

Article

Does Corporate Sustainable Management Reduce Audit Report Lag?

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Abstract: This study empirically analyzes the relationship between corporate sustainable management (CSM) and audit report lag. From the perspective of the agency theory that information asymmetry is resolved through CSM, audit report lag was predicted to decrease and was subsequently analyzed. The analysis results are as follows. First, the relationship between CSM and audit report lag was significant in the negative trend. This means that companies that actively engage in CSM have a shorter audit report lag than those that do not. Second, the relationship between CSM and audit report lag according to auditor size showed a significant negative trend only in the group with a large auditor size. Third, the relationship between CSM and audit report lag according to the quality of earnings showed a significant negative trend only in the group with good earnings. In other words, the relationship between CSM and audit report lag varies depending on the size of the auditor and the quality of earnings. This study is meaningful in that it directly examines the impact of CSM on audit report lag, focusing on the period following the introduction of K-IFRS. The results of this study have important implications for not only managers, but also investors and supervisory institutions, in that CSM not only increases corporate value through improved earnings quality, but also affects the performance of the auditor.

Keywords: corporate sustainable management (CSM); audit report lag; auditor size; earnings quality



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1. Introduction

Recently, with the primary purpose of a company being to maximize its financial performance, corporate sustainable management (CSM), which considers the economic, environmental, and social factors that directly or indirectly affect business management, has emerged as a major topic. The KCGS (Korea Corporate Governance Service) has conducted corporate governance evaluations since 2003, based on its high transparency and expertise. Since 2011, KCGS has evaluated the CSM level of Korean listed companies every year through ESG evaluation, which includes social responsibility and environmental management based on international standards. Korea introduced K-IFRS in 2011, and the purpose of this study is to examine how CSM actually affects audit procedures under the changed international accounting environment. CSM is a concept that addresses the long-term values of a company while encompassing the economic, environmental, and social issues that affect business management as a whole. This means that individual companies can achieve long-term healthy growth as companies strive to create and maintain a healthy corporate ecosystem rather than short-sighted profit maximization [1]. Summarizing previous studies, CSM can be defined as activities in which a company strives for sustainable development in all areas of the environment, economy, and society while minimizing risks associated with management, thereby enhancing shareholder and corporate value [2]. Most of the preceding studies have suggested that the level of CSM varies according to the characteristics of the company, and companies that actively perform CSM are more

successful than those that do not. Specifically, in companies with financial resources and capabilities [3–5] and companies with well-established governance structures [4–7], the more actively CSM is carried out, the higher the corporate value [4,8–10]. In addition, companies that perform CSM have lower earnings management and higher earnings persistence [11], which is expected to provide more transparent and reliable financial information to the capital market [12]. However, it is also suggested that, if a manager performs CSM above an appropriate level for personal reputation or personal gain, the corporate value does not increase, even if the level of CSM is higher [13–16]. Investors perceive that the risk arising from conflicts with stakeholders is low for companies with excellent CSM activities [17]. Dhaliwal et al. (2011) [18] and Cho et al. (2012) [19] presented empirical results showing that information asymmetry is alleviated in companies that actively implement CSM. Companies that perform CSM activities voluntarily disclose a lot in order to highlight a positive image, and information asymmetry is alleviated through information disclosure [20]. Kim et al. (2012) [12] suggested that companies with excellent CSM activities had lower levels of earnings management and actual earnings management through discretionary accruals. Investors perceive companies that fail to fulfill their CSM as high-risk [21,22].

The audit report lag refers to the period from the end of the fiscal year to the date of the audit report. A number of studies have been conducted on the determinants and the effects of the audit report lag. The timely provision of financial information is an important attribute of financial reporting that helps information users make investment decisions. A delay in the audit report is interpreted as a signal to the market that a negative issue has arisen from the audit. The higher the earnings transparency of audited companies, the shorter the audit report lag [23]. It has been argued that the audit report lag is extended by a higher level of earnings management, as it takes longer to obtain the evidence necessary to form an audit opinion [24,25]. As such, when information asymmetry is substantial due to the agency problem, the audit risk increases and the audit report lag may be extended as more time is invested to lower the detection risk.

The direction of the relationship between CSM and audit report lag can be inferred from the link with accounting quality. Under the stewardship and stakeholder theories, earnings management decreases as CSM activities are actively performed [26–29]. On the other hand, under the agency theory, earnings management increases as CSM activities are actively performed [30–32]. In this study, it is expected that a reduction in earnings management will lower the audit risk the more actively CSM activities are performed from the perspective of the stewardship and stakeholder theories. The reduction in audit risk will affect the audit process, and the audit report lag will be reduced.

Although studies have been carried out on certain factors, such as decision incentives for sustainable management, earnings management, and capital cost, there has been insufficient discussion on the relevance of CSM to auditing. Therefore, this study intends to examine the relationship between CSM and audit report lag. The analysis period is from 2011 to 2019, and companies listed on the Korean Exchange are analyzed.

The analysis results of this study are as follows. First, the relationship between CSM and audit report lag is significant in a negative trend. This means that the more active a company is in terms of CSM, the shorter the audit report lag. In other words, CSM is perceived as a factor that lowers audit risk from an external auditor's perspective, and the audit report lag decreases because less audit time is invested. Second, only the sample in which the auditor belongs to the Big Four shows a significant negative trend. In the case of the Big Four, the auditor is assumed to achieve excellent audit quality, and so it is judged that the time lag for audit reporting decreased due to the high transparency of financial reporting. Third, when samples are classified according to earnings quality, only companies with a high earnings quality show a significant negative trend. It was determined that the audit report lag was reduced because companies with a high earnings quality have a lower information risk and lower audit risk. This study has the following additional contribution when compared to the previous studies related to the audit report lag. First, by examining the relationship between CSM and the audit report lag, we broadened our understanding

of CSM. Second, by analyzing the relationship between CSM and the audit report lag, it was revealed that CSM can be a determinant of the audit report lag. Third, CSM reduced the auditor's audit risk and acted as a determinant of the audit performance process. Fourth, the relationship between CSM and audit report lag worked significantly under the accounting environment under the introduction of international accounting standards. In other words, it was confirmed that CSM and international accounting standards have a complementary relationship in the emerging market of Korea. Fifth, it is meaningful in that it revealed that CSM has positive effects on the company by improving the timeliness of financial reporting. These results are expected to provide implications for supervisory agencies, auditors, and companies subject to audit by suggesting that audit efforts are reduced due to CSM.

The structure of this study is as follows. Following the introduction of Section 1, Section 2 presents a review of previous studies and hypothesis setting, and Section 3 explains the research design. Additionally, Section 4 reports the empirical analysis results, and Section 5 presents the conclusions and limitations.

2. Literature Review and Hypotheses Development

2.1. Corporate Sustainable Management

The Dow Jones Sustainability Indices (DJSI) defines corporate sustainability as “a business approach that creates long-term shareholder value by managing risks related to economic, environmental, and social development and utilizing them as business opportunities”. Claudy et al. (2016) [33] defined it as “a concept that integrates the environmental, social, and economic aspects of corporate performance and strategic and operational activities of a company”. Schaltegger and Hörisch (2017) [34] defined sustainable management as “management activities aimed at reducing negative social and environmental impacts and contributing to sustainable development”. These various definitions of sustainable management take the viewpoint of pursuing the harmonious development of economy, society and environment by emphasizing non-financial performance in common.

The theoretical background of sustainable management is divided into views that it infringes on the interests of shareholders and the view that it protects the interests of shareholders. Stewardship and stakeholder theories argue that sustainable management reduces earnings management. According to the stakeholder theory [26], it is argued that building good relationships with various stakeholders is a social capital that can enhance a company's sustainable financial performance [35]. Stewardship theory [27] asserts that responsible stewardship can increase corporate value through cooperation rather than betrayal through acts of self-serving and pro-organization. On the other hand, agency theory asserts that sustainable management increases earnings management [30]. Agency theory asserts that managers engage in CSR for private benefit. The earnings management exacerbates agency costs [31] and has serious consequences for stakeholders [32].

