testing the moderating role of PO in this study. The RE estimator was selected according to the Chow, Hausman, and Breusch-Pagan LM tests in Table 5. The RE results indicate that PO enhances the impact of GIC and GO on SP, but it does not moderate the effect of GCG on SP. Combined with the findings in Table 4, this study identifies a quasi-moderating role of PO in the relationship between GIC, GO, and SP. Specifically, PO independently affects SP and moderates the effects of GIC and GO on SP. However, GIC alone does not have a significant impact on SP. Thus, a company with a high GIC cannot increase SP without a strong PO. PO strengthens the effect of GIC on SP and amplifies the positive impact of GO on SP when it moderates this relationship.

Table 4. Equation 1 estimation result

	I	II	III
Constant	-1.511 (1.192)	-8.494*** (1.286)	-8.067** (2.804)
GIC	6.956** (2.774)	0.218 (0.479)	0.227 (0.657)
GCG	0.089 (0.082)	6.707*** (1.429)	6.477** (2.257)
GO	2.637** (0.934)	0.414*** (0.063)	0.409*** (0.088)
PO	-5.735** (2.151)	8.646*** (1.711)	7.789** (3.141)
R^2	0.089	-	-
Adj R^2	0.063	-	-
Overall R^2	-	0.0578	0.0578
F (Prob)	3.43 (0.010)	23.45 (0.000)	-
Total MSE	2.806	-	-
Root MSE	1.621	-	-
Wald Chi^2 (Prob)	-	-	92.21 (0.000)
Chow (Prob)	131.97 (0.000)	-	-
Hausman (Prob)	-	2.49 (0.646)	-
Breusch Pagan (Prob)	-	-	609.99 (0.000)
JT e (Prob)	0.06 (0.972)	-	0.02 (0.992)
JT u (Prob)	3.98 (0.136)	-	5.89 (0.052)
BP/CW (Prob)	-	-	14.44 (0.008)
M Wald (Prob)	-	301 (0.000)	-
Wooldgride (Prob)	496 (0.000)	496 (0.000)	496 (0.000)
Obs	144	144	144

Notes: *significant at level 0.001, ***significant at level 0.05, ***significant at level 0.10. Column I is the result of the OLS estimator, column II is FE, and column III is RE. Dependent variable = Sustain. The Chow test is carried out to select the best estimator between OLS and FE, while the Hausman test is used to select the best estimator between FE and RE. The Breusch Pagan test determines the best estimator between RE and OLS. JT is a joint test, a skewness test, and a kurtosis test (normality test). JT e is a joint test for normality in the error term (overall error term). At the same time, JT u is a joint test for normality in individual time invariants (individual error term). The hypothesis for this test is that the data is normally distributed. BP/CW is an abbreviation of the Breusch Pagan Cook-Weisberg test to test heteroscedasticity in the RE estimator. The null hypothesis is that there is no heteroscedasticity in the RE model. The Wooldridge test is to determine whether there is a serial correlation problem. The null hypothesis is that the model does not suffer serial correlation. Robust standard errors are in parentheses.

This study demonstrates that GCG positively affects SP without the need for moderation by PO. PO does not moderate the effect of GCG on SP, meaning that PO conditions do not alter the impact of GCG on SP. Therefore, GCG is a significant variable in increasing SP. Similarly, both GCG and GO can individually influence SP. Companies in the consumer goods sector with relatively high levels of GCG and GO tend to have higher SP. Additionally, PO enhances the positive effect of GIC on SP by 2.9 times and increases the effect of GO on SP by 1.3 times.

To provide a more comprehensive analysis, this study also examined the effects of GIC, GCG, and GO on various SP dimensions, including ROA, SRD, OPM, PER, and SG. The results are presented in Table 6. According to Table 6, GIC does not significantly impact any SP dimension. While GIC has a negative effect on SG, this effect is insignificant. However, public ownership amplifies GIC's negative effect on SG, indicating that higher public ownership makes GIC less effective in promoting SP. Specifically, high public ownership causes GIC to reduce SG, although it can moderate GIC's effect on ROA. On the other hand, GCG positively impacts OPM and PER, influencing the company's internal business processes and perspectives on learning and growth.

