Audit and CSR committees: are they complements or substitutes in CSR reporting, assurance, and GRI framework adoption?

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Abstract

Abstract

Purpose- This study aims mainly to test the effect of audit committee independence and expertise attributes on corporate social responsibility (CSR) reporting, assurance, and Global Reporting Initiative (GRI) framework adoption and to investigate how CSR committee existence moderates this main relationship.

Design/methodology/approach-The study uses a large global sample that includes all (59,172) firm-year observations having CSR-related data in the Thomson Reuters Eikon database for a period between 2002 and 2019. The empirical analyses are based on random-effects logistic panel regression and Hayes methodology for the moderation analysis.

Findings-The study finds that audit committee independence and expertise are significantly associated with CSR reporting, CSR report assurance, and GRI framework adoption. Moderation analysis largely supports the existence of a substitution role between audit and CSR committees and implies that audit committees are significant predictors of CSR reporting, assurance, and GRI framework adoption mostly in the absence of the CSR committee.

Originality-This is the first study to investigate the direct and indirect effect of audit committees' attributes not only on CSR disclosure but also on GRI implementation and CSR reporting external assurance, considering the CSR committee's possible substitutability or complementarity

moderating role. This research develops a deeper understanding of audit committees' non-financial role.

Practical implications- The findings propose audit committee members be extra-vigilant in CSR reporting and assurance practices arising from undertaking substitution roles with the CSR committee. Hence, firms may configure their corporate structure in line with the results such as augmenting the audit committee with independent and expert members if they do not constitute a CSR committee. If firms establish a CSR committee, audit committee members may allocate less time to CSR reporting and assurance and more time to financial reporting quality.

Keywords: audit committee; CSR committee; CSR reporting; assurance; GRI; complementarity and substitution hypothesis

1. Introduction

The core principles of corporate governance include transparency and credibility when disclosing financial and non-financial information to let stakeholders know that companies are well-managed by accountable boards. Not only do both internal and external corporate governance mechanisms have an important role in maintaining the long-term sustainability of businesses, but also their characteristics and interactions can enhance the role played by each other in improving corporate social responsibility (CSR) reporting. Thus, corporate governance and CSR should not be considered disparate and sustained independently (García-Sánchez, et al., 2021). Effective corporate governance reduces the decoupling between CSR performance and CSR reporting (Sauerwald and Su, 2019), however, the mechanisms through which the governance affects CSR decoupling are not yet fully known (García-Sánchez et al., 2021). While the effect of corporate governance on operating performance has received great attention, the empirical investigations of the role of different corporate governance mechanisms in CSR reporting are somehow scant (Jizi *et al*., 2014). Thus, this research tries to answer: do internal corporate governance mechanisms, their characteristics and interactions affect CSR reporting? Therefore, the purpose of this study is to examine the effect of audit committee independence and expertise on CSR reporting, assurance, and global reporting initiative (GRI) adoption and how CSR committee existence moderates this relationship.

As an internal corporate governance mechanism, audit committees oversee non-financial reporting as well as financial reporting. Thus, audit committees have an important role in assuring that companies report high-quality CSR information (Mohammadi *et al*., 2021). While prior research (e.g., Khan et al., 2013; Yu et al., 2016) found that audit committee existence has a significant and positive effect on the extent of credible CSR disclosure, others found no significant relationship between the presence of audit committee and CSR reporting (e.g., Habbash, 2017). Additionally, having a separate CSR committee not only plays a symbolic reputational role, as it proves to the public a company's recognition of the importance of CSR at the top level (Rodrigue et al., 2013) but also shows the board's real commitment to assure better CSR reporting. The CSR committee's presence is positively related to the extent of the assurance statement of CSR disclosure (Rossi and Tarquinio, 2017). Moreover, to gain credibility with various stakeholders, CSR reports should be externally assured by a third party (Brown-Liburd and Zamora, 2015). These corporate governance mechanisms are configured in bundles and do not work independently (Oh et al., 2018), however, such a bundling approach has mostly been ignored in the literature (García-Sánchez et al., 2021). Therefore, we argue that transparent and credible disclosure of CSR information is affected by the audit committee characteristics, not only by the presence of an audit committee, and by the CSR committee.

Using country-industry-year fixed-effects panel logistic regression, the study analyses a large international sample of 59,172 firm-year observations from 2002-2019. We find that audit committee independence and expertise are significantly associated with CSR report assurance and GRI adoption whereas only audit committee expertise is positively associated with CSR reporting but not audit committee independence. Moderation analysis, using Hayes methodology, largely supports the existence of a substitution role between audit and CSR committees implying that audit committees are significant predictors of CSR reporting, assurance, and GRI adoption in the absence of the CSR committee. This study is expected not only to enrich the audit committee and CSR literature but also to guide managers and policymakers in addressing CSR-related issues through recognizing and enhancing the influencing corporate governance mechanisms, such as the effective attributes of audit committees.

This article contributes to the growing body of literature on the relationship between corporate governance and corporate reporting in several ways. First, most previous disclosure studies focus on the positive role of audit committees in the financial reporting and audit process (e.g., McDaniel *et al*., 2002; Zhang *et al*., 2007; Kim *et al*., 2012; Bhuiyan and D'Costa, 2020), while in this paper we are interested in exploring audit committees' positive role in non-financial reporting quality namely CSR reporting practices that are growing in importance. Second, previous studies investigated only the impact of audit committee existence on CSR reporting (e.g., Khan *et al*., 2013); therefore, our study goes beyond this limit and considers audit committees' attributes rather than merely the presence of the audit committee. Third, prior studies confirm that audit committee attributes like independence (Bronson *et al*., 2009) and expertise (Gul and Leung, 2004) ensure high-quality financial reporting, hence, we investigate whether these attributes have similar positive effects on CSR reporting. Fourth, few previous studies which considered audit committee attributes focused only on one sector such as banking (Buallay and Al-Ajmi, 2020) or one country with a limited sample such as Australia (Appuhami and Tashakor, 2017) and Iran (Mohammadi *et al*., 2021), while the current study uses one of the largest possible international samples which reinforces generalizability of the findings. Furthermore, previous research mostly examined the role of the audit committee on CSR reporting without considering whether these reports have been prepared according to GRI standards or been assured by an external party which are two of the most important elements that add to the credibility and reliability of the CSR reports. Moreover, this study is among the few pioneering papers to investigate the indirect effect of the existence of a CSR committee on the relationship between the audit committee and CSR disclosure, which has not been investigated yet. Hence, the paper expands on existing studies conducted in a small, single country, industry-specific, or short-term studies by triangulating prior research findings using an international dataset of 59,172 firm-year observations over a long 18-year period between 2002 and 2019. The paper uses fixed-effects models to address model misspecification problems. Due to the time-variant functional relationship feature of the independent and dependent variables, we applied the panel data regression analysis to alleviate the possible risk of multicollinearity and estimation bias (Baltagi, 2001). To address endogeneity concerns, we also ran a robustness test by using Two-stage least squares (2SLS) analysis and propensity score matching methodology. Therefore, to the best of the authors' knowledge, this is the first study to investigate the direct and indirect effect of audit committees' attributes not only on CSR disclosure but also on GRI implementation and CSR reporting external assurance, considering the CSR committee's possible substitutability or complementarity moderating role with the audit committee, contributing to the corporate governance bundling hypothesis. This is a recent development in the corporate governance literature, promoting a more refined approach to governance mechanisms' effect on corporate policies (Oh et al., 2018).

