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DETERMINANTS FOR DISCLOSURE OF THE KEY AUDIT MATTERS IN NON-FINANCIAL COMPANIES OF B3

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ABSTRACT

This research analyzes the determinants of the quantity of key audit matters (KAM) reported in audit reports from 2016 to 2019 of the non-financial companies listed on B3. The longitudinal regression model for panel data - Poisson's *Log-Linear* was applied to an annual sample of at least 272 companies, resulting in 1,198 reports and 3,295 KAM (dependent variable), considering as explanatory variables the aspects of the auditor, the auditee, and corporate governance mechanisms. The findings demonstrate that being audited by the big four is negatively associated with the quantity of KAM. This may be due to the big four or not reporting the same mean number of KAMs per company. Auditors of larger companies, less profitable and with greater operational risk, disclose more KAM, probably aiming to ensure their independence. The audit committees were not statistically significant, not impacting the quantity of KAM reported. The results contribute to the literature on factors that affect the disclosure of KAM in a non-European context (Bepari et al., 2022) with four years of data, and to companies, auditors, and regulatory and supervisory bodies, through Poisson's multilevel regression, which is an appropriate approach for structured counting data in clusters of relatively similar observations (panels). This advances the studies by Ferreira and Morais (2020) and Guedes et al. (2021), who used ordinary least squares (OLS), and Colares et al. (2020), who used the Chi-square test in one- or two-year analyses of characteristics that tend to establish the quantity of KAM in Brazil.

Keywords: Auditor's Report. Key Audit Matters. Determinants.

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1 INTRODUCTION

Independent audit reports are a source of information for accounting users, especially shareholders (Reid et al., 2019). A new format has been disclosed to improve the relevance and usefulness of the auditor's report since December 2016, with paragraphs on the key audit matters (KAM) (Reid et al., 2019; Wuttichindanon & Issarawornrawanich, 2020). This seeks to provide a less standardized report to users in order to maximize the auditee's information, denoting its specificities and generating more transparency about the audit reports and the activities developed by the auditor (CFC, 2016; IAASB, 2015; Reid et al., 2019).

The KAM insertion in the audit report aims for the auditor, based on his judgment, to report the matters that are most relevant to the auditee (CFC, 2016). This greater transparency of the auditor, within the scope of the capital market, is associated with less information risk (Cordos & Fülöp, 2015). Therefore, it seems reasonable to assume that more reported KAM implies less informational asymmetry, corroborating the Agency Theory that highlights auditors as reducing agents of informational asymmetry (Alves Júnior & Galdi, 2020; Jensen & Meckling, 1976).

For Wuttichindanon and Issarawornrawanich (2020), three groups of factors are determinants of the KAM: auditor characteristics, corporate governance mechanisms, and company attributes. Relevant aspects of the auditor include the risk of litigation, in which the disclosure or not of a key audit matter may imply loss of reputation and/or loss of the customer (Pinto & Morais, 2019). Similarly, the auditor must determine the KAM considering the areas of greatest risk of the auditee (Alves Jr & Galdi, 2020; Sierra-García et al., 2019), the size and profitability of the customer may require more or fewer audit procedures due to the associated financial risks (Pinto & Morais, 2019).

Regarding corporate governance mechanisms, NBC TA 701 establishes that the key audit matters are selected among those communicated to those responsible for governance (CFC, 2016; Kang, 2019). This recognizes the relevance of these agents exert in the supervision of financial reports and makes it possible to understand the basis of the auditor's decisions related to key audit matters and how they will be reported in the auditor's report (Kang, 2019). Corporate governance systems change in each country, and the influence on auditing may be different (Velte, 2018). However, it is expected that, regardless of jurisdiction, the reported KAM will be selected from the matters shared with the audit committees (Zhang & Shailer, 2021).

The disclosure of KAM is correlated with the auditor (fees and audit firm) and customer characteristics (sector, business complexity, and company size) (Ferreira & Morais, 2020; Lennox et al., 2019; Pinto & Morais, 2019; Sierra-García et al., 2019). The number of KAM disclosed also demonstrates association with: i) auditor litigation risk so that the big four are likely to report more KAM; ii) company characteristics (complexity, profitability, and sector); and iii) the number of independent members (governance attribute) (Wuttichindanon & Issarawornrawanich, 2020). Also, the large customers, due to the complexity of the firms (Pinto & Morais, 2019) and the record of losses in consecutive years also show themselves as indicators for the auditor to assess the level of risk of the company (Gallizo & Saladrigues, 2016) and possibly, based on them, communicate KAM.

Velte (2020) investigated the impact of the financial and sectoral expertise of the audit committees on the legibility of the key audit matters, identifying that the financial experience has a positive impact on the KAM. Through an experiment, Kang (2019) investigated how investor sophistication and the prospect of KAM disclosure jointly affect the degree of questioning of audit committee members during their supervision process. Abu and Jaffar (2020) observed that companies with frequent audit committee meetings manage to reduce the number of KAM. Zhang and Shailer (2021) found that more accounting or sector knowledge by audit committees

results in less KAM. Financial experience and the presence of female representatives on the audit committee have a positive relationship with the disclosure of KAM in the Middle East (Mah'd & Mardini, 2022).

Ferreira and Morais (2020) analyzed whether the particularities of the audited Brazilian companies influence the volume of KAM reported in 2016, indicating the need to verify this relationship over time. Pinto and Morais (2019), based on 2016 data, evaluated the factors that affect the number of KAM in the main European countries (United Kingdom, France, and the Netherlands), emphasizing that few studies investigate aspects that determine the disclosure of KAM by auditors. Köhler et al. (2020) suggest understanding how the characteristics of auditors influence the communication of KAM, as this disclosure is based on their judgment. Gold and Heilmann (2019) recommend examining the KAM production process, including the auditor's communications with management and audit committees. Bepari et al. (2022) indicate the absence of evidence on determinants of different types of KAM disclosure in a non-European context.