Table 5. Equation 2 estimation result

	I	II	III
Constant	-0.566** (0.285)	-2.266* (1.169)	-2.018* (1.216)
GIC * PO	-0.326 (3.293)	3.151** (1.141)	2.954** (1.254)
GCG * PO	3.408** (1.611)	5.383 (5.365)	4.605 (4.155)
GO * PO	-0.226 (0.235)	1.43** (0.381)	1.322** (0.434)
R^2	0.041	-	-
Adj R^2	0.021	-	-
Overall R^2	-	0.0081	0.007
F (Prob)	2.03 (0.112)	18.96 (0.000)	-
Total MSE	2.806	-	-
Root MSE	1.657	-	-
Wald Chi^2 (Prob)	-	-	51.21 (0.000)
Chow (Prob)	114 (0.000)	-	-
Hausman (Prob)	-	6.52 (0.089)	-
Breusch Pagan (Prob)	-	-	577 (0.000)
JT e (Prob)	0.22 (0.897)	-	0.31 (0.855)
JT u (Prob)	5.11 (0.077)	-	4.22 (0.121)
BP/CW (Prob)	-	-	157.76 (0.000)
M Wald (Prob)	-	1276 (0.000)	-
Wooldgride (Prob)	581 (0.000)	581 (0.000)	581 (0.000)
Obs	144	144	144

Notes: *significant at level 0.001, ***significant at level 0.05, ***significant at level 0.10. Column I is the result of the OLS estimator, column II is FE, and column III is RE. Based on the Hausman test results, the best estimator is RE. Dependent variable = SP. Robust standard errors are in parentheses.

High public ownership can strengthen GCG's effect on SG, which, in this context, refers to customer focus. Thus, high GCG and significant public ownership can increase SG. Regarding GO, its effect on SP dimensions is more pronounced. GO positively affects ROA, OPM, and PER. A quasi-moderation relationship exists between GO, public ownership, and the ROA and PER dimensions, indicating that public ownership partially moderates GO's impact on these dimensions.

Table 6 indicates that a 1 percent increase in GCG results in a 25.7 percent increase in OPM and a 2.8 percent increase in PER. Similarly, a 1-point increase in GO leads to a 1.7 percent increase in ROA, a 1.8 percent increase in OPM, and a 0.1 percent increase in PER. A 1 percent increase in PO boosts ROA by 35.2 percent and PER by 3.1 percent. When GIC is paired with adequate PO, the effect on ROA is a 10.2 percent increase; however, this combination can also result in a 58.6 percent decrease in SG. Conversely, PO enhances GCG's impact on SG by 56.1 percent. High public ownership strengthens GO's effect on ROA by 6.3 percent, OPM by 5.6 percent, and PER by 0.3 percent.

4.1. The Effect of GIC on SP

This study found that GIC does not affect the SP of consumer goods sector companies in Indonesia. GIC does not significantly impact SP dimensions such as ROA, SRD, MLO, IP, and SG. This finding contradicts the RBV and NRBV theories, which suggest that GIC, as an intangible asset, should enhance business excellence and sustainability. The results indicate that GIC in consumer goods sector companies in Indonesia is not being fully utilized to improve sustainability performance. This includes economic, environmental, and social performance within the triple bottom line framework, consumer-focused performance, internal business processes, and learning and growth performance within the SBSC framework

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Table 6. The effect of GIC, GCG, and GO on SP based on its dimensions