In this study, social responsibility, corporate governance, and environmental management were selected as detailed measures of sustainable management. The impact of detailed measurements on the company is as follows. There is an argument that social responsibility is expenses incurred in pursuit of private interests of managers or major shareholders in terms of agency costs. On the other hand, corporate social responsibility is a view that considers the pursuit of sustainable management by smoothly reconciling the demands and conflicts of various stakeholders outside the company [36]. Since managers do not want to share their wealth with shareholders, an effective control mechanism to monitor this is essential. As an effective control mechanism, corporate governance can play a role as a device to resolve or alleviate agency problems and can contribute to the increase in corporate value by efficiently distributing limited resources of the company [37]. Although eco-friendly management is perceived as an expense in the short term, it is the basis for sustainable growth in the long term. In other words, when a company engages in environmentally friendly management activities, such as investing in environmental improvement or entering an environmental business, the company not only benefits di-

rectly from loans and taxes, but also as a sustainable company, economically profitable and socially and environmentally friendly. It created a sense of fulfillment of responsibility and was able to increase sales by increasing the intangible value of enhancing the image of the company [38].

Recent previous studies have claimed that there is a relationship between CSM and financial reporting transparency. CSM are a means of resolving information asymmetry between companies and stakeholders, and the more active the CSM, the better the quality of profit information [39–41]. In addition, most of the studies on the relationship between CSM and corporate value show a positive relationship.

Yoon and Oh (2005) [42] tested the relationship between the firm performance, value, and market return of individual companies using the corporate governance evaluation index of the KCGS as an explanatory variable. As a result of the analysis, firms with good corporate governance showed good business performance.

Kuk and Kang (2011) [15] analyzed the impact of CSM on corporate value and empirically analyzed the relationship between CSM and corporate governance. As a result of the analysis, it was found that CSM enhances corporate value.

Richardson and Welker (2001) [43] reported a negative relationship between the degree of CSM disclosure and the cost of equity. Here, the CSM disclosure has the effect of reducing the transaction costs for investors, thereby increasing the demand for the company's stock and enhancing market liquidity, or reducing uncertainty in the distribution of future earnings.

Lorraine et al. (2004) [44] observed the stock price response to environmental performance information. As a result of the analysis, it was found that the stock price responds to sales, which is a relatively important function given to a company, but does not respond to other information, such as environmental performance news.

Byun et al. (2008) [45] tested the relationship between corporate governance and the cost of branch capital. As a result of the analysis, companies with better protection of shareholder rights, composition and operation of the board of directors, and transparency in disclosure had lower cost of equity.

In the capital market, there is a problem of information asymmetry between external stakeholders and companies. When corporate information is provided to external stakeholders, information asymmetry can be reduced and the adverse selection problem can be resolved. In addition, the cost of external financing can be reduced, which can increase the economic performance [45].

Rodriguez et al. (2006) [46] reported that, when a company publishes CSM disclosure or sustainability report, it reduces the information asymmetry and lowers the cost of equity.

Han and Lee (2013) [47] verified the relationship between CSM and earnings persistence, and the relationship between CSM and corporate value. As a result of the analysis, CSM and earnings persistence showed a positive effect on corporate value.

Cheon and Kim (2011) [48] verified the continuous CSM and financial performance. As a result of the study, it was found that companies that consistently perform CSM have better financial performance than companies that do not, and that the performance of CSM itself is also good. In addition, it was found that the business performance after the next period was better as the company continued to fulfill its CSM.

Choi and Moon (2013) [11] verified the difference in earnings management and earnings persistence between the two groups in order to examine the difference in accounting transparency between companies that engage in CSM and those that do not. As a result of the analysis, companies that engage in CSM have lower earnings management and higher profitability than those that do not.

2.2. Audit Report Lag

Delays in audit reports impair the quality of financial information by not providing timely information to stakeholders. In general, it is reported that information value and time to prepare financial statements are inversely related. Delays in financial reports that

are not published in a timely manner can have a negative impact on corporate value [49,50]. Investors postpone stock trading until earnings are announced [51], and the stock price response to early earnings reports is more important than the stock price response to delayed earnings reports [49].

Ashton et al. (1987) [52] stated that audit report lag is determined by business complexity, company size, listing status, profitability, and risk factors. Additionally, Carslaw and Kaplan (1991) [53] presented debt as an important determinant of the audit report lag. Another research flow is the characteristics of external auditors (auditor size, structure of external auditors, provision of non-audit services, term of office of auditors, auditing techniques of auditing firms, replacement of audit partners, and change in auditors) as an example [54–58]. In general, it was argued that audit report lag increases in highly structured audit firms than in audit firms with significant audit processes [59,60]. Audit report lag is a function of the audit approach used by auditors [61]. In recent studies, it was found that the determinants of corporate governance were ownership structure [55,62] and internal control [52,63,64].

Na and Choi (2004) [24] examined the relationship between the accrual amount and the audit report lag. The size of the accounting accrual was measured by the deepening of the accounting, and the deepening of the accounting was defined as the ratio of the absolute value of the accounting accrual to the sales. As a result of the analysis, there was a positive relationship between the deepening of accounting and the audit report lag. In other words, the greater the severity of accounting, the greater the audit report lag. These empirical results are interpreted as increasing the audit report lag by recognizing the uncertainty inherent in accounting as a high audit risk.

Park (2016) [65] examined the relationship between the increase in executive cash remuneration and the audit report lag in companies with suspected earnings management. As a result of the analysis, the interaction between 4Q earnings management and executive cash remuneration was positively related to the audit report lag.

Jang et al. (2016) [66] analyzed the relationship between unfaithful disclosure corporations and the time lag of audit reports. The designation of a corporation with disrespectful disclosure means that the company's internal control is deficient, and depending on the circumstances, it may be circumstantial evidence of the management's nefarious intentions. As a result of the analysis, there was a positive relationship between the designation of an unfaithful disclosure corporation and the time lag of the audit report.

Jeon and Jang (2017) [23] analyzed the relationship between earnings transparency and audit report lag. As a result of the analysis, there was a negative relationship between the earnings transparency of audit target firm and the audit report lag. This means that the higher the company's earnings transparency, the shorter the audit report lag.

Kim and Shin (2017) [67] analyzed the relationship between auditor characteristics and audit report lag. As the characteristics of the auditor, the size of the auditor, industry professional auditors, the level of input of excellent auditors, and the audit time and audit fee were used [67]. As a result of the analysis, first, the auditor size and audit report lag were significant in a positive trend, which can be interpreted as a result of efforts to maintain their reputation because the larger the auditor size, the greater the loss suffered from low-quality audits. Second, there was a significant positive relationship between audit input factors and audit report lag measured by audit time and audit fee.

Lee and Byeon (2020) [68] examined the relationship between managerial overconfidence and audit report lag. As a result of the analysis, as the manager's overconfidence increased, the audit report lag increased. This means that it takes more time for the auditor to have reasonable confidence in what the overconfidence manager asserts when establishing the audit plan.

Companies with active CSM are expected to appoint high-quality auditors with relatively high audit fees to maintain friendly relations with stakeholders and alleviate information asymmetry. Therefore, managers who have appointed high-quality auditors will be relatively reluctant to manage earnings as CSM increase [30].

Recently, as issues regarding CSM have increased, the reporting requirements for non-financial information as well as financial information are being strengthened. In this situation, companies will try to inform the market of excellent information about the environment, governance, and reinforcement of social responsibility activities through disclosure of corporate sustainability reports.