We organize the rest of the study as follows. We review the relevant literature, establish the theoretical background, and formulate the hypotheses in the second section. Then, we describe the research variables, sample, data preprocessing, and research methodology in the third section. In the fourth section, we report the empirical findings and state the acceptance or rejection of the hypotheses. Finally, we discuss the results considering past studies, draw conclusions, and offer theoretical and managerial implications.

2. Literature Review and Hypotheses Development

2.1. Audit committee attributes and CSR reporting

Audit committee attributes, such as members' expertise and independence, are considered significant factors in determining the role of audit committees in CSR reporting. The role of the audit committee and its independence and financial expertise attributes have been studied from different theoretical perspectives, including perspectives from the economics and psychology fields. First, from an economic perspective, agency theory suggests that audit committees, through monitoring top managements and auditors, strengthen information disclosure quality to alleviate agency costs and problems engendered by the separation of ownership and control (Bedard and Gendron, 2010), including the increase of information asymmetry concerning CSR by opportunistic managers. From an agency theoretical perspective, the higher the board committees' independence, the greater impact they will have on the monitoring process (Fama and Jensen, 1983). A more efficient monitoring role is expected by having independent directors sitting on the audit committee since they do not have a personal or economic relationship with management and can work objectively and independently from management (Musallam, 2018). An independent board committee pays higher attention to activities that increase long-term company value and transparency and enhance the perception of companies' social impact (Jizi et al., 2014). Li et al. (2012) reported that audit committee independence enhances the quality and credibility of not only financial but also non-financial disclosure. In this regard, the greater the audit committee independence level is, the stronger the supervisory and monitoring functions are. Hence, audit committee independence could favour the process of collecting and representing CSR information according to the GRI guidelines and having CSR reports externally assured. Building on the preceding discussion, this study expects that audit committee independence will have a positive effect on CSR reporting, external assurance, and GRI framework adoption.

Second, the psychological perspective relying on director expertise literature suggests that experts and non-experts are different in their decision-making and problem-solving behaviour. Thus, the expertise paradigm has been used to investigate the relationship between the financial expertise of audit committee members and the consequences of audit committee performance (Bedard and Gendron, 2010). In addition to audit committee independence, committee members' expertise is also considered a critical factor for the committee's effective functioning and oversight performance. Having sufficient accounting and finance expertise by audit committee members is required to effectively as well as independently evaluate and oversight the corporate issues that they tackle. The reality is that the committee members with accounting or finance experience are more likely to detect problems in financial reporting. While it has been reported that financial expertise is valuable in oversight of financial reporting (Agrawal and Chadha 2005), there is not the same agreement in the literature on the relevance of such expertise in CSR reporting (e.g., Yu *et al*., 2016; Appuhami and Tashakor, 2017; Mohammadi *et al*., 2021). It could be argued that audit committee members with financial expertise have a better understanding of the implications of good reporting practices in general and of compliance with best reporting standards, in particular

(Mangena and Tauringana, 2007). The financial expertise makes audit committee members more effective in ensuring compliance with rules and regulations, in general and equips them with skills to be more effective in ensuring compliance with the CSR-related GRI standard, in particular (Yu *et al*., 2016).

Despite the high attention devoted to the role of audit committees in improving CSR performance, little attention has been given to the relationship between audit committee attributes and CSR disclosure (Appuhami and Tashakor, 2017). The evidence provided in the literature about the relationship of these attributes with CSR reporting is inconclusive and mixed. For example, Buallay and Al-Ajmi (2020) report that the independence of the audit committee members has a positive relationship with the extent of CSR reporting, while their financial expertise has a significant negative association. Similarly, Mangena and Tauringana (2007) find that audit committee independence is positively associated with CSR voluntary disclosure and Musallam (2018) finds that audit committee members' financial expertise has a significant negative relationship with CSR disclosure. Likewise, a significant positive relationship between audit committee independence and CSR disclosure is reported in Australian firms (Appuhami and Tashakor, 2017) and Iranian firms (Mohammadi *et al*., 2021). On the contrary, Yu *et al*. (2016) and Mohammadi *et al*. (2021) found that the financial expertise of audit committee members has a positive and significant relationship with CSR performance and disclosure. However, Appuhami and Tashakor (2017) found no evidence that the financial expertise of audit committee members affects CSR disclosure. Raimo et al. (2021) argue that the skills of financial experts are relevant for non-financial information disclosure since they could favour quality and transparency-oriented disclosures. Even though there are mixed empirical results on the relationship between audit committee independence and different types of disclosures (e.g., Mangena and Tauringana, 2007;

Li et al. 2012) about CSR activities, opportunistic managers can increase information asymmetry because it is unregulated, unlike other disclosures. Therefore, independent audit committee members may improve the oversight process effectiveness, consequently, enhancing CSR reporting to protect stakeholders from managers' opportunistic behaviour. Thus, we argue that the investigation should not only cover the audit committee attributes' effect on whether CSR report is disclosed or not but also on whether they improve CSR reporting quality as being prepared according to GRI standards and assured by an external party[1].

