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Internal Control Managers' Accounting Experiences on Audit Quality—Focus on ESG

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Abstract: The purpose of this research is to investigate whether internal control (IC) managers' experience in accounting influences audit quality, employing a regression analysis by utilizing a novel dataset of Korean firms from 2018 to 2020. According to the findings, IC managers who have a deeper understanding of accounting or more expertise in the field have a positive impact on audit quality. Nuancing this link between the accounting-specific experiences of IC managers and audit quality, the study examines how ESG investment impacts the relationship between IC managers' accounting-related experiences and audit quality. The result confirms that the negative effect of low ESG investment on a firm's sustainability is reduced when IC managers are with strong accounting competency. In other words, in a circumstance in which a company's audit risk is high due to insufficient ESG investments, IC managers's high degree of accounting proficiency cope with audit risk to increase audit quality. Additionally, by analyzing a dataset recently obtained from Korea that assesses the level of accounting expertise possessed by IC managers, it has become evident that this experience plays a key role in the process of improving audit quality. These findings imply that policymakers' and standard setters' efforts to promote high-quality audits should be coordinated with IC managers' accounting experiences.

Keywords: internal control managers' accounting-specific experiences; audit quality; ESG

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1. Introduction

It is essential for companies to adopt preventive measures in managing risk in order to lessen the possibility of unfavorable events occurring, as well as to gain the confidence of investors and ensure transparent financial reporting. Following a series of high-profile accounting scandals in 2002, internal control (IC) is becoming one of the critical strategies for developing self-discipline and improving managerial performance (Huang and Huang 2020; Tan et al. 2020; Gallardo-Vázquez and Lizcano-Álvarez 2020; Myšková and Hájek 2019). Additionally, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in 2013 highlighted the significance of the IC system and the direct influence it has on the long-term viability of a company (COSO (Committee of Sponsoring Organizations of the Treadeway Commission) 2013). COSO further explained that a high level of IC, which is demonstrated in experienced IC employees, improves the effectiveness and efficiency of audit operations and ensures compliance with existing laws and regulations, therefore, assisting companies in improving their future performance (Lai et al. 2017). When the firms are equipped with highly competent staff, they are expected to improve the reliability of the reports that companies generate and release, allowing their stakeholders to analyze and monitor the firm's sustainability with more accurate information (Shin et al. 2017).

Prior research has emphasized the importance of investment in human resources for the effective operation of IC. Ge and McVay (2005) contend that the primary cause of major deficiencies in IC is a lack of accounting expertise and related training in human resources. With the amendment of the External Audit Law in 2014, it is now possible for the general public to access information related to how much each company invests in human resources

related to IC. Overall, previous research shows that a higher ratio of IC personnel reduces the possibility of material weakness (Choi et al. 2013), accounting error (Ryu et al. 2012), and improves discretionary accruals (Kim et al. 2013). Taken together, this suggests that the effective operation of IC through investments in human resources lowers control risk (Suh et al. 2018).

In 2018, the New External Audit Law was amended to promote transparency and reliability in accounting information and to attract more attention from CEOs. As a result of the amendment, strict standards are applied when auditing IC, and should the result of the audit be negative the firm will be delisted from the market. At the same time, the amendment further highlighted the importance of accounting personnel, requiring that companies disclose their accounting capabilities and credentials in addition to disclosing their qualified personnel management. Given that the new disclosure was established to convey information about the accounting capabilities to outside stakeholders and to promote the responsibility of IC managers, it is critical for policymakers to examine the competency of IC personnel. Additionally, the new amendment explicitly prioritizes how much experience each individual IC manager has in related accounting fields. In contrast, in 2014, the only data being released was related to the average years of experience of all IC personnel in each firm.

Previous studies mostly focused on the result of IC, and whether firms are perceived to have material weakness assessed by auditors. Firms will obtain an IC opinion of material weakness when the likelihood of misstatement in financial statements is more than remote and its amount is material. Even though this is a clear way to confirm the quality of IC, the scope of these studies is limited because they fail to differentiate the IC levels for firms that are determined to not be perceived as having a material weakness. With only 1~4% of all audited firms across studies being seen to have material weakness, a significant portion of the sample remains under-analyzed.

This study focuses on the IC manager's accounting-specific experiences concerning audit quality. Audit quality is described as the possibility of detecting potential errors as well as the capacity to report on such issues (DeAngelo 1981). In regard to higher audit quality, Gaynor et al. (2016) suggest that greater quality may be achieved by providing adequate and relevant proof that financial statements accurately represent the company's activities. In addition, the market will be more receptive to acquiring services from auditors if they have a well-deserved reputation for conducting audits to a very high standard. When conducting an audit, external auditors compile audit risk by considering inherent risk (IR), control risk (CR), and detection risk (DR), with CR being directly related to the efficacy of the IC system.