A company that performs a high level of CSM will increase investors' investment incentives by reducing perceived risk. Disclosed information on CSM can reduce audit risk by reducing information asymmetry between investors and companies. When the audit risk is lowered, the audit time can be shortened and the audit reporting time lag can be reduced. Previous studies related to the audit report lag presented that the lower the quality of accounting earnings, the more the auditor recognizes the opacity of the accounting information provided by the company and expands the scope of the verification procedure. In this respect, the more CSM activities that exist, the better the quality of accounting earnings can be, and it can act as an incentive to provide transparent and reliable financial information to the market. In this case, the auditor can set the audit risk as low by evaluating the transparency of accounting information of companies that are active in CSM in the process of performing the verification procedure. Accordingly, it is expected that the audit report lag will decrease. Therefore, the following hypotheses were established:

Hypothesis 1 (H1). *There is a negative relationship between CSM and audit report lag.*

Hypothesis 1a (H1a). *There is a negative relationship between the total evaluation grade of CSM and audit report lag.*

Hypothesis 1b (H1b). *There is a negative relationship between the corporate governance evaluation grade of CSM and audit report lag.*

Hypothesis 1c (H1c). *There is a negative relationship between the social responsibility evaluation grade of CSM and audit report lag.*

Hypothesis 1d (H1d). *There is a negative relationship between the environmental management evaluation grade of CSM and audit report lag.*

In general, Big Four auditors are perceived to provide higher quality audit services. Big Four auditors have high professionalism based on a lot of education and practical experience and have a large number of audited companies. Accordingly, it is known to perform higher-quality audits because it is relatively free from threats from the audited company [69,70]. In addition, the cost of reputational damage is high [69], and they face a high risk of litigation because they have a greater ability to indemnify than non-Big Four auditors [71–73]. When auditing an audited company with potential for insolvency, Big Four auditors are likely to audit more conservatively in order to manage relatively high litigation risk and minimize damage due to reputational damage. Therefore, it can be predicted that Big Four auditors will more effectively suppress earnings management before insolvency than non-Big Four auditors [74]. As such, the level of earnings management differs depending on whether the auditor is a Big Four auditor, so the relationship between sustainability management and audit report lag may appear as different. Therefore, the following hypotheses were established:

Hypothesis 2 (H2). *The relationship between CSM and audit report lag will show a negative direction when the size of the auditor is large.*

Hypothesis 2a (H2a). *The relationship between the total evaluation grade of CSM and audit report lag will show a negative direction when the size of the auditor is large.*

Hypothesis 2b (H2b). *The relationship between the corporate governance evaluation grades of CSM and audit report lag will show a negative direction when the size of the auditor is large.*

Hypothesis 2c (H2c). *The relationship between the social responsibility evaluation grade of CSM and audit report lag will show a negative direction when the size of the auditor is large.*

Hypothesis 2d (H2d). *The relationship between the environmental management evaluation grade of CSM and audit report lag will show a negative direction when the size of the auditor is large.*

The research results report that the quality of earnings is better for companies that actively engage in sustainable management. Moon (2007) [75] analyzed the introduction of ethical management as a proxy for sustainable management. As a result of the analysis, the more the company introduced ethical management practices, the lower the level of discretionary accounting choice of managers. In addition, the level of discretionary accruals was lower after the introduction of ethical management compared to before the introduction. Kim et al. (2010) [76] reported that the social index and discretionary accrual in the Economic Justice Index (KEJI) showed a negative relationship. Ji (2019) [77] verified the quality of accounting earnings of sustainable management companies in terms of accounting conservatism and book-tax differences (BTDs), respectively. The empirical analysis results are as follows. First, it was found that the level of accounting conservatism was higher in sustainable management companies than in non-sustainable companies. Second, it was found that the difference between accounting earnings and taxable income (BTD) was less for sustainable management companies than for non-sustainable companies. Therefore, according to the results of this study, firms with good CSM can be expected to have a higher quality of accounting earnings than those that do not. As such, sustainable management and the quality of earnings have a complementary relationship. Therefore, the following hypotheses were established:

Hypothesis 3 (H3). *The relationship between CSM and audit report lag will show a negative direction when earning quality is good.*

Hypothesis 3a (H3a). *The relationship between the total evaluation grade of CSM and audit report lag will show a negative direction when earning quality is good.*

Hypothesis 3b (H3b). *The relationship between the corporate governance evaluation grades of CSM and audit report lag will show a negative direction when earning quality is good.*

Hypothesis 3c (H3c). *The relationship between the social responsibility evaluation grade of CSM and audit report lag will show a negative direction when earning quality is good.*

Hypothesis 3d (H3d). *The relationship between the environmental management evaluation grade of CSM and audit report lag will show a negative direction when earning quality is good.*

3. Research Design and Data

3.1. Empirical Models

In this study, the regression model for verifying the relationship between CSM and audit report lag is shown in Equation (1). For the measurement of CSM, data from the KCGS were used. The dependent variable, audit report lag, was measured by taking the natural logarithm of the number of days from the end of the fiscal year to the date of writing the audit report.

$$\text{ARL}_{it} = \beta_0 + \beta_1 \text{CSM}_{it} + \beta_2 \text{SIZE}_{it} + \beta_3 \text{LEV}_{it} + \beta_4 \text{ROA}_{it} + \beta_5 \text{GRW}_{it} + \beta_6 \text{LOSS}_{it} + \beta_7 \text{FORSALE}_{it} + \beta_8 \text{BIG4}_{it} + \beta_9 \text{OPIN}_{it} + \beta_{10} \text{AT}_{it} + \beta_{11} \text{FOR}_{it} + \beta_{12} \text{OWN}_{it} + \sum \text{YD} + \sum \text{ID} + \varepsilon_{it} \quad (1)$$

CSM in Equation (1) represents sustainable management. CSM is the variable of interest in Hypothesis 1, and the predictive sign of (β_1) is negative. The more active the company with CSM, the smaller the audit report lag. As control variables, SIZE, LEV, ROA, GRW, LOSS, FORSALE, BIG4, OPIN, AT, FOR, and OWN were selected. SIZE represents the size of a company and is measured as the natural logarithm of total assets. As the firm size increases, the number of stakeholders and the demand for information on the company are high, so information is rapidly transmitted to the capital market [54,66]. On the other hand, the larger the size of a company, the more audit tasks may be required [66]. LEV is the debt ratio and LOSS is the loss dummy that is 1 if net income is negative, and 0 otherwise. The financial risk of the audited company acts as a factor that increases the audit risk [66]. Therefore, the debt ratio (LEV) and loss-reporting firm (LOSS) are expected to cause audit report lag [78]. ROA represents profitability and GRW represents growth potential. Managers want to report good news early. The higher the profitability, the faster the disclosure will be, so the audit report lag is expected to decrease [66]. The greater the growth potential, the greater the business risk and the greater the audit risk, which is expected to increase the audit reporting lag [78]. FORSALE is defined as the ratio of exports to total sales. The greater the overseas sales, the more complex the business environment, so the audit report lag is expected to increase. BIG4 is a dummy variable that is 1 if the auditor is Big Four, and 0 otherwise. AT is the value obtained by obtaining the natural logarithm of the audit time. The larger the auditor size, the greater the number of auditors can reduce the audit report lag. On the other hand, the larger the auditor size, the more sensitive to reputational damage caused by audit failure, the longer the audit report lag. Audit time is the greatest determinant of audit report lag [79]. As the audit time increases, it is predicted that the audit report lag will increase. In order to control corporate governance, FOR and OWN are included [80]. For year- and industry-specific controls, the year dummy variable (YD) and industry dummy variable (ID) are included.

3.2. Corporate Sustainability Management

The ESG rating grades of the KCGS are divided into four categories (ESG integration category, governance category, social category, and environmental category), which are then labeled as A+, A, B+, B, C+, and C. The evaluation factors of corporate governance evaluation are the protection of shareholder rights, the board of directors, the audit organizations, the protection of the rights of stakeholders, and management monitoring by the market. The evaluation factors for social responsibility are the conditions for workers, relationships with business partners and competitors, consumer protection, and contribution to the local community. The evaluation factors for environmental management are environmental management plan, environmental management practice, environmental performance management and reporting, and stakeholder response. In this study, the ESG ratings of KCGS were scored as follows: A+ = 10, A = 9, B+ = 8, B = 7, C+ = 6, and C = 5 [81]. The governance category has a distribution of 10 to 5 points, while the rest of the categories have a distribution ranging from 10 to 7. The higher the rating, the better the company is evaluated for its sustainable management activities. If the hypothesis of this study is supported, the coefficient value of the ESG score is expected to have a negative value. In other words, it is predicted that the higher the score, the shorter the audit report lag. It is anticipated that the ESG integration (=TOTAL_SCORE), governance (=GOV_SCORE), social (=SOC_SCORE), and environmental categories (=ENV_SCORE) will all have the same sign [82].