By the Chi-square test, Colares et al. (2020) observed some relationship between the audit committee and KAM with data from only one fiscal year in Brazil. Therefore, they suggest temporal expansion and more robust analysis techniques, such as panel data. Through multiple linear regression, Guedes et al. (2021) detect a negative and significant relationship between the audit committee and the number of KAM reported.

Understanding how engagement between auditors and audit committees affects external auditors' reporting decisions enables understanding and evaluating the role of extended reporting in promoting audit transparency (Zhang & Shailer, 2021). Thus, in order to fill the temporal limitation of considering only 2016 in the Brazilian scope (Colares et al., 2020; Ferreira & Morais, 2020), of not investigating the components of corporate governance, specifically the characteristics of the audit committee members (Ferreira & Morais, 2020), or of evaluating the effect of the audit committee without exclusive counting data techniques (Colares et al., 2020; Guedes et al., 2021), we seek to answer the following problem question: what are the determinants of the quantity of KAM reported in Brazilian audit reports from 2016 to 2019? Thus, we seek to analyze the determinants of the quantity of KAM reported in the audit reports from 2016 to 2019 of non-financial companies listed on B3 – Brasil, Bolsa, Balcão.

Although there are normative guidelines to determine whether a matter constitutes a KAM (CFC, 2016), the relationship between the number of KAM with their determining factors has been investigated using experiments (Pinto & Morais, 2019). As the quantity depends on the professional judgment of the auditor, further investigations into the aspects that influence this behavior help understand the implication of the KAM disclosure (Bepari et al., 2022; Köhler et al., 2020; Pinto & Morais, 2019). Therefore, this study provides direct documentary evidence on what motivates auditors to disclose KAM in the Brazilian context.

Based on this purpose, it contributes to the literature on audit reports and KAM, fostering the debate on the characteristics that determine the disclosure of the auditor's opinion over time, and with this, it advances in the studies proposed by Ferreira and Morais (2020) and Guedes et al. (2021), which used ordinary least squares (OLS), and in the research by Colares et al. (2020), which used the Chi-square test. This study operationalizes Poisson regression, the form of regression used to model and analyze data counting (Hox et al., 2017). Moreover, this investigation makes it possible to discuss the international scope, for example, with Wuttichindanon and Issarawornrawanich (2020), who investigated the factors that led auditors to consider issuing KAM in the context of Thailand; Pinto and Morais (2019) and Sierra-García et al. (2019) within Europe; Zhang and Shailer (2021) in the United Kingdom, and Abu and Jaffar (2020) in Malaysia. It may also be useful for standard setters, regulators, and financial managers to better understand the factors that can influence an auditor's underlying decision to disclose KAM.

2 DETERMINANTS OF KEY AUDIT MATTERS

The new audit report requires auditors to identify and report on key audit matters (KAM). That means the matters that were most significant in the audit of the financial statements according to their professional judgment (Pinto & Morais, 2019). This disclosure aims to improve the content of the information in the audit report and, thereby, promote communication between auditors and users of accounting information (Kang, 2019). The disclosure of KAM decreases information asymmetry and conflicts of interest between management and shareholders (Kang, 2019; Velte, 2020).

To ensure adequate audit reporting, audit committees are understood as one of the key elements of internal corporate governance monitoring (DeFond & Zhang, 2014). The audit committee requires a rigorous external audit because the independent auditor supports the audit committee in its monitoring functions (Velte, 2018). Financial expertise means that the audit committee member is familiar with financial accounting and auditing standards and can be classified as a variable that strengthens the audit committee's knowledge in overseeing the financial report process and the external auditor (Velte, 2020). Thus, possible agency conflicts between management and shareholders, which arise from interests and information asymmetries, can be reduced by the implementation of financial experts in the audit committees, and they can influence the quantity of KAM (Velte, 2018; Velte, 2020), as experience allows a better understanding of the matters, risks, and audit procedures proposed to address these matters and risks (Abbott et al., 2003).

The proportion of members on the committee who do not participate in other committees (independent members) may require an expanded audit scope to avoid being associated with a financial misstatement and also order (or support the auditor's demand for) additional audit procedures, going beyond the initial audit plan to areas that subsequently reveal higher levels of containment, uncertainty, or risk (Abbott et al., 2003). Thus, independence can contribute to the better detection of financial distortion. In other words, more KAM reports on inconsistent aspects of financial reports, considering that the auditor must define KAM considering the areas of greatest risk of the auditee (Alves Jr & Galdi, 2020; Sierra-García et al., 2019).

Colares et al. (2020) highlight that the audit committee has cooperated as a risk management tool and communication link for matters between the board of directors, auditors, and shareholders, as it also acts in preparing the financial statements supervising and ensuring greater quality. Guedes et al. (2021) indicate that the audit committee contributes to managing internal control and reducing risks identified during the audit work. Elmarzouky et al. (2022) warn that meetings occur between the independent auditor and the audit committee, leading to the KAM being known by management before communication in the audit report.

Besides, KAM are matters that, before being disclosed to the market, must be communicated to the audit committee (CFC, 2016). This suggests that audit committee members are important in identifying and communicating KAM to information users (Kang, 2019). Thus, it is relevant to examine whether the audit committee influences the disclosures of the KAM through three hypotheses:

H_1: There is a significant and positive relationship between the number of audit committee members and the quantity of KAM disclosed.

