

The homogeneity of BIG4 audit reports after the implementation of key audit matters in the context of fair value accounting

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This study examines the homogeneity of BIG4 audit reports after implementing key audit matters (KAMs) in the context of fair value accounting. We focus on reported KAMs and the procedures related to the fair values of investment properties, particularly those related to challenging management's estimations and valuation specialists' use. Our data consist of 235 individual audit reports from the real estate sector from 2017 to 2018 and cover 60% of the listed real estate companies in the EU, Switzerland, and Norway. We found that the BIG4 audit firms are not homogenous in their audit reports. There is a statistically significant difference among the BIG4 audit firms in reporting the challenge of management estimates and in the number of audit procedures. We also found that a country's legal origin plays a significant role when auditors report KAMs. Our findings contribute to the current audit quality and reporting literature.

KEY WORDS

audit quality, BIG4, fair value, IFRS, investment properties, key audit matter, the challenge of management estimation, use of specialists

1 | INTRODUCTION

When assessing audit quality, the BIG4 audit firms have been considered a single entity (Bennouri et al., 2015; DeAngelo, 1981). Grouping is based on the assumption that the BIG4 audit firms have more to lose (because of reputation capital), which encourages the BIG4 audit firms to produce higher quality audits than non-BIG4 firms (Choi et al., 2008; Compris & Huang, 2015; Coram, 2014; DeAngelo, 1981).

Even though audit quality has not been explicitly determined, various studies have concluded that the audit quality of BIG4 audit firms is better than that of non-BIG4 audit firms (Becker et al., 1998; Francis & Krishnan, 1999; Kim et al., 2003; Sercu et al., 2002;

Simunic & Stein, 1987). BIG4 audit firms also face more litigation than non-BIG4 audit firms because of the deep pocket hypothesis, which encourages the firms to perform at a higher quality (Khurana & Raman, 2004; Krishnan et al., 2017; Palmrose, 1988).

There is no unambiguous definition of audit quality (Francis, 2004; Knechel et al., 2013), but some regulators have established an audit quality framework (FRC, 2008; IAASB, 2011), and there is a common understanding of the elements of audit quality (Francis, 2004; Knechel et al., 2013). One stream of audit report research (presenting audit quality) recognizes the importance of wording in audit reports (Bédard et al., 2019; Christensen et al., 2014; Menon & Williams, 2010).

Previous studies on audit report quality have indicated one element of audit quality (e.g., Financial Reporting Council [FRC], 2008;

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Francis, 2004; Francis & Krishnan, 1999; Weber & Willenborg, 2003). Furthermore, clear and transparent reporting has been considered a characteristic of audit quality (Knechel et al., 2013; Knechel & Shefchik, 2014; Reid et al., 2015; Segal, 2019). In addition, transparent reporting clarifies the performed audit procedures beyond those described in audit standards, which can enhance audit quality (Jermakowicz et al., 2018).

In the current study, we are particularly interested in the homogeneity of BIG4 audit reports after implementing key audit matters (KAM). When BIG4 audit firms are considered a homogeneous group in audit quality, there should be no significant qualitative or materiality differences among the audit reports' transparency or reported audit procedures. Although auditing standards do not provide templates for reporting KAMs, they guide audit work (ISA 701 - *Communicating key audit matters in the independent auditor's report*). Therefore, because the required audit procedures affect reporting (ISA 701.13b, ISA 701.A46-A51), we can assume that reporting transparency will still be at the same level among the BIG4 audit firms and other audit firms and that the quality of the audit will be consistent and high quality.

Previous studies have shown that the BIG4 audit firms are a homogenous group when it comes to audit quality (DeAngelo, 1981; Defond et al., 2000; Ferguson et al., 2003; Francis, 2004; Francis & Krishnan, 1999; Francis & Wilson, 1988; Simunic & Stein, 1987). Previously, though, the differences among BIG4 audit firms have been recognized at the fee level (Simunic, 1980), in industry specialization (Ferguson et al., 2003; Francis et al., 2005), and within transparency reports (Fu et al., 2015). However, the differences in audit quality among the BIG4 audit firms have not been recently studied.

In the current paper, we approach the homogeneity of BIG4 audit reports using the concept of equifinality, which means that the final results can be reached from different initial conditions and in different ways (Grezov & Drazin, 1997). Equifinality is a strategic choice of organizational design to achieve high performance (see Child, 1972; Grezov & Drazin, 1997). The fundamental question in equifinality revolves around the organizational processes that generate equifinality. Because the premise in the current study is that all BIG4 audit firms strive to maintain high-quality audits, that is, equifinality in high-quality audits, we are particularly interested in how the auditing processes of BIG4 firms differ (in auditing reports in forms of KAM) in the real estate sector when generating quality audits.

Previous studies have shown that countries' legal origins impact auditors' behaviour (Alexeyeva & Mejia-Likosova, 2016; Choi et al., 2008; Eierle et al., 2021; Kim et al., 2012). Porta et al. (1998) recognized that legal origins are different relating to the protection of investors. There has been a recognized positive association between earnings quality and investor protection, and legal origins can affect auditors' behaviour to avoid legal liability (Alexeyeva & Mejia-Likosova, 2016; Ball et al., 2000). The legal origin could impact the content of the auditors reporting.

The current study examines the homogeneity of audit reports by KAMs disclosed by the BIG4 audit firms in the real estate sector, connecting these reports with the audit of the fair values of investment

properties in the EU, Switzerland, and Norway. In these countries, publicly listed companies follow International Financial Reporting Standards (IFRS), allowing the recognition of investment properties at fair value (IAS 40.30) (IASB, 2016b) and fair value change to recognize profit and loss accounts (IAS 40.35).

The real estate sector provides an excellent opportunity to examine an auditor's procedures and reporting in more detail. The value of investment properties usually forms a significant part of the financial year's results and balance sheet's value in the real estate industry (Muller et al., 2011; Sangchan et al., 2020). In addition, previous studies have recognized that investment properties in the real estate sector comprise about 70–80% of total assets (Muller et al., 2011; Sangchan et al., 2020), while other assets are not relevant to an individual basis. In addition, although in other business sectors, investment properties or fair value changes, which are recognized through profit and loss, are widely used, the real estate sector can provide a closed research environment. Other businesses than real estate noise would not disturb the results. Our study covers 60% of the listed real estate companies in the EU, Switzerland, and Norway.