	ROA (FE)	SRD (RE)	OPM (FE)	PER (RE)	SG (RE)
Constant	-0.192 (0.091)	0.238*** (0.025)	-0.163 (0.098)	0.02*** (0.005)	-0.589 (0.511)
GIC	0.007 (0.026)	-0.01 (0.015)	0.007 (0.042)	0.001 (0.002)	-0.212* (0.121)
GCG	0.164 (0.076)	0.013 (0.027)	0.257** (0.103)	0.028*** (0.005)	0.931 (0.672)
GO	0.017*** (0.003)	0.002 (0.003)	0.018** (0.005)	0.001*** (0.001)	-0.002 (0.007)
PO	0.352** (0.115)	0.006 (0.021)	0.119 (0.124)	0.031*** (0.005)	0.203* (0.112)
Overall R^2	0.025	0.009	0.001	0.1193	0.191
F (Prob)	27.78 (0.000)	-	16.79 (0.000)	-	-
Wald Chi^2 (Prob)	-	3.64 (0.457)	-	91.35 (0.000)	8.33 (0.08)
Hausman (Prob)	24.45 (0.001)	-	77.17 (0.000)	-	7.44 (0.114)
Breusch Pagan (Prob)	-	725 (0.000)	-	657 (0.000)	11.58 (0.067)
JT e (Prob)	-	0.771 (0.679)	-	0.101 (0.952)	7.64 (0.022)
JT u (Prob)	-	0.201 (0.903)	-	1.63 (0.443)	0.501 (0.779)
BP/CW (Prob)	-	0.531 (0.600)	-	1.5 (0.264)	2.54 (0.341)
M Wald (Prob)	239 (0.000)	-	453 (0.000)	-	-
Wooldgride (Prob)	481 (0.000)	733 (0.000)	349 (0.000)	351 (0.000)	467 (0.000)
Moderating Effect					
Constant	-0.018 (0.031)	0.251*** (0.025)	0.081* (0.045)	0.042*** (0.006)	0.043* (0.026)
GIC * PO	0.102** (0.038)	0.014 (0.056)	0.182 (0.112)	0.008 (0.008)	-0.586** (0.238)
GCG * PO	0.204 (0.138)	-0.043 (0.102)	-0.116 (0.238)	0.029 (0.019)	0.561*** (0.146)
GO * PO	0.063*** (0.014)	0.014 (0.016)	0.056** (0.023)	0.003** (0.001)	-0.026 (0.019)
Overall R^2	0.011	-	0.019	-	-
F (Prob)	11.68 (0.000)	-	-	-	-
Wald Chi^2 (Prob)	-	7.99 (0.046)	-	16.09 (0.001)	0.109
Obs	144	144	144	144	144

Notes: *significant at level 0.001, ***significant at level 0.05, ***significant at level 0.10. The dependent variable in column I is ROA, estimated with the FE estimator. The dependent variable in column II is SRD, estimated with RE. Column III is OPM with the FE estimator, while columns IV and IV are PER and SG estimated with RE. The best estimator was determined using the Chow, Hausman, and Breusch Pagan tests. Robust standard errors are in parentheses.

The finding that GIC does not affect SP in this study challenges several previous studies, including those by Malik et al. (2020), Yusliza et al. (2020), Widyastuti et al. (2021), Renaldo & Augustine (2022), Yadiati et al. (2019), Asiaei et al. (2022), Lajara et al. (2022), Shah et al. (2021), Ramadhani & Amin (2023), and Boso et al. (2023). These studies reported a positive effect of GIC on SP. However, most of these studies used cross-sectional data collected via questionnaires and analyzed using SEM. In contrast, this study uses panel data, measuring GIC based on the disclosures made by each company i in year t. This difference in data types likely accounts for the divergent findings regarding the effect of GIC on SP.

The lack of effect of GIC on SP in this study could also be attributed to the absence of other supporting factors related to GIC in companies in the primary consumer goods sector. Mansoor et al. (2021) and Yong et al. (2022) suggest that the impact of GIC on SP needs to be mediated by adequate Green Human Resource Management (GHRM). Without the support of GHRM, the effect of GIC on SP may be negligible. Verde et al. (2014) further reinforce this argument, stating that GIC needs to be mediated by Green Supply Chain (GSC) management to affect SP. In other words, GIC cannot independently influence SP. This finding is consistent with Zalfa & Novita (2019), who also found no significant impact of GIC on SP. Additionally, GIC does not significantly affect any individual SP dimensions. This result aligns with the study by Sahid & Henny (2023), which also did not find any effect of GIC on the financial performance dimensions of SP.

Table 2 shows that the average GIC of primary consumer goods companies is relatively low, at just 0.255 or 25.5%. This indicates a limited focus on environmental strategy. The low GIC value makes it challenging to influence SP. Similarly, the average SP of these companies is also very low, suggesting a lack of awareness about the environmental damage caused by their operational activities. Given this context, further research is needed to examine the role of government regulations and government share ownership in promoting increases in company GIC and SP.