Overall, this study considers IC managers' accounting-specific experiences as low in control risk. Although accounting knowledge may be an essential element in IC, there has been little examination of this in past research owing to the lack of detailed data. With the release of the new amendment, however, comes a wealth of information about the specific expertise of IC managers in various accounting areas. This presents a fruitful opportunity to examine whether a relationship exists between IC managers' accounting expertise and audit quality.

After thoroughly testing the correlation between IC managers' accounting-specific experiences and audit quality, a positive relationship is confirmed between the two variables. That is, the financial information supervised and prepared by the IC managers with more experience is considered transparent and reliable, resulting in higher audit quality. Moreover, the abilities of IC managers are particularly evident in firms with high audit risks. As various studies have suggested that firms with ESG ratings have higher accounting reliability (Limkriangkrai et al. 2017; Na et al. 2013), resulting in improved audit quality, it becomes essential to investigate the role of IC managers' accounting expertise in counterbalancing the impact of poor ESG ratings. In this case, it is possible to speculate that the perceived competence of IC managers in a company, as a result of their solid accounting expertise, could offset the negative perceptions that arise from a low ESG rating.

Expanding on the idea that IC managers' accounting experience may act to balance out negative perceptions of a firm, the study examined the firms that are audited by non-Big 4 audit firms and for firms listed in the KOSDAQ market, both of which are associated with lower audit quality.

This study, therefore, makes several meaningful contributions to the existing body of literature. First, it leverages novel and unique data on the accounting-specific experiences of IC managers to show that accounting skills and knowledge of the business are essential for improving the quality of ICs. Additionally, instead of measuring the average skills or experiences of IC personnel, as has been standard, the analysis encompasses the impact of individual competency. Deriving from this more nuanced description of a firm's IC environment, the study can then provide strong evidence that effective IC enhances corporate sustainability, as measured by ESG.

The remaining parts of the paper are laid out as follows. The literature evaluation and hypothesis generation process are detailed in Section 2. Section 3 then introduces the research design, including the data selection method and the model, with the results being described in Section 4. Extension tests, specifically focused on firms audited by non-Big 4 audit firms and those listed in the KOSDAQ market, are reported in Section 5. The final Section 6 then presents a brief discussion of the collected results and conclusion.

2. Theoretical Background and Hypothesis Development

2.1. Institutional Background

Financial Supervisory Service (FSS) initiatives to reform the accounting system were announced by Korea's Financial Supervisory Service, akin to the US Securities and Exchange Commission, in 2002 after SOX was passed by the US Congress. The new initiatives in Korea are called K-SOX due to their similarity to SOX's metrics. Following this, FSS announced the External Audit Act which mandates that every public firm establishes an IC system to ensure the preparation and disclosure of accurate financial information to investors. The term IC is used to describe control operations that are carried out by a firm in order to accomplish its management goals (COSO (Committee of Sponsoring Organizations of the Treadeway Commission) 2013). It is critical to have an IC system in place, particularly after the Enron debacle prompted the U.S. to implement SOX and enforced stringent rules governing the design and maintenance of IC mechanisms. A corporate representative is responsible for the control and operation of the IC system. Additionally, one of the full-time directors of the company is appointed to the role of internal accounting manager. IC system operating status is reported to the shareholders, board of directors, and statutory auditor each year by a corporate representative. As part of an audit, an auditor must assess the operational condition of the IC system and must express an overall review opinion on the findings in the audit report. If the company is listed on a stock market, the auditor should express an audit opinion in the audit report. The External Audit Act is distinct from Article 404 of SOX in that it requires auditors in Korea to either evaluate or audit the specifics of a company's report on the operational state of its IC system.

Since 2018, there has been a requirement in Korea for annual reports to include the previous accounting experience of the IC manager. Prior to this new legislation, it was only required that the average number of months and the ratio of those having a CPA license among IC personnel be disclosed. The new rules, however, require IC managers to provide additional information about their accounting background in order to foster accountability and credibility of financial statements. Accounting experiences are defined as the time a person worked as an auditor or consultant in a department that is in charge of preparing financial statements before working at the pertinent firm.