H_2: There is a significant and positive relationship between the percentage of independent members in the audit committee and the quantity of KAM disclosed.

H_3: There is a significant and positive relationship between the financial expertise of the audit committee and the quantity of KAM disclosed.

NBC TA 701 requires the auditor to enter customer-specific information in the audit report to improve the communication value of the audit report (CFC, 2016). Therefore, due to

the company characteristics, the number of KAM should be different for each undertaking. In this sense, the disclosure of KAM is expected to reduce the information gap between auditors and users, increase the effectiveness of the audit report, and improve the audit quality (Alves Júnior & Galdi, 2020).

Greater transparency by the auditor in audit policies, processes, and methodologies can improve the audit quality (Deumes et al., 2012; Litjens et al., 2015) and thus increase the usefulness of the auditor's work. For example, audit quality concerns regulators in the stock market since quality work is associated with a lower information risk (Cordos & Fülöp, 2015). DeAngelo (1981) defines audit quality as the auditor's likelihood (competence) to detect material misstatements in the financial statements and, subsequently, the ability to report them in the audit report (independence). Lennox et al. (2019) point out that auditors have access to a large amount of private information about their customers' financial statements, thus being in a privileged position to bring unexpected risks to investors' attention.

In this perspective, the decision to disclose a KAM is affected by the auditor and the environment (Pinto & Morais, 2019). Velte (2020) notes that banks audited by large audit firms, such as the big four, are negatively associated with KAM since if a bank is audited by the big four, on average, the number of KAM decreases by approximately 51.67%. Brasel et al. (2016) indicate that the disclosure of KAM mitigates the liability of auditors if judged litigiously on undetected misstatement, making it more predictable for the user of the financial statements. However, Gimbar et al. (2016) demonstrate that KAM disclosure on subsequent litigation increases the auditor's responsibility when accounting standards are accurate or when the auditor discloses additional procedures performed in response to higher associated risks.

Pinto and Morais (2019) point out that the disclosure of a KAM by the auditor may involve feelings of commitment, regret, and liability. Hence, the authors mean that the KAM disclosure in the audit report is influenced by the perceived consequences of the economic trade-off auditor between the likelihood of being exposed to litigation and the loss of reputation on the one hand and the expected cost of losing a customer on the other. In addition, the accuracy of an accounting standard and that certain entities are more regulated and supervised than others may affect the number of KAM reported (Sierra-Garcia et al., 2019; Velte, 2020).

Camargo et al. (2019) identified that the KAM on Taxes, Fraud and Process Risks, and Corporate Reorganization are related to the loss of companies listed in IBRX 100, which may indicate topics that demand greater attention from professionals because they have a potential impact on the continuity of entities. Also, larger, more indebted companies, with higher fees paid to audits, of greater representativeness for the auditor, with a greater number of subsidiaries, audited by the big four, with the issuance of ADR, listed in Novo Mercado, and from regulated industries and with the presence of an audit board have a greater quantity of KAM in the Brazilian context in 2016 (Cruz et al., 2019). A higher number of KAM can be determined due to companies being audited by the big four; multinationals with many subsidiaries, technology, property, and construction industries, and finance, while highly profitable entities issue a lower number of KAM in Thailand (Wuttichindanon & Issarawornrawanich, 2020).

Lennox et al. (2019) realize that the number of KAM disclosed is higher in larger companies, with more subsidiaries, with higher book-to-market ratios, listed in the US, with financial difficulties, and with matters associated with incorrect financial reporting. Sierra-Garcia et al. (2019) point out that KAM are usually related to complex areas with a significant margin for managerial judgment. This indicates that the customer's financial information is relevant to the definition of the KAM, which leads us to believe that the characteristics of the auditor and the customer are the main determinants of the number and type of KAM, considering that the customer's financial condition is the main factor analyzed to formalize or not an audit contract, at the same time that the financial variables impact the auditor's identification. Based on this, it is postulated that:

H_4: There is a significant and positive relationship between the big four auditors and the quantity of KAM disclosed.

H_5: There is a significant and positive relationship between the client's financial condition (degree of indebtedness, loss in the previous year, size) and the quantity of KAM disclosed.

H_6: There is a significant and negative relationship between customer profitability and the quantity of KAM disclosed.

3 METHODOLOGICAL PROCEDURES

Table 1 shows the variables used to investigate the relationship between the determining factors and the quantity of KAM reported in Brazilian companies.