4.2. The Effect of GCG on SP

The study utilized Asian standards to gauge GCG, revealing a positive impact on SP. These results affirm the validity of agency theory, suggesting that enhancing the quality of GCG mechanisms contributes to heightened company sustainability. However, while agency theory underscores the importance of GCG, it does not explicitly elucidate its relationship with SP, particularly concerning environmental and social performance dimensions. The analysis demonstrates that when scrutinized individually, GCG fails to exert influence on environmental, social, and economic performance dimensions as measured by SRD (refer to Table 6). Notably, GCG exhibits a more pronounced effect on OPM and PER.

The impact of GCG on SP in this study aligns with various prior research, including studies by Holiawati et al. (2020), Sar (2018), Lu (2020), Salo (2008), Hussain et al. (2016), and Chandrakant & Rajesh (2023). These studies also concluded that effective GCG mechanisms within a company contribute to enhanced SP. For example, Holiawati et al. (2020) emphasized that GCG mechanisms serve as control mechanisms, fostering higher sustainability performance when executed effectively. The observed effect of GCG on SP in this study suggests that GCG practices within companies are geared towards improving not only financial performance but also environmental, social, and other dimensions of SP. These findings further indicate that GCG mechanisms within the primary consumer goods sector prioritize maintaining corporate reputation through enhanced environmental performance. Contrary to stakeholder theory, which suggests that a company's environmental performance is primarily influenced by stakeholder pressure, the positive association between GCG and SP uncovered in this study suggests that GCG mechanisms play a significant role in driving environmental performance independent of stakeholder pressure.

The positive correlation between GCG and SP observed in this study underscores the growing necessity for companies to proactively manage their environmental impact. This finding contradicts the conclusions drawn by Ruhiyat et al. (2022), which suggested that GCG practices within companies are not primarily oriented toward enhancing SP. However, it's essential to note that Ruhiyat et al. (2022) focused their study on companies primarily in the banking and financial services sector, which may exhibit distinct characteristics compared to those examined in our study. Our study posits that the nature of a company's operations plays a pivotal role in shaping the impact of GCG on SP. Companies directly involved in activities with environmental implications, such as those in the primary consumer goods manufacturing sector, tend to prioritize GCG practices that are closely intertwined with SP. Conversely, companies operating in sectors less directly connected to environmental concerns, such as financial services, may prioritize GCG practices primarily geared toward financial performance. However, while this assumption holds merit, further research is warranted to substantiate it conclusively. Future studies should explicitly investigate the differences in company characteristics and their implications for the relationship between GCG and SP.

4.3. The Effect of GO on SP

This study identified a favorable impact of GO on SP. When scrutinized individually, GO exerts influence across three SP dimensions: ROA, OPM, and PER. This implies that GO positively correlates with financial performance, internal business processes, and learning and growth aspects. The observed positive relationship between GO and SP fortifies the significance of signaling theory, suggesting that companies garnering favorable investor perceptions tend to exhibit heightened performance. In essence, a company's robust growth prospects can bolster its sustainability performance.

The affirmative impact of GO on SP observed in this study echoes findings from previous research conducted by Lourenc et al. (2012), Artiach et al. (2010), Puspita & Daljono (2014), and Ruhiyat & Holiawati (2020). These studies also underscored the significance of GO in enhancing the SP of publicly traded companies. Consequently, GO emerges as a distinct asset for companies seeking to integrate sustainable performance practices. This aligns with Ruhiyat & Holiawati (2020), affirming that the magnitude of GO can stimulate companies to adopt sustainable performance practices more effectively. A company's substantial GO

can be interpreted as a commitment to ongoing expansion. Such companies are inclined towards implementing SP practices as they are more cognizant and accountable for mitigating environmental impacts stemming from their operational activities. This perspective resonates with the NRBV theory, which posits that minimizing environmental harm is integral to a company's commitment to its longevity and expansion. As depicted in Table 2, the mean GO value, assessed through MBV, stood at 2.338 in this study. This value appears notably elevated, surpassing the baseline of 1. Such a figure indicates that investors perceive the company as possessing promising growth prospects. Additionally, it signifies that investors appraise the company more favorably than its book value suggests. Consequently, a higher GO value correlates with a relatively enhanced SP for the company. However, further research delving into investors' primary orientations and motivations when making investment decisions would provide valuable insights.