2.2. Prior Literature on IC Managers

Due to the limited nature of prior IC disclosure, and therefore, associated data sets, earlier academic studies have focused on the consequences of the material weakness of IC. Companies with IC weaknesses tend to make lower-quality profits (Ge and McVay 2005;

Ashbaugh-Skaife et al. 2008). Further, companies that reported IC weaknesses have been shown to have lower quality accruals as evaluated by the accrual noise compared to the companies that did not disclose IC difficulties. This evidence provides credibility to the viewpoint that it is necessary to maintain quality IC to achieve superior financial reporting. Specifically, it is vital to maintain quality IC in order to produce reliable financial reporting. This conclusion adds validity to the stance advocated by the authorities, namely that it is essential to maintain high-quality IC to provide high-quality financial reporting.

While these studies provide grounding to the understanding of the positive correlation between IC and quality of financial reporting, they are nevertheless based on the dichotomous assumption that the firms that disclosed IC weaknesses are operated at a similar level of IC. To strengthen and confirm this relationship, the differing level of IC across firms regardless of whether or not they report material weakness, ought to be taken into consideration. Therefore, it is relevant to compare the operation level of IC across different firms.

At present, Korea is one of the only countries that require the disclosure of a firm's IC operation status. Ge and McVay (2005) indicate that firms with an inadequate allocation of IC resources, such as improperly qualified employees, likely disclose IC weaknesses. Choi et al. (2013) investigated the role of IC staff in determining the overall strength of the IC. They observed that a negative association existed between the divulgence of IC weakness and both the percentage of IC workers in the business as a whole as well as the change in the proportion of IC personnel within certain key divisions. This finding demonstrates the critical role played by IC staff in ensuring high-quality IC, which in turn impacted the accuracy of financial reporting. Shin et al. (2017) emphasized the significance of qualitative aspects of IC personnel investments, namely that investing in IC employees in other areas, such as in the accounting and finance departments, improves audit efficiency.

As the New External Audit Law requires disclosure of accounting-related career history, including experience related to generating and disclosing financial statements and any consulting experience, it is now more important than ever for IC managers to have solid accounting backgrounds. The new amendment requires that the representative of the company be responsible for selecting a manager to take charge of the IC system and report on its operating condition both to the audit committee and the board of directors. Given the substantial role that the IC managers are expected to play in generating, administering, and reporting on the IC system status, it is plausible to hypothesize that their accounting-related experiences contribute considerably to determining whether the IC system can successfully carry out its functions.

SEC's Final Rule: Disclosure Required by Sections 406 and 407 of the Sarbanes-Oxley Act of 2002 defines that financial experiences are classified as either supervisory or accounting (SEC (Securities and Exchange Commission) 2003), and that supervisory experiences might be not appropriate to comprehend accounting concerns; thus, it may fail to enhance the monitoring effect (Dhaliwal et al. 2010). Previous research reports that accounting expertise results in lower absolute value abnormal accruals (Carcello et al. 2006) and higher accounting conservatism (Krishnan and Visvanathan 2008). In addition, appointing accounting experts as a member of an audit committee is related to a positive stock reaction (DeFond et al. 2005). If IC managers have previous accounting experience, they can control deficiencies that are either process-specific or pervasive throughout the firm (Gramling and Schneider 2018).

To the best of our knowledge, there have been no studies conducted regarding IC managers' accounting experiences in international settings, and very few studies have been conducted recently on the topic of the accounting expertise held by IC managers. Koo and Ki (2020) conducted an investigation into the link between the duration of an IC manager's tenure with the company and their expertise in accounting-related fields, as well as the disclosure of an IC company's significant weaknesses. They suggest the work experiences of IC managers that are related to accounting have a greater impact on minimizing IC material weaknesses than their length of service does. Therefore, companies should ensure

that they have IC managers with appropriate accounting skills to maintain sustainable management practices (Koo and Ki 2020; Lai et al. 2017). Kim and Jung (2020) analyze the relationship between the accounting experiences of IC managers and the amount of time spent on audits. It has been demonstrated that there is a negative correlation between the number of audit hours and the length of careers as well as the experiences of IC managers. This indicates that the competency of IC managers would have a significant influence on IC if a systematic accounting system was not put into place. Notably, the research conducted by Koo and Ki (2020) and Kim and Jung (2020) is limited to data only from the year 2018.

2.3. Audit Quality

While auditors are responsible for providing reasonable assurance that financial statements are free of material misstatements (SAS 55), they should also consider the relevant audit risks as part of their core operations. Audit risk is composed of IR, CR, and DR. While IR arises from the firm's innate characteristics or the surrounding environment such as the industry, CR depends on the managers' efforts to control the IC system. After considering IR and CR, the auditors adjust the DR, which affects the nature, time, and extent of auditing procedures. For example, auditors expand the range of auditing procedures when the level of material misstatement is high. In other words, auditors' responses to higher levels of material misstatement maintain the targeted audit risk, safeguarding audit quality.