CSR reporting quality can be improved by audit committee attributes, such as members' expertise and independence. It is argued, for example, that audit committee members with financial expertise can encourage companies to comply with GRI standards in CSR reporting and to get CSR reports externally audited by a third party (Shaukat et al., 2016). Complying with the GRI standard enables companies to systematically and consistently produce CSR reporting. In turn, this allows companies' stakeholders to track the development of CSR performance over time, enhancing stakeholder accountability and companies' credibility among their various stakeholders (Clarkson et al., 2008). Audit committee attributes, such as members' expertise and independence affect the decision of having CSR reports externally audited to further demonstrate a company's commitment to building stakeholder trust. We expect that audit committee members with financial expertise can realize a better monitoring role and will have a positive implication on the CSR disclosure to be externally assured and comply with GRI disclosure standards. Building on the preceding discussion, this study introduces the following first and second hypotheses:

H1: Audit committee independence has a positive association with (a) CSR reporting, (b) external assurance, and (c) GRI framework adoption.

[1] There is evidence that external assurance and GRI adoption enhances CSR report quality (Ballou et al., 2018).

H2: Audit committee expertise has a positive association with (a) CSR reporting, (b) external assurance, and (c) GRI framework adoption.

2.2. CSR committee moderating effect

CSR reporting quality can be affected not only by the audit committee but also by the presence of a CSR committee. CSR reporting depends on the efficiency of both governance committees, namely audit and CSR. However, prior corporate governance research focuses mainly on the independent effects of each governance mechanism (Aguilera et al., 2008), causing a lack of evidence on the effectiveness of these governance mechanisms' interaction (Misangyi and Acharya, 2014). For example, García-Sánchez et al. (2019) argue that CSR committees play a role in CSR activities comparable to the role of audit committees in the financial dimension of business activities without considering the interaction of CSR and audit committees. Therefore, it is recommended to examine the interdependencies of these governance mechanisms to understand their joint effectiveness (Aguilera et al., 2008). A possible reason for the inconsistency of the prior research is the oversimplified view of governance mechanisms as independent and a lesser attempt to test their joint effect on CSR reporting empirically (Oh et al., 2018). Thus, we are interested in investigating the complementary or substitution effect of the role played by these two committees on CSR reporting. Although both perspectives consider the co-occurrence of both committees, more of one means less of the other in substitution theory, while they are mutually enhanced in complementarity theory (Misangyi and Acharya, 2014).

Most previous research has been concerned exclusively with the different governance mechanisms' ability "to resolve the shareholder-manager agency problem independent of each other" (Rediker and Seth, 1995, p. 86). Although governance mechanisms have been conventionally considered substitutes for one another (e.g., Dalton *et al*., 2003; Rediker and Seth, 1995), others contended that they operate as complements (e.g., Tosi, 2008). Hassan *et al*. (2019) applied the substitution and complementary theories to examine whether an effective audit committee substitutes or complements board characteristics and found that it is positively associated with board size and board independence but negatively associated with CEO duality. In this research, we are interested in conducting a substitutability/complementarity hypotheses analysis of audit and CSR committees' role in CSR reporting, CSR report assurance, and GRI adoption in CSR reporting. In comparing the substitution and complementarity perspectives, audit and CSR committees as two corporate governance mechanisms could replace each other concerning CSR reporting oversight, from the substitution perspective. The complementarity perspective favours the co-presence of these two monitoring roles such that both committees need to be present for effective governance to occur.

As CSR reporting, assurance, and GRI compliance domains are interdisciplinary between audit and CSR committees, one may augment the other one's role. According to Liao *et al.* (2015), the CSR committee's role is like the responsibilities of the audit committee. Thus, it could be claimed that the CSR committee will complement the audit committee's work in the economic-financial area with the same diligence but paying attention to the CSR dimensions (García-Sánchez *et al*., 2019). The complementarity perspective, rather than the replacement between board committees as corporate governance mechanisms, is conceptually underlined by the mutual enhancement. It is suggested that governance mechanisms complementarily operate as their mutual presence increases each other's effectiveness (Aguilera *et al*., 2008; Tosi, 2008). It is assumed to be a synergic complementary role rather than an additive one (Ennen and Richter, 2010), where the collective outcome exceeds the outcome of each committee per se.

Conversely, from a substitution perspective (Ward *et al*., 2009), one corporate governance mechanism may reduce the effect of another. In the absence of the CSR committee, the audit committee may assume the role of the CSR committee in fostering CSR reporting, assurance, and GRI guidelines adoption. Alternatively, the audit committee may not prefer the intervention of the CSR committee in CSR reporting as it considers CSR reporting and assurance within their responsibility and sphere of influence. Therefore, when governance mechanisms act as substitutes, achieving the best outcome does not necessitate multiple mechanisms' co-existence (Oh *et al*., 2018). The substitutive view suggests that when adopting multiple governance committees at the same time, the effect of each committee will not increase (or may even become negative). If board committees may substitute each one, better CSR disclosures will not be ensured by the interference of more governance committees. If information asymmetry in a firm can be reduced because of existing audit committees, the need for an additional governance committee is smaller (Ho and Wong, 2001). Some empirical studies support this substitutive view. For example, Oh et al., (2018) find that multiple governance mechanisms mainly act as substitutes for each other to promote CSR. Therefore, it is assumed that the audit committee may replace the CSR committee, as they are mutually exclusive regarding CSR reporting governance, where only one or the other should be present and responsible for effective CSR reporting. Building on the preceding discussions, this study introduces the following hypotheses concerning the substitutability/complementarity between audit committee attributes (i.e., independence and expertise) and the CSR committee[2]:

H3: CSR committee significantly moderates the association between audit committee independence and (a) CSR reporting, (b) external assurance, and (c) GRI framework adoption.

[2] We established non-directional hypotheses reflecting both substitutability/complementarity between audit committee attributes (i.e., independence and expertise) and CSR committee.

H4: CSR committee significantly moderates the association between audit committee expertise and (a) CSR reporting, (b) external assurance, and (c) GRI framework adoption.

The analysis of substitutability/complementarity hypotheses addresses concerns about the inconclusive findings from the previous CSR studies (Oh *et al*., 2018). It suggests that the audit committee could be more positively related to CSR reporting if the CSR committee acts as a complement, but its positive effects can be diminished if the CSR committee acts as a substitute. Overall, the same governance mechanism (audit committee) may have different implications for CSR reporting, based on the arrangement of other governance mechanisms (CSR Committee). Figure 1 shows the hypothesized associations among the variables of the study.