4.4. The Effect of PO on SP

This study observed a notably strong positive correlation between PO and SP. This aligns with several prior studies, including Melnyk et al. (2003), Manning & Reimsbach (2018), Ruhiyat & Holiawati (2020), Sumarta et al. (2023), Julekhah & Rahmawati (2019), and Ardyaningsih & Oktarina (2022), which similarly reported a positive impact of PO on SP. However, it's important to note that these studies employed diverse SP measurement methods, encompassing SRD, environmental disclosure, and environmental performance. In contrast, our study amalgamated all SP dimensions based on the SBSC and the triple bottom line. The observed influence of PO on SP underscores the pertinence of stakeholder theory, suggesting that a company's SP is shaped by the degree of public scrutiny it faces. Public involvement in a company's capital structure is a regulatory factor, compelling companies to prioritize financial, environmental, and social performance. Clò et al. (2017) assert that PO is the primary determinant of a company's SP performance. This positive correlation between PO and SP further substantiates the significance of legitimacy theory in the SP context. Companies with a substantial PO percentage tend to demonstrate heightened awareness of their sustainability performance to garner support from their surroundings. Moreover, the affirmative impact of PO on SP also underscores public investors' keen interest in a company's environmental preservation efforts, emphasizing the significance of maintaining a favorable reputation in environmental stewardship.

4.5. The Moderating Role of PO in Enhancing SP

In this study, PO was examined as a potential moderator of the impact of GIC and GO on SP. The findings reveal a positive moderating effect, indicating that PO has the capacity to enhance the influence of both GIC and GO on SP. Specifically, when GIC is substantial and coupled with high PO, it tends to elevate SP. Similarly, the effect of GO on SP is more pronounced when accompanied by high levels of PO. However, it is noteworthy that PO did not demonstrate a moderating effect on the relationship between GCG practices and SP. This suggests that the effectiveness of GCG initiatives within a company does not directly hinge on the level of public ownership in enhancing SP. The role of PO in moderating the effect of GIC on SP underscores the relevance of stakeholder theory. It highlights that while GIC alone may not significantly impact SP, substantial PO can drive companies to leverage GIC to enhance SP. This emphasizes the importance of public participation in influencing corporate sustainability efforts. Examining the relatively low average value of GIC across companies (as shown in Table 2) suggests that the intangible assets aspect of company resources has yet to substantially contribute to improving sustainability performance. Conversely, companies with robust GO tend to exhibit superior SP, with high levels of PO further amplifying this effect.

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

This study investigated the influence of GIC, GCG, GO, and PO on SP within the primary consumer goods sector in Indonesia. Additionally, it explored the moderating role of PO in the relationship between these explanatory variables and SP. The findings revealed that SP within the primary consumer goods sector is impacted by GCG mechanisms, the company's growth potential, and the proportion of public ownership. Notably, the individual contribution of GIC to SP was not significant for these companies. However, a higher proportion of public shares was found to enhance the effects of both GIC and GO on SP. Conversely, the impact of GCG on SP was observed to be independent. Nevertheless, when moderated by PO, GCG demonstrated a significant increase in company SP. Based on these findings, it is recommended that companies operating in the primary consumer goods sector prioritize strengthening GCG practices and upholding their corporate reputation to enhance growth prospects and thereby improve SP. Despite the lack of a direct impact

on SP, efforts to enhance GIC should still be pursued. Notably, if a company possesses a relatively high proportion of public ownership, this can augment the influence of GIC on SP. The role of policymakers is pivotal in fostering greater environmental awareness among companies. However, it is important to acknowledge several limitations of this study. Notably, it does not control for individual characteristics such as company size and debt burden, which could affect the results. Incorporating these factors in future studies using panel data would enhance the accuracy of estimates. Additionally, this study employs the RE estimator, assuming all variables to be exogenous, which may overlook potential endogeneity issues in the model. Future research endeavors should aim to replicate this study while addressing these limitations and utilizing more comprehensive datasets.

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