Audit quality is defined as the joint probability of both the ability to identify possible mistakes and the capabilities to report such problems (DeAngelo 1981). The detection of possible mistakes denotes the amount of the auditor's work, whereas the latter denotes the auditor's purpose, competence, and independence. However, DeAngelo's (1981) definition is limited in that it excludes the client firm's situation in the industry landscape. Recently, a number of studies have redefined audit quality during auditing procedures. DeFond and Zhang (2014) define that higher audit quality provides a higher level of assurance while also incorporating the firm's underlying financial and fundamental features. Gaynor et al. (2016) suggest that a higher level of audit quality is obtained by sufficient and appropriate evidence that the financial statements properly represent the firm's operations.

High audit quality is vital in a well-functioning capital market. Auditor quality is motivated by the consequences of litigation or insurance incentives as well as a reputation effect (Skinner and Srinivasan 2012). In the former case, if auditors are held legally accountable for audit failures, then they have the incentive to perform high-quality work in order to avoid expensive litigation procedures. Larger audit firms are more likely to provide investors with financial recourse and insurance against poor audit quality. As a result, investors tend to favor bigger audit firms because they are better at fulfilling legal obligations. The latter motivation for auditors to prevent audit failures is reputational. Clients place a high value on audit quality and this value is reflected in the market price for audit services. Clients, according to this point of view, will leave an auditing firm whose reputation has begun to deteriorate for one with a higher-quality reputation

2.4. Hypothesis Development

Previous studies have primarily examined the outcome of IC operation, with a focus on identifying material weaknesses within a firm's IC system. Assessing the result of the IC system assumes that the companies are operating at a similar level. Ge and McVay (2005) attributed such deficiencies to a lack of qualified accounting personnel. Considering that the operational efficiency of the IC system relies upon the competence of the personnel responsible for its management, the current research places emphasis on evaluating the accounting expertise of the IC manager.

As the operational efficiency of IC is contingent on the proficiency of the personnel responsible for its management, this research focuses on the accounting expertise of the IC manager. Prior literature has proposed that a firm can be benefited from having human resources at the management level with accounting expertise, as demonstrated by a decrease

in the absolute value of abnormal accruals (Carcello et al. 2006), enhancement in accounting conservatism (Krishnan and Visvanathan 2008), and an increase in audit fee (Krishnan and Visvanathan 2009). According to Koo and Ki (2020), companies that have considerable accounting experience in the area of IC were able to improve the quality of their IC, which acts as a cornerstone for a company's potential to achieve sustainable development.

This study investigates the relationship between the accounting experiences of IC managers and audit quality. IC managers with prior auditing experiences or exposure to auditors are more likely to have professional skepticism and recognize potential audit risks in financial statements (Scarpati 2003). Additionally, IC managers are better equipped to evaluate the impact of IC deficiencies and are knowledgeable about regulatory standards. Therefore, the study hypothesizes that IC managers with accounting-related expertise will lead to improved audit quality. Upon this reasoning, Hypothesis 1 is developed.

Hypothesis 1. *IC managers' accounting-related experience is significantly, and positively correlated with better audit quality.*

Much research has shown that effective IC reduces the likelihood of fraudulent reporting (Donelson et al. 2017), enhances the dependability of non-financial data (Huang and Huang 2020; Tan et al. 2020), and impacts firms' innovative performances positively (Lai et al. 2017). Examples of Osstem Implant and Volakwagen demonstrate how a lack of IC can negatively impact firms' sustainable existence.

Although the importance of IC operations to a firm's long-term viability is widely recognized, few studies have explored the relationship between IC operations and a firm's sustainability. Recently many firms have been actively pursuing ESG in an effort to enhance their sustainability. ESG provides evidence of a company's effort to address regulatory and social pressure regarding climate change, maintain relationships with employees and communities, and manage risks and opportunities related to corporate governance (Verheyden et al. 2016). According to a survey conducted by KPMG, one of the Big-4 accounting firms, responsible investment in ESG can lead to economic success in stock markets by positively impacting a firm's reputation (Yoo 2021). A high ESG score may also improve investment incentives since investors view such companies to be more adaptable to changes in the operational environment (Akpinar et al. 2008). According to the signaling theory perspective, companies make investments in ESG to signal to their various stakeholders that they have a long-term commitment to sustainability (Zhang and Wiersema 2009). In other words, companies use ESG reports as a way to convey a positive image and gain the trust of investors and other stakeholders. Conversely, poor ESG practices can undermine a company's reputation and threaten its ability to continue operations.

