Original Article

Informational content of key audit matters and financial analysts' forecasts*

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ABSTRACT

The aim of this article was to analyze the relationship between the informational content of the key audit matters (KAMs) reported in the Independent Audit Report (IAR) and financial analysts' forecasts for the companies listed on the B3 S.A. – *Brasil, Bolsa, Balcão* (B3). The research that has investigated the relevance of KAMs has not analyzed the incremental information about the audited firm, from the independent auditor's viewpoint, that can affect financial analysts' forecasts. The findings of this research reveal that the KAMs reported present relevant informational content about the audited firm for financial analysts, thus improving the quality of their forecasts. In addition, it was observed in the quantile analysis that the KAMs contribute to the fine tuning of analysts' forecasts. The debate on the auditor-analyst relationship is also widened, specifically regarding the utility of KAMs for financial analysts, in terms of them considering using this information in their projections for the analyzed companies, thus reinforcing the search for their improvement by the regulator. The analysis was conducted based on generalized least squares (GLS) and quantile regressions covering 137 non-financial companies, using data from (quarterly and annual) analysts' forecasts available from Thomson Reuters Eikon® and financial information from Economatica®. In general, the quantity and content of the items reported as KAMs were revealed to be significant in relation to the analysts' earnings per share forecasts and to their forecasting error, revealing a reduction in asymmetry. Thus, the higher the informational value of the KAMs, the better the quality of that information is, contributing to forming an earnings forecast consensus and minimizing the error in the financial analysts' estimates. In addition, it was observed that the disclosure of KAMs has no immediate reflection in the earnings forecast in the quarter following their disclosure, with their informational content being diluted over the following financial period, impacting the annual earnings forecast.

Keywords: audit report, key audit matters, financial analysts, informational asymmetry, informational value.

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1. INTRODUCTION

The annual disclosure of key audit matters (KAMs) by the independent auditor aims to provide users of the Independent Audit Report (IAR) with additional information about the audited firm and that auditor's work (Chu et al., 2018; Kostova, 2016; Segal, 2017; Sneller et al., 2016). That information seeks to communicate the auditor's perceptions regarding auditing questions that involve the most difficult, subjective, or complex judgements, and/or represent the greatest difficulty in obtaining appropriate and sufficient auditing evidence, and/or represent the greatest complexity for the auditor in forming an opinion about the financial statements (Christensen et al., 2014). With this, the communication of the relevant matters in the auditor's professional judgement makes the audit report more informative for its users, providing knowledge on the areas where there is the risk of a relevant distortion in the financial statements of the audited firm (Cordoş & Fülöp, 2015; Köhler et al., 2020; Sneller et al., 2016).

Thus, it seems to be reasonable to suppose that relevant matters described in the KAMs are of interest to financial analysts, who capture obligatory and/or voluntary financial or other information (He et al., 2019; Ozlanski, 2019), in order to forecast the expected earnings, share price, and market value of companies (Lima & Luca, 2016; Martinez, 2004) more accurately. Hence, if the analysts use the KAMs as inputs in the formation of their outputs (earnings per share and company performance forecasts), the accuracy of their estimates tends to improve and the associated asymmetry can be mitigated.

The studies on KAMs have been approached under different focuses, such as: (i) communicative value through quantitative results and categories (Brazilian Institute of Independent Auditors [IBRACON], 2017, 2018); (ii) capital market reactions (Lennox et al., 2019); (iii) protection of auditors against litigation in relation with undetected distortions (Brasel et al., 2016); (iv) impacts of inclusion in the IAR (Segal, 2017; Sneller et al., 2016); (v) determining factors for disclosure (Ferreira & Morais, 2020; Sierra-García et al., 2019); (vi) informational relevance for investors (Alves & Galdi, 2020; Christensen et al., 2014); and (vii) utility for financial statement users (Cordoş & Fülöp, 2015), creditors (Boolaky & Quick, 2016), and other interested parties (Velte & Issa, 2019).

He et al. (2019) highlight the relevance of the quality of the audit in the elaboration of financial analysts' forecasts, and Ozlanski (2019) reinforces the idea that sophisticated information users, such as financial analysts, tend to be more influenced by KAMs than the other information users. However, by analyzing the United Kingdom market, Lennox et al. (2019) revealed that investors tended not to react to KAM information, as they received that informational content through other channels, such as financial analysts' reports.