Table 1
Research Variables

Description	Acronym	Metric	Expected signal	Theoretical Support
DEPENDENT VARIABLE				
Quantity of KAM	QKAM	number of KAM reported per company		Wuttichindanon & Issarawornrawanich (2020); Ferreira & Morais (2020)
INDEPENDENT VARIABLES OF INTEREST				
Audit committee size	COM	number of members in the audit committee	+	Wuttichindanon & Issarawornrawanich (2020)
Independent members	INDEP	the proportion of independent members	+	Wuttichindanon & Issarawornrawanich (2020)
Financial Expertise	EXP	dummy indicating if the company has at least one member with experience in accounting, auditing, and/or finance (1), otherwise 0 (zero)	+	Wuttichindanon & Issarawornrawanich (2020)
Big Four	BIG	dummy considering whether company *i* in period *t* was audited by big four (1), otherwise 0 (zero)	+	Wuttichindanon & Issarawornrawanich (2020)
Company size	SIZ	Natural logarithm of the total asset	+	Wuttichindanon & Issarawornrawanich (2020); Ferreira & Morais (2020)
Profitability	ROA	refers to the fraction of net profit by total assets	-	Ferreira & Morais (2020); Sierra-Garcia et al. (2019)
Indebtedness	IND	degree of indebtedness calculated by the sum of current and non-current liabilities divided by total assets	+	Ferreira & Morais (2020); Pinto & Morais (2019)
Loss	LOSS	dummy indicating whether the company ended the previous year with a loss	+	Ferreira & Morais (2020); Lennox et al. (2019)
INDEPENDENT CONTROL VARIABLES				
Year 1	Y1	refers to the first year of implementation of KAM, codified 1 for the end of fiscal year 2016	+	Wuttichindanon & Issarawornrawanich (2020); Sierra-Garcia et al. (2019)
Nature of the business setting	SEC	specification dummies of the sector that the company belongs to at B3	+/-	Wuttichindanon & Issarawornrawanich (2020); Ferreira & Morais (2020)
B3 governance level	GOV	specification dummies of the company's governance level at B3	+	Colares et al. (2020); Guedes et al. 2021

Based on Table 1 and the studies by Ferreira and Morais (2020) and Wuttichindanon and Issarawornrawanich (2020), it is expected: a greater number of KAM reported by the big four, given they are recognized audit firms in the market, causing auditors to communicate matters they consider relevant without being subject to the consequences that disclosure may have. Within the scope of the loss, a positive relationship is also estimated, as to protect their reputation and reduce the risk of litigation, auditors are likely to disclose more KAM in companies with a higher risk of continuity. Companies with high indebtedness evaluate this same understanding, as auditors tend to review this company in more detail, resulting in an increased effort by the auditor and possibly more KAM communicated in their audit report. All the more so, larger and less profitable companies also tend to have higher KAM numbers. Regarding the industries, possibly not all presented the same behavior, investigated the following segments: cyclical consumption, industrial goods, public utility, basic materials, non-cyclical consumption, health, oil, gas, and biofuels, information technology, others, and communication.

The quantity of KAM and audit firm information (big four or not) were collected from the Independent Audit Reports, available on the B3 website http://www.b3.com.br/pt_br/produtos-e-servicos/negociacao/renda-variavel/empresas-listadas.htm), for the period from 2016 to 2019, of Brazilian non-financial companies, totaling 1,198 verified reports. Consistent with studies on KAM (Velte, 2020), companies in the financial sector were excluded. The results data for the previous year (loss or not), total assets (size), profitability, indebtedness, and sector were obtained from the Economatica® database in January 2021. Corporate governance proxies were obtained from the Thomson Reuters® database. Regarding the analyzed period, it is *ex-post* the implementation of the KAM standard in the Brazilian context, but before COVID-19, given it was a period of pandemic (crisis) and they were able to have specific and quite different results from those found in the sample approach of this research.

Table 2 illustrates the research data, segregating companies by year and industry. It was identified that the three most representative industries are: cyclical consumption, industrial goods, and public utility, which cover 66.36% of the data.

Table 2
Research Sample

Sector	**2016**		**2017**		**2018**		**2019**	
Companies in B3	**357**		**357**		**357**		**357**	
(-) Financial company or not located at B3 on the date of collection	**(51)**		**(47)**		**(47)**		**(85)**	
(=) Final sample								
Industrial goods	68	22.22%	69	22.26%	70	22.58%	61	22.43%
Communications	6	1.96%	6	1.94%	6	1.94%	6	2.21%
Cyclical consumption	78	25.49%	78	25.16%	78	25.16%	70	25.74%
Non-cyclical consumption	24	7.84%	25	8.06%	25	8.06%	23	8.46%
Basic materials	28	9.15%	28	9.03%	28	9.03%	23	8.46%
Oil, gas, and biofuels	10	3.27%	10	3.23%	10	3.23%	9	3.31%
Health	17	5.56%	19	6.13%	19	6.13%	16	5.88%
Information technology	7	2.29%	7	2.26%	7	2.26%	4	1.47%
Public interest	68	22.22%	68	21.94%	67	21.61%	60	22.06%
Overall total	**306**	**100%**	**310**	**100%**	**310**	**100%**	**272**	**100%**

To examine the determinants of the quantity of KAM reported by the auditing firms from 2016 to 2019, the main statistical method used was a longitudinal regression model that suited the panel data structure. Since the dependent variable (response) is a count, emphasis was placed on the family of Generalized Linear Models (GLM) with probability distribution of the

supposedly Poisson response, a typical distribution for random variables from counts. The multilevel regression model with Poisson distribution is described in Hox et al. (2017). Computationally, Bates et al. (2015) package of the R software (R Core Team, 2022) was used.

Thus, as the quantity of KAM (QKAM) reported (dependent variable) is explained by the literature as arising from contextual factors, the company and the audit firm, Poisson regression is assumed to be the most appropriate method, which was also used by Pinto and Morais (2019) in the European context to investigate which factors lead auditors to disclose KAM. In this research, according to Table 1, the characteristics of the auditee are represented by: company size (SIZ), profitability (ROA), indebtedness (IND), loss (LOSS), sector (SEC), and corporate governance (GOV), while big four is an aspect of the audit firm (BIG). Governance variables are verified by the existence or not of members in the audit committee with experience in accounting and/or finance (EXP), proportion of independent directors (INDEP), and number of members (COM). A dummy control variable was also included for the first year of the KAM (Y1), as the subjects and quantity of KAM of 2016 may be a reference for later years of companies in the same sector.