This study attempts to examine the relationship between a high level of IC and audit quality in the context of firms with low ESG. The following second hypothesis is developed accordingly.

Hypothesis 2. *The accounting-related experiences of IC managers an alleviate the negative impact of poor ESG on audit quality.*

3. Research design

3.1. Data

The narrowing of the data set and the final data selection for the study are outlined in Table 1. The initial data set included non-financial companies listed on the Korea Stock Exchange (KSE) and the Korea Securities Dealers Automated Quotation (KOSDAQ) from 2018 to 2020. The IC data are manually collected from business reports. ESG data are privileged and are provided by the Korea Corporate Governance Service (KCGS). In contrast to earlier studies (Koo and Ki 2020) that employed grades (A–F) that researchers themselves converted to a numerical score based on their own judgment, this study was leverages the

actual numerical scores provided by the KCGS. The initial data set included non-financial firms from 2018 to 2020 that use a December year-end system. To reach the data set analyzed in this study, 376 firms that do not have IC managers with accounting-related experiences and ESG investment data were excluded as well as those with incomplete information related to IC managers' accounting expertise and ESG. After eliminating those firms that did not satisfy the requirements, 5039 firms remain viable for the final data set.

Table 1. The Data Selection Process.

Non-financial firms with December year end from 2018 to 2020	5541
Less:	
Firms without IC managers' accounting related experiences and ESG information	376
Firms with missing data	126
Final Sample	5039

Table 2 shows the distribution of 5039 firms by industry. The industry classification is based on the Korean Standard Industrial Classification for listed companies. The industries with the biggest number of samples are industries of machinery,/Equipment, computers, electrical machinery, electronic components, medical instrument, automobiles, and transport equipment.

Table 2. Data distribution by industry.

Industry	Number of Firms
Food/Beverage, Tobacco	195
Textile, Clothing, Bags/Shoes	109
Wood, Pulp, Paper, Printing	87
Petroleum Refining, Chemicals, Rubber, Rubber/Plastic, Recycled Raw Materials	850
Non-metallic Minerals	97
Primary Metals, Metal Products	334
Machinery/Equipment, Computers, Electrical Machinery, Electronic Components, Medical/Precision Instrument, Automobiles, Transport Equipment	1629
Furniture/Other Products	72
Electric/Gas/Water, Sewage/Waste, Waste Collection, Environmental Cleaning	55
Construction	141
Wholesale	416
Services	1054
Total	5039

3.2. Model Specification

To test the correlation between IC managers' accounting-related experiences and audit quality put forward in Hypothesis 1, the following regression model is established. Audit quality (Aq), the dependent variable, is based on the research of Kothari et al. (2005). The detailed process of obtaining the value is described in Equation (1). The independent variable (ICM) is the measurement of IC managers' accounting-related experiences.

The model's control variables are based on previous audit quality research (Choi et al. 2013). Size is included as a control variable since large firms are likely to have an effective IC system that lowers the probability of having distorted financial statements (Ryu et al. 2012;

Shin et al. 2017). Moreover, the debt ratio (Lev) is necessarily included. As the debt ratio gets higher, so does the IR. Auditors will modify the audit range in the audit scope to match the targeted audit risk (Kang and Lee 2009).

$$\begin{aligned} Aq_t = \alpha_1 + \beta_1 ICM_t + \beta_2 Size_t + \beta_3 Lev_t + \beta_4 Roa_t + \beta_5 Growth_t + \beta_6 Loss_t + \beta_7 Mtb_t \\ + \beta_8 Vol_t + \beta_9 Beta_t + \beta_{10} Big_t \\ + \beta_{11} Mkt_t + \sum Ind + \sum Yr + \varepsilon \end{aligned} \quad (1)$$

where Aq = Audit quality assessed by the model in Kothari et al. (2005), ICM = log (IC managers' accounting related experiences), Size = the natural logarithm of total assets of a firm; Lev = total liabilities divided by total assets, Roa = net income divided by total assets, Growth = changes in sales in the current and prior year divided by the sales in the prior year, Loss = 1 if a firm with loss in year t, and 0 otherwise, Mtb = market value of equity divided by book value of equity, Vol = Volatility of daily price-earnings ratio in year t, Beta = Systematic risk in year t, Big = 1 if a firm is audited by Big-4 accounting firm, and 0 otherwise, Mkt = 1 if a firm is listed in KOSDAQ market, and 0 if a firm is listed in KOSPI market, Ind = industry dummy variables, and Yr = year dummy variables.