Considering that KAMs provide greater informational content for financial analysts due to the greater transparency about the audit carried out, increased confidence in the verification process, and greater reliability regarding the financial statements of the audited firm, the following research question arises: what is the relationship between the informational content of the KAMs reported in the IAR and the financial analysts' forecast? Therefore, the aim of this research is to analyze the relationship between the informational content of the KAMs reported in the IAR and financial analysts' forecasts for companies listed on the B3 S.A. – *Brasil, Bolsa, Balcão* (B3) in the period from 2016 to 2018.

Within this context, the research is based on the assumptions of Signaling Theory (Dalmácio et al., 2013; Spence, 1973), as it examines the informational value of KAMs for analysts. According to that theory, in an asymmetrical environment, signals become differentiating resources that favor trust and propagation to other individuals, playing a relevant role when there is uncertainty in the capital market, while most companies seek to issue signals to their users that contribute to investment decisions.

In this aspect, Signaling Theory is applied in this study due to the fact that KAMs are seen as signals that can affect financial analysts' performance and earnings per share forecasts and their recommendations to investors to buy, sell, or hold stocks. Independent auditors, through the disclosure of KAMs in IARs, reinforce their role of certifying information and making it more reliable for the market (Dănescu & Spătăcean, 2018). In turn, analysts, who are intermediary agents that add value to the capital market, conceive their forecasts with the partial or total use of KAMs, and disclose them through their investment recommendations, also issue signals and contribute to reducing informational asymmetry (He et al., 2019; Healy & Palepu, 2001; Simpson, 2010).

However, despite audits providing analysts with more credible financial reports (Association of Chartered Certified Accountants [ACCA], 2011), studies that analyze the relationship between indicators and properties of the quality of the audit and analysts' forecasts remain in

their infancy (Abernathy et al., 2018; Behn et al., 2008; He et al., 2019).

Analyzing the relationship between the KAMs reported by independent auditors in IARs (historical and explicit accounting information) and financial analysts' forecasts widens the debate on the auditor-analyst relationship and the importance of these agents in the capital market (Abernathy et al., 2018; Begley & Feltham, 2002; Behn et al., 2008; He et al., 2019; Healy & Palepu, 2001; Lima & Luca, 2016), as well as broadening the understanding of the utility of KAMs for analysts (Boolaky & Quick, 2016; Köhler et al., 2020).

The research is also interesting for regulatory bodies, given the flexibility that auditing firms have regarding the application of Brazilian Accounting Standard – Technical Standards of Independent Auditing (NBC TA) 701 (Federal Accounting Council [CFC], 2016), denoting the potential to meet the expectations of regulators with regard to providing a more valuable reporting model. The standard assumes that the audit quality is maintained or improved and that the auditor discloses company particularities and not only ratifies what was already communicated in other informational material (ACCA, 2018). Within this context, the impact of regulations for auditing and its supervision on expanding markets is denoted, including alterations in the auditor's report and the effect of that execution for the interested parties, directly for financial analysts and indirectly for investors and managers.

2. THEORETICAL ASSUMPTIONS AND DEVELOPMENT OF THE HYPOTHESES

The aim of including the section called KAMs in the IAR is to widen the users' understanding about the audit and the financial situation of the audited firm (Boolaky & Quick, 2016; Lennox et al., 2019), enabling shareholders to have access to more information about the audited firm and not only the managers (Sneller et al., 2016). NBC TA 701 requires the auditor to communicate in the IAR for the period evaluated matters judged to be significant, why they are considered relevant, and how they were treated within the scope of the audit (CFC, 2016). Thus, the auditor's obligation to report the critical matters from the audit can be interpreted as an opportunity for them to give an opinion with greater informational content on the audited firm (Boolaky & Quick, 2016; Lennox et al., 2019).

This disclosure requirement portrays changes in the activities of auditing firms and produces expectations of an improvement in the reliability and quality of the IAR (ACCA, 2018; CFC, 2016; Cordoş & Fülöp, 2015). Besides the KAMs indicating innovation, they equally represent serving the public interest and valuing the audit within the ecosystem of financial reports, as they provide more and better information to investors (ACCA, 2018; Boolaky & Quick, 2016; Cordoş & Fülöp, 2015; Köhler et al., 2020; Sneller et al., 2016), enabling a reduction in informational asymmetry and signaling significant data to the market.

The Brazilian Capital Market Regulator (CVM, 2018), via Circular Notice 01/2018, highlights that KAMs should present significant informational content for users, and not merely generically and vaguely portray the matter, as this would go against the objective of KAMs to be informative and transparent.