Given the indicators of the audit committee COM, INDEP, and EXP presenting just over three hundred valid observations, it was decided to aggregate them into a single variable called the COMMITTEE with the following categories:

- *no valid response in the indicators;*
- *all indicators less than or equal to median;*
- *some smaller and others larger than the median;*
- *all indicators higher than median*

Following Hox et al. (2017) and considering the notations in Table 1, the usual model (assuming error terms with normal distributions) of multilevel regression describes the $QKAM_{it}$ response variable in two levels of equations, with level 1 representing the observation of QKAM at time t of company i and level 2 at company i.

Level 1:

$$QKAM_{it} = \beta_{0i} + \beta_1 COMMITEE_{it} + \beta_2 SIZ_{it} + \beta_3 LOSS_{it} + \beta_4 ROA_{it} + \beta_5 IND_{it} + \beta_6 BIG_{it} + \beta_7 Y1_{it} + \beta_8 (GOV\_Level2)_{it} + \cdots + \varepsilon_{it}$$

Level 2:

$$\beta_{0i} = \gamma_{00} + \gamma_{01}(SET\_comunicacoes)_i + \cdots + u_{0i}$$

Where ε_{it} represents the random term at time t of company i and u_{0i} is the random term of company i, supposedly independent for different companies, normal distributions, and constant variances $V(\varepsilon_{it})$ and $V(u_{0i})$ for all i and t.

The model allows a relationship of dependence between observations of the same company, which is natural. For simplicity, it was considered that only the intercept is random (varies between companies), correcting the heterogeneity due to different levels of QKAM between companies. The other coefficients were supposedly fixed (the same for all companies). That means the impact of each explanatory variable should not be different between companies. This simplification is usual to avoid very complex modeling.

In the present case, where the response variable (QKAM) is a count, Poisson distribution was assumed instead of normal distribution. In this context, the level 1 equation relates the QKAM with a linear combination of the explanatory variables, having as a link the logarithmic function. The level 2 equation associated with companies remains the same. The method for estimating the coefficients is maximum likelihood, as Bates et al. (2015) described.

Descriptive statistics (mean, standard deviation, minimum, and maximum) were also applied for data analysis. All statistical analyses were operationalized using the R software (R Core Team, 2022).

4 RESULTS

Table 3 shows the descriptive statistics of the study sample.

Table 3
Descriptive Statistics

Variable	Sample	Mean	Standard Deviation	Minimum	p25	p50	p75	Maximum
QKAM	3,295	2.750	1.371	0	2	3	4	8
INDEP	308	0.350	0.329	0	0	0.333	0.667	1
EXP	308	0.555	0.498	0	0	1	1	1
COM	308	3.370	1.314	1	3	3	4	10
BIG	1,198	0.785	0.411	0	1	1	1	1
SIZ	1,198	14.716	2.001	6.043	13.459	14.815	16.145	20.646
ROA	1,198	-1.001	67.896	-1173.634	-1.414	2.431	6.668	1453.854
IND	1,198	0.974	2.744	0.040	0.490	0.657	0.813	46.124
LOSS	1,198	0.655	0.475	0	0	1	1	1
Y1	1,198	0.255	0.436	0	0	0	1	1
Level 1	1,198	0.063	0.244	0	0	0	0	1
Level 2	1,198	0.049	0.216	0	0	0	0	1
Novo Mercado	1,198	0.380	0.486	0	0	0	1	1
Traditional	1,198	0.368	0.482	0	0	0	1	1
NoGov	1,198	0.139	0.347	0	0	0	0	1

The dependent variable (QKAM) shows a mean of 2.75 matters per company. In some companies, the auditor did not highlight the key audit matters; in others, he had eight KAM evidenced. At the international level, Pinto and Morais (2019) identified in the European context (Netherlands, France, and United Kingdom) a mean of 3.8 KAM per company, with a minimum of zero and a maximum of nine; Sierra-Garcia et al. (2019) observed that 61.89% of companies disclose from 3 to 5 KAM, and Wuttichindanon and Issarawornrawanich (2020) verified, on average, two KAM per company in Thailand.

Table 4 shows the total and mean KAM per sector of activity, considering the specificities of each area.

Table 4
Mean and Total Annual Quantity of KAM by Sector in the Period from 2016 to 2019

Sector	2016		2017		2018		2019		Total	
	Total	Mean	Total	Mean	Total	Mean	Total	Mean	Total	Mean
Industrial goods	198	2.91	179	2.59	197	2.81	143	2.34	717	2.68
Communications	9	1.50	18	3.00	18	3.00	17	2.83	62	2.58
Cyclical consumption	209	2.68	210	2.69	226	2.90	174	2.49	819	2.69
Non-cyclical consumption	58	2.42	79	3.16	81	3.24	68	2.96	286	2.95
Basic materials	84	3.00	74	2.64	70	2.50	68	2.96	296	2.77
Oil, gas, and biofuels	33	3.30	35	3.50	32	3.20	24	2.67	124	3.18
Health	45	2.65	50	2.63	55	2.89	40	2.50	190	2.68
Information technology	21	3.00	17	2.43	19	2.71	9	2.25	66	2.64
Public interest	205	3.01	212	3.12	166	2.48	152	2.53	735	2.79
Total	**862**	**2.82**	**874**	**2.82**	**864**	**2.79**	**695**	**2.56**	**3,295**	**2.75**

Table 4 shows that, on average, the number of KAM reported per company in the sectors is greater than 2.58, with a mean maximum of 3.18. Thus, RAI users have, on average, three KAM reported by the auditor, with the three sectors with large mean numbers: Oil, Gas, and

Biofuels (3.18), Non-Cyclical Consumption (2.95), and Public Utility (2.79), while Communications (2.58) has the lowest mean number.