Sales growth is also included in the model since firms that are growing in terms of sales are likely to have difficulty maintaining proper IC. The variable Loss is included as a proxy for the business risk of an auditee. According to a study by O'Keefe et al. (1994), when the business risk grows, audit risk increases as well. The volatility of daily price-earnings is represented by the standard deviation of the price-earnings ratio. Beta encompasses systematic risk, which measures the other area that financial variables cannot assess. Big is a dummy variable and takes a value of 1 when the auditor is one of the Big-4 accounting firms. Mkt is a dummy variable that is included in the equation to represent the market to which the company belongs. Finally, the inclusion of industry dummy variables is conducted with the intention of controlling volatility by industry. Additionally, in order to control for audit quality across years, year dummy variables are included. Equation (2) shows the method of obtaining a value of audit quality suggested by Kothari et al. (2005). In detail, a cross-sectional model of discretionary accruals is used to measure audit quality by predicting the model for all industries based on its two-digit industry code (Lee 2022).

$$\frac{TA_t}{A_{t-1}} = \alpha_0 + \beta_1 \frac{1}{A_{t-1}} + \beta_2 \frac{\triangle S_t - \triangle AR_t}{A_{t-1}} + \beta_3 \frac{PPE_t}{A_{t-1}} + \beta_3 ROA_t + \varepsilon_t \quad (2)$$

where, TA = Net income after subtracting cash flow from operations, S = Sales, AR = Accounts receivables, PPE = Plant, property, and equipment, ROA = Net income divided by total assets, and A = Total assets

Hypothesis 2 predicts whether ESG investments affect the relationship between IC managers' accounting-related experiences and audit quality. To test this hypothesis, an OLS regression based on the following Equation (3) is performed. The key independent variable in Equation (3) is the interaction term of IC managers' accounting related experiences and the ESG score, denoted by $ICM \times ESG$.

$$\begin{aligned} Aq_t = \quad & \alpha_1 + \beta_1 ICM_t + \beta_2 ESG_t + \beta_3 ICM \times ESG_t + \beta_4 Size_t \\ & + \beta_5 Lev_t + \beta_6 Roa_t + \beta_7 Grwoth_t + \beta_8 Loss + \beta_9 Mtb_t \\ & + \beta_{10} Vol_t \beta_{11} Beta_t + \beta_{12} Big_t + \beta_{13} Mkt_t + \sum Ind + \sum Yr + \varepsilon \end{aligned} \quad (3)$$

4. Empirical Findings

4.1. Descriptive Statistics

Table 3 displays the descriptive statistics for the main variables of this study. The mean value of Aq is found to be 0.005, which corresponds closely to the results of the study performed by Choi (2020). The mean value of ICM is 4.600. When expressed in raw values, the average amount of years spent working in accounting positions held by IC managers is

99.48. The average ESG is 2.959 and the median value is 3.258 and the values are similar to the study of Lee and Kim (2021), showing normal distribution of ESG scores.

Table 3. Descriptive Statistics.

Variables	Mean	STD	Q1	Median	Q3
Aq	0.005	0.227	−0.041	0.010	0.060
ICM	4.600	1.230	3.871	4.969	5.575
ESG	2.959	0.950	2.772	3.258	3.524

Note: Where, Aq = Audit quality measured by model in Kothari et al. (2005), ICM = log (IC managers' accounting related experiences), ESG = 1 if ESG score is less than average, 0 otherwise.

Table 4 is a summary of the correlations between the key variables in this study. It displays the results of the Pearson correlations between the key variables without taking into consideration the effects of any other experimental or control variables that may be relevant before testing the Hypotheses. It shows the correlation that might cause the problem or multicollinearity issue. Aq is only mildly negatively correlated with ICM but is significantly negatively correlated with ESG. This indicates that the investment in ESG is significantly related to audit quality. The correlation findings may have limits in interpretation since they do not take into consideration the effect of the controlling factors that may affect the connection between each variable.

Table 4. Pearson Correlation.

	(1)	(2)	(3)
(1) Aq	1.0000	−0.0215 0.1155	−0.0553 0.0359
(2) ICM		1.0000	−0.0016 0.9502
(3) ESG			1.0000

Note: Where, Aq = Audit quality measured by model in Kothari et al. (2005), ICM = log (IC managers' accounting related experiences), ESG = 1 if ESG score is less than average, 0 otherwise in Table 4, the coefficient of the ICM variable is −0.004, significant at 5%.