3.3. Samples and Data

The samples were for companies listed on the Korean Exchange from 2011 to 2019. Financial data were collected from the FN Data Guide. Audit report date were manually collected in the electronic disclosure system of the Financial Supervisory Service. In this study, observations with outlier values in the lower 1% or lower and upper 99% of each variable, except for the dummy variable, were treated as outliers and winsorized. The

final sample used for hypothesis testing was 5880 firm-year observations. Table 1 is the distribution of the sample by industry and year. The proportion of samples by year was similar. The sample of the cokes and chemical industry was the largest, and the sample of the publishing and broadcasting industry was the smallest.

Table 1. Sample distribution.

Year										
Industry	2011	2012	2013	2014	2015	2016	2017	2018	2019	Observations
Food and Beverage	31	32	32	32	32	34	37	37	28	295
Fiber, Clothes, and Leathers	26	27	27	25	26	28	29	29	17	234
Timber, Pulp, and Furniture	24	24	24	24	25	25	25	25	17	213
Cokes and Chemical	65	70	69	69	71	71	73	78	67	633
Medical Manufacturing	36	34	36	36	37	40	41	43	38	341
Rubber and Plastic	19	21	21	21	21	21	24	24	19	191
Non-Metallic	18	18	19	19	20	21	21	22	16	174
Metallic	56	56	56	55	57	57	57	58	38	490
PC and Medical	56	56	56	55	57	57	57	58	38	490
Machine and Electronic	41	41	41	40	40	41	43	43	31	361
Other Transportation	52	53	55	50	52	54	55	55	36	462
Construction	26	27	25	25	27	26	26	29	21	232
Retail and Whole Sales	54	54	55	56	57	58	59	59	43	495
Transportation Services	20	20	21	21	22	22	23	25	21	195
Publishing and Broadcasting	16	17	18	18	18	18	19	19	14	157
Professional Services	58	54	54	56	57	58	58	58	42	495
Other	63	60	60	56	57	58	61	64	45	524
Total	648	650	655	645	663	678	699	716	526	5880

4. Empirical Results

4.1. Descriptive Statistics

Table 2 presents the descriptive statistics of major variables for the full sample. The average of the audit report lag was about 67 days. It took an average of 67 days from the end of the fiscal year to the audit report date. The average of the total evaluation grades (TOTAL_SCORE) was 7.270, and the average of the corporate governance evaluation grades (GOV_SCORE) was 6.652. The average of the social responsibility activity evaluation grade (SOC_SCORE) was 7.378, and the average of the environmental management evaluation grade (ENV_SCORE) was 7.369. As the average value is larger than the median, companies with a low CSM level are relatively more distributed. In other words, the CSM of the entire company is at a low level, and there is a need to improve the CSM level. The average company size (SIZE) was 27.060, the median was 26.836, the average debt ratio (LEV) was 0.472, and the median was 0.479. The average of the loss dummy variable (LOSS) was 0.235, and about 24% of the total sample reported losses. Exports accounted for 20% of the total sales. About 64% of the total samples were externally audited by large accounting firms. Most of the companies had an appropriate opinion with 0.4% of the companies with an inappropriate audit opinion. The average audit time was 2282 h. The averages of the foreign ownership ratio (FOR) and major shareholder ratio (OWN) were 9.7% and 44.30%, respectively.

Table 2. Descriptive statistics ($N = 5880$).

Variable	Mean	Std.	Min	25%	Median	75%	Max
ARL(raw)	66.220	13.702	32.000	63.000	71.000	75.000	85.000
ARL(log)	4.213	0.193	2.833	4.174	4.277	4.331	4.727
TOTAL_SCORE	7.270	0.594	7.000	7.000	7.000	7.000	10.000
GOV_SCORE	6.652	1.221	5.000	5.000	7.000	7.000	10.000

Table 2. Cont.

Variable	Mean	Std.	Min	25%	Median	75%	Max
SOC_SCORE	7.378	0.743	7.000	7.000	7.000	7.000	10.000
ENV_SCORE	7.369	0.656	7.000	7.000	7.000	8.000	10.000
SIZE	27.060	1.557	24.085	25.987	26.836	27.895	31.459
LEV	0.472	0.206	0.075	0.308	0.479	0.623	0.953
ROA	0.024	0.082	−0.324	0.002	0.027	0.060	0.271
GRW	0.073	0.237	−0.493	−0.017	0.035	0.109	1.524
LOSS	0.235	0.424	0.000	0.000	0.000	0.000	1.000
FORSALE	20.283	28.191	0.000	0.000	3.259	36.935	99.513
BIG4	0.637	0.481	0.000	0.000	1.000	1.000	1.000
OPIN	0.043	0.203	0.000	0.000	0.000	0.000	1.000
AT(raw)	2282.430	3119.140	88.000	810.000	1287.000	2427.000	21,298.000
AT(log)	7.342	0.922	1.386	6.780	7.213	7.841	11.142
FOR	0.097	0.131	0.000	0.011	0.041	0.131	0.897
OWN	0.443	0.168	0.019	0.321	0.448	0.557	1.000

Note: See Appendix A for variable definitions.

4.2. Pearson Correlations

Table 3 shows the Pearson correlation analysis results of the main variables. In this study, CSM, a variable of interest, and audit report lag (ARL), a dependent variable, showed a significant negative trend, indicating that firms with good CSM are associated with shorter audit report lags. Firm size (SIZE), debt ratio (LEV), loss dummy (LOSS), firm audited by large accounting firm (BIG4), audit opinion (OPIN), and audit time (AT) had a significant positive relationship with audit report lag (ARL). Profitability (ROA), overseas sales (FORSALE), and major shareholder (OWN) had a significant negative relationship with audit report lag (ARL). The larger the company size, the higher the debt ratio, the more companies that reported losses, the more companies audited by a large accounting firm, the more inappropriate the audit opinion, and the longer the audit time, the longer the time lag for the audit report. On the other hand, the higher the profitability, the higher the ratio of export amount and major shareholder, the shorter the audit report lag.

Table 3. Pearson correlations ($N = 5880$).

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) ARL(log)	−0.047	−0.028	−0.069	0.023	0.145	0.198	−0.108	0.014	0.083	−0.031	0.338	0.043	0.256	−0.009	−0.022
(2) TOTAL_SCORE		0.557	0.849	0.760	0.613	0.118	0.074	0.023	−0.050	0.052	0.279	−0.006	0.572	0.394	−0.142
(3) GOV_SCORE			0.436	0.376	0.433	−0.012	0.154	−0.003	−0.146	0.020	0.246	−0.009	0.373	0.313	−0.066
(4) SOC_SCORE				0.674	0.605	0.104	0.091	0.023	−0.070	0.018	0.290	−0.013	0.568	0.381	−0.102
(5) ENV_SCORE					0.609	0.154	0.051	−0.003	−0.034	0.115	0.247	−0.009	0.556	0.377	−0.130
(6) SIZE						0.223	0.133	0.053	−0.137	0.029	0.461	−0.149	0.778	0.484	−0.016
(7) LEV							−0.298	0.016	0.286	0.035	0.052	0.116	0.261	−0.141	−0.131
(8) ROA								0.268	−0.670	−0.055	0.084	0.056	0.048	0.216	0.181
(9) GRW									−0.162	−0.064	−0.036	0.124	0.017	0.024	0.023
(10) LOSS										0.075	−0.110	−0.021	−0.040	−0.178	−0.162
(11) FORSALE											0.029	−0.124	0.041	−0.019	−0.095
(12) BIG4												−0.264	0.479	0.284	0.062
(13) OPIN													0.012	−0.151	0.018
(14) AT(log)														0.410	−0.127
(15) FOR															−0.160
(16) OWN															1.000

Note: This table presents Pearson correlations. Coefficients shown in bold are significant at $p < 0.05$ (two-tailed test). Please see Appendix A for variable definitions.

