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Key audit matters disclosure: do they reveal construction firm's risk of financial distress? Evidence from Ethiopia

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ABSTRACT

Recent studies have provided insights into key audit matters (KAMs) disclosure content and their determinants. While conducting this study, no known study examined the relation between the type of KAMs reported and the level of clients' financial distress (FIDT) risk in Ethiopia, which is a clear research gap. Hence, this study aimed to examine the disclosure of KAMs' (in number and nature) usefulness in assessing a client construction firm's FIDT risk. A quantitative method with five-year (2017–2022) secondary data of KAMs disclosure in the audited financial reports of grade one construction companies in Ethiopia was used to study the relationship. The pooled OLS regression analysis shows that KAMs reported by auditors are valuable in predicting and assessing a firm's risk of FIDT. The number of KAMs and all account-specific KAMs were useful in assessing firms' FIDT. However, from the company-wide KAMs, going concern was found to be significant. Results were found robust to FIDT, using alternative measures, and tests of endogeneity. Overall, this study suggests construction firms contemplate auditor disclosers (KAMs) as one of the financial health assessment approaches.

Introduction

The benefits of key audit matters (KAMs) recently have gotten attention from various studies and made diverse conclusions on their usefulness for the users of financial reports. Recent studies demonstrated that annual reports' usefulness regarding the characteristics of the firm and audit risks specific to the client rely on KAM disclosure (Moroney et al. 2021; Seebeck and Kaya 2022; Smith 2022). Providing judgement on the degree to which the client is operationally and financially viable is the main decision but is difficult to make. The audit standards require auditors to examine clients' going concern ability and provide their opinion when they find it significant to report (IAASB 2015). However, some studies (Pincus et al. 2017; Read and Yezegel 2018; Geiger et al. 2021) revealed that auditors frequently misreport the going concern classifications. The viability of the client to remain as an entity needed new approaches, and the going concern report became significant (Laitinen and Laitinen 2020). According to Franzel (2017), the issue calls for more studies on the benefits of comprehensive audit reporting.

The usefulness of audit disclosures in examining companies' financial condition has been studied recently by some scholars (Gutierrez E et al. 2020; Munoz-Izquierdo et al. 2020; Liu et al. 2022). According to Munoz-Izquierdo et al. (2020), the classification accuracy of Spanish non-financial firms improved by 10% using bankruptcy forecast models when accounting and traditional auditing data were combined. Using the traditional audit report format, Gutierrez E et al. (2020) also conclude that the models' predictive ability improved as the going concern opinions are added to different business default models.

The literature has limited evidence regarding KAMs' perceived usefulness for financial report users. However, the type and number of KAMs' usefulness in explaining the level of a firm's financial health and complexity remain an open query in many countries. While conducting this study, no known study examined the relation between the type of KAMs reported and the level of clients' financial distress (FIDT) risk in Ethiopia, which is a clear research gap. The literature inspires this study with the new concept of KAM disclosure, which may show the degree of the firm's FIDT risk that it may face. This study aims to examine the degree to which KAM disclosers (recent and compulsory expanded audit reports) are important in evaluating the existing degree of firms' FIDT. The study, in particular, empirically examined the relationship between auditors' reports on the type and number of KAMs and the FIDT degree of client firms. The KAMs are examined in two ways: by level of risk and financial impact category. Considering the context, this study posed three research questions to examine the relationship between KAMs and FIDT:

RQ1: Is there a relationship between the number of KAMs reported by auditors and the level of the client firm's FIDT?

RQ2: Is there a relationship between the risk level of KAMs reported by auditors and the level of the client firm's FIDT?

RQ3: Is there a relationship between the auditor's report on KAMs classified by their primary impact and the client firm's level of FIDT?

A quantitative method with five-year (2017–2022) secondary data of KAMs disclosure in the audited financial reports of grade one construction companies in Ethiopia was used to study the relationship. The study regresses the proxies for the level of FIDT of client firms on different KAM categories and their

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occurrence frequencies. The results of Pooled OLS regression analysis revealed that there is a significant explanatory power of KAM disclosed by an auditor in evaluating the presence of a firm's FIDT level. As the number of KAMs increases, the risk of FIDT level in the firm becomes higher. This result is consistent when using alternative FIDT level measures. Furthermore, various endogeneity tests were made to confirm that KAM disclosures are not only determined by poor financial ratios as a measure of the level of FIDT (Singh et al. 2022), and the results are robust.

This study has contributed to the literature with its findings on expanded audit reports and FIDT. In prior literature, most of the studies have investigated the degree of incremental usefulness of expanded audit reports from a financial report users' perspective. However, this study advances its investigation by examining KAMs' usefulness (assessed by the number and risk-level categories) for the users of financial reports to undertake decisions on the viability of firms. The finding of this study has wide-ranging implications for construction firms and their stakeholders, such as investors, auditors, and regulators. It promotes accountability and transparency within construction firms, developing a financial responsibility culture. It also sheds light on the specific financial operations of construction firms with high distress risk, eventually improving the industry's sustainability. It can also provide directions for regulatory changes to confirm that auditors properly examine critical areas through audits. Auditors may also benefit from this study by assessing potential clients' engagement risk and providing audit report disclosers for users as an alternative going concern signal about the firm. The following section of the paper includes a literature review, methodology, major findings, and conclusions.