4.2. Primary Findings

Table 5 describes the association between the experiences of IC managers and audit quality. The adjusted r-square shows 0.052 with an F-value of 9.5, implying that the model is adequate. The result implies that external auditors take into account the accounting-related experiences of IC managers during auditing procedures. The accounting information prepared and managed by IC managers with accounting-specific experiences is also transparent and reliable (Lee et al. 2011). In addition, IC managers with a better understanding of accounting encouraged auditors to conduct thorough audits, which resulted in higher audit quality. Choi (2020) discovered that having certified public accountants as part of the internal accounting personnel, and managers' earnings management is restricted, leading to higher quality accounting information. By utilizing an IC manager as a preliminary measurement of the company's level of IC, rather than as a result of the audit, companies with sufficient IC personnel where the level of control risk is evaluated as low, efficient external auditors can reduce the time spent on assigning auditors responsible for substantive testing, resulting in improvement of audit effectiveness and audit quality (Suh et al. 2018).

Table 6 shows the regression result that examines the second hypothesis. Model 3 analyzes the IC manager's accounting-specific experiences in a firm with low ESG investment. High investment in ESG implies a firm's sustainable existence to external stakeholders (Connelly et al. 2011). At the same time, sustaining a high level of ESG investment implies that the firms are actively involved in risk management activities (Lim and Choi 2018;

Kim et al. 2016). On the contrary, firms with poor ESG investment are evaluated conversely. Furthermore, low ESG investment may be identified as high audit risk, which the auditors prepare strategies to reduce to an acceptable level. The key variable is ICM × ESG and it displays a statistically significant coefficient of −0.007. The result implies IC managers possessing more extensive accounting-specific experiences significantly mitigate the negative audit quality impact of low ESG investment. If an IC manager with accounting-specific knowledge based on their prior experiences exists within the firm, the auditor utilizes this information to reduce audit risk to an acceptable level, resulting in higher audit quality.

Table 5. Regression analysis on the relationship between accounting-specific experiences of IC managers and audit quality.

Variables	Coeff.	t-Stat.
Intercept	0.471	4.700 ***
ICM	−0.009	−2.500 ***
Size	−0.019	−4.900 ***
Lev	−0.033	−1.610 *
Roa	0.018	6.650 ***
Growth	−0.006	−0.630
Loss	−0.082	−8.060 ***
Btm	0.003	0.800
Vol	0.014	0.040
Beta	0.020	2.300 **
Big	−0.007	−0.750
Mkt	0.007	0.690
Ind Dummy	Included	
Year Dummy	Included	
F-value	9.5 ***	
Adj. R^2	0.052	
Observations	5039	

(1) *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. (2) See Equation (2) for variable definition.

Table 6. Regression analysis on the effect of ESG on the relationship between accounting-specific experiences of IC managers and audit quality.

Variables	Coeff.	t-Stat.
Intercept	−0.092	−1.530
ICM	0.001	−0.530
ESG	−0.029	−1.470
ICM × ESG	−0.007	−1.860 **
Size	0.002	0.800
Lev	0.016	1.330
Roa	0.051	2.800 ***
Growth	−0.019	−2.220 **
Loss	0.024	3.640 ***
Mtb	0.007	2.780 **
Vol	0.066	3.820 ***
Beta	−0.006	−0.970
Big	0.000	−0.080
Mkt	0.010	1.490
Ind Dummy	Included	
Year Dummy	Included	
F-value	3.15 ***	
Adj. R^2	0.02	
Observations	5039	

(1) *** and ** indicate significance at the 1% and 5% levels, respectively. (2) See Equation (2) for variable definition.

5. Further Investigation

Table 7 displays the additional regression analysis result. Panel A shows the relationship between IC managers' accounting-specific experiences and audit quality depending on audit firm size, Big-4s vs. Non-Big-4s. The coefficient of ICM in Non-Big-4 is −0.006, statistically significant at 5%, while Big-4 shows an insignificant coefficient of 0.002. Panel B in Table 6 displays the relationship between IC managers' accounting-specific experiences and audit quality depending on the Market, KOSDAQ vs. KOSPI. The coefficient of ICM in the first column of Panel B is −0.008, statistically significant at 5%.

Table 7. Additional tests.