The sample was audited, on average, 78.46% by the big four. This implies a preference of Brazilian companies for auditors with more audit expertise, corroborating Ferreira and Morais (2020), who verified 71.36% of Brazilian companies audited by the big four. It is also observed that the return on assets (ROA) is, on average, negative, indicating that the companies studied cannot generate results based on their assets (Ferreira & Morais, 2020). This may be associated with the presentation of loss as a result of the year, a fact identified by the loss variable (LOSS), which has a mean of 65.5%. On the other hand, the mean indebtedness (IND) of 0.97 reveals that companies have total assets to cover short-term and long-term liabilities. The size of the companies is homogeneous due to the use of the natural logarithm – standard deviation of 2.0.

A preliminary exploratory analysis found that the distributions of SIZ, ROA, and IND values had many extremely discrepant cases. Although there is no explicit assumption about the explanatory variables, very discrepant values can cause misleading results and influence the estimation of coefficients. Logarithmic transformation was initially performed in SIZ and IND, and in ROA, logarithmic smoothing for both positive and negative values. Moreover, values that distanced more than three interquartile deviations from the median were excluded, resulting in 1,159 observations for the analysis.

It is observed that the comparison of the frequency distribution of the QKAM values and the theoretical Poisson distribution did not show good adherence, as well as the residual graphs showed that the fit of the model to the data was not very good. Other regression models were evaluated, especially the traditional model considering the error terms with normal distribution with and without logarithmic transformation into QKAM, but no satisfactory fit was obtained. On the other hand, the different models fit to the data showed results that led to similar conclusions, thus offering reasonable confidence in the findings of this study. Therefore, the results of the multilevel regression assuming Poisson distribution are presented because they are compatible with the count-based measure's nature.

Table 5 shows the results of the Poisson multilevel regression of the variables in Table 1.

Table 5

Estimates and significance tests of regression coefficients based on 1,159 *four-year observations in* 308 *companies. Response variable: QKAM*

Indicator	Coefficient	Standard error	z stat	Pr(>|z|)	
BIG	-0.150	0.059	-2.561	0.010	*
SIZ	0.086	0.014	6.043	0.000	***
LnROA	-0.022	0.013	-1.749	0.080	*
LnIND	0.006	0.042	0.134	0.893	
LOSS	-0.016	0.047	0.339	0.735	
Y1	0.051	0.041	1.258	0.208	
GOV [Level 2]	0.024	0.116	0.208	0.836	
GOV [Novo Mercado]	-0.029	0.094	-0.310	0.756	
GOV [No Governance]	-0.097	0.090	-1.077	0.282	
GOV [Traditional]	-0.091	0.093	-0.981	0.327	
COMMITTEE [all indicators less than or equal to median]	0.133	0.083	1.592	0.111	
COMMITTEE [some smaller and others larger]	0.031	0.054	0.578	0.563	
Committee [all indicators higher than median]	0.088	0.112	0.785	0.433	
SEC [Communications]	-0.233	0.156	-1.494	0.135	
SEC [Cyclical consumption]	-0.022	0.060	-0.363	0.717	
SEC [Non-cyclical consumption]	-0.030	0.084	-0.361	0.718	
SEC [Basic materials]	-0.079	0.086	-0.927	0.354	
SEC [Oil, gas, and biofuels]	0.050	0.120	0.416	0.677	
SEC [Health]	-0.015	0.099	-0.156	0.876	
SEC [Information technology]	0.028	0.148	0.192	0.848	
SEC [Public interest]	-0.076	0.065	-1.166	0.244	

Note. ***, **, * is significant at the level of 1%, 5%, and 10%, respectively. In GOV, the reference is governance *Level* 1; in the COMMITTEE, the reference is *No Response in the Indicators*; and in SEC, it is the *Industrial Goods* sector.

As expected, size (SIZ) demonstrated a positive relationship and significance to the quantity of KAM. The fact that the audit firm and the return on assets were significant to the quantity of KAM evidenced was also confirmed. The fact that the company has indebtedness is positively related to the quantity of KAM, and loss does not imply further KAM reports, both without statistical significance in this research.

The fact that the audit firm big four denotes a negative sign may occur because, according to Table 6, which provides an overview of how the overall mean KAM evolved between 2016 and 2019 in the sample, there is no absolute annual mean difference in KAM reported by big four company or not. Thus, it is not confirmed that a big four reports more KAM per company than a non-big four. For example, in 2018, the non-big four reported, on average, more KAM than the big four, and in 2019, the mean number is similar. Velte (2020), when evaluating European banks, also identified the big four negatively associated with KAM. On the other hand, Wuttichindanon and Issarawornrawanich (2020) reveal that the risk of auditor litigation (big four) in Thailand is positively associated with the number of KAM. In other words, companies audited by a big four audit firm are more likely to observe a greater number of KAM. For Abdullatif and Al-Rahahleh (2020), many non-big four audit firms realized that after the first year of KAM disclosure, they should report a similar number of KAM to the most successful audit firms for companies in the same sector.

Regarding the temporal aspect, it is verified that it maintains (Table 6) the approximate mean number of three KAM reported by the audited company, regardless of whether the auditing firm is a big four or not. This evidence can benefit users of accounting information because regardless of the audit firm, on average, there is the same number of KAM reported.