3. Research methodology

Various analysis approaches are employed in the methodology section. Univariate as well as multivariate data analysis tools are performed. First, the data preprocessing is performed including cleaning retrieved data, missing values examination, detection of significant outliers, imputation of the missing values, and winsorization steps. Next, the univariate analysis with descriptive statistics of the included variables and the sample distribution based on year and sector is performed. Pearson's correlation analysis is performed after the univariate analysis approach. The baseline analysis incorporates the logistic panel data regression analysis and moderation analysis. Furthermore, the robustness checks of the baseline models are examined using various methods detailed in the robustness test section.

3.1. Variables

Four sets of variables are incorporated into the models in this study. First, dependent variables are three binary variables denoting whether a firm disseminates a CSR report (CSRreporting), assures its CSR report with a third party (CSRextassur), and adopts the GRI framework (GRIframe) in preparing its CSR report (Du and Wu, 2019; Karaman *et al*., 2020). Second, independent test variables are two audit committee proxies namely audit committee independence (Audindepend) and expertise (Audexpertise) (Be´dard *et al*., 2004; Lee and Fargher, 2018). In line with prior studies (Iliev and Roth, 2018; Kılıç et al., 2021), while audit committee independence is proxied by the percentage of independent members on the audit committee, audit committee expertise is proxied by the score depending on the existence of an audit committee having at least three members and being at least one "financial expert" within the meaning of Sarbanes-Oxley. Third, moderating variable is assessing whether a firm has a CSR committee or not (CSRcommit) (Kılıç *et al*., 2021). Finally, control variables are containing board attributes such as board size (Boardsize), board independence (Boardindep), board gender diversity (Boarddivers), and CEO duality (CEOduality), financial characteristics such as firm size (Firmsize) proxied by the natural logarithm of total assets, profitability (return on assets), and Leverage (total debt scaled by total assets), and ownership structure (free float percentage) (Khlif and Souissi, 2010; Karaman *et al*., 2020; Shahbaz *et al*., 2020). We selected board-related control variables as they are intensively discussed and investigated in the past literature concerning board monitoring's strength, board decision-making, and CSR engagement of firms. For example, while board size is argued to have larger communication problems and generate greater agency problems (Cheng, 2008), board independence and gender diversity are considered important board monitoring mechanisms and stimulators of CSR engagement and reporting (Kiliç et al., 2015; Ullah et al., 2019; Shahbaz et al., 2020). On the other hand, CEO power is considered detrimental to stakeholder engagement and exacerbates agency conflicts (Muttakin et al., 2018; Shahbaz et al., 2020). Moreover, larger and more profitable firms are expected to have a greater commitment to CSR reporting as they are exposed to greater stakeholder scrutiny and may have greater resources to deploy for CSR reporting, highly leveraged firms try to meet borrowing costs via CSR engagement (Kuzey and Uyar, 2017; Bhuiyan and Nguyen, 2020). Furthermore, ownership structure may play role in inducing firms to be more opaque or transparent depending on the shareholders' expectations (Gamerschlag et al., 2011; Majumder et al., 2017; Karaman et al., 2018). Table A1 includes the list of variables with the corresponding explanation of each variable in the Appendix.

3.2.Sample

The research sample has firm-year observations having CSR-related data in the Thomson Reuters Eikon database between 2002 and 2019. The sample term begins with the year 2002 as it is the first year of GRI adoption in the Thomson Reuters Eikon database and ends with 2019 as it is the latest year the data were available at the time, we collected data. Since the data screening process is a crucial step before further analysis (Hair *et al*., 2019), missing data analysis, winsorization, the examination of possible outliers, and imputation of the missing values are carefully examined in this phase. First, the data set is cleaned after the data retrieval. The string characters within numerical values are cleaned and the variables are organized for the analysis, where the first row is for the variable names and the rest of the rows are for the records. Then, possible extreme values are examined by checking the initial descriptive statistics of the included variables. Accordingly, the preliminary descriptive analysis shows that the control variables including Boardsize, Profitability, and Leverage had extreme skewness. Thus, these control variables were winsorized in both lower and upper tails at one percent.

Following the data screening process, possible outliers are examined. A multivariate outlier detection approach is utilized. For this, the minimum covariance determinant -MCD analysis tool is used which can robustify the Mahalanobis distance (Verardi and Dehon, 2010). The results of

MCD yielded 13 significant outliers. After removing the extreme outliers based on the MCD approach, the final sample includes 59,172 observations.

In the next step, missing value analysis with imputations of them are investigated. The initial summary statistics of the missing records show that some of the variables had missing values with relatively small percentages. Accordingly, the results indicate that Audindepend had 7.82%, Boardsize had 0.35%, Boardindep had 2.63%, Boarddivers had 1.61%, Freefloat had 0.91%, Profitability had 0.58%, and Firmsize and Leverage had 0.22% firm-year missing records for the 18 years between 2002 and 2019. The missing value analysis results indicate that the missing values of the recorded variables are significantly less than 10%. According to Bennett (2001), analysis with more than 10% missing values can likely generate biased results during statistical analysis. The missing values of the indicated variables were subject to further data screening process of imputation since the current variables with missing values do not cause any possible biased analysis results. These variables were subject to imputations with the MCMC-Markov Chain Monte Carlo approach. Therefore, the variables with missing values were imputed before further analysis.

The final sample distribution concerning year and sector is presented in Table 1. The records in the early years are relatively small with 410 in 2002, and 657 in 2003 while there are relatively large firm-year observations in the most recent years with 6,120 in 2017, 6,838 in 2018, and 7,702 in firm-year observations in 2019. This trend shows the evolution of CSR engagement among firms over the years. Furthermore, the distribution of the sample indicates that 10.15% of the firm-year observations are from basic materials, 14.67% are from consumer cyclical, 6.92% are from consumer non-cyclicals, 6.79% from energy, 22.53% are from financials, 7.07% are from healthcare, 16.27% are from industrials, 8.77% are from technology, 2.63% are from telecommunication service, and 4.21% are from utility sectors. According to the sample distribution, the final sample size is 59,172 firm-year records. Finally, the country-level sample distribution is examined (Table A2 in the Appendix section). There are 65 countries with 7,702 unique firms out of which 36.42% are from the United States, 6.14% are from the United Kingdom, 6% are from Chine, and 5.73% are from Japan, among others. Also, there are 59,172 data points with 31.76%-United States, 10.10%-Japan, 7.72%-United Kingdom, 5.57%-Australia, and 5.03%-Canada, among others.