The current study contributes to the audit literature in several ways. First, we contribute to Glover et al.'s (2017) study on the challenges in auditing fair value measurements and complex estimates. Although Glover et al.'s (2017) study is based on a survey of audit partners, our study focuses on the actual reporting from the published audit reports. Glover et al. (2017) report that 87% of partners use a specialist for nonfinancial fair value audits. Our results show that 50% of audit reports indicate that a specialist has been used. When Glover et al. (2017) report that 87% of auditors use specialists, the statements written on audit reports do not support this finding. Second, we contribute to Asbahr and Ruhnke's (2019) study of the real effect of reporting KAMs on auditors' judgement and choice of action. Asbahr and Ruhnke (2019) show that sceptical actions tend to be lower when the accounting estimates are reported as a KAM. We have found that 50% or less of auditors reported sceptical procedures on published KAMs. Third, we contribute to previous studies regarding the differences among the BIG4 audit firms by giving a new angle for comparing companies. Previous studies have concentrated on fee differences (Simunic, 1980), specialization (Ferguson et al., 2003), and transparency reports (Fu et al., 2015). Our study provides information about the reporting style among BIG4 audit firms, showing statistically significant differences in the reported tasks on the audit reports. Fifth, we contribute to the overall research on audit reputation and quality by adding detailed evidence of the work reported by the auditor, hereby showing a statistically significant difference when it comes to reporting in the use of valuation specialists and the challenge of management. Finally, the current study also gives audit practitioners and inspectors detailed information about the wording of KAM in one special area—the fair value of investment properties—and gives new insights into how to provide helpful information to the users of audit reports. In addition, the current study provides new information on the prevalence of reported sceptical procedures relating to challenging audit tasks and how auditors can improve their reporting.

Our paper is structured as follows: In this section, we have introduced the field of our research topic. In Section 2, we describe accounting treatment under the IFRS for investment properties. Section 3 provides an overview of fair value accounting. Section 4 provides a theoretical background on KAM. In Section 5, we present our research questions. Sections 6 and 7 present our data and the main findings. Finally, we conclude and discuss our theoretical contribution in Section 8.

2 | ACCOUNTING FOR INVESTMENT PROPERTIES IN THE REAL ESTATE SECTOR

Investment properties play a vital role in the real estate sector. Typically, investment properties comprise 70–80% of the total assets in the real estate sector (Sangchan et al., 2020). The accounting guidance for investment properties under the IFRS is based on IAS 40 – *Investment properties*. IAS 40 – *Investment properties* give two alternatives for accounting: fair value or at cost (IAS 40.30). Under the fair value model, fair value change is recognized through profit and loss (IAS 40.35) at each reporting date, and no depreciation is recognized. When investment properties are recognized at cost, the valuation of the investment properties should be based on IFRS 5 – *Noncurrent assets held for sale and discontinued operations* (if the assets meet the classification criteria), IFRS 16 – *Leases* (if the company is recognized as a right-of-use asset), or IAS 16 – *Property, plant, and equipment* (in every other case).

The IAS 16 – *Property, plant and equipment* standard requires investment properties initially recognized at cost (IAS 16.15). If the investment properties are accounted for based on IAS 16, the subsequent measure should be a cost less depreciation (IAS 40.56 c). Therefore, the revaluation model described under IAS 16 cannot be followed (IAS 40.56 c).

The accounting difference between the fair value model from IAS 40 – *Investment properties* and IAS 16 – *Property, plant, and equipment* is essential. While using the fair value model (IAS 40), fair value is recognized through profit and loss; the cost model does not recognize (at all) the positive fair value changes. IAS 16 requires that assets are depreciated to the residual value within the economic life of assets. Therefore, revaluation models described in IAS 16 are not acceptable for investment properties (IAS 16.5). When investment properties are sold, the outcome is the same. IAS 40's fair value model recognizes positive and negative fair value changes and can cause more volatile profit and loss impact than accounting at cost less depreciation.

3 | FAIR VALUE REPORTING IN THE REAL ESTATE SECTOR

Because managers have more insider information about a company's financial situation, there is information asymmetry between managers and owners (Banker et al., 2013). Auditor monitoring reduces noise and management bias while improving information quality

(Wallace, 1980; Watkins et al., 2004). The audit aims to reduce this information asymmetry and minimize managers' reporting opportunism (Grand, 1996; Piot, 2001). However, there has been much criticism that the audit report has not answered the increased information needs of investors (Bédard et al., 2014; Church et al., 2008; Cohen Commission, 1978; Geiger, 1993; Mock et al., 2013). One solution for this deficiency of reporting has been a requirement for providing more information about audit procedures and how auditors have gotten enough comfort from audit evidence to release audit reports (Botez, 2017; IFAC, 2015; Li et al., 2019; PCAOB, 2014; Segal, 2017, 2019; Velte & Issa, 2019). The regulator's solution for this lack of information has forced the auditor to provide a new type of audit report (IFAC, 2015; Jermakowicz et al., 2018; PCAOB, 2014). New reporting requirements could also decrease the expectation gap between auditors and investors (Sirois et al., 2018) and increase the communicative value of the auditor's report (Köhler et al., 2020).

IFRS 13 (IASB, 2016a) recognizes three levels of fair value hierarchy; in level 1, fair value is based on market information. In level 2, fair value is based on the observable inputs for valuation purposes. Level 3 fair value is based on nonobservable inputs (IFRS 13.74). Accounting estimates with high estimation uncertainty (mainly level 3 fair value) are often interesting to users of financial statements (Barth, 2006; Griffith, Hammersley, Kadous, & Young, 2015). Fair values in level 3 are highly dependent on management's judgement and assumptions and may require an expert (Christensen et al., 2012; Griffith, Hammersley, & Kadous, 2015). Estimations with high management involvement may be identified as significant risks (ISA 701.A14). Management estimates are also subject to management bias for earnings management purposes (Christensen et al., 2012; Jarva, 2009; Selling & Nordlund, 2015). Finally, management estimations are also subject to possible fraud (Jones & Jones, 2010). The above reasons explain why the fair value of investment properties is considered a KAM in the auditor's report in the real estate sector.

Investment properties could be valued based on the financial statements based on fair value (IAS 40.30), and a change of fair value could be recognized as profit and loss statements (IAS 40.35). The fair values of disclosed investment properties are usually level 3 in the IFRS fair value hierarchy (IFRS 13.72; Ghosh et al., 2020). The fair value for level 3 is not based on the public sources' information but rather on unobservable inputs (IFRS 13.86). In fair value level 3, there have been some doubts about the fair value's reliability (Song et al., 2010). Fair value accounting has been recognized as relevant and reliable when at levels 1 or 2 of the fair value hierarchy (Song et al., 2010).

Because the magnitude of the investment property assets complying with the real estate company's total assets is typically material, a slight change in the assumptions can cause significant changes in the company's result. Thus, the real estate company's results are sensitive to fair value calculation variables (Dietrich et al., 2000).

The fair value calculation variables include many different assumptions that management can directly or indirectly affect (Dietrich et al., 2000). As a result, auditors typically face difficulties in auditing highly uncertain fair values (Christensen et al., 2012; Griffith,

Hammersley, & Kadous, 2015; Rowe, 2019). Auditors have difficulty identifying misstatements that are signified by problematic patterns among those assumptions underlying complex estimates when those assumptions appear reasonable individually (e.g., Cannon & Bedard, 2017; Griffith, Hammersley, & Kadous, 2015; Griffith, Hammersley, Kadous, & Young, 2015; Hurtt et al., 2013; Nelson, 2009). Based on Phillips's (1999) study, the auditor can rarely identify a single piece of evidence that explicitly contradicts reporting rules.

In the current study, we are particularly interested in the homogeneity of BIG4 audit reports in the context of fair value accounting. The real estate sector, which mainly reports the fair values of investment properties as KAMs in audit reports, provides an excellent opportunity to investigate the differences in reporting among BIG4 audit firms. To the best of our knowledge, there are no studies relating to BIG4 audit reporting differences, focusing specifically on KAM.