4.3. Multivariate Results

CSM and Audit Report Lag (H1)

Table 4 shows the results of the regression analysis of Equation (1) for the relationship between CSM and audit report lag. As a result of the analysis, the F-value was significant at the 1% level, so the research model is appropriate. The variance inflation index (VIF) of the independent variable used in the regression analysis of this study was 5 or less, and it was found not to exceed 10; that is, it was determined that the problem of multicollinearity was not serious. In Table 4, the CSM regression coefficient (β_1), which shows the effects of CSM on the audit report lag, was found to be a significant negative value. In other words, it is an empirical result that shows that companies that actively engage in CSM have shorter audit report lag than those that do not. The more active the CSM, the better the quality of financial reporting, so the audit risk decreases. In other words, it can be interpreted that as the audit risk decreases, less audit time is invested and the audit report lag is shortened. The empirical results of Hypothesis 1 support previous studies that the more active the sustainable management, the better the quality of earnings, and that the audit report lag of companies with an excellent quality of earnings will decrease [24,66]. In other words, it supports the stakeholder and stewardship perspectives, which are the theoretical backgrounds of sustainable management [26,27,35].

Looking at the control variables, LEV, GRW, BIG4, OPIN, and AT showed a significant positive trend. It means that the higher the debt ratio and growth potential, the larger the audit report lag, the larger the company audited by a large accounting firm, the more negative the opinion, and the longer the audit time. SIZE, ROA, FORSALE, and FOR showed a significant negative trend. The larger the company size, the better the profitability, the larger the export proportion, and the higher the foreign ownership ratio, the shorter the audit report lag.

Table 5 shows the results of the regression analysis of Equation (1), which divided the samples according to the size of the auditor. PANEL A in Table 6 is the analysis result of the group audited by Big Four. The CSM regression coefficient (β_1), which shows the impact of CSM on the audit report lag, was found to be a significant negative value. PANEL B in Table 6 is the analysis result of the group audited by non-Big Four. The CSM regression coefficient (β_1), which shows the effect of CSM on the audit report lag, was not statistically significant. This is an empirical result indicating that the correlation between CSM and audit report lag is more statistically significant in the group audited by Big Four. In other words, companies audited by Big Four have a high-earnings quality. Therefore, it is estimated that CSM based on this will be more effective. Accordingly, the positive role of CSM is interpreted as improving the timeliness of financial reporting [72,73]. On the other hand, firms audited by non-Big Four have a relatively lower quality of earnings compared to firms audited by Big Four. Although CSM activities improve the quality of earnings, the quality of earnings also affects the effectiveness of CSM activities. In other words, in the group classified as non-Big Four, it can be inferred that the characteristics of companies with a low-earnings quality halve the effectiveness of CSM activities.

Table 6 shows the results of the regression analysis of Equation (1), in which samples are classified according to the quality of earnings. Earnings quality was measured with the modified Jones model (1995) [83]. Based on the median, if the quality of earnings was greater than the median, the group was classified as a group with a high-earnings quality, and if the quality of earnings was less than the median, the group had a lower earnings quality. PANEL A in Table 6 is the analysis result of the group with a high-earnings quality. The CSM regression coefficient (β_1), which shows the impact of CSM on the audit report lag, was found to be a significant negative value. PANEL B in Table 6 is the analysis result of the lower-earnings-quality group. The CSM regression coefficient (β_1), which shows the effect of CSM on the audit report lag, was not statistically significant. This is an empirical result indicating that the correlation between CSM and audit report lag is more statistically significant in the group with a high-earnings quality. In other words, it is estimated that CSM based on low information risk for companies with excellent earnings quality will

be more effective. Accordingly, the positive role of CSM is interpreted as improving the timeliness of financial reporting [64,65]. On the other hand, CSM activities affect the quality of earnings. However, in the group with a low-earnings quality, the results of CSM activities are not significant. This means that, while CSM activities affect the earnings quality, the quality of earnings can also affect the effectiveness of CSM activities. In other words, it is interpreted that the effect of CSM can be halved in the group with lower earnings quality.

Table 4. The relevance of CSM and audit report lag.

Variables	CSM1=TOTAL_SCORE			CSM2=GOV_SCORE		
	Coefficient	t-Value	VIF	Coefficient	t-Value	VIF
Intercept	4.461	76.660 ***	0.000	4.363	78.020 ***	0.000
CSM	−0.020	−3.690 ***	1.785	−0.006	−2.480 **	1.313
SIZE	−0.021	−6.930 ***	3.964	−0.022	−7.570 ***	3.655
LEV	0.093	6.080 ***	1.561	0.084	5.750 ***	1.546
ROA	−0.197	−4.140 ***	2.160	−0.185	−3.960 ***	2.141
GRW	0.054	4.080 ***	1.090	0.045	3.480 ***	1.095
LOSS	0.004	0.550	1.928	0.008	0.970	1.927
FORSALE	−0.001	−2.590 ***	1.239	−0.001	−2.750 ***	1.244
BIG4	0.146	23.080	1.435	0.146	23.910 ***	1.427
OPIN	0.098	2.160 **	1.027	0.102	2.090 **	1.025
AT	0.047	10.120 ***	3.243	0.047	10.400 ***	3.163
FOR	−0.074	−3.070 ***	1.713	−0.074	−3.180 ***	1.680
OWN	−0.014	−0.800	1.273	−0.006	−0.360	1.249
YD		Included			Included	
ID		Included			Included	
F-value		45.13 ***			48.04 ***	
Adj.R ²		20.58%			19.98%	

Variables	CSM3=SOC_SCORE			CSM4=ENV_SCORE		
	Coefficient	t-Value	VIF	Coefficient	t-Value	VIF
Intercept	4.402	77.250 ***	0.000	4.448	76.700 ***	0.000
CSM	−0.009	−2.070 **	1.737	−0.022	−4.370 ***	1.877
SIZE	−0.021	−7.170 ***	3.912	−0.020	−6.650 ***	4.032
LEV	0.092	6.080 ***	1.556	0.095	6.240 ***	1.561
ROA	−0.194	−4.110 ***	2.155	−0.203	−4.280 ***	2.141
GRW	0.052	4.020 ***	1.089	0.051	3.860 ***	1.097
LOSS	0.004	0.530	1.930	0.007	0.870	1.915
FORSALE	−0.001	−2.720 ***	1.237	−0.001	−2.530 **	1.248
BIG4	0.148	23.540 ***	1.433	0.138	21.580 ***	1.446
OPIN	0.099	2.180 **	1.026	0.093	2.070 **	1.027
AT	0.045	9.680 ***	3.256	0.049	10.530 ***	3.252
FOR	−0.082	−3.430 ***	1.707	−0.077	−3.220 ***	1.695
OWN	−0.012	−0.710	1.265	−0.003	−0.150	1.271
YD		Included			Included	
ID		Included			Included	
F-value		45.67 ***			42.81 ***	
Adj.R ²		20.06%			19.78%	

Note: This table reports the relevance of CSM and audit report lag. *** and ** represent significance at the 0.01 and 0.05 levels, respectively. Please see Appendix A for variable definitions.

Table 5. The relevance of CSM and audit report lag according to auditor size.

PANEL A BIG4				
Variables	CSM1=TOTAL_SCORE		CSM2=GOV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	4.552	103.530 ***	4.523	107.420 ***
CSM	−0.010	−2.610 ***	−0.004	−2.250 **
SIZE	−0.014	−5.640 ***	−0.014	−6.330 ***
LEV	0.090	7.110 ***	0.084	6.970 ***
ROA	−0.144	−3.490 ***	−0.135	−3.380 ***
GRW	0.003	0.250	0.005	0.420
LOSS	0.012	1.870 *	0.013	2.140 **
FORSALE	−0.001	−2.830 ***	−0.001	−3.030 ***
OPIN	0.076	2.030 **	0.059	1.410
AT	0.015	3.670 ***	0.015	3.980 ***
FOR	−0.057	−3.320 ***	−0.059	−3.610 ***
OWN	0.031	2.330 **	0.033	2.530 **
YD	Included		Included	
ID	Included		Included	
F-value	16.72 ***		16.82 ***	
Adj.R ²	11.24%		10.71%	