[Insert Table 1 here]

3.3.Research model

The formulation of the research models and the selection of the appropriate methodology are explained in this section. Panel logistic regression analysis is chosen to test the proposed hypotheses due to the structure of the data as well as the dependent variables. The proposed dependent variables are in binary categorical variables and the sample is in a firm/year longitudinal data format. Thus, the most appropriate analysis tool is the panel logistic regression method. Besides the panel data set aspect of the research sample, a further post-estimation test is utilized to decide between ordinary logistic regression and shows the independent variables. For this, a LR-likelihood-ratio test of "ρ (rho)=0" is examined to choose between an ordinary (pooled logistic regression) and panel logistic regression analyses. The term "ρ" is defined as the proportion of total variance which is contributed by the panel-level variance component. Accordingly, a panel regression analysis (panel estimator) is not different from ordinary logistic regression if ρ is zero. The preliminary analysis results of LR test of rho shows that (*Model1: $\chi 2$-stat/01 = 23000, p-value: 0.000; Model2: $\chi 2$-stat/01 = 14000, p-value: 0.000; Model3: $\chi 2$-stat/01 = 12000, p-value: 0.000*) ρ(rho)'s is significantly different from zero in each research model. Therefore, the proposed hypotheses should be tested using panel data logistic regression instead of ordinary logistic regression.

The baseline research models are investigated using the Country-Industry-Year Fixed-Effects (FE) panel logistic regression approach to deal with the unobserved heterogeneity. Moreover, it is used to maintain the assumption of unobserved fixed-effects being correlated with the main explanatory variables since the financial and accounting-related research focuses on information that reflects time-invariant characteristics. Therefore, the country-industry-year FE is chosen as the most appropriate tool to alleviate potential time-invariant endogeneity threats (Nunn, 2007; Feenstra et al., 2013; Schons & Steinmeier, 2016; Rjiba et al., 2020).

There are advantages of utilizing panel data regression analysis instead of linear regression analysis: such as a possible risk of multicollinearity is alleviated when using the panel regression approach as well as any biases in the estimations process are reduced (Baltagi, 2001).

Equation (1) represents the research models below.

$$P(Y = 1 \mid X_{i1}, X_{i2}) = F(\beta_0 + \beta_1.X_{i1} + \beta_2.X_{i2}) \text{ where } F \text{ is the logistic distribution function } F(z)=exp(z)/(1+exp(z)) \quad (1).$$

In the formulated model above, "*Y*" shows CSRreporting (Model 1), CSRextassur (Model 2), and GRIframe (Model 3) which are binary dependent variables where one indicates the existence of CSRreporting, CSRextassur, and GRIframe and zero indicates otherwise. Also, "X_{i1}" shows the independent variables including Audindepend and Audexpertise. Moreover, the term "X_{i2}" represents the control variables and the country, industry, and year fixed-effects including Boardsize, Boardindep, Boarddivers, CEOduality, Firmsize, Profitability, Leverage, Freefloat, country effect, industry effect, and year effect.

Multicollinearity analysis

The multicollinearity analysis is performed if there is any high correlation between the independent variables. The Variance Inflation Factor (VIF) of the independent variables is calculated to address the risk of high correlation (Please see Table A3 in the Appendix section). The highest values of VIF were 1.64 in Model 1, 1.59 in Model 2, and 1.59 in Model 3. The VIF values range between 1.02 and 1.64. The values of VIFs indicate that there is no multicollinearity issue among the independent variables since they are significantly less than the suggested threshold value of 10 (Neter et al., 1996; Kennedy, 2008; Hair et al., 2019).

3.4. Moderation analysis

Moderation analysis incorporates the moderating role of CSRcommit to the relationship of the independent variables with the dependent variables. The empirical model is formulated in Equation 2 below.

$P(Y = 1 \mid X_{i1}, M_i, X_{i2}) = F(\beta_0 + \beta_1.X_{i1} + \beta_2.M_i + \beta_3.X_{i1}*M_i + \beta_2.X_{i2})$ *where F is the logistic distribution function* $F(z)=exp(z)/(1+exp(z)$ *(2).*

In Equation 2, the moderator variable (M_i) is indicated by CSRcommit; the independent variables (X_{i1}) are indicated by Audindepend and Audexpertise; the dependent variables (Y) are represented by CSRreporting, CSRextassur, and GRIframe; and the control variables including the country effect, industry effect and year effect are represented by (X_{i2}). The moderation analysis is based on Hayes' (2018) methodology using a Stata module developed by Jose (2013). The Huber-White sandwich estimator (Huber, 1967; White, 1980), as the robust standard errors are reported to eliminate any possible risk of heteroskedasticity issue, is implemented throughout the regression analysis.

4. Empirical Findings

4.1. Descriptive statistics

The summary statistics of the research variables are examined (Table 2) in which the numerical variables are summarized based on their average, variability, minimum, and maximum values while the categorical variables are summarized based on the frequency and the corresponding percentages of the categories of each variable. The results show that 49.10% of firm-year records have CSRreporting, 42.96% of records with the existence of CSRreporting have CSRextassur while 62.31% of records with the existence of CSRreporting have GRIframe adoption. Besides, the results indicate that the mean Audindepend is 85.08% ± 25.79% and the mean Audexpertise is 53.33% ± 30.45. Regarding the moderator variable, 43.72% of the firm-year records indicate the existence of CSRcommit.

[Insert Table 2 here]

4.2.Correlation analysis

The pairwise linear correlation coefficients are examined using Pearson's correlation coefficients (Table 3). Based on the results, Audindepend has a significant negative correlation with CSRreporting and CSRextassur while it does not have a significant bivariate correlation with GRIframe. Furthermore, the result shows that Audexpertise has a significant negative correlation with CSRreporting, CSRextassur, and GRIframe.