Review of the literature

During the audit of a firm's financial reports, external auditors address the most significant matters referred to as KAM in their report (Sierra-García et al. 2019). Auditors determine and provide reports on these matters for transparency and to highlight the audit process. The purpose is to improve the audit report's usefulness and relevance by targeting the areas which need more audit attention. Auditors may consider factors in communicating their KAMs, such as complex accounting estimates, significant risks, new accounting policies, materiality, legal or regulatory compliance, transactions with related parties, and unusual transactions (Camacho-Minano et al. 2023). Most importantly, auditors may use KAMs to publicly communicate material risks related to the client's going concern, which signals the risk of FIDT and minimizes the client's possibility of getting going concern opinions.

The firm's experience of significant financial difficulties and yet working to address its financial obligations is referred to as FIDT (Altman et al. 2017). Several factors cause it, and it is a condition in which the firm's financial health is declined. In identifying the FIDT condition of a firm, auditors may use signals such as decreasing profits (revenue), inability to raise capital, high debt values, liquidity concerns, downgraded credit ratings, unfavourable cash flow, and legal and regulatory difficulties. Business closure, bankruptcy, restructuring, or asset liquidation are the severe consequences of FIDT. Firms apply different strategies to resolve their FIDT problems, such as enhancing operational efficiency, cutting costs, looking for new revenue streams, restructuring debt, looking for financial support, or renegotiating payment contracts (Altman 1983).

In revealing the FIDT conditions of firms, KAMs are now gaining new attention from the auditors' and researchers' side. The informative usefulness of KAMs has been investigated by some studies from the users' perspective. A recent study by Seebeck and Kaya (2022) in the U.K. regarding the informative usefulness of KAMs using various proxies shows that KAMs with detailed descriptions have a significantly positive relationship with capital market reactions. This relation shows that KAMs are useful to investors for informed judgements. Previous studies (Camacho-Minano et al. 2023; Chen et al. 2023) show that clients get more KAMs as they have losses, prior accounting restatement, and higher leverage ratios (risk from the auditor's viewpoint).

In addition, emerging studies have recently delivered empirical insights on assessing the risk of FIDT using the type of disclosures in audit reports (KAMs). Most studies used well-known assessment models (Altman et al. 2017) to evaluate the risk of FIDT using financial report data (by computing accounting ratios). Nevertheless, numerous studies (Bellovary et al. 2007; Laitinen and Laitinen 2020) have doubted accounting-dependent assessment models' predictive ability; they suggest advancing those models to include non-financial and market-based factors. According to Munoz-Izquierdo et al. (2020), information gathered from external auditing data showing the nature of the audit opinion and disclosure content can be considered a non-financial factor.

Generally, there is limited evidence in previous literature regarding KAMs' perceived usefulness for financial report users. However, the type and number of KAMs' usefulness in explaining the level of a firm's financial health and complexity remain an open query. While conducting this study, no known study examined the relation between the type of KAMs reported and the level of clients' FIDT risk in Ethiopia. The identified research gap inspires this study to be undertaken with the new concept of KAM disclosure, which may show the degree of the firm's FIDT risk that it may face. The study, in particular, examined the relationship between auditors' reports on the type and number of KAMs and the FIDT degree of client firms. The KAMs are examined in two ways: by level of risk and financial impact category.

By providing transparency on matters impacting the general audit strategy and demanding hard audit decisions, regulators aim to upsurge audit reports' benefits (IFAC 2016; PCAOB 2018). International audit regulations, both PCAOB and IAASB, require auditors to evaluate the client's material risk in their audit, including issues demanding subjective and solid judgements (Kohler et al. 2020; Porumb et al. 2021). However, both regulations let the auditor's judgement determine the number of KAMs. Moreover, based on the audit standards, determining the significance of a matter to be classified as a KAM still relies on the auditor's judgement. The KAMs reflect the risk that can affect the firm's comprehensive financial report generally (company-wide) or specifically (account-specific) (Burke et al. 2022; Gutierrez EF et al. 2022).

In Ethiopia, the International Standards on Auditing (ISA) are used for financial auditing of firms in various industries (including the construction industry). Auditors focus more on specific matters while auditing construction firms, such as cost estimation, contract terms, revenue recognition, compliance with industry-specific regulations, contingencies, and project completion (AABE 2014). Within the country's legal and regulatory environment, auditors use local accounting and auditing regulations aligned with International Financial Reporting Standards

(IFRS) and ISA. Accounting and Auditing Board of Ethiopia (AABE) is the country's regulatory body for auditing standards and regulations. According to Ethiopian Financial Reporting Proclamation No. 847/2014, Article No. 32 (AABE 2014), auditors must report material risks to a client firm in any industry before bankruptcy.