Panel A. The effect of Big-4 vs. Non-Big-4				
Variables	**Non-Big-4**		**Big-4**	
	Coeff.	**t-Stat.**	**Coeff.**	**t-Stat.**
Intercept	0.437	4.620 ***	−0.022	−0.550
ICM	−0.006	−1.850 **	0.002	0.900
Size	−0.019	−4.840 ***	−0.001	−0.770
Lev	0.055	2.480 **	0.021	1.630 *
Roa	0.368	11.250 ***	0.141	5.250 ***
Growth	0.044	2.780 ***	−0.053	−4.350 ***
Loss	0.035	3.540 ***	0.006	0.970
Btm	0.015	2.440 **	0.010	3.320 ***
Vol	0.037	1.430	0.062	3.180 ***
Beta	−0.010	−0.970	0.006	0.850
Ind Dummy	Included		Included	
Year Dummy	Included		Included	
F-value	10.28 ***		6.95 ***	
Adj. R^2	0.054		0.055	
Observations	3392		1647	
Panel B. the effect of Market, KOSPI vs. KOSDAQ				
Variables	**KOSDAQ**		**KOSPI**	
	Coeff.	**t-Stat.**	**Coeff.**	**t-Stat.**
Intercept	0.509	5.280 ***	0.070	1.890
ICM	−0.008	−2.500 **	0.001	0.820
Size	−0.022	−5.760 ***	−0.004	−2.800 ***
Lev	0.059	2.600 ***	0.036	3.230 ***
Roa	0.403	10.420 ***	0.160	5.190 ***
Growth	0.086	5.100 ***	0.007	0.570
Loss	0.043	4.110 ***	0.011	1.960 *
Btm	0.020	2.870 ***	0.005	1.990 *
Vol	0.028	1.030	0.019	1.100
Beta	−0.006	−0.510	0.001	0.180
Ind Dummy	Included		Included	
Year Dummy	Included		Included	
F-value	12.16 ***		8.77 ***	
Adj. R^2	0.067		0.073	
Observations	1641		3398	

(1) *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. (2) See Equation (2) for variable definition.

The firms audited by Big-4 audit firms have incentives to deliver excellent audit quality, due to modern audit technology, low economic dependency on each audited firm, and high reputational damage costs (DeAngelo 1981). On the contrary, non-Big-4 accounting firms may be more reliant on a limited number of audited clients than Big-4, due to their focus on smaller regional businesses.

Firms listed on the KOSDAQ generally are valued lower than those listed on the KOSPI. One reason for this overall trend can be seen in the relatively poor governance

structure for KOSDAQ-listed firms in comparison to KOSPI firms, which results in a significant degree of information asymmetry in the former's internal management structure. Furthermore, KOSDAQ-listed firms suffer from the loosening of legislation governing market monitoring and oversight as well as lower financial transparency resulting in weaker investor protections and internal controls.

Based on the findings that KOSDAQ-listed firms have a generally inferior governance structure and internal controls, it is reasonable to conclude that KOSDAQ-listed firms audited by non-Big-4 accounting firms are less likely to have underdeveloped accounting systems. Consequently, these companies should prioritize the training of their accounting staff to ensure that their internal controls and accounting practices conform to industry standards.

6. Conclusions

This study first explores whether the accounting-specific experiences of IC managers affect audit quality. Using novel data from Korea, the study identifies that IC managers' accounting-specific experiences improve audit quality. Furthermore, the study then pursues whether the negative effect of low ESG investment on audit quality, typically indicating a low possibility of sustainable existence, can be counterbalanced by IC managers with extensive accounting-specific experiences. It is found that despite poor ESG investment, a firm can indeed mitigate the impact on audit quality by having managers with considerable accounting expertise in the area of IC.

This research sheds light on the importance of IC quality in a company's long-term success. Identifying a number of contributing factors to IC quality extends meaningfully upon the body of prior research. First, the study provides empirical evidence from novel data on IC managers' career experience that accounting competence and understanding of the firm's operations are crucial to increasing IC quality. While prior research has focused on how the number of IC employees or the presence of CPA licenses among IC staff impacts internal control quality (Choi et al. 2013; Park et al. 2019), this study expands upon this foundation by investigating whether IC personnel's professional backgrounds have a significant influence on IC quality.

Second, although the background suggests that effective IC improves a firm's sustainability (COSO (Committee of Sponsoring Organizations of the Treadeway Commission) 2013), few researchers have sought to experimentally investigate this feature. This study provides evidence of superior IC, measured by the IC managers' accounting-specific experiences, enhances corporate sustainability, resulting in higher audit quality.

Third, while the previous studies have focused on the average data on the IC personnel, this study examines the effect of IC personnel on an individual level. It implies that the firm should make sure to allocate individuals who have abundant knowledge in the accounting of IC operations which serves as the foundation for sustainable development in the firm.

Nonetheless, there are limitations to this study. Even if the standards for IC in Korea are comparable to those in the United States, it is possible that it will not be possible to generalize these findings to other nations owing to the presence of unknown institutional parts that have the potential to influence the results.

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