Variables	CSM3=SOC_SCORE		CSM4=ENV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	4.526	104.390 ***	4.545	101.420 ***
CSM	−0.003	−1.720 *	−0.016	−4.330 ***
SIZE	−0.014	−5.910 ***	−0.012	−4.660 ***
LEV	0.087	6.980 ***	0.096	7.400 ***
ROA	−0.143	−3.500 ***	−0.139	−3.320 ***
GRW	0.004	0.380	−0.001	−0.070
LOSS	0.012	1.940 *	0.012	1.800 *
FORSALE	−0.001	−2.920 ***	−0.001	−2.640 ***
OPIN	0.076	2.040 **	0.076	2.010 **
AT	0.014	3.370 ***	0.014	3.330 ***
FOR	−0.064	−3.760 ***	−0.055	−3.160 ***
OWN	0.034	2.530 **	0.034	2.470 **
YD	Included		Included	
ID	Included		Included	
F-value	16.58 ***		17.10 ***	
Adj.R ²	10.99%		11.88%	

PANEL B non-BIG4				
Variables	CSM1=TOTAL_SCORE		CSM2=GOV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	3.956	13.270 ***	3.475	3.475 ***
CSM	−0.047	−1.240	−0.005	−0.005
SIZE	−0.004	−0.420	0.002	0.002
LEV	0.048	1.260	0.037	0.037
ROA	−0.237	−2.150 **	−0.254	−0.254
GRW	0.096	3.190 ***	0.073	0.073
LOSS	0.006	0.290	0.015	0.015
FORSALE	−0.001	−2.650 ***	−0.001	−0.001
OPIN	0.122	1.140	0.132	0.132
AT	0.098	9.440 ***	0.100	0.100
FOR	−0.126	−1.420	−0.087	−0.087
OWN	−0.152	−3.370 ***	−0.138	−0.138
YD	Included		Included	
ID	Included		Included	
F-value	9.34 ***		10.19 ***	
Adj.R ²	12.66%		12.66%	

Table 5. Cont.

Variables	CSM3=SOC_SCORE		CSM4=ENV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	3.680	15.870 ***	3.683	17.290 ***
CSM	−0.009	−0.370	−0.011	−0.530
SIZE	−0.003	−0.350	−0.004	−0.450
LEV	0.047	1.250	0.059	1.580
ROA	−0.239	−2.190 **	−0.239	−2.240 **
GRW	0.092	3.080 ***	0.091	3.110 ***
LOSS	0.007	0.350	0.009	0.460
FORSALE	−0.001	−2.810 ***	−0.001	−2.870 ***
OPIN	0.127	1.190	0.120	1.150
AT	0.095	9.130 ***	0.102	9.890 ***
FOR	−0.134	−1.520	−0.145	−1.640
OWN	−0.154	−3.450 ***	−0.123	−2.750 ***
YD	Included		Included	
ID	Included		Included	
F-value	9.27 ***		9.41 ***	
Adj.R ²	12.42%		12.96%	

Note: This table reports the relevance of CSM and audit report lag according to auditor size. ***, **, and * represent significance at the 0.01, 0.05, and 0.1 levels, respectively. Please see Appendix A for variable definitions.

Table 6. The relevance of CSM and audit report lag according to earnings quality.

PANEL A Earnings Quality > Median				
Variables	CSM1=TOTAL_SCORE		CSM2=GOV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	4.342	56.700 ***	4.219	57.460 ***
CSM	−0.022	−3.080 ***	−0.007	−2.230 **
SIZE	−0.015	−3.870 ***	−0.014	−3.880 ***
LEV	0.120	5.910 ***	0.103	5.270 ***
ROA	−0.184	−2.580 ***	−0.200	−2.870 ***
GRW	0.053	2.980 ***	0.043	2.350 **
LOSS	0.015	1.370	0.016	1.490
FORSALE	−0.001	−2.280 **	−0.001	−2.380 **
BIG4	0.130	15.260 ***	0.132	16.100 ***
OPIN	0.120	2.180 **	0.112	1.910 *
AT	0.043	7.150 ***	0.040	6.840 ***
FOR	−0.055	−1.620	−0.049	−1.510
OWN	−0.006	−0.240	0.005	0.210
YD	Included		Included	
ID	Included		Included	
F-value	25.34 ***		27.10 ***	
Adj.R ²	21.38%		21.25%	
Variables	CSM3=SOC_SCORE		CSM4=ENV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	4.255	56.520 ***	4.319	56.730 ***
CSM	−0.009	−1.680 *	−0.031	−4.690 ***
SIZE	−0.015	−3.740 ***	−0.012	−3.000 ***
LEV	0.115	5.700 ***	0.113	5.580 ***
ROA	−0.180	−2.570 ***	−0.187	−2.650 ***
GRW	0.053	2.940 ***	0.055	3.060 ***
LOSS	0.016	1.520	0.016	1.510
FORSALE	−0.001	−2.450 **	−0.001	−2.370 **

Table 6. Cont.

Variables	CSM3=SOC_SCORE		CSM4=ENV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
BIG4	0.134	15.760 ***	0.124	14.540 ***
OPIN	0.119	2.140 **	0.117	2.150 **
AT	0.039	6.470 ***	0.044	7.270 ***
FOR	−0.067	−2.000 **	−0.064	−1.900 *
OWN	−0.004	−0.170	−0.007	−0.320
YD	Included		Included	
ID	Included		Included	
F-value	25.38 ***		24.21 ***	
Adj.R ²	21.09%		21.02%	
PANEL B earnings quality < median				
Variables	CSM1=TOTAL_SCORE		CSM2=GOV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	4.649	51.290 ***	4.570	52.300 ***
CSM	−0.019	−1.580	−0.004	−1.070
SIZE	−0.030	−6.290 ***	−0.032	−7.150 ***
LEV	0.077	3.350 ***	0.075	3.380 ***
ROA	−0.209	−3.130 ***	−0.177	−2.710 ***
GRW	0.055	2.830 ***	0.049	2.670 ***
LOSS	−0.007	−0.550	−0.001	−0.120
FORSALE	−0.001	−1.180	−0.001	−1.340
BIG4	0.164	17.240 ***	0.160	17.540 ***
OPIN	0.068	0.890	0.089	1.060
AT	0.052	7.210 ***	0.055	7.870 ***
FOR	−0.078	−2.260 **	−0.086	−2.590 ***
OWN	−0.025	−0.970	−0.017	−0.680
YD	Included		Included	
ID	Included		Included	
F-value	21.48 ***		22.51 ***	
Adj.R ²	19.29%		19.01%	
Variables	CSM3=SOC_SCORE		CSM4=ENV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	4.617	52.080 ***	4.642	51.190 ***
CSM	−0.010	−1.490	−0.012	−1.450
SIZE	−0.031	−6.670 ***	−0.033	−6.740 ***
LEV	0.080	3.500 ***	0.090	3.860 ***
ROA	−0.204	−3.080 ***	−0.210	−3.160 ***
GRW	0.053	2.800 ***	0.049	2.570 ***
LOSS	−0.008	−0.680	−0.003	−0.270
FORSALE	−0.001	−1.210	−0.001	−1.000
BIG4	0.164	17.410 ***	0.153	15.880 ***
OPIN	0.070	0.920	0.062	0.820
AT	0.052	7.230 ***	0.055	7.650 ***
FOR	−0.082	−2.420 **	−0.080	−2.340 **
OWN	−0.023	−0.910	0.000	0.000
YD	Included		Included	
ID	Included		Included	
F-value	21.92 ***		20.17 ***	
Adj.R ²	19.42%		18.89%	

Note: This table reports the relevance of CSM and audit report lag according to earnings quality. ***, **, and * represent significance at the 0.01, 0.05, and 0.1 levels, respectively. Please see Appendix A for variable definitions.

4.4. Additional Analysis

4.4.1. Controlling for Time-Series and Cross-Sectional Dependencies

Table 7 shows the result of the empirical analysis of Hypothesis 1 using the methodology of Gow et al. (2010) [84]. Gow et al. (2010) [84] devised a methodology to control cross-sectional and time-series dependencies. Since the sample in this study has the properties of panel data, time-series and cross-sectional dependencies may exist. When time-series and cross-sectional dependencies occur, the t-value may be overestimated and affect statistical significance. Gow et al. (2010) [84] presented a methodology to control time-series and cross-sectional dependencies. To control for these cross-sectional and time-series dependencies, further analysis was performed using the methodology of Gow et al. (2010) [84]. As a result of the analysis, Hypothesis 1 was supported. In other words, it means that Hypothesis 1 was supported even after controlling for cross-sectional and time-series dependencies.