Research method

Sample and data collection

A quantitative method with an explanatory research type was applied, considering the nature of variables, data, and the aim of the study (examining relationships). The initial sample of this study encompasses all construction companies (3119) registered in the Ethiopian Ministry of Urban Development and Construction (EMUDC) from 2017 to 2021. A purposive sample selection procedure was followed in determining and selecting the sample. Those recent periods were fixed to highlight recent and relevant findings for readers' interest and considered the availability of necessary data. Then, the sample was narrowed to grade-one construction firms since those companies are category-A taxpayers and required to report a compressive audit report (but not for other categories). Regardless of the company's annual turnover, category 'A' taxpayer is any company (which includes construction firms) incorporated under the laws of Ethiopia. Most of their compressive audit reports on financial statements are accessible from the Ethiopian Revenue and Customs Authority (ERCA). Additional data on KAM disclosure and the auditor were also collected from the firm's annual report. Ensuring the consistency of coding of KAMs through categories and level of risk was emphasized more during this research. In the sampling process, 2698 construction firms were excluded because they are not grade-one construction companies and category 'A' taxpayers (no requirement for a comprehensive audit report). The process results in 421 grade-one construction firms. Then, another criterion was set for the accessibility of audited financial reports within the period, and 334 grade-one construction companies were dropped due to not having all necessary data in the specified period. The reason is that some of those firms were established after 2021, and some quit or stopped operations due to litigation issues during the period. The sample selection process is summarized in Table 1, and the final sample encompassed 87 grade-one construction firms and 435 firm-year observations.

Regression models

This study has developed three pooled OLS regression models to examine the issue. Definitions for all variables included in the model are presented in Appendix A. The first research question (RQ1) examines the relationship between the number of KAMs reported by auditors and the client firm's FIDT level. Hence, the

following OLS regression model was developed to answer it considering each client's firm-year observations.

Model 1:

$$\text{FIDT}_{it} = \beta_0 + \beta_1 \text{NKAM}_{it} + \sum \text{CONTROLS} + \varepsilon_{it}$$

The total number of KAMs in each sampled firm for the periods was calculated as applied by previous literature (Sierra-García et al. 2019; Lennox et al. 2022). As a measurement for the dependent variable (FIDT), Altman's eZ"-Score model was applied (continuous variable). The revised version of Altman's (1983) Z-score model, which is accepted by various studies (Balcaen and Ooghe 2006; Altman et al. 2017; Habib et al. 2020) and practice as a main bankruptcy prediction technique, was used. The following four-factor model was used to calculate the Z"-Score.

$$\text{Z}'' - \text{Score} = 3.25 + 6.56\text{Z}_1 + 3.26\text{Z}_2 + 6.72\text{Z}_3 + 1.05\text{Z}_4$$

The following four most accurate financial ratios for bankruptcy prediction are included in the top ten ranks made by Bellovary et al. (2007). The working capital to total assets ratio (Z_1), retained earnings to total assets ratio (Z_2), earnings before interest and taxes to total assets ratio, and book value of equity to total liabilities ratio. Generally, the threshold value for FIDT is 2.6; a Z"-Score above this value indicates a safe. If a firm has a Z"-Score below the threshold value, it is in the distress or grey zone, meaning it is more likely to have financial problems in the short term. In this study, the Z"-Score value measures FIDT (increasing FIDT means a lower risk of FIDT)

Based on the suggestions of previous studies (Sierra-García et al. 2019; Lennox et al. 2022), this study included control variables (CONTROLS) such as client and auditor characteristics that can impact KAM disclosure. The study included audit fee (ADFE), audit opinion (ADOP), and auditor change (ADCH) for auditor characteristics. It also included construction firm size (CFSZ) and the existence of a restatement (REST) for client characteristics. As Lennox et al. (2022) suggested, this study also included the fixed effect of year and industry categories to capture issues regarding time-serious trends and industry characteristics.

This study's second research question (RQ2) was posed to examine the relation between the type of KAMs and FIDT. The relationship of KAMs to the level of risk, such as account-specific (AKAM) or company-wide (CKAM), with the firm's FIDT was examined using the following OLS regression (Model 2). For a given year, the sum of the client firm's account-level and company-wide KAMs are represented by AKAM and CKAM, respectively (see Table 2).

Model 2:

$$\text{FIDT}_{it} = \beta_0 + \beta_1 \text{AKAM}_{it} + \beta_2 \text{CKAM}_{it} + \sum \text{CONTROLS} + \varepsilon_{it}$$

Considering the last research question (RQ3), the study examined the effect of KAMs by classifying the financial impact on FIDT levels. Account-specific KAMs were classified by liquidity,

Table 1. Sample selection procedure.

The sample: construction companies and company-year observations	
Initial sample: all construction firms registered in EMUDC in 2017	3119
Less: construction firms not registered as grade one	(–) 2698
Grade one construction firms	421
Less: construction firms with no required data of the consolidated annual statement (2017–2021)	(–) 334
Total construction firms of the sample: Firms with all consolidated annual statement data in ERCA (2017–2021)	87
Firm-year observations total (87*5)	435

Table 2. Key audit matters categorization.