4 | KEY AUDIT MATTERS (KAMs) IN AUDIT REPORTS

Publicly listed companies in the EU, Switzerland, and Norway are obligated to report KAMs in the auditor's reports from the financial year ending on or after December 15, 2016, as required by ISA 701.6. KAMs explain the judgement areas of financial statements, why those are important for auditors, and how auditor's audit procedures gather enough evidence to release the auditor's report (ISA 701.8; Dennis et al., 2019). In addition, there is no standard model for auditors' reports, so KAMs provides an excellent opportunity to investigate the differences in auditors' reporting.

A KAM that has been a mandatory requirement since the ISA audit-related audit report (ISA 701.11) of publicly listed companies (ISA 701.5) after December 2016 explains the auditor's responses to the key audit risk areas (ISA 701.13a). This KAM always requires judgement (ISA 701.7). Hence, the sufficiency and appropriateness of the work description performed are a matter of professional judgement (ISA 701.A46). Nevertheless, the description is still intended to provide a concise explanation, enabling users of the financial statements to understand how the KAM has been audited (ISA 701.13b; Cordos & Fülop, 2015; Segal, 2017). Furthermore, limiting the use of highly technical auditing terms helps users who do not have the proper knowledge of auditing to understand the basis for the auditor's focus on particular matters during the audit (ISA 701.A30).

Auditors must use professional judgement when deciding on the audit procedures to be performed. Hogarth (1980) has created a theory about the judgement process of financial users (see also Bedard et al., 2012). Following Hogarth's theory (1980), the auditor's audit procedure decisions could be explained by how the auditor has selected which procedures to perform.

Defining and reporting a KAM is risk based (Sierra-García et al., 2019). Sierra-García et al. (2019) qualify KAMs into two different types: entity-level risk and account-level risk, here based on Lennox et al.'s (2018) definition of the risk of material misstatement. Reporting KAMs is based on significant audit risks (ISA 701), and the

audit procedures to cover those risks are based on decision-making (Knechel, 2000). However, there could be a different approach to gathering enough audit evidence to state that there is no material misstatement in the financial statement. Low (2004) points out that selected audit procedures depend on the auditor's specialization.

Recent studies have shown that the audit's KAM in the auditor's report is relevant to investors (Christensen et al., 2014; Sirois et al., 2018). Christensen et al. (2014) examine, for example, whether the audit report's outcome in the audit report is relevant to investors; the study shows that the new reporting format to disclose KAM affects investor decision making when compared with the previous reporting model (Christensen et al., 2014; Moroney et al., 2021). The auditor's report means a lot to investors, even though its actual benefits have been criticized (e.g., Carcello, 2012; Carson et al., 2013; Church et al., 2008; Smiliauskas et al., 2008). Additional information compared with standard reporting is relevant to investors, but the information must give some new insights; otherwise, it does not impact investors (Bédard et al., 2019).

Although standard setters have had high expectations of the impact of KAM reporting, the recent results from different studies have been controversial. Creating a new requirement could cause unintentional consequences (Giddens, 1984; Power, 2004; Vinnari & Skærbaek, 2014). Some unintentional consequences could be that sceptical actions have decreased because of the new reporting type (Asbahr & Ruhnke, 2019). Bédard et al. (2019) point out that extended reporting has low communicative value because investors already know reported matters from other sources.

Although standard setters have had high expectations for KAMs to improve audit reports, the impact might be weakened because of boiler-plate, technical, or ambiguous texts (Bédard et al., 2019; Mock et al., 2013), and audit reports have low communicative value for investors. Only a few studies relating to the new reporting requirement's impact on the audit itself (Asbahr & Ruhnke, 2019; Fuller, 2015) have shown some unintended consequences of the KAM reporting requirement. For example, based on Kend and Nguyen (2020) study, KAM reporting could lead auditors to accept an aggressive accounting estimate. Asbahr and Ruhnke (2019) recognize a decrease in sceptical actions when the issue has been reported as a KAM.

The auditing standards do not mention additional information and procedures in the auditor's report. For example, such matters in the audit of the fair value of investment property include using a valuation specialist in connection with the valuation audit and the auditor's scepticism about the valuation (Nelson, 2009). According to Hurtt's (2010) definition, scepticism manifests itself, for example, in challenging the calculations presented by management. Asbahr and Ruhnke (2019) find that sceptical actions in the proposed adjustment amounts are significantly lower when the accounting estimates are reported as KAMs.

The use of valuation specialists and the challenge of management estimations have been recognized as deficiencies in audit work as reported by the auditors' inspectors (FRC, 2020; PCAOB, 2014). The inspectors expect a valuation specialist to review complex fair values,

and they expect management's assumptions to be challenged (FRC, 2020; PCAOB, 2014).

We primarily focus on two issues in KAMs in audit reports: the challenge of management estimations and the use of a valuation specialist in the auditor's report as additional information for the user of financial statements. Accordingly, we next present our research questions.

5 | RESEARCH QUESTIONS

5.1 | Fair value reporting among the BIG4 audit firms

Knechel et al. (2013) write that one element of the audit quality framework is the audit report. Francis (2011) argues that an audit report is a signal of audit quality, but the audit report as an indicator of audit quality has been limited because audit report content has been restricted. The fact and expectation and information gaps that Mock et al. (2013) point out have been solved or reduced in a new reporting format. Mock et al. (2013) point out that one missing element is significant audit risks. Reporting KAMs has resolved and reduced this limitation.

Our premise is that the audit report of the BIG4 auditor is of high quality. The content of the auditor's report can be examined in terms of the number of items to be reported. Another substantive research object is whether the reported audit tasks differ from those mentioned in the standards (in the current study, examining the KAMs in audit reports). Accordingly, our first research question is as follows:

RQ1. Does the number of reported audit tasks concerning the fair value of investment properties differ among the BIG4 audit firms?

5.2 | The use of fair value specialists among the BIG4 audit firms

BIG4 audit firms have been considered a homogeneous group when considering audit quality (Bennouri et al., 2015; DeAngelo, 1981). BIG4 audit firms' reputational and litigation risks increase the incentives to perform higher audit quality (Boone et al., 2010; Palmrose, 1988; Simunic & Stein, 1987). There is no absolute requirement under IAS 540 (Auditing accounting estimates and related disclosures) that valuation specialists should be used for fair value auditing. However, it is typical for auditors to use fair value specialists when clients use external valuers in the real estate sector (Cannon & Bedard, 2017; Glover et al., 2017; Griffith, 2020; Sangchan et al., 2020).