[Insert Table 3 here]

4.3.Baseline models

The country-industry-year fixed-effects logistic regression analysis is used for testing the proposed hypotheses. The results are presented in Table 4. Column #1 incorporates the full sample, while Columns # 2 & 3 incorporate sub-samples with the existence of CSRreporting. The results reveal that Audindepend has a significant and positive relationship with CSRextassur ($p<0.01$), and GRIframe ($p<0.05$). Moreover, Audexpertise has a positive and significant association with

CSRreporting ($p<0.01$), CSRextassur ($p<0.01$), and GRIframe ($p<0.05$). Hence, while H1b and H1c concerning the positive relationship between audit committee independence and CSR external assurance and GRI framework adoption holds, H1a concerning audit committee independence and CSR reporting relationship does not. Furthermore, the hypotheses H2a, H2b, and H2c hold regarding the positive association between audit committee expertise and CSR reporting, external assurance, and GRI framework adoption respectively.

Thus, the positive association between the audit committee quality (i.e., proxied by the independence and expertise) attributes and CSR reporting, assurance, and GRI adoption provides supplementary evidence to the prior studies' inconclusive results in different contexts. While the results confirm Mohammadi et al. (2021) in Iran who found that audit committee independence and expertise are positively associated with CSR[3], they partially confirm Appuhami and Tashakor (2017) in Australia, Buallay and Al-Ajmi (2020) in the GCC[4], and Musallam (2018) in Palestine. Because, while both Appuhami and Tashakor (2017) and Buallay and Al-Ajmi (2020) found positive evidence for audit committee independence's association with CSR disclosure, they found insignificant and negative evidence for audit committee financial expertise's association with CSR disclosure respectively. Our results also depart from Musallam (2018) who found CSR disclosure's insignificant association with audit committee independence and negative association with audit committee financial expertise. Thus, our evidence extends those prior country-level studies' findings particularly by providing evidence for the audit committee's financial expertise's positive association and CSR reporting, assurance, and GRI adoption[5]. The evidence we found supports agency theory which implies that audit committee quality is an important board monitoring

[3] This study is about CSR performance, unlike our study which is about CSR reporting, assurance, and GRI adoption.
[4] Gulf Cooperation Council.
[5] Appuhami and Tashakor (2017), Buallay and Al-Ajmi (2020), and Musallam (2018) are on CSR disclosure not on assurance and GRI adoption.

mechanism (Fama and Jensen, 1983; Bedard and Gendron, 2010; Al Farooque and Ahulu, 2017). While the independence of the audit committee ensures its efficient and objective functioning independent from management (Musallam, 2018), hence, enhancing CSR disclosure quality and credibility (Li *et al*., 2012), the committee's financial expertise might foster the CSR report's compliance with assurance and GRI standards (Yu *et al*., 2016; Raimo *et al*., 2021).

[Insert Table 4 here]

4.4.Moderating effect of CSR committee

The moderation role of CSRcommit on the relationship of independent variables (Audindepend & Audexpertise) and dependent variables (CSRreporting, CSRextassur, and GRIframe) are investigated using the country-industry-year FE logistic regression analysis. The results are shown in Table 5, where Columns #1 & 2 incorporate the full sample, while Columns # 3, 4, 5, & 6 incorporate a sub-sample (existence of CSRreporting). The moderating variable, CSRcommit, is a binary categorical variable for which one represents the existence of CSRcommit and zero represents otherwise. The results reveal that the interaction term *Audindepend*CSRcommit* has a significant and positive association with CSRreporting ($p < 0.10$) while *Audexpertise*CSRcommit* has a significant negative association with CSRreporting ($p<0.01$). Thus, CSRcommit has a moderating effect on the relationship between independent variables (Audindepend and Audexpertise) and CSRreporting since the interaction terms are statistically significant (Columns #1 & #2). This lends support to H3a and H4a.

In addition, the results indicate that the interaction terms *Audindepend*CSRcommit* ($p<0.10$) and *Audexpertise*CSRcommit* ($p<0.10$) have a significant and negative relationship with CSRextassur. More specifically, CSRcommit is a significant moderator of the association of

Audindepend and Audexpertise with CSRextassur since the interaction terms are statistically significant (Columns #3 & #4). This lends support to H3b and H4b.

Finally, according to the results, *Audindepend*CSRcommit* ($p<0.10$) and *Audexpertise*CSRcommit* ($p<0.01$) have a significant and negative association with GRIframe. Hence, CSRcommit is a significant moderating variable on the association of Audindepend and Audexpertise with GRIframe since the interaction terms are statistically significant (Columns #5 & #6). This lends support to H3c and H4c.

Thus, while five outputs support the substitution hypothesis (H3b, H3c, H4a, H4b, H4c) between audit committee attributes and CSR committee in stimulating CSR reporting, external assurance, and GRI framework adoption, one output confirms the complementarity hypothesis (H3a) between audit committee independence and CSR committee.

Hence, the findings provide empirical evidence on internal governance mechanisms' role in CSR reporting practices. We focus on interdependence and joint effectiveness of audit and CSR committees in fostering CSR reporting, assurance, and GRI adoption assuming their substitutive or complementary role (Misangyi and Acharya, 2014). While the substitution perspective asserts that one corporate governance mechanism may reduce the effect of another (Ward et al., 2009), the complementary perspective posits that a bundle of corporate governance mechanisms creates a synergy (Ennen and Richter, 2010; García-Sánchez et al., 2021). Based on this theoretical argument, we found support for the substitutive role between audit committee quality and CSR committee (Dalton et al., 2003; Rediker and Seth, 1995), and hence, reject their complementary role except for one instance; audit committee independence and CSR committee interaction (Tosi, 2008). In prior studies, there is evidence for both substitutive and complementary roles between CSR committees and other governance mechanisms. For example, while our finding supports Oh et al. (2018) who found multiple governance mechanisms' substitutive roles for each other to promote CSR, it both confirms and contradicts García-Sánchez et al. (2021) depending on the chosen board attributes. García-Sánchez et al. (2021), while the CSR committee has a substitutive role with board independence, it has a complementary role with board gender diversity in stimulating CSR report assurance existence.