Risk-level	Classification	Variable code	Variable description	Source
Account-specific KAMs (AKAM)	Liquidity	FLQY	Number of KAMs disclosed related to liquidity	Bellovary et al. (2007) and Camacho-Minano et al. (2023)
	Solvency	FSLY	Number of KAMs disclosed related to solvency	Bellovary et al. (2007) and Camacho-Minano et al. (2023)
	Profitability	FPRY	Number of KAMs disclosed related to profitability	Bellovary et al. (2007) and Camacho-Minano et al. (2023)
Company-wide KAMs (CKAM)	Going concern	GOCN	Number of KAMs disclosed related to going concern	Camacho-Minano et al. (2023)
	Other than going concern	OCWR	Number of KAMs disclosed other than going concern	Camacho-Minano et al. (2023)

solvency, or profitability. Similarly, company-wide KAMs were classified by going concern (GOCN) or other company-wide risks (OCWR). The following OLS regression model was developed to study the relationships.

Model 3:

$$FIDT_{it} = \beta_0 + \beta_1 FLQY_{it} + \beta_2 FSLY_{it} + \beta_3 FPRY_{it} + \beta_4 GOCN_{it} + \beta_5 OCWR_{it} + \sum CONTROLS + \varepsilon_{it}$$

The number of KAMs regarding doubts about the viability of a firm is represented by (GOCN), and the number of company-wide KAMs other than going concern is represented by (OCWR). The number of KAMs primarily impacting a firm's liquidity, solvency, and profitability is represented by FLQY, FSLY, and FPRY, respectively. Generally, the sampled construction firms' KAM disclosures reported by auditors and the classifications made to each KAM (based on the previous literature) are presented in Table 2.

Major findings

Descriptive statistics

The summarized descriptive statistics of sampled company-year observations and reported KAMs are presented in Table 3. The company-year observations distribution in the year and industry categories are presented in Panel A. The most represented construction industry category is building construction (BDC) (62.1%), followed by general construction (GLC) (34.5%) and road construction (RDC) (3.4%). Moreover, the number of KAMs distributed in the year is presented in Panel B. The number of client firms reported KAMs ranges from 1 to 5 annually. The overall mean is 2.94, declining slightly throughout the sample from 3.14 to 2.94 in 2017 and 2021, respectively. The number of KAMs distributed by risk level and classification in the year is presented in Panel C (Table 3). Across the sample of 435 firm-year observations, 1277 KAMs are distributed. Considering KAMs' risk level in years, the number of reported company-wide KAMs (34.6%) is lower than account-specific KAMs (65.4%). From the reported account-specific KAMs, the most disclosed KAMs are concerning solvency (31.7%), followed by profitability (20.5) and liquidity (13.2%). From the reported company-wide KAMs, 86 KAMs (7.6%) are concerning the company's going concern, and 339 KAMs (27.9%) are other company-wide KAMs.

Besides, the average yearly total audit fees (in thousands of Ethiopian Birr) of firms in the sample are presented in Panel D. The average audit fees show a slight increment across the sample period (2017 to 2021). In addition, the summary of the nature of the opinion issued in the year is presented in Panel E. 85.7% (373) of company-year audit reports are an unqualified and non-

going concern. Qualified for going concern, audit reports accounted for 14.3% (62) of the total audit reports. This result is consistent with previous literature (Feldmann and Read 2010), highlighting that qualified audit reports for going concern are rare. In this study, the result about going concern doubts has to be noted; hence, 14.3% of the sample received KAMs paragraph regarding going concern. Based on this evidence, the firm's future viability may be disclosed by auditors, preferably in the KAMs paragraph rather than the extremely going concern opinions.

The descriptive statistics and univariate analysis of FIDT and the number of KAMs are presented in Table 4. The link between the values of FIDT and the number of KAMs is displayed in Panel A. Client construction firms have a mean of 13.145 and 3.872 FIDT, as they have one and five KAMs in their audit report, respectively. The result reflects that construction companies with one KAM are financially healthier than companies with five KAMs based on Altman (1983). Hence, as the number of KAMs increases, the mean value of FIDT (representing the firm's FIDT level) decreases; hence, the risk of FIDT increases.

In addition, the sample of this study was divided into two subsamples, such as firm years having a lower number of KAMs (less than three) and a higher number of KAMs (greater than or equal to three). The t-test of means deference is presented in Panel B (Table 4). The result shows a significant mean difference between the two groups, and the FIDT means differ. Generally, this result of univariate analysis partly answers the first research question since construction firms having greater than or equal to three KAMs disclosed are more likely to be financially distressed than construction firms having less than three KAMs disclosed.