Despite the contradictory findings when it comes to using valuation specialists to improve audit quality (Boritz et al., 2020; Griffith, 2018; Joe et al., 2017), auditors expect that using valuation specialists will increase because of the requirement from auditor inspectors (FRC, 2020; PCAOB, 2014). Furthermore, since auditors

are concerned about reputational risk and possible lawsuits (Khurana & Raman, 2004), using a valuation specialist on the auditor's risk of being prosecuted in court has been investigated in previous studies (Brown et al., 2020). Brown et al.'s (2020) research show that a valuation specialist's use is relevant to a court visit's outcome. Using a valuation specialist in the auditor's report reduces litigation risk and decreases reputational risk (Khurana & Raman, 2004; Pinto & Morais, 2018). However, evidence relating to the effects of experience on audit judgement has been mixed (Bonner, 1990). Because using valuation specialists seems to decrease both the reputational and litigation risks, our second research question is as follows:

RQ2. Does the use of valuation specialists differ among the BIG4 audit firms?

5.3 | Challenging management estimates among the BIG4 audit firms

Auditors' reputations and risk of litigation require high-quality auditing; thus, we can assume that the BIG4 audit firms aim to maintain high-quality audits. However, the effects of challenging the management estimates on the auditor's reputational risk and risk of litigation have not been investigated. Past studies have concentrated on scepticism regarding management estimates on financial statements (Feng & Li, 2014; Niemeier, 2007; Selling & Nordlund, 2015). Sceptical procedure's impacts on KAM reporting have been researched by Asbahr and Ruhnke (2019). Therefore, it can be assumed that a reported challenge to management estimates may not have the same significance as using the valuation specialist described above (Martin et al., 2006). Challenging management estimates is also not required in all situations (FRC, 2020). Reporting management challenges could lead to Type I and Type II reporting errors. Type I means that the auditor has unnecessarily challenged management estimates. In a Type II reporting error, the auditor has failed to challenge management estimates, even though they should have. Audit inspectors also expect auditors to challenge management assumptions more frequently (FRC, 2020; PCAOB, 2014). Therefore, auditors can reduce inspection findings by adding challenges to their audit reporting. The BIG4 audit firms are accustomed to keeping a unified set of reporting qualities based on previous research. This assumption introduces us to the final research question:

RQ3. Does the number of management estimates that are challenged differ among the BIG4 audit firms?

6 | EMPIRICAL DESIGN

6.1 | Data

The focus of the current study is the reporting of KAMs in the real estate sector. Our sample includes data from companies operating in

NACE Rev.2. Industry 68 “Real estate activities” and that apply IFRS standards. We compared the gathered company list to the list of companies at EPRA (European Public Real Estate Association) for EPRA nomination. All missing companies from the previous list were added to the data. We deleted all financial statements in which investment properties are not classified as a separate balance sheet item, as defined by IAS 40. Our data contain companies for Europe, covering 60% of the listed real estate companies in the EU, Switzerland, and Norway. Country frequencies are tabulated in the Table 3. We hand-collected all available English versions of the financial statements from 2017 to 2018. Information about challenging management's view about the fair value and valuation specialists' use is collected from audit reports. Next, we hand-collected the change of investment properties' fair value as recognized in the profit and loss account and the carrying value of investment properties. The financial data are complemented from the Refinitiv Eikon database. We have excluded observations with missing data for any variables. Our sample consists of 127 individual companies, of which 108 have data from 2017 and 127 from 2018, making up 235 firm-year observations.

6.2 | Variables

RESPONSE is our primary variable of interest, which is the number of audit procedures in the KAMs reported in the audit report. The maximum number of reported issues in the audit report related to the key audit matter of the fair value of investment property is eight, with the minimum being zero. So, for example, if an auditor has pointed out concerns about all possible KAMs, this RESPONSE takes a value of 8. Two of these eight issues—CHALLENGE and SPECIALIST—are not included in the audit standards. In our research setting, these are the most interesting because they concern with challenging the management's fair value opinion and valuation specialists' use. CHALLENGE takes a value of 1 if an auditor has challenged the fair value opinion and 0 otherwise. SPECIALIST takes a value of 1 if an auditor has used a valuation specialist and 0 otherwise.

We are interested in the differences among auditors' reporting, especially among the BIG4 audit firms. Therefore, our sample includes only BIG4 audit firms. We also exclude joint audits because of hard directing the appropriate BIG4 auditor.

In regression models, we provide a set of control variables that may influence audit reporting. Because our focus is on the real estate industry and our dependent variables are expected to be related to fair value, we control the absolute value of change of fair value divided by the fair value before the change (FVCHANGE). In addition, we include firm-specific controls that have been used in auditing research. We control for firm size, which is the natural logarithm of the total assets (LNASSETS) (e.g., Kallunki et al., 2019; Khurana & Raman, 2004), the return of assets (ROA) (e.g., Kallunki et al., 2019), LEVERAGE (e.g. Kallunki et al., 2019; Khurana & Raman, 2004), and Tobin's Q (TOBINQ). Several studies have used the book-to-market ratio or market-to-book ratio as a control variable (e.g., Gul et al., 2002; Khurana & Raman, 2004). We use Tobin's Q because the

book-to-market ratio gets extreme values because of negative equity capital observations. Previous auditing literature has pointed out that a country's legal system may affect auditors' behaviour (e.g., Abdolmohammadi et al., 2017; Francis, 2004). Therefore, we include legal origin dummies in our analysis. Table 1 presents the variable definitions, Table 2 presents the descriptive statistics, and Table 3 presents the sample observations by country. Table 3 also presents the number of REIT clients per auditor in each country, along with the country's legal origin. Legal origins are based on Porta et al. (1998) and the CIA Fact Book.

From Table 2, we can see that our data do not have any extreme values. The standard deviations are also reasonable when compared with the mean values. Our data contain more than 50 observations for each BIG4 auditor. PWC covers 28.5% of our observations. The corresponding shares for other BIG4 auditors are 26.8%, 23.0%, and 21.7% for KPMG, Deloitte, and EY, respectively. Most of our observations (39.6%) fall into common law legal origin countries, 23.8% into French, 15.74% into German, and 20.85% into Scandinavian.

6.3 | Methods

We use a one-way ANOVA to compare the mean RESPONSE values between groups to compare auditors' reporting behaviour. We also present a post hoc Bonferroni statistic for pairwise group comparisons. To consider the nature of the RESPONSE distribution (0–8), we also provide a nonparametric Kruskal-Wallis test and Dunn's rank-sum test for pairwise comparisons. Finally, in the case of CHALLENGE and SPECIALIST, we provide cross-tabulations with chi-squared test statistics.