Table 7. The relevance of CSM and audit report lag (using the methodology of Gow et al. (2010)).

Variables	CSM1=TOTAL_SCORE		CSM2=GOV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	4.385	37.712 ***	4.274	32.171 ***
CSM	−0.024	−2.445 **	−0.006	−2.030 *
SIZE	−0.016	−3.083 **	−0.017	−2.954 **
LEV	0.105	3.898 ***	0.099	3.975 ***
ROA	−0.203	−2.598 **	−0.187	−2.635 **
GRW	0.055	3.293 **	0.047	2.757 **
LOSS	0.006	0.528	0.008	0.891
FORSALE	−0.001	−2.142 *	−0.001	−2.396 **
BIG4	0.150	3.168 **	0.149	3.127 **
OPIN	0.094	4.042 ***	0.097	4.132 ***
AT	0.043	3.874 ***	0.042	3.711 ***
FOR	−0.093	−2.304 *	−0.097	−2.449 **
OWN	−0.012	−0.505	−0.002	−0.081
YD	Included		Included	
ID	Included		Included	
F-value	57.01 ***		60.06 ***	
Adj.R ²	19.34%		19.15%	

Variables	CSM3=SOC_SCORE		CSM4=ENV_SCORE	
	Coefficient	t-value	Coefficient	t-value
Intercept	4.324	34.674 ***	4.370	37.914 ***
CSM	−0.012	−2.108 *	−0.025	−3.059 **
SIZE	−0.017	−2.908 **	−0.016	−2.980 **
LEV	0.105	3.981 ***	0.108	3.851 ***
ROA	−0.199	−2.580 **	−0.209	−2.625 **
GRW	0.053	3.252 **	0.050	2.741 **
LOSS	0.005	0.521	0.007	0.696
FORSALE	−0.001	−2.233 *	−0.001	−2.209 *
BIG4	0.152	3.188 **	0.141	3.118 **
OPIN	0.094	4.016 ***	0.090	3.745 ***
AT	0.041	3.548 ***	0.045	3.701 ***
FOR	−0.103	−2.561 **	−0.096	−2.350 **
OWN	−0.010	−0.405	0.001	0.034
YD	Included		Included	
ID	Included		Included	
F-value	57.62 ***		54.67 ***	
Adj.R ²	19.28%		19.12%	

Note: ***, **, and * represent significance at the 0.01, 0.05, and 0.1 levels, respectively. Please see Appendix A for variable definitions.

4.4.2. Controlling for Fixed Effect: Fixed-Effect Model

Whether to use a fixed-effect or a random-effect model when testing using panel data can be determined through the Hausman test. Since the results of the Hausman test showed statistical significance, an analysis was performed using the fixed-effect model. Table 8 shows the results of the empirical analysis of hypothesis 1 using the fixed-effect model. When using time-series data, heteroscedasticity problems can arise due to cross-sectional and time-series correlations. In order to alleviate this heteroscedasticity, additional analysis using a fixed-effect model was performed. As a result of the analysis, Hypothesis 1 was supported. In other words, it means that Hypothesis 1 was supported even after controlling for cross-sectional and time-series correlations.

Table 8. The relevance of CSM and audit report lag (using fixed-effect model).

Variables	CSM1=TOTAL_SCORE		CSM2=GOV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	4.381	81.800 ***	4.300	85.480 ***
CSM	−0.019	−3.630 ***	−0.006	−2.660 ***
SIZE	−0.011	−3.940 ***	−0.010	−3.980 ***
LEV	0.145	10.340 ***	0.141	10.490 ***
ROA	−0.168	−3.610 ***	−0.145	−3.210 ***
GRW	0.046	3.450 ***	0.038	2.950 ***
LOSS	0.011	1.420	0.014	1.840 *
FORSALE	−0.001	−3.180 ***	−0.001	−4.470 ***
BIG4	0.170	28.560 ***	0.172	30.160 ***
OPIN	0.081	1.890 *	0.090	1.960 **
AT	0.139	3.130 ***	0.009	2.170 **
FOR	−0.076	−3.400 ***	−0.079	−3.680 ***
OWN	−0.028	−1.800 *	−0.026	−1.760 *
F-value	112.89 ***		122.10 ***	
Adj.R ²	18.53%		18.11%	

Variables	CSM3=SOC_SCORE		CSM4=ENV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	4.377	87.620 ***	4.408	89.390 ***
CSM	−0.164	−4.420 ***	−0.023	−5.540 ***
SIZE	−0.010	−4.030 ***	−0.010	−4.070 ***
LEV	0.141	10.710 ***	0.143	11.030 ***
ROA	−0.123	−2.860 ***	−0.102	−2.430 **
GRW	0.036	3.010 ***	0.033	2.750 ***
LOSS	0.016	2.220 **	0.020	2.760 ***
FORSALE	−0.001	−4.530 ***	−0.001	−3.810 ***
BIG4	0.151	26.790 ***	0.133	23.890 ***
OPIN	0.090	2.120 **	0.093	2.280 **
AT	0.014	3.240 ***	0.019	4.350 ***
FOR	−0.092	−4.300 ***	−0.093	−4.450 ***
OWN	−0.033	−2.230 **	−0.033	−2.290 **
YD	Included		Included	
ID	Included		Included	
F-value	105.23 ***		96.49 ***	
Adj.R ²	17.21%		17.10%	

Note: This table shows the relevance of CSM and audit report lag (using fixed effect model). ***, **, and * represent significance at the 0.01, 0.05, and 0.1 levels, respectively. Please see Appendix A for variable definitions.

4.4.3. Controlling for Endogeneity: 2SLS Regression with Instrumental Variable and Time-Lag Model

Table 9 shows the results of the regression analysis of Hypothesis 1 using the two-stage least-squares estimator.

Table 9. The relevance of CSM and audit report lag: using the methodology of 2SLS.

Variables	CSM1=TOTAL_SCORE		CSM2=GOV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	4.545	26.550 ***	4.318	48.630 ***
CSM	−0.029	−1.730 *	−0.007	−1.640 *
SIZE	−0.020	−7.290 ***	−0.019	−6.800 ***
LEV	0.110	7.470 ***	0.101	7.130 ***
ROA	−0.199	−4.040 ***	−0.192	−3.980 ***
GRW	0.055	3.870 ***	0.048	3.490 ***
LOSS	0.005	0.580	0.009	1.140
FORSALE	−0.001	−4.030 ***	−0.001	−4.640 ***
BIG4	0.151	24.040 ***	0.149	24.680 ***
OPIN	0.093	2.050 **	0.096	1.960 **
AT	0.040	8.800 ***	0.041	9.360 ***
FOR	−0.099	−4.150 ***	−0.101	−4.440 ***
OWN	−0.006	−0.370	0.000	−0.020
YD	Included		Included	
ID	Included		Included	
F-value	95.89 ***		103.18 ***	
Adj.R ²	18.84%		18.86%	

Variables	CSM3=SOC_SCORE		CSM4=ENV_SCORE	
	Coefficient	t-value	Coefficient	t-value
Intercept	4.523	32.210 ***	4.513	32.860 ***
CSM	−0.029	−1.960 **	−0.024	−1.640 *
SIZE	−0.019	−6.860 ***	−0.021	−7.440 ***
LEV	0.109	7.420 ***	0.111	7.500 ***
ROA	−0.196	−4.010 ***	−0.202	−4.140 ***
GRW	0.053	3.780 ***	0.053	3.700 ***
LOSS	0.005	0.620	0.006	0.780
FORSALE	−0.001	−4.110 ***	−0.001	−4.270 ***
BIG4	0.152	24.340 ***	0.143	22.600 ***
OPIN	0.094	2.060 **	0.091	2.020 **
AT	0.038	8.570 ***	0.042	9.160 ***
FOR	−0.104	−4.390 ***	−0.103	−4.360 ***
OWN	−0.008	−0.510	0.008	0.500
YD	Included		Included	
ID	Included		Included	
F-value	97.62 ***		91.02 ***	
Adj.R ²	18.87%		18.53%	

Note: This table shows the relevance of CSM and audit report lag (using the methodology of 2SLS). ***, **, and * represent significance at the 0.01, 0.05, and 0.1 levels, respectively. Please see Appendix A for variable definitions.