[Insert Table 5 here]

4.5. Robustness tests

To check the robustness of the analysis results of the baseline models, various further tests are employed namely (1) excluding three specific sectors from the sample such as financials, energy, and utilities, (2) using alternative control variables, (3) running Instrumental Variable with Two-Stage Least Squares (2SLS) regression analysis, (4) using random-effect (RE) estimator as an alternative method, (5) controlling for countries' governance quality, and (6) generating alternative sample based on Propensity Score Matching (PSM). Justifications for robustness tests and their outputs are highlighted and reported below.

4.5.1. *Excluding three particular sectors*

We ran a robustness test by excluding financial, and energy, utility sectors as these sectors are likely to be regulated in terms of CSR reporting and/or assurance (Casey and Grenier, 2015; Hamrouni et al., 2019). The baseline models are re-run using panel logistic regression analysis (Table 6). Regarding the linear associations, the results are almost compatible with the initial analysis results except for two associations (Table 6). While Audindepend has a significant positive association with CSRreporting in the robustness check, it is not so in the baseline analysis. Furthermore, Audexpertise and GRIframe have an insignificant association in this robustness test, whereas they are significantly and positively associated in the baseline analysis. Furthermore, we ran a similar test for the moderation analysis and reported the results in Table 7 which also confirm the validity of the baseline moderation analysis reported in Table 5.

[Insert Table 6 here]

[Insert Table 7 here]

4.5.2. Alternative control variables

The baseline analysis is re-run by trying a list of alternative control variables to see that the results are robust to alternative variables (Amin and Liu, 2020). For this, profitability, leverage, and firm size are replaced with their alternative counterparts. The results are presented in Table 8, under which footnotes specify which alternative variables were used. The baseline models with the alternative control variables are re-run using panel logistic regression analysis. The results reported in Table 8 largely support the findings reported in Table 4 with two exceptions (the same as the robustness test in section 4.5.1). Furthermore, we ran a similar test for the moderating effect and reported the results in Table 9. The outcome of this robustness test confirms the baseline moderation analysis (Table 5) except for the moderating effect of *Audindepend*CSRcommit* which does not have a significant association with GRIframe.

[Insert Table 8 here]

[Insert Table 9 here]

4.5.3. Two-stage least squares (2SLS)

In the next robustness check, the baseline model is subject to a two-stage least square instrumental variable regression analysis for panel data (Chen and Al-Najjar, 2012). The Durbin-Wu-Hausman test which compares the coefficients of ordinary regression analysis and 2SLS regression analysis is applied for which the null hypothesis is that the regressors are exogenous. The results of the Durbin-Wu-Hausman test indicate that the independent variables (Audindepend and Audexpertise) are endogenous regressors (p-values<0.05). Thus, we need to use the instrumental variable analysis approach (Hausman, 1978; Nakamura and Nakamura, 1981, Davidson and MacKinnon, 1993). Thus, Instrumental Variable Regression Analysis with 2SLS is utilized. To perform the 2SLS methodology, we used one-year lag values of Audindepend and Audexpertise (independent variables) as the instrument variables which can be correlated with the endogenous variables while they do not correlate with the error term (Wooldridge, 2010, Wooldridge, 2013; Ngare *et al*., 2014; Bellemare *et al*., 2017, Godos-Díez *et al*., 2018). There are various advantages of using the 2SLS methods. By utilizing the 2SLS, possible endogeneity and omitted variable bias are controlled (Angrist and Alan, 2001). Furthermore, it is a commonly chosen approach: (i) to handle endogeneity issues that may be caused by some independent variables that are correlated with unobserved error term; and (ii) it is also used to alleviate the parameter estimation inconsistency caused by endogeneity issue in accounting and finance research (Larcker and Rusticus, 2010). Thus, it is utilized to remove the correlations between the independent variables and the error term. By employing the 2SLS methodology, the endogeneity and the omitted variable bias are controlled (Wooldridge, 2013; Sun and Yu, 2015; Cui *et al*., 2018).

The results of 2SLS (Table 10) show that Audindepend and Audexpertise have a significant and positive association with CSRreporting, CSRextassur, and GRIframe. In summary, the results in the robustness analyses are largely consistent with those obtained from the baseline analysis. In the robustness with 2SLS (Chen and Al-Najjar, 2012), we obtained a statistically significant relationship between Audindepend and CSRreporting, whereas the result was insignificant in the baseline analysis for the same association.

[Insert Table 10 here]

4.5.4. Alternative estimator

We re-run the baseline research models using an alternative estimator. The random-effects (RE) panel logistic regression analysis is used as an alternative approach. The research models are re-run (Table 11 and Table 12). The results for the direct associations largely confirm the baseline analyses reported in Table 4 with two exceptions (the same as the robustness test in section 4.5.1). Moreover, regarding the moderating effect of CSRcommit, the results are compatible with the initial analysis results (Table 12).

[Insert Table 11 here]

[Insert Table 12 here]

4.5.5. Controlling for governance quality of nations

Presuming that country-level governance strength could play role in the hypothesized relationships, therefore, we controlled countries' governance quality by controlling World Governance Indicators (WGI). It is calculated by the average of six governance indicators namely voice and accountability, political stability, absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption based on a scale of -2.5 to 2.5 (WorldBank, 2021). Regarding the linear associations (Table 13), the results are almost compatible with the initial analysis results except for two associations (the same as the robustness test in section 4.5.1). Moreover, regarding the moderating effect of CSRcommit, the results are compatible with the initial analysis results (Table 14).

[Insert Table 13 here]

[Insert Table 14 here]

4.5.6. Propensity Score Matching (PSM)

Finally, the Propensity Score Matching (PSM) method (Leuven and Sianesi, 2003) is utilized to generate an alternative sample to mitigate any potential endogeneity concern which is a widely used approach in accounting research (Peel and Makepeace, 2012). A binary variable from the two audit committee proxies is generated. The observations with top quartile values of the audit committee variables of interest are used as the treatment group while the rest of the observations are used as the control group for performing the PSM method. Following the generating of the alternative sample based on the PSM approach, the baseline research models are re-run (Table 15). The results of the linear associations and the moderation effects are compatible with the baseline analysis results in the robustness check.

[Insert Table 15 here]

In consequence, the findings are mostly robust to an alternative sample, alternative controls, institutional quality, and endogeneity concerns.