We use the ordered logit model for RESPONSE and the binary logit model for CHALLENGE and SPECIALIST in a multivariate analysis. In both cases, the logit model is reasonable because of the dependent variable's binomial or ordered nominal nature and because our auditor variables are dichotomous. In the ordered logit model, we

TABLE 1 Variable definitions

Variable	Definition
RESPONSE	Number of reported (KAM) issues in the audit report
CHALLENGE	1 if an audit report includes KAM concerning F.V. and 0 otherwise
SPECIALIST	1 if an auditor has used valuation specialist and 0 otherwise
FVCHANGE	Change of fair value/investment properties
LNASSETS	Natural logarithm of total assets
ROA	P/L after tax/Total assets
LEVERAGE	Total debt on period average/Total assets
TOBINQ	Tobin's Q = (MarketCap + TotalAssets – TotalEquity)/TotalAssets
LEGAL	Legal origin, 1 = common law, 2 = French, 3 = German, 4 = Scandinavian

TABLE 2 Descriptive statistics

	N	Mean	St.dev	Min	Max
RESPONSE	235	4.545	1.396	0	8
CHALLENGE	235	0.277	0.448	0	1
SPECIALIST	235	0.502	0.501	0	1
FVCHANGE	235	0.043	0.067	-0.409	0.291
LNASSETS	235	15.509	5.131	6.874	25.799
ROA	235	0.052	0.063	-0.619	0.232
LEVERAGE	235	0.362	0.165	0	1.563
TOBINQ	235	1.654	4.966	0.465	63.54
EY	51	21.7%	COMMONLAW	93	39.57%
PWC	67	28.5%	FRENCH	56	23.83%
KPMG	63	26.8%	GERMAN	37	15.74%
Deloitte	54	23.0%	SCANDINAVIAN	49	20.85%
	235	100.0%		235	100.0%

Note: Variable definitions are shown in Table 1.

TABLE 3 Sample market shares by country

Country	1 = EY	2 = PWC	3 = KPMG	4 = Deloitte	Total	Legal origin
Austria	3	0	2	2	7	German
Belgium	8	7	0	6	21	French
Cyprus	0	1	0	0	1	Common law
Denmark	1	2	0	0	3	Scandinavian
Estonia	0	3	0	0	3	German
Finland	2	0	6	0	8	Scandinavian
France	0	0	2	1	3	French
Germany	0	3	11	1	15	German
Great Britain	14	20	19	24	77	Common law
Greece	0	3	0	0	3	French
Ireland	0	3	1	2	6	Common law
Italy	2	1	0	0	3	French
Luxembourg	0	0	2	0	2	French
Malta	0	5	1	0	6	Common law
Netherlands	5	4	3	0	12	French
Norway	1	2	4	2	9	Scandinavian
Poland	0	0	0	2	2	French
Spain	0	5	0	5	10	French
Sweden	7	7	6	9	29	Scandinavian
Switzerland	8	0	4	0	12	German
Virgin Islands	0	1	2	0	3	Common law
Total	51	67	63	54	235	

Note: The number of REIT clients per auditor in the country. Total number of observations by country and countries legal origin.

assume that the RESPONSE categories have equal distances. We also run our analysis with country dummies to consider the possibility that one or several countries may be driving our results. We include legal origin dummies in our analysis as an alternative control for country differences. Our data do not provide the possibility to observe

auditors' industry specialization. We present our sample country statistics with corresponding client numbers in Table 3. Year dummies are also included in the model, and standard errors are clustered at the firm level. The linearized version of our regression model is presented in Equation (1).

$$Dep_{i,t} = \beta_0 + \sum_{k=1}^4 \beta_k (Auditor)_k + ctrl_{i,t} + \beta_1 Year2018 + \sum_{m=1}^{21} \beta_m (Country)_m \quad (1)$$

where Dep is RESPONSE, CHALLENGE, or SPECIALIST and the auditor is a dummy for each audit company. Common law legal origin is treated as a reference category in the regressions, and Deloitte is the reference category for BIG4 firms.

7 | RESULTS

7.1 | Research question 1

We begin our analysis by comparing the RESPONSE of auditors. Table 4 presents the mean values and mean ranks for each auditor group. Pairwise comparison statistics are Bonferroni for mean differences and Dunn's rank test for ranks. We observe differences in RESPONSE mean values. Deloitte has the highest value of 5.056,

TABLE 4 Pairwise comparison statistics for RESPONSE

	1	2	3	4
1 EY	Mean	4.078		
(n = 51)	Mean rank	94.67		
2 PWC	Mean	0.28	4.358	
(n = 67)	Mean rank	-1.34*	111.18	
3 KPMG	Mean	0.60	0.32	4.683
(n = 63)	Mean rank	-2.30**	-1.046	123.35
4 Deloitte	Mean	0.98***	0.70**	0.37
(n = 54)	Mean rank	-3.68***	-2.56***	-1.54*
(n = 235)	ANOVA F = 5.17*** Kruskal-Wallis $\chi^2 = 13.949***$			142.26

Note: Variable definitions are shown in Table 1. Group means, mean ranks, Bonferroni (italics) and Dunn's (bolded and italics) statistics.

*p < 0.1. **p < 0.05. ***p < 0.01.

TABLE 5 Ordered logit regression

	(1)	OR	(2)	OR	(3)	OR
1. EY	-1.365*** (0.482)	0.255	-1.134** (0.491)	0.322	-1.237*** (0.457)	0.290
2. PWC	-0.912** (0.378)	0.402	-1.366** (0.547)	0.255	-0.991** (0.385)	0.371
3. KPMG	-0.582 (0.419)	0.559	-0.244 (0.505)	0.784	-0.381 (0.428)	0.683
LNASSETS	0.007 (0.032)		0.039 (0.045)		0.022 (0.033)	
FVCHANGE	2.674 (2.553)		1.720 (3.352)		4.008* (2.411)	
ROA	-1.985 (3.639)		-0.157 (4.066)		-2.083 (3.227)	
Leverage	-0.456 (1.109)		0.847 (1.460)		0.950 (1.281)	
TOBINOQ	-0.013 (0.015)		-0.005 (0.014)		-0.011 (0.013)	
Legal origin						
1. FRENCH					-0.791** (0.373)	0.453
2. GERMAN					-1.683*** (0.474)	0.186
3. SCANDINAVIAN					-1.074*** (0.407)	0.341
Year fixed effects	Yes		Yes		Yes	
Country fixed effects	No		Yes		-	
Obs.	235		235		235	
Pseudo R ²	0.022		0.104		0.048	

Note: Robust standard errors are in parenthesis. Variable definitions are shown in Table 1. Dependent variable: RESPONSE. Coefficients, (std. errors).

Reference categories are Deloitte for auditor and common law for legal origin.

*p < 0.1. **p < 0.05. ***p < 0.01.

KPMG 4.683, and PWC 4.358; EY has the lowest value of 4.078. The ANOVA F test ($F = 5.17$) and the Kruskal–Wallis ($\chi^2 = 13.949$) point to significant differences between groups. The Bonferroni test points to significant differences for Deloitte versus EY and PWC in the pairwise comparison test. Dunn's test for rank sums shows significant differences between Deloitte and every other BIG4 audit firm (the difference between Deloitte and KPMG is significant at the 90% level). There is also a significant difference between EY and KPMG and between EY and PWC. The latter is significant at the 90% level.