As the instrumental variable, the industry average CSM grade was used. Estimate the CSM using the instrumental variable in the first-stage regression analysis. A second-stage regression analysis was performed using the estimated CSM. As a result of the analysis, Hypothesis 1 was supported; that is, Hypothesis 1 was supported even after controlling for endogeneity.

Table 10 shows the results of the regression analysis of Hypothesis 1 using the time-lag model. The relationship between CSM and audit report lag was analyzed using period-T data. In order to control the endogeneity that may occur between the two variables, additional analysis was performed using the T-1 data for CSM and the T data for the audit report lag. As a result of the analysis, Hypothesis 1 was supported; that is, Hypothesis 1 was supported even after controlling for endogeneity.

Table 10. The relevance of CSM and audit report lag: time-lag model.

Variables	CSM1=TOTAL_SCORE		CSM2=GOV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	4.533	81.780 ***	4.369	78.310 ***
CSM _{it-1}	−0.034	−7.040 ***	−0.010	−4.770 ***
SIZE	−0.020	−7.220 ***	−0.021	−7.230 ***
LEV	0.087	6.150 ***	0.083	5.690 ***
ROA	−0.170	−3.750 ***	−0.174	−3.700 ***
GRW	0.049	3.850 ***	0.041	3.120 ***
LOSS	0.011	1.390	0.008	1.060
FORSALE	−0.001	−2.950 ***	−0.001	−2.790 ***
BIG4	0.121	20.430 ***	0.146	23.900 ***
OPIN	0.094	2.120 **	0.104	2.130 **
AT	0.052	11.860 ***	0.047	10.260 ***
FOR	−0.077	−3.360 ***	−0.077	−3.320 ***
OWN	−0.014	−0.880	−0.011	−0.670
YD	Included		Included	
ID	Included		Included	
F-value	45.49 ***		48.41 ***	
Adj.R ²	19.55%		20.13%	

Variables	CSM3=SOC_SCORE		CSM4=ENV_SCORE	
	Coefficient	t-Value	Coefficient	t-Value
Intercept	4.457	81.080 ***	4.501	83.180 ***
CSM _{it-1}	−0.024	−6.260 ***	−0.027	−6.030 ***
SIZE	−0.020	−6.970 ***	−0.021	−7.370 ***
LEV	0.085	5.960 ***	0.091	6.470 ***
ROA	−0.165	−3.640 ***	−0.137	−3.070 ***
GRW	0.049	3.850 ***	0.046	3.640 ***
LOSS	0.012	1.510	0.016	2.170 **
FORSALE	−0.001	−3.110 ***	−0.001	−2.960 ***
BIG4	0.126	21.090 ***	0.110	18.780 ***
OPIN	0.095	2.120 **	0.094	2.180 **
AT	0.049	11.100 ***	0.053	12.070 ***
FOR	−0.084	−3.660 ***	−0.089	−3.980 ***
OWN	−0.014	−0.910	−0.016	−1.040
YD	Included		Included	
ID	Included		Included	
F-value	43.04 ***		40.45 ***	
Adj.R ²	19.13%		18.90%	

Note: This table shows the relevance of CSM and audit report lag (using time-lag model). *** and ** represent significance at the 0.01 and 0.05 levels, respectively. Please see Appendix A for variable definitions.

5. Conclusions

This study analyzed the impact of CSM on the audit report lag using 5880 firm-year observations from 2011 to 2019. CSM was measured with the evaluation grade of the KCGS, and the audit report lag was taken as the natural logarithm of the number of days from the end of the fiscal year to the date of the audit report.

CSM is being visualized in various forms as a cornerstone for sustainable growth. In the international capital market, FTSE4Good and Dow Jones Sustainability Indices (DJSI) have been developed to link CSM to corporate valuation. In addition, as CSM is reflected in the decision-making process of creditors, companies are actively disclosing CSM information to reduce information asymmetry between companies and investors. In particular, CSM can reduce the estimated risk of future cash flows by reducing management risks. In addition, it can be a means of preventing the rise in debt financing costs as it can reduce information risks faced by creditors by alleviating information asymmetry [85].

The analysis results are as follows. First, the relationship between CSM and audit report lag was significant in the negative trend. This means that the more companies that

are active in CSM, the shorter the audit report lag. It is inferred that the quality of earnings is improved through CSM, which increases the transparency of financial reporting, thereby reducing information risk and lowering audit risk. The reason is that external auditors can invest less audit time and shorten the audit report lag due to the lowered audit risk. Second, looking at the effects of CSM and audit report lag according to the number of auditors, only when the auditor was Big4 Four did a statistically significant negative trend appear. Since the quality of financial reporting is different according to the number of auditors, it can be inferred that the relationship between CSM and the audit report lag appears to be different. Third, the relationship between CSM and audit report lag according to the quality of earnings showed a statistically significant negative trend, only when the quality of earnings was good. When the quality of earnings is good, the transparency of financial reporting increases and audit risk decreases; that is, due to the lowered audit risk, the audit time can be shortened and the audit report lag can be reduced.

The contributions of this study are as follows. By analyzing the incentives for audit report lag, this study provided a theoretical basis for telling companies what the incentives for audit report lag are. By demonstrating that CSM can induce an audit report lag, it is meaningful in that it reveals that CSM can affect the audit procedures of external auditors. The difference in the results of this study is that it examines the effects of CSM in the emerging market, Korea, mainly after the introduction of International Financial Accounting Standards. Additionally, it is meaningful in that it revealed that the impact of CSM on the audit report lag may differ depending on the company characteristics, such as the number of auditors and the quality of earnings. It was confirmed that CSM showed a positive effect by improving the timeliness of accounting reports. Policy makers will be able to apply it to supplement regulations and disclosure systems related to CSM. The evaluation target of the KCGS is to disclose CSM evaluation results, only for KOSPI-listed companies and some KOSDAQ-listed companies. In addition, it is meaningful in that it suggested a trend for the revision of the disclosure system to disclosure policy makers. For example, policy makers may consider expanding the number of companies subject to disclosure.

The limitations of this study are as follows. Since this study analyzed only companies with CSM evaluation-grade information, there may be bias in the sample selection. Therefore, caution is required in the general interpretation. Additionally, there is the problem of omitted variables that affect the relationship between CSM and audit report lag. If there is a systematic relationship between an explanatory variable that is treated as an exogenous variable and included in the model and an omitted variable that is not included in the model but has a correlation with both the explanatory variable and the dependent variable, an endogeneity problem may occur. As a specific example, endogeneity occurs when there is a measurement value that is not included in the detailed indicators for evaluating the CSM evaluation grade. We look forward to exploring the various measures of CSM, and the future research according to firm and industry characteristics.

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Appendix A. Variable Definitions

Dependent Variables

ARL	=	Audit report lag (log variable), the natural log of the number of days from the end of the fiscal year to the date of the audit report for firm i in year t;
Explanatory Variables		
CSM	=	Corporate Sustainable Management, ESG rating grade (ESG integration sector, environmental sector, social sector, and governance sector) of the KCGS (Korean Corporate Governance Service);
Control variables		
SIZE	=	firm size, the natural log of total assets;
LEV	=	leverage, total debts/total assets;
ROA	=	the return on assets, pretax income/lagged total assets;
GRW	=	growth rate, sales for firm i in year t/(sales for firm i in year t–sales for firm i in year t–1);
LOSS	=	loss firm dummy variable, 1 if the firm reported negative net income, and 0 otherwise for firm i in year t;
FORSALE	=	export ratio, overseas sales/total sales;
BIG4	=	Big 4 affiliated audit firm dummy variable, 1 if the firm audited by a Big 4 auditor, and 0 otherwise for firm i in year t;
OPIN	=	audit opinion, 1 if an audit opinion is not unqualified opinion, and 0 otherwise for firm i in year t;
AT	=	audit time (log variable), the natural log of audit time measured in hours;
FOR	=	the foreign ownership ratio;
OWN	=	the ownership ratio, sum of stakes by major shareholders and related parties;
YD	=	year dummy;
ID	=	industry dummy.

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