Correlation and regression outputs

The test result in Table 5 show, overall, there is a statistically significant and medium correlation between the FIDT and the independent variables included in the models. However, the correlations of FIDT with company characteristics, such as restatement (REST), and auditor characteristics, such as auditor change (ADCH), are low. Most of the relationships between KAMs and FIDT are negative and significant. FIDT and NKAM have a significant correlation value of −0.955, which shows that as the number of KAM increases, the value of FIDT decreases (the risk of FIDT increases). The study also found a significantly negative correlation between AKAM and CKAM. The FIDT correlation with AKAM and CKAM classifications is also significantly negative. Besides, the correlation result revealed no multicollinearity problem among the variables included in the regression models.

This study used three regression models to address the research questions (RQ1, RQ2, and RQ3). The results of the first

Table 3. Descriptive statistics of sampled company-year observations.

Panel A. Company-year observation distribution in the year and industry category

Construction industry category (CINC)	2017	2018	2019	2020	2021	Total	%
General construction (GLC)	24	34	42	25	25	150	34.5
Building construction (BDC)	61	53	41	59	56	270	62.1
Road construction (RDC)	2	0	4	3	6	15	3.4
Total	87	87	87	87	87	435	100

Panel B. Summary of KAMs reported in the year

KAMs reported (NKAM)	2017	2018	2019	2020	2021	Means
Mean no. of KAMs	3.14	2.86	2.74	3.00	2.94	2.94
Std. dev. no. of KAMs	1.36	1.43	1.43	1.32	1.27	1.36
Min. no. of KAMs	1	1	1	1	1	1
Max. no. of KAMs	5	5	5	5	5	5

Panel C. Number of KAMs distribution by risk level and classification in year

KAMs classification		2017	2018	2019	2020	2021	Total	%
AKAM	FLQY	39	30	31	38	30	168	13.2
	FSLY	84	83	70	87	81	405	31.7
	FPRY	57	48	55	45	57	262	20.5
	Sub-total AKAM	180	161	156	170	168	835	65.4
	%	14.1	12.6	12.2	13.3	13.2	65.4	
CKAM	GOCN	18	22	19	18	9	86	6.7
	OCWR	75	66	63	73	79	356	27.9
	Sub-total CKAM	93	88	82	91	88	442	34.6
	%	7.3	6.9	6.4	7.1	6.9	34.6	
Total NKAMs		273	249	238	261	256	1277	
%		21.4	19.5	18.6	20.4	20.0	100	

Panel D. Summary of averaged audit fees (,000 ETB) in year

	2017	2018	2019	2020	2021	Total
Audit fees (ADFE)	12,019.083	12,776.551	12,948.375	12,119.339	12,203.943	62,067.291

Panel E. Summary of the nature of opinion issued in the year

Audit opinion (ADOP)	2017	2018	2019	2020	2021	Total	%
Unqualified and non-going concern	75	74	70	77	77	373	85.7
Qualified for going concern	12	13	17	10	10	62	14.3

Panel F. Summary of firms' auditor change in the year

Auditor change (ADCH)	2017	2018	2019	2020	2021	Total	%
Not occurred	61	69	65	67	66	328	75.4
Occurred	26	18	22	20	21	107	24.6

Panel G. Distribution of firm size in the year

Construction firm size (CFSZ)	2017	2018	2019	2020	2021	Total	%
Small	15	15	14	12	11	67	15.4
Medium	49	38	31	52	51	221	50.8
Large	23	34	42	23	25	147	33.8

Panel H. Distribution of existence of restatement in year

Restatement (REST)	2017	2018	2019	2020	2021	Total	%
Not existed	64	63	60	64	57	308	70.8
Existed	23	24	27	23	30	127	29.2

model (Model 1) in Table 6 display that there is a significantly negative relationship (–0.195) between the number of KAMs (NKAM) and the level of FIDT (FIDT). The result indicates that the risk of FIDT rises as the number of KAMs reported increases (RQ1). Considering the economic significance, the firm's risk of FIDT is increased by 19.5% with an increase in KAMs. From this result, the study suggested that financially distressed client construction companies get, on average, about four KAMs ($2.94 \times 1.195 \approx 4$) disclosures. The value is rounded, and the mean number of KAMs per sample firm, 2.95, was considered (see Table 3, Panel B).

The relationship between the firm's FIDT and KAM type was also examined using two different regression models (to answer RQ2 and RQ3). The results of the second model (Model 2) in Table 6 display that both the number of account-specific KAMs (AKAM) and company-wide KAMs (CKAM) have a significantly negative relation with FIDT (firm's Z'' Score value). The higher coefficient of AKAM over CKAM indicates that the overall account-specific KAMs capture more structural risks (FIDT) than company-wide KAMs. Considering the economic significance, the firm's risk of FIDT is increased by 34.7% and 16.1% for an increase in AKAM and CKAM, respectively (RQ2). The

average number of AKAM and CKAM per firm is 1.92 and 1.02 (835/435 and 442/435), respectively (see the distribution in Table 3, Panel C). From the results, the study suggests that, on average, out of the four KAMs disclosed by financially distressed client construction companies, about three KAMs ($1.92 \times 1.347 \approx 3$) are AKAM, and one KAM ($1.02 \times 1.161 \approx 1$) is CKAM (the values are rounded).