We now move to an ordered logit regression to control the previously known issues that may cause a higher RESPONSE score. Table 5 presents the results of the ordered logit models. Our main question relates to the differences among the BIG4 audit companies, and we run our models with year dummies (columns 1–3), country dummies (column 2), and legal origin dummies (column 3). Logistic models can estimate the raw coefficients for variables and evaluate the odds for each category. In other words, we can compare the odds among auditors to get a higher RESPONSE score. The reference category for auditors is Deloitte. We present the regression coefficients and odds ratios (OR) for the categorical variables. We can interpret the results as follows. Regression coefficient shows that one unit change in the predictor means the value of coefficient times change in the log odds in the dependent variable. Interpreting the OR means that for a one unit increase in predictor, that is, going from 0 to 1, the odds of high category of RESPONSE versus the combined middle and low categories are the value of OR times greater. For example, in a column 1, for EY, the coefficient is -1.365 , and we would say that for a one-unit increase in EY (going from 0 to 1 [compared with Deloitte]) we expect a 1.365 decrease in the log odds of being in a higher level of RESPONSE, given all of the other variables in the model are held constant. That is, going from 0 to 1, the odds of 3.9 (1/0.255) of the highest response rate versus the combined lower response rates are 3.9 times lower, given that all of the other variables in the model are

held constant. Likewise, the odds of the combined highest rates versus the lowest response rate is 3.9 times lower.

Our results propose that when compared with Deloitte, EY has the lowest likelihood of having a higher RESPONSE score. PWC has the second-lowest likelihood (e.g., -0.912 in col 1). These results are statistically significant in all models. We do not observe significant differences between Deloitte and KPMG. The highest pseudo R^2 (0.104) is in model 2, where country dummies are included. Model 3 with legal system dummies has a pseudo R^2 of 0.048, but the coefficients for legal dummies are highly significant. Significant negative coefficients signify that compared with the common law legal system, auditors operating in other legal environments are less likely to report a higher number of KAMs.

7.2 | Research questions 2 and 3

Our sample companies operate in the real estate sector, and a remarkable share of their assets lies in investment properties. The use of fair value allows management to use fair value as an instrument to adjust the results according to their own will. Therefore, we take a closer look at RESPONSE. We run some additional analyses for SPECIALIST and CHALLENGE, which are the industry-related components of RESPONSE. In addition, these two components are not included in audit standards.

We first cross-tabulate SPECIALIST and CHALLENGE with the audit groups and provide a chi-squared test for distributions (Table 6). Again, we observe the variation among the auditors. Out of all the auditors, 27.66% have challenged management's opinion about fair value. For example, Deloitte reported management challenges in about 52% of cases, while EY reported challenges in about 14% of cases. PWC and KPMG are very close to each other, with about 22–23% of cases. The observed differences are statistically highly significant.

TABLE 6 Cross-tabulation of auditor versus CHALLENGE and SPECIALIST

1 = EY 2 = PWC 3 = KPMG 4 = Deloitte	CHALLENGE			SPECIALIST		
	0	1	Total	0	1	Total
1 EY	44	7	51	20	31	51
	86.27	13.73	100.00	39.22	60.78	100.00
2 PWC	51	16	67	39	28	67
	76.12	23.88	100.00	58.21	41.79	100.00
3 KPMG	49	14	63	30	33	63
	77.78	22.22	100.00	47.62	52.38	100.00
4 Deloitte	26	28	54	28	26	54
	48.15	51.85	100.00	51.85	48.15	100.00
Total	170	65	235	117	118	235
	72.34	27.66	100.00	49.79	50.21	100.00
χ^2	22.153; $p = 0.000$			4.391; $p = 0.222$		

Note: The first row presents frequencies, and the second row presents row percentages. The variable definitions are in Table 1. Frequencies, percentages, and chi-squared test statistics.

TABLE 7 Logit regression results

	(1) SPECIALIST	(2) SPECIALIST	(3) SPECIALIST
1. EY	0.367 (0.507)	0.443 (0.525)	0.495 (0.496)
2. PWC	-0.327 (0.426)	-0.541 (0.485)	-0.326 (0.436)
3. KPMG	0.118 (0.443)	-0.042 (0.550)	0.253 (0.469)
LNASSETS	0.042 (0.034)	0.075* (0.041)	0.058* (0.034)
FVCHANGE	-1.598 (3.489)	-7.546 (4.922)	-0.535 (3.219)
ROA	-1.749 (3.713)	4.594 (4.671)	-2.725 (3.661)
Leverage	-0.745 (1.070)	0.145 (1.396)	-0.013 (1.176)
TOBINQ	-0.031 (0.027)	-0.042 (0.034)	-0.031 (0.025)
Legal origin			
2. FRENCH			-0.565 (0.407)
3. GERMAN			-1.009* (0.587)
4. SCANDINAVIAN			-0.413 (0.453)
_cons	-0.243 (0.737)	-2.079 (1.542)	-0.427 (0.754)
Year fixed effects	Yes	Yes	Yes
Country fixed effects	No	Yes	No
Obs.	235	223	235
Pseudo R ²	0.028	0.086	0.045

Note: Robust standard errors are in parentheses. The variable definitions are in Table 1. The dependent variable is SPECIALIST. Reference categories are Deloitte for auditor and common law for legal origin. Coefficients and (standard errors).

* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

TABLE 8 Logit regression results

	(1) CHALLENGE	(2) CHALLENGE	(3) CHALLENGE
1. EY	-1.836*** (0.536)	-2.908*** (0.751)	-1.799*** (0.560)
2. PWC	-1.171** (0.508)	-1.725** (0.720)	-1.194** (0.519)
3. KPMG	-1.365*** (0.528)	-1.654*** (0.551)	-1.362*** (0.511)
LNASSETS	-0.001 (0.036)	-0.006 (0.049)	0.024 (0.037)
FVCHANGE	2.842 (3.786)	2.738 (5.045)	2.558 (3.483)
ROA	-3.579 (5.433)	-3.849 (6.324)	-3.379 (4.729)
Leverage	-1.200 (1.612)	-2.152 (1.850)	0.111 (1.554)
TOBINQ	0.181* (0.100)	0.434*** (0.113)	0.151* (0.083)
Legal origin			
2. FRENCH			-1.241** (0.540)
3. GERMAN			-0.829 (0.620)
4. SCANDINAVIAN			-0.861 (0.547)
_cons	0.545 (0.956)	1.375 (1.447)	0.295 (0.923)
Year fixed effects	Yes	Yes	Yes
Country fixed effects	No	Yes	No
Obs.	235	202	235
Pseudo R ²	0.116	0.240	0.146

Note: Robust standard errors are in parentheses. The variable definitions are in Table 1. The dependent variable is CHALLENGE. Reference categories are Deloitte for auditor and common law for legal origin. Coefficients and (standard errors).

* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

When it comes to valuation specialist use, about 50% use a valuation specialist out of all the auditors. EY has the highest rate of using a specialist (about 61%). The observed differences among the BIG4 audit companies are not statistically significant.

Finally, we use the logit model to analyse the differences among the auditors (Tables 7 and 8), using the same controls as in the earlier ordered logit model. Again, the control group is Deloitte in the BIG4 auditor group and common law legal origin in the legal origins. We do not find significant differences in using valuation specialists among the BIG4 auditors. This is in line with our earlier observations in the cross-tabulations. As a whole, it is difficult to predict the use of valuation specialists. First, the pseudo R^2 for our models is between 0.028 and 0.086. Second, we find only a couple of 90%-level significant coefficients. A positive coefficient for firm size indicates that the higher the client company, the higher the probability of using a specialist. Auditors operating in French legal origin countries, compared

with those of common law origin, have a lower possibility of using a specialist.