5. Discussion, Conclusions, and Implications

It is doubtless that CSR reporting and assurance assigned new roles to auditors and audit committees in the corporations. With the advance of CSR reporting and assurance, a growing body of academic research is trying to explore how auditors and audit committees are repositioned in this field to help firms improve their transparency and accountability practices through CSR reporting and assurance practices. Although some current studies examined the effect of the audit committee characteristics with either CSR reporting or assurance, they largely ignored how the CSR committee moderates the role of audit committees on CSR reporting and assurance along with GRI framework adoption in reporting. Hence, this study aims to fill this gap by mainly testing the effect of audit committee attributes on CSR reporting, assurance, and GRI framework adoption practices and by investigating how organizational contingency moderates this main connection.

Thus, it investigates moderating effect of the CSR committee on the association between audit committee characteristics and CSR reporting and assurance practices, and GRI framework adoption. With moderating effect of the CSR committee, the study examines the complementarity or substitution role between audit and CSR committees. Hence, the study aims to provide both practical implications for organizations and practical and theoretical implications for the auditing field. The study responds to the call of Cohen and Simnett (2015) for prospective research studies by incorporating corporate governance mechanism and organization features to produce a CSR report and assure it.

The conclusions that could be drawn from the study are as follows. First, audit committee independence is significantly associated with CSR report assurance and GRI framework adoption. Moreover, audit committee expertise is a significant predictor of CSR reporting, assurance, and GRI framework adoption. In consequence, it appears that audit committee members have rapidly configured themselves for this emerging type of corporate reporting and assurance which is, in nature, distinct from auditing financial reports (Zhou *et al*., 2019; Dalla Via and Perego, 2020). Second, moderation analysis largely supports the existence of a substitution role between audit and CSR committees with one exception. Both audit committee independence and expertise are more influential in CSR report assurance and GRI framework adoption in the absence of the CSR committee. However, while audit committee independence is more effective in CSR reporting in the presence of a CSR committee, audit committee expertise is more effective in CSR reporting in the absence of a CSR committee. The results validate that if one corporate governance mechanism has a substitutive relationship with other governance mechanisms, its impact on CSR reporting can diminish or even obliterate the other one's role (Oh *et al*., 2018). Unlike the substitutive relationship between audit committee independence and CSR committee in driving assurance and

GRI, the finding supporting the complementary relationship between audit committee independence and CSR committee in driving CSR reporting could be explained by differentiating the samples of these two types of analyses. While the full sample is used when the dependent variable is CSR reporting, the sub-sample of CSR reporters is used when the dependent variables are assurance and GRI. Hence, the contradicting findings imply the differences in characteristics of independent audit committee members in these two samples. Overall, our findings expand prior studies that focused on the direct association between audit committee characteristics and CSR reporting or assurance and found inconclusive results (Appuhami and Tashakor, 2017; Buallay and Al-Ajmi, 2020). The results are robust to endogeneity concerns, alternative sampling, variables control variables, controlling for country-industry-year effect, and additional control variables.

The theoretical and practical implications of the study are as follows. Organizational contingency plays a significant role in audit committees' undertakings in the CSR reporting and assurance domain. The direct link between audit committee attributes and CSR reporting and assurance supports the propositions of agency and stakeholder theories. Furthermore, in line with the substitution hypothesis, two corporate governance mechanisms (audit and CSR committees) play a substitution role in CSR reporting, assurance, and adopting GRI guidelines in CSR reporting. The findings propose audit committee members be extra-vigilant in CSR reporting and assurance practices arising from undertaking substitution roles with the CSR committee. Hence, firms may configure their corporate structure in line with the results such as augmenting the audit committee with independent and expert members if they do not constitute a CSR committee. If firms establish a CSR committee, audit committee members may allocate less time to CSR reporting and assurance and more time to financial reporting quality.

Our findings should be considered with the following limitations. First, the CSR committee is a binary variable that denotes the existence or not of such a specific committee; hence, it does not assess the qualification of the team members. Second, the CSR reporting variable is a binary proxy that does not assess the scope of the reporting. These limitations also suggest some future research opportunities to overcome such limitations if data exist, for example in some country-level studies. Furthermore, although relevant literature is growing at a rapid pace, more studies incorporating auditor or audit committee characteristics are needed to expand the scope of CSR reporting and assurance. For example, prospective research may extend our investigation by exploring whether there is a tradeoff between external audit quality and CSR committee in fostering CSR reporting and assurance. Moreover, whether the audit committee characteristics augment the value-relevance of CSR reporting and assurance is worth investigating as the value relevance of CSR reporting and assurance per se is inconclusive in the past literature.

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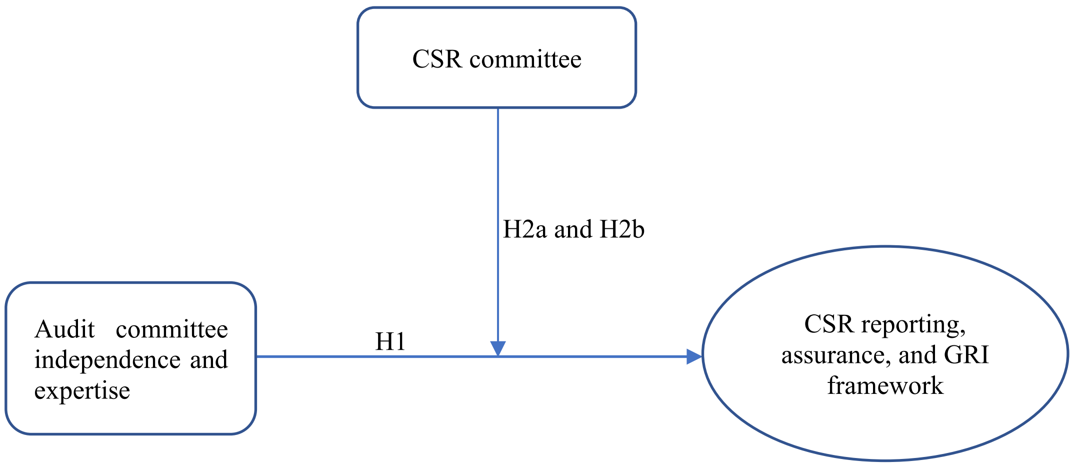

Figure 1: The figure depicts the theoretical structure of the study. The construct on the left is audit committee characteristics. The construct on the right is CSR reporting, external assurance, and GRI framework adoption. The upper construct is the moderator namely CSR committee