Table 6

Mean Annual KAM per Big Four or Non-Big Four Audit Firm

Audit Firm	2016	2017	2018	2019	General
Non-Big Four	2.46	2.54	3.05	2.57	2.68
Big Four	2.89	2.89	2.70	2.55	2.77
Overall Mean KAM	2.82	2.82	2.79	2.56	2.75

Table 5 also shows that the size of the auditee affects the quantity of KAM, confirming that the informational environment is one of the determining attributes of the quantity of KAM disclosed. Pinto and Morais (2019) understand that large customers are more complex, require more work, and present greater risk to auditors. Lennox et al. (2019) also denote a higher number of KAM in riskier, more complex, and larger companies.

Regarding return on assets (ROA), a negative and significant sign leads us to believe that institutions with losses are more conducive to reporting KAM. This can show investors and creditors the inability to generate income from the amount of existing assets. This finding is consistent with Pinto and Morais (2019) in clarifying that lower profitability increases financial risk and, with this, auditors tend to review this company more thoroughly, resulting in more audit procedures and, consequently, in the identification of more KAM. Camargo et al. (2019) indicate that the fact that companies have losses is related to the KAM, as it demands greater attention from audit professionals because it has a potential impact on the continuity of the entities. Bepari et al. (2022) also comprised more KAM reported for less profitable companies. Mah'd and Mardini (2022) point out that lower profitability reduces the agency's problems in relation to KAM in the auditor's report, implying less informational asymmetry. This may occur because, on average, the auditees have a negative return on assets. Therefore, companies with lower solvency disclose more KAM (Sierra-Garcia et al., 2019).

The first year of KAM reporting (Y1) does not reveal significance but a positive relationship with the reported quantity of KAM. The matter of the sector type was controlled.

Still, it showed no influence on the KAM disclosure, which differs from the Thai scenario (Wuttichindanon & Issarawornrawanich, 2020), whose Information Technology sector was significant. Thailand also has a high shareholding concentration, which tends to weaken corporate governance mechanisms. That means, as in Brazil, business ownership is concentrated in the hands of small groups of individuals.

Concerning corporate governance variables (COMMITTEE), these are positively related to QKAM. However, the governance variables were insignificant, even with the control of missing data. Gold et al. (2019) found that characteristics of the audit committee, such as independence, its effectiveness, or the existence of financial expertise, have no significant impact on the number of KAM disclosures. This supports the idea that audit committees and external auditors have a complementary and not substitute relationship (Velte, 2020).

Table 7 shows the robustness of the study regression, with only the significant variables in Table 6 and those of governance (audit committee).

Table 7

Regression Summary Using Only the Significant and Governance Variables. Response Variable: QKAM

Indicator	Coefficient	Standard error	z stat	Pr(>|z|)	
BIG	-0.131	0.053	-2.452	0.014	**
SIZ	0.084	0.013	6.591	0.000	***
LnROA	-0.028	0.010	-2.636	0.008	***
COMMITTEE [all indicators less than or equal to median]	0.135	0.082	1.640	0.101	
COMMITTEE [some smaller and others larger]	0.034	0.053	0.642	0.521	
Committee [all indicators higher than median]	0.091	0.110	0.824	0.410	

Note. ***, **, * is significant at the level of 1%, 5%, and 10%, respectively. In the COMMITTEE, the reference is *No Response in the Indicators*.

The additional analysis in Table 7 shows that the choice of audit firm is a determinant of the number of KAM, but not necessarily a big four reports more KAM than a non-big four. The quantity of KAM in the Brazilian scope also remains influential, aspects of the auditee, such as the size and non-existence of return on assets. Therefore, auditor and customer attributes are factors that contribute to reporting more KAM and, with this, meet the purpose of including KAM in the independent auditor's report to be more transparent (Reid et al., 2019), and the Agency Theory, which foresees auditors as reducing information asymmetry in the capital market (Jensen & Meckling, 1976).

In a complementary analysis, due to the three governance variables being representative of the same committee, the interaction was carried out between them with the audit variable (BIG), giving rise to the variable BIG: COMMITTEE, which, together with the significant variables of the study (Table 6) were analyzed in a new regression (Table 8).

In the UK, there is a requirement that both auditors and audit committees publish matters that consider key reporting matters (Zhang & Shailer, 2021). In Brazil, NBC TA 701 establishes that the key audit matters are selected among those communicated to those responsible for governance (CFC, 2016). The decision of which and how many KAM to communicate is the auditor's (Köhler et al., 2020; Pinto & Morais, 2019), but the interaction between the auditor and the audit committee can affect the quantity of KAM reported. ISA 701 indicates that the interaction between the auditor and customer governance is important to disclose KAM (Moscariello et al., 2019) properly. The presence of an audit committee minimizes probable conflicts between the auditee and the audit firm, thus reducing the time of disclosure of the auditor's report and requiring more audit quality (Colares et al., 2020). Therefore, the KAM disclosure in the presence of an audit committee may occur with the governance's consent.

Table 8
Regression with Interaction Between the Audit Firm and the Governance Committee. Response Variable: QKAM

Indicator	Coefficient	Standard error	z stat	Pr(>|z|)	
SIZ	0.086	0.013	6.677	0.000	***
LnROA	-0.028	0.010	-2.630	0.009	***
BIG	-0.163	0.059	-2.786	0.005	***
COMMITTEE [all indicators less than or equal to median]	-0.027	0.228	-0.118	0.906	
COMMITTEE [some smaller and others larger]	-0.165	0.176	-0.941	0.347	
COMMITTEE [all indicators higher than median]	0.016	0.245	0.065	0.948	
BIG:COMMITTEE [all indicators less than or equal to median]	0.184	0.240	0.769	0.442	
BIG:COMMITTEE [some smaller and others larger]	0.218	0.181	1.201	0.230	
BIG:COMMITTEE [all indicators higher than median]	0.092	0.272	0.337	0.736	

Note. ***, **, * is significant at the level of 1%, 5%, and 10%, respectively. In the COMMITTEE, the reference is *No Response in the Indicators*.