In terms of CHALLENGE (Table 8), Deloitte challenges management more likely than the others (significant negative coefficient for other BIG4 dummies in all columns). Compared with Deloitte, EY has the lowest probability of challenging management opinion. For example, the coefficient for EY is -1.836 in column 1 and -2.908 in column 2. Auditors operating in French legal origin, here compared with common law origin countries, have a lower possibility of challenging management. Compared with the models for the use of specialists (Table 7), the values of pseudo R^2 are relatively higher, between 0.116 and 0.240.

The results of the challenge are clearer than using valuation specialists. When it comes to separating RESPONSE components, only CHALLENGE can explain the observed differences.

		1	2	3	4
1 CommonLaw (n = 93)	Mean	5.032			
	Mean rank	139.60			
2 French (n = 56)	Mean	-0.69**	4.339		
	Mean rank	2.54***	110.08		
3 German (n = 37)	Mean	-1.14***	-0.45	3.892	
	Mean rank	3.85***	1.50*	90.04	
4 Scandinavian (n = 49)	Mean	-0.69**	0.01	0.46	4.347
	Mean rank	2.87***	0.39	-1.11	106.02
<i>(n = 235)</i>					
ANOVA F = 7.84***					
Kruskal-Wallis $\chi^2 = 17.750***$					

TABLE 9 Pairwise comparison statistics for RESPONSE by LEGAL origins

Note: Group means, mean ranks, Bonferroni (italics) and Dunn's (bolded and italics) statistics. Variable definitions are shown in Table 1.

* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

TABLE 10 Ordinal logit results

	(1) CommonLaw	(2) French	(3) German	(4) Scandinavian
1. EY	-0.459 (0.646)	-2.178** (0.851)	-4.609*** (1.133)	0.335 (0.843)
2. PWC	-1.891*** (0.581)	-1.461* (0.817)	-2.557** (1.1)	0.574 (1.356)
3. KPMG	-0.758 (0.713)	-2.12 (1.517)	-2.302*** (0.861)	-0.324 (0.813)
LNASSETS	0.067 (0.053)	-0.111 (0.119)	0.07 (0.119)	0.13* (0.068)
FVCHANGE	1.913 (4.616)	9.759*** (3.709)	17.804** (8.401)	-38.092* (20.8)
ROA	-3.979 (8.276)	-7.415 (8.242)	13.064 (12.204)	60.219** (26.802)
Leverage	-1.778 (1.935)	-0.073 (3.666)	16.198** (7.636)	-2.556 (1.882)
TOBINQ	-0.013 (0.065)	-0.027 (0.023)	-6.003 (4.989)	3.114** (1.229)
Year fixed effects	Yes	Yes	Yes	Yes
Obs.	93	56	37	49
R^2	0.058	0.089	0.281	0.134

Note: Dependent variable is RESPONSE. Robust standard errors are in parentheses.

* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

7.3 | Additional analysis

We found earlier that the legal environment has strong explanation power when analysing variation in reported KAMs. This is especially the case of RESPONSE. This raises the question of variation of KAMs between legal origins. Therefore, we run additional analysis, starting with comparing RESPONSE mean values between legal origins and ending with sub-sample regression analysis. The regression models are the same as used in our primary analysis.

Table 9 presents the mean values of REONSE by each legal origin. We find that there are statistically significant differences between

legal origins. The highest mean value (5.032) of RESPONSE is in Common law countries and the lowest (3.892) in German legal origin countries. Both the Bonferroni and Dunn's statistics state that the Common law countries differ from others.

In the ordered logit results (Table 10), we find that in the Common law countries, PWC auditors report fewer KAMs than Deloitte auditors. EY and PWC report fewer KAMs than Deloitte in the French legal origin countries. In the German legal origin countries, every three auditors report fewer KAMs than Deloitte, while in Scandinavian legal origin countries, we do not find any significant differences between BIG4 auditors.

TABLE 11 Logit regression results

	(1) CommonLaw	(2) French	(3) German	(4) Scandinavian
1. EY	^a	-1.848* (1.074)	0.338 (1.701)	1.117 (1.282)
2. PWC	-0.527 (0.632)	-1.666** (0.815)	0.841 (1.698)	0.364 (1.055)
3. KPMG	0.061 (0.766)	-0.769 (1.242)	-0.227 (1.288)	0.271 (1.041)
LNASSETS	0.051 (0.062)	-0.054 (0.086)	0.311 (0.216)	0.125* (0.068)
FVCHANGE	1.801 (8.62)	-8.278 (6.738)	13.968 (25.689)	-6.932 (17.822)
ROA	-7.618 (12.147)	2.665 (7.144)	18.484 (23.905)	-12.686 (25.442)
Leverage	-4.79 (2.931)	1.969 (2.108)	12.015 (7.968)	-2.801 (3.568)
TOBINQ	0.021 (0.081)	-0.095* (0.05)	-1.054 (4.887)	5.604** (2.603)
_cons	1.323 (1.261)	1.379 (2.115)	-11.839 (7.394)	-5.921* (3.327)
Year fixed effects	Yes	Yes	Yes	Yes
Obs.	79	56	37	49
R ²	0.081	0.151	0.208	0.174

Note: Robust standard errors are in parentheses. Dependent variable is SPECIALIST.

^aEY is excluded due to lack of variation of SPECIALIST within EY auditors in the Common law countries.

*p < 0.1. **p < 0.05. ***p < 0.01.

TABLE 12 Logit regression results

	(1) CommonLaw	(2) French	(3) German	(4) Scandinavian
1. EY	-2.464*** (0.831)	-2.617* (1.488)	^a	-1.143 (1.746)
2. PWC	-2.229*** (0.691)	-2.381* (1.261)	^a	1.025 (1.673)
3. KPMG	-2.325*** (0.731)	-2.363 (2.811)	-0.992 (2.042)	-2.791 (1.923)
LNASSETS	0.04 (0.059)	-0.195 (0.19)	0.121 (0.182)	0.096 (0.141)
FVCHANGE	0.006 (6.812)	6.728 (6.928)	4.455 (33.545)	-21.079 (18.594)
ROA	-3.873 (10.028)	-10.235 (7.512)	-38.225 (39.388)	72.755*** (27.714)
Leverage	-5.01* (2.708)	-2.203 (2.414)	-9.807 (10.685)	6.788 (5.705)
TOBINQ	0.05 (0.046)	0.934** (0.441)	1.725 (7.49)	5.314** (2.531)
_cons	2.689** (1.36)	3.687 (2.62)	1.711 (13.088)	-15.474*** (4.978)
Year fixed effects	Yes	Yes	Yes	Yes
Obs.	93	56	20	49
R ²	0.193	0.369	0.297	0.381

Note: Robust standard errors are in parentheses. Dependent variable is CHALLENGE.

^aEY and PWC are excluded due to lack of variation of CHALLENGE within EY/PWC auditors in the German legal origin countries.

*p < 0.1. **p < 0.05. ***p < 0.01.

Table 11 presents results for the use of a valuation specialist. This sub-sample analysis shows that it is the French legal origin where the BIG4 auditors differ in using a specialist. Namely, in the French legal origin countries, compared with other BIG4 auditors, EY and PwC auditors use less likely valuation specialists. This finding is statistically significant at a 95 (90) percent level in the case of PwC (EY).