The third model (Model 3) separates the going concern (GOCN) from other company-wide KAMs (OCWR) and groups account-specific KAMs by their primary impact on the construction company's liquidity (FLQY), solvency (FSLY), and profitability (FPRY). The results in Table 6 display that liquidity (−0.329), solvency (−0.330), profitability (−0.316), and going concern (−0.205) have a significantly negative relation with the firm's level of FIDT. However, other company-wide KAMs (−0.05) have insignificant and negative relations with FIDT. A likely reason for this result is that identifying company-wide

KAMs other than going concern is more challenging for the auditor; hence, OCWR could have less predictive power than other KAM classifications.

The result of GOCN corresponds with previous literature (Basioudis et al. 2008; Gutierrez E et al. 2020; Munoz-Izquierdo et al. 2020; Camacho-Minano et al. 2023) examining the relationship between the level of firms' FIDT and going concern, that shows a significant relation. Although the sign of the relationship between FIDT and OCWR is supported by previous literature (Balcaen and Ooghe 2006; Alexeyeva and Sundgren 2021; Camacho-Minano et al. 2023) made considering mergers and acquisitions as company-wide KAMs, the significance has not corresponded.

In addition, the result of FLQY is supported by some previous FIDT literature (Altman et al. 2017; Bepari et al. 2022), evidencing that liquidity measures better predict a firm's bankruptcy. However, the result contradicts the recent study of Camacho-Minano et al. (2023), which concluded that firm liquidity has no substantial impact on a firm's FIDT. The studies mentioned above included KAMs on inventory, earnings management, accrual, deferral, cash, and receivable as liquidity-related KAMs. Besides, the result of FSLY is supported by previous literature (Carson et al. 2013; Altman et al. 2017; Munoz-Izquierdo et al. 2020; Bepari et al. 2022; Camacho-Minano et al. 2023) made on firm's bankruptcy and confirming leverage measures are perfect company default predictors. Those studies included KAMs on intangible intensity, leverage, liabilities, contingencies, leases, long-term debt, and pension as solvency-related KAMs. Finally, the result of FPRY is also supported by previous literature (Altman 1983; Jansen et al. 2012; Altman et al. 2017; Lukason and Laitinen 2019; Habib et al. 2020; Li et al. 2020; Camacho-Minano et al. 2023) examining FIDT using ratios-based business failure prediction models and confirmed that measures of profitability best predict a firm's bankruptcy. Those studies included

Table 4. Descriptive statistics and univariate analysis of FIDT and NKAMs.

Panel A. Descriptive statistics

NKAM	Obs.	Mean FIDT	Std. dev. FIDT	Percentile 5	Percentile 95
1	85	13.145	1.266	11.832	15.254
2	89	10.936	.485	10.178	11.671
3	105	8.954	.656	7.996	10.055
4	81	6.898	.597	5.864	7.772
5	75	3.872	1.383	1.008	5.628
Total	435	8.919	3.217	3.187	13.633

Panel B. Univariate analysis

NKAM	Obs.	Mean FIDT	Std. dev. FIDT	p Value	t-test
>= 3	261	6.86	2.27	.000	−26.507***
< 3	174	12.02	1.46		

The authors report a p-value with "***" indicating (two-tailed) statistical significance at the 1% level.

Table 5. Correlation matrix.

	FIDT	NKAM	AKAM	CKAM	FLQY	FSLY	FPRY	GOCN	OCWR	ADFE	ADOP	ADCH	CFSZ	REST
FIDT	1.000													
NKAM	−0.955	1.000												
AKAM	−0.922	0.087	1.000											
CKAM	−0.448	0.622	0.155	1.000										
FLQY	−0.426	0.384	0.449	0.056	1.000									
FSLY	−0.464	0.460	0.494	0.136	−0.192	1.000								
FPRY	−0.444	0.410	0.504	0.022	0.033	−0.268	1.000							
GOCN	−0.372	0.486	0.257	0.567	0.093	0.143	0.128	1.000						
OCWR	−0.203	0.309	−0.042	0.687	−0.016	0.036	−0.088	−0.210	1.000					
ADFE	0.996	−0.094	−0.090	−0.472	−0.420	−0.451	−0.432	−0.350	−0.252	1.000				
ADOP	0.589	−0.579	−0.347	−0.610	−0.179	−0.190	−0.134	−0.160	−0.583	0.641	1.000			
ADCH	−0.061	0.051	0.008	0.089	0.032	−0.016	0.004	0.041	0.069	−0.067	−0.126	1.000		
CFSZ	0.901	−0.089	−0.082	−0.496	−0.375	−0.407	−0.407	−0.416	−0.222	0.089	0.492	−0.139	1.000	
REST	0.003	−0.012	0.029	−0.070	0.066	−0.035	0.028	−0.059	−0.031	0.008	0.080	0.057	0.016	1.000

Table 6. Pooled OLS regression model.