It is possible to observe that corporate governance, through the audit committee, does not impact the quantity of KAM reported in the analyzed sample. Zhang and Shailer (2021) note that fewer significant matters are expected when audit committees have greater accounting and sector knowledge. Also, there is better communication between the auditor and the audit committee when disclosing few KAM (Abdullatif & Al-Rahahleh, 2020). An audit committee indicates an improvement in the entity's governance and, consequently, a lower perception of risk by the independent audit, implying less KAM reported by the audit firm (Colares et al., 2020; Guedes et al. 2021). Therefore, communication between the audit committee and the audit firm can occur to resolve the types of matters to be disclosed and, not specifically, the quantity, which is the variable observed in this research, given that the auditor has frequent meetings with the audit committee (Elmarzouky et al., 2022). According to Velte's (2018) findings, in the context of the United Kingdom, members with financial expertise in the audit committee contribute positively to the KAM readability, a variable also not investigated in this study.

The ROA and SIZ variables continued to show an influence on the quantity of KAM, which indicates that it is presumed that auditors of less profitable companies with greater operational risk, and which are larger (Ferreira & Morais, 2020; Pinto & Morais, 2019; Sierra-Garcia et al., 2019), feel more pressured to disclose more KAM in order to ensure their independence (Alves Jr & Galdi, 2020; Sierra-García et al., 2019). This is consistent with the assumption of the Agency Theory, in which greater auditor transparency within the scope of the capital market can be associated with lower information risk (Cordos & Fülöp, 2015) and an increase in the credibility of users about auditor information.

Table 9 summarizes the findings of the signs observed in this research regarding the investigated variables (Table 1).

Table 9
Analysis of Expected Signals for Research Variables

Description	Acronym	Expected signal	Signal Obtained
Audit committee size	COM	+	x
Independent members	INDEP	+	x
Financial Expertise	EXP	+	x
Big Four	BIG	+	x
Company size	SIZ	+	√
Profitability	ROA	-	√
Indebtedness	IND	+	x
Loss	LOSS	+	x
Year 1	Y1	+	x

Nature of the business setting	SEC	+/-	x
B3 governance level	GOV	+	x

Note. √ and X correspond respectively to be significant and "Prove" and "Do not prove" expected signal.

Based on Table 9, it is impossible to accept hypotheses H1, H2, and H3 that the total number of members, independence, and expertise of the audit committee are significant and positively related to the quantity of KAM. As for the hypothesis of the big four (H4) having significance and positive association is not proven because the signal verified is negative. It is already confirmed that the size of companies (H5) influences more KAM and profitability (H6) in less KAM reported to the market.

5 FINAL REMARKS

The determinants of the quantity of KAM reported in the independent audit reports from 2016 to 2019 in the non-financial companies listed on B3 – Brasil, Bolsa, Balcão were analyzed. The contextual factors investigated are aspects of the audit firm, the auditee, and corporate governance (audit committee). In this sense, 1,198 audit reports presented by Brazilian companies listed on the stock exchange were examined to obtain the quantity of KAM and the audit firm, and the Economatica® database was consulted in order to collect the financial data. Corporate governance proxies were obtained from the Thomson Reuters® database. Descriptive statistics and Poisson regression were analyzed.

Regarding the determinants of the quantity of KAM reported, it was identified that these disclosures are particularly more relevant for larger companies, with a lower return on assets (negative ROA), and that the auditing firm has an influence on the definition of how many KAM will be disclosed to the market. Therefore, in contexts where the auditee presents a greater financial risk, regardless of whether the audit firm is a big four or not, to reduce its liability, auditors report more KAM. Thus, since KAM aims to provide more information to the capital market (Alves Jr & Galdi, 2020), information users can obtain more data from the auditee, based on the independent auditor's judgment, through the KAM. Thus, the findings of this study are consistent with Sierra-García et al. (2019), who highlight the characteristics of the auditor and the customer as determinants of the number of KAM disclosed in the United Kingdom.

Regarding corporate governance, the audit committee variables were insignificant to the number of KAM disclosed. The results suggest that customer and audit firm attributes, but not governance, significantly affect the number of KAM disclosures.

The study contributes to the audit literature by analyzing the determinants of the KAM disclosure, considering factors of the auditee, the audit firm, and corporate governance. Moreover, the results are useful for regulators, highlighting the attributes that influence the identification of a KAM, and for internal users of accounting information by understanding the factors that influence the processes behind auditors' decisions to disclose KAM. Thus, the studies by Ferreira and Morais (2020), Pinto and Morais (2019), and Sierra-García et al. (2019), respectively, in the Brazilian and European scope, are advanced, which investigated only 2016 and did not consider aspects of corporate governance as a determinant of KAM. It also expands on the study by Wuttichindanon and Issarawornrawanich (2020) in Thailand, where business ownership is concentrated in small groups of individuals, unlike in Europe.

Regarding limitations, the proportion of data in the audit committee sample (13%) resulted in limited insights into how the audit committee affects the quantity of KAM reported. Future research can qualitatively investigate how audit committee members perceive this KAM communication process and the importance of their work in promoting KAM disclosures with less informational asymmetry. Replication of this study, including comparison of the COVID-19 and post-COVID-19 period, is also suggested, considering that during the crisis and after the COVID-19 pandemic crisis, the results may be different from the pre-COVID-19 period.

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