Finally, Table 12 presents the results of the subsample analysis for CHALLENGE. We find that the differences between BIG4 auditors exist in the Common law countries. Compared with other BIG4 auditors, Deloitte challenges management opinion more likely (significant negative coefficients for EY, PwC, and KPMG in column 1).

8 | CONCLUSION

The current study aimed to determine whether BIG4 audit companies could be treated as a homogenous group related to audit reporting. Previous studies have shown that audit report quality indicates audit quality (Francis, 2004; Francis & Krishnan, 1999; Financial Reporting Council [FRC], 2008; Lennox, 1999; Weber & Willenborg, 2003), and the BIG4 audit firms have been considered a homogenous group in relation to audit quality (DeAngelo, 1981; Defond et al., 2000; Ferguson et al., 2003; Francis, 2004; Francis & Krishnan, 1999; Francis & Wilson, 1988; Simunic & Stein, 1987).

KAMs in audit reports have been a mandatory requirement since the ISA audit-related audit report (ISA 701.11) of publicly listed companies (ISA 701.5) after December 2016, but there is no standard model for auditors' reports. This means that the content of the audit report (which also serves as an indicator of audit quality) may differ between the audit companies; thus, KAMs provides an excellent opportunity to investigate the differences between auditors' reporting.

We explored this issue by using hand-collected KAM data from audit reports. In addition, our research setting of real estate companies allowed us to compare auditor behaviour, particularly in terms of the total number of reported issues, valuation specialist use, and challenging management opinion.

Our findings provide some indication that BIG4 audit companies do not harbour the same issues when reporting KAMs on audit reports. There is a wide range of explanations describing what the auditor has done. The range listed on the audit report and fair value of investment properties KAMs were 0 to 8, with the average being 4.55.

We found some statistically significant differences in the number of audit procedures reported by BIG4 audit companies. Assessed by probabilistic calculations, Deloitte has the highest probability of reporting the audit report with the most audit activities. Although legal origin will affect the results, our findings showed statistically significant differences between BIG4 audit companies with different legal origins. For example, PwC has statistically significantly fewer reported audit procedures than Deloitte in common law legal origin. In the French legal system, EY and PwC have statistically significantly less audit reported audit procedures than Deloitte, and in the German

legal system, EY, KPMG, and PwC have statistically significantly less audit reported audit procedures than Deloitte. Our results indicate that BIG4 audit companies are not reporting the same audit tasks relating to the fair value of investment properties in their audit reports.

We found that the reported audit procedures differ among the BIG4 audit companies. A statistically significant difference among the BIG4 audit companies was found in reporting the challenges of management estimates. Deloitte statistically significantly more often reports challenge management estimates when compared with the other BIG4 audit firms in the common law legal systems. There were also statistically significant differences between Deloitte and EY and PwC of French origin. In French legal origin, Deloitte report challenges the management more often than EY and PwC. In challenging management valuations regarding fair values, about 28% of audit reports include a sentence relating to a challenge of management estimations. EY's reporting on management valuation challenges was statistically significantly less frequent than the other BIG4 audit firms. The legal system affects the result overall. The differences between legal systems impact the results. In Common Law countries, auditors reported challenging management estimations more often than in other legal systems.

We also examined the use of valuation specialists. Valuation specialists were mentioned in 50% of the audit reports, but we did not find statistically significant differences among the BIG4 audit firms. The legal origin itself does not impact the auditor's reporting. However, in the French legal origin, Deloitte has used valuation specialists statistically significantly more often than EY and PwC.

Although our study reports significant differences among the BIG4 audit companies, we cannot reject the existing BIG4 audit companies and audit quality evidence. In the case of challenging management opinion, there are two types of errors in auditing. Type 1 errors (false positive) suggest that an auditor challenges the opinion, even though they are correct. Type 2 errors (false negative) suggest that auditors do not challenge the opinion, even though they should. We have not studied whether complement or supplement audit activities can cover these issues.

We also found that a country's legal origin plays a role when auditors report KAMs. Auditors operating in common law-origin countries tend to report more audit procedures in KAMs. In contrast, auditors operating in German legal origin countries report the most minor number audit procedures in KAMs. Although we do not find differences among the BIG auditors when using valuation specialists overall, we find little evidence that auditors operating in German legal origin countries are less likely to use valuation specialists than other legal origins. However, we found out that the Deloitte report uses specialists more often than PwC and EY in the French legal origins. Finally, auditors operating in French and German legal origin countries are less likely to challenge management opinions.

The current study contributes to the audit literature. However, it also has implications for regulators who frequently require auditors to pay attention to management estimations of fair value estimations and auditors' responses to management discretion around fair values.

(FRC, 2020; Joe et al., 2017; Public Company Accounting Oversight Board [PCAOB], 2014). Real-life evidence about auditors' responses to fair value estimations could provide a new aspect for future audit reporting requirements and a response to highly estimated information.

Further investigation could also focus on why auditors do not report management challenges more often. Another area for investigation could be whether the BIG4 audit companies report using a valuation specialist in litigation for risk mitigation purposes or for meeting supervisors' needs. One answer may also be a challenge to the fair value verification is true. One possible future research area could be the difference between legal systems related to the content of KAM. Our result pointed out that the legal system impacts the number of reported audit procedures and how auditors report the challenge of management estimations.

Our findings may impact the reporting of the audit industry while also benefiting audit inspectors and preparers of reporting policies and helping investors to understand fully. However, it should be noted that our findings are early stage and relate to the adaption of updated audit reporting standards, and we have concentrated on only one KAM in one business sector.

We approached the homogeneity of the audit reports of BIG4 companies using the concept of equifinality (Grezov & Drazin, 1997). Grezov and Drazin (1997) state that equifinality depends on functional organizational demands and the options available to managers to deal with those demands. Based on our findings in audit reports, in terms of equifinality, the audit quality of BIG4 audit companies depends on (1) the differences in functional demands (challenges in estimation of fair values, role of management in fair value estimations, reputation of audit firm, and risk of litigation, demands of supervisors, and demands of investors) and (2) the options available to auditors to deal with those demands (audit standards, use of valuation specialists, audit reports, and KAMs). When the premise is that BIG4 audit firms strive to maintain high-quality audits, our results show that different strategies can achieve this. In this way, we can say that different auditing strategies in different contexts may lead to similar results, that is, to the equifinality of audit quality (cf. Child, 1972; Grezov & Drazin, 1997).

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CONFLICT OF INTEREST

We are not aware of any issues relating to the conflict of interest.

ETHICS STATEMENT

This study does not contain material that raises ethical issues.

AUTHOR CONTRIBUTIONS

Tuomas Honkamäki: develop the original idea, gather data, drafting the manuscript. **Markus Mätö:** Statistical analysis. **Henri Teittinen:** Critical revision of manuscript for adding Equifinality to the contexts.

PERMISSION TO REPRODUCE MATERIAL FROM OTHER SOURCES

This is an original article, and this has not been published or request for publishing of any other sources.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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