Model	Model 1	Model 2	Model 3
Dependent variable	FIDT	FIDT	FIDT
NKAM	−0.195*** (0.069)		
AKAM		−0.347*** (0.121)	
CKAM		−0.161*** (0.060)	
FLQY			−0.329** (0.125)
FSLY			−0.330*** (0.117)
FPRY			−0.316** (0.128)
GOCN			−0.205*** (0.060)
OCWR			−0.05 (0.064)
Observations	435	435	435
R-squared	99.68	99.71	99.74
F-Statistics	12,384.01***	20,194.89***	1686.83***
Fixed effects (industry category and year) and controls	Yes	Yes	Yes
Model VIF	5.29	6.24	6.02

The authors report p-values with "**" and "***" indicating (two-tailed) statistical significance at the 5% and 1% levels, respectively.

KAMs on revenue accounts and earnings management as profitability-related KAMs.

Tests of robustness

This study employed three alternative FIDT measures to examine the robustness of the outcomes and the dependent variable (FIDT). Those are the Z''- Score (FIDTzsv) indicator variable, the Charitou et al.'s (2004) Score (FIDTch), and the Charitou's Score (FIDTchv) indicator variable (see Appendix A for definitions). Firstly, the untabulated results of the logistic regression model show there is a significant relation (–0.167) between FIDTzsv and the number of KAMs, which supports the findings of the study's main model. The pseudo R^2 of the model is 45.1%, and the area under the curve (AUC) of the model is 0.724, indicating the level of FIDT can efficiently be explained by the number of KAMs variables and their classification. Secondly, the FIDTch measure was also employed, and the study's main findings were supported since the untabulated results show that a high likelihood of FIDT can be reflected by expanded audit reports having a high number of KAMs and similar results found for KAMs classification (see Table 6). Thirdly, a logistics regression for the indicator variable FIDTchv (Charitou's score indicator) was made, and the outcomes (untabulated) for the number of KAMs variables and their classifications are similar to the results of FIDTzsv.

Endogeneity tests

Two-step system GMM estimator

This study used this approach to address concerns regarding unobservable omitted variables and measurement errors that influence FIDT. It is also used to address issues on simultaneous causality since the client construction companies' weak financial health may determine the disclosure of KAMs. Compared to a one-step GMM estimator, this estimator is more accurate in correcting measurement errors (Roodman 2009). The results of the GMM estimator are presented in Table 7, Model 4. The issues regarding the proliferation of instruments and serial autocorrelation of errors are addressed in this test.

Propensity score matching (PSM)

The study used the PSM test to alleviate the specification dependency of the relation between NKAM and FIDT. The study created treatment and control groups to analyse the NKAM variable. The indicator variable TRMT was coded as 0 for audit reports having less than three KAMs and 1 otherwise (the auditor and client construction firm characteristics were controlled). The first-stage regression results of Model 5 in Table 7 show a significant relationship between the control variables and TRMT. Auditor characteristics such as audit fee (ADFE) and audit opinion (ADOP) and client firm characteristics such as construction firm size (CFSZ) are significantly related to the disclosure of KAMs. The second-stage regression of Model 6 in Table 7 used the propensity score (Mypscore) to assess each audit report's low and high number of KAMs. Audit reports that disclosed less than three KAMs were considered low and coded as 0, while 1 represents high (having three or more KAMs). The result shows that the relation between FIDT and NKAM is still significantly negative (–0.193), confirming the study's main results, which show that KAMs accurately reflect FIDT.

Change specification model

The study further applied a change specification model to see if KAMs are not simply driven by the firms' poor fundamentals. KAM disclosure may primarily rely on the financial condition of firms because of the calculation of Z''-Score in the main model (FIDT). This endogeneity concern was addressed using change specification models. This study created an indicator variable NKAM_g, which is the change of NKAM between t and t–1. The regressions were re-estimated, and the result of Model 7 in Table 7 show similar results to Table 6 (significantly negative coefficient of −0.015); hence, construction firms' FIDT level can accurately be assessed with KAMs.

Conclusions and implications

This study was focused on examining the usefulness of improved transparency of the audit process through KAMs in assessing client construction firms' FIDT risk. Recent calls for further investigations were considered from the literature (Minutti-Meza

Table 7. Two-step-system generalized method of moments (GMM), propensity score matching (PSM), and changes of the main independent variable model.

Model	Model 4	Model 5	Model 6	Model 7
Robustness tests	Two-step GMM	First stage PSM	Second stage PSM	Change specification model
Dependent variable	FIDT	TRMT	FIDT	FIDT
FIDT_ln	−0.063* (0.050)			
NKAM	−0.323** (0.171)		TRMT −0.193*** (0 .064)	
NKAM_g				−0.015** (0.008)
ADFE	0.022*** (0.007)	−0.005*** (0.001)	0.064*** (0.001)	0.065*** (0.001)
ADOP	−0.526*** (0.140)	0.225*** (0.050)	−0.684*** (0.052)	−0.721*** (0.047)
ADCH	−0.011 (0.033)	−0.034 (0.033)	0.088 (0.025)	0.013 (0.025)
CFSZ	0.110 (0.069)	0.164*** (0.041)	0.205** (0.082)	0.158** (0.073)
REST	−0.060 (0.048)	0.004 (0.028)	0.029 (0.033)	0.024 (0.035)
Observations	348	435	435	435
R-squared			99.65***	99.64***
Wald test	68.32***			
F-Statistics				9698.28***
Fixed effects (industry category and year)	Yes	Yes	Yes	Yes
Model VIF	6.05		4.18	3.35
AR (1) (p value)	−2.07 (.038)			
AR (2) (p value)	−1.45 (.209)			
Hansen test (p value)	2.20 (.333)			
Diff-Hansen test (p value)	4.35 (.226)			

The authors report p-values with "*", "**", and "***", indicating (two-tailed) statistical significance at the 10%, 5%, and 1% levels, respectively.

2021; Camacho-Minano et al. 2023; Chen et al. 2023). The relationship between KAMs and FIDT was examined by filtering grade-one construction firms registered in the Ethiopian Ministry of Urban Development and Construction from 2017 to 2021, resulting in 435 firm-year observations.

The result of this study shows that KAMs reported by auditors are valuable in predicting and assessing a firm's risk of FIDT. The finding evidenced that the risk level of FIDT in construction companies rises as the disclosed number of KAMs increases. The number of KAMs and the nature of KAMs are also found to be substantial in assessing a firm's FIDT level. The finding shows that account-specific KAMs are more substantial in assessing a firm's FIDT than company-wide KAMs. Account-specific KAMs grouped based on their primary impact as liquidity, solvency, and profitability were useful in assessing a firm's FIDT. However, in the company-wide KAMs, only going concern was found significant in assessing the extent of the firm's FIDT. The results were found robust after being checked by alternative FIDT measures and endogeneity tests.

The finding of this study is highly pertinent and has wide-ranging implications for construction firms and their stakeholders, such as investors, auditors, and regulators. Firstly, it promotes accountability and transparency within the construction firms, developing a financial responsibility culture. It also sheds light on the specific financial operations of construction firms with high distress risk, eventually improving the industry's sustainability. Secondly, the findings can assist regulators in assessing the cost-benefit of new regulations on expanded audit reporting (auditor's requirement for KAM disclosure) for the construction industry. It can provide directions for regulatory changes to confirm that auditors properly examine critical areas through audits. Thirdly, auditors may benefit from this study by assessing potential clients' engagement risk and providing audit report disclosers for users as an alternative going concern signal about the firm. Finally, this study is also beneficial to users of financial reports as the study conducted a new approach to evaluating the financial health of firms using public auditor (independent) data.

Acknowledging the study's limitations is essential, and the following are limitations which may guide future research and researchers. The number of construction firms included in the sample and the data availability may constrain the generalizability of the findings. The time frame may limit the relevance of the study's findings since regulatory frameworks and economic conditions may change over time. The distinctive features (regulatory, economic, and cultural) of Ethiopia's construction industry (regulatory, economic, and cultural) may also limit the generalizability of the findings to other countries.

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Data availability statement

The data is available upon reasonable request.

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Appendix A.
Variables and their definitions

Dependent variables	
In the main analysis	
FIDT	Altman's Z''- Score of sampled grade 1 construction companies and calculated as:
	$3.25 + 6.56 \times Z_1 + 3.26 \times Z_2 + 6.72 \times Z_3 + 1.05 \times Z_4$
	Z_1 = (Current assets minus current liabilities) divided by total assets
	Z_2 = Retained earnings divided by total assets
	Z_3 = Earnings before interest and taxes divided by total assets
	Z_4 = Book value of equity divided by total liabilities
In the test of robustness and endogeneity	
FIDTzsv	Altman's Z'' -Score classification and coded as:
	1 if score $>=$2.6 (safe zone) and 0 if score $<$2.6 (grey and distressed zone)
FIDTch	Charitou's score of sampled grade-one construction companies was calculated as follows:
	$1/1 + EXP\{-7.1786 + [12.3826 \times (TL/TA)] - [20.9691 \times (NI/TL)] - [3.0174 \times (OPCF/TL)]\}$
FIDTchv	Charitou's Score classification and coded as follows:
	1 if the score $>=$0.2 (non-distressed) and 0 if the score $<$0.2 (Distressed)
FIDT_ln	The lagged value of FIDT used for the endogeneity test

Independent variables	
In the main analysis and test of endogeneity,	
NKAM	The number of disclosed KAMs by an auditor
NKAM_g	Change of number of disclosed KAMs between period t and t−1
AKAM	Account-specific KAMs
CKAM	Company-wide KAMs
FLQY	KAMs on liquidity
FSLY	KAMs on solvency
FPRY	KAMs on profitability
GOCN	KAMs on going concern
OCWR	KAMs on other company-wide risks
ADFE	The amount of total audit fees
ADOP	Audit opinion coded as 1 if qualified for going concern, 0 otherwise)
ADCH	Auditor change coded as 1 if occurred, 0 not occurred)
CFSZ	Construction firm size is coded as 1 if small, 2 if medium, and 3 if large
REST	Restatement coded as 1 if existed, 0 not existed)