According to Abernathy et al. (2018), auditors and financial analysts play a fundamental role in the capital market, attesting to the credibility, quality, or utility of what is disclosed in financial statements. When assessing financial statements, the independent audit assumes the conduct of determining what is disclosed, even in the IAR, as a source of information for the financial market, which depends on high quality inputs to function correctly (Behn et al., 2008). In turn, through their earnings estimates, elaborated *ex post*, analysts add companies' historical and contemporary accounting factors to the latest earnings per share forecast (Brown et al., 2010).

The characteristics of companies and the information that features in their accounting reports are inputs for financial analysts' forecasts (Abernathy et al., 2018; Behn et al., 2008; He et al., 2019; Healy & Palepu, 2001; Lima & Luca, 2016). The binary opinion expressed by the auditor in the IAR about the adequacy or not of a company's patrimonial and financial position is relevant information for analysts (Gold et al., 2012). The disclosure of KAMs, why these were judged relevant, and how the matter was treated in the audit (procedures executed) are elements that are most significant and of interest to financial analysts when formulating their forecasts (Boolaky & Quick, 2016).

Along these lines, the expansion of the audit report (through KAMs) will probably produce stronger credibility effects than the previous standard auditors' report (that is, without KAMs) (Behn et al., 2008; Chu et al., 2018; Ferreira & Morais, 2020; Segal, 2017; Silva et al., 2014; Sneller et al., 2016). It is believed that the KAMs judged to be relevant by auditors can be evaluated as significant by financial analysts, since, as intermediary agents of

information, they observe the financial or other data disclosed by companies in order to use it in their forecasts and subsequent recommendations to investors (Abernathy et al., 2018; Dalmácio et al., 2013; Martinez, 2004). Therefore, financial analysts who capture accounting elements (Dalmácio et al., 2013; Martinez, 2004) are expected to use KAMs to formulate and revise their earnings per share forecasts.

The core understanding is that auditors, with the aim of fulfilling the KAM standard and protecting themselves from the risk of litigation, will disclose KAMs related to a company's areas of greatest risk (Brasel et al., 2016). The most common disclosure elements involve revenue recognition, valuing fixed assets, loans, accounts receivable, and reducing the recoverable value of goodwill and intangible assets (Sierra-García et al., 2019). Thus, KAMs report aspects that influence earnings for the period, providing details on complex areas of the company's earnings. Therefore, KAMs represent inputs that can contribute to projecting the financial analysts' earnings per share forecast.

Köhler et al. (2020) report that, based on a reliability model, KAMs with (strong) positive or negative trend content run the risk of creating different perceptions among accounting information users. Intuitively, it seems reasonable to expect financial analysts to evaluate the content of each KAM differently, contributing in a divergent way to the formation of the earnings per share estimate. Thus, it can be considered that the KAMs will be associated with the financial analysts' forecast, reducing informational asymmetry under the lens of Signaling Theory, as according to hypothesis 1 (H₁).

H₁: the informational content of the KAMs reported in IARs is reflected in the consensus regarding the financial analysts' earnings per share forecast.

In relation to the quality of the financial analysts' projections, these are analyzed through the metrics known as error and accuracy (Martinez, 2004). The achievement or exceedance of projections is a proxy for market expectations and a benchmark for managers (Rikling et al., 2013). Barton and Mercer (2005) and Winchel (2015) highlight that if the quality of the financial reports is considered to be poor, analysts make negative inferences about the company's prospects and provide a mixture of arguments; that is, negative and positive information, resulting in pessimistic share price forecasts. The independent auditors carry out tests and procedures in each audit to reduce the risks of the financial statements to an acceptable level, so that the KAMs communicated, due to the verifications made on those matters and reported

by the auditor in the IAR, portray the elimination of risks, that is, the items that are judged to be relevant by the auditors are free from relevant distortions (Lennox et al., 2019).

The number and types of KAMs reported are associated with the accounting records that portray the judgements of management, including revenue recognition, accounts receivable, accruals, and stock valuations, as well as communications regarding aspects related to the continuity of the business, such as attributes of internal control and information technology (Sierra-García et al., 2019). That evidence, through being signaled by the auditors, who have access to internal data and direct contract with the managers, and having undergone the verification process, is assumed to provide quality and reliable support to analysts, who receive the auditors' communications positively (Abernathy et al., 2018).

The core idea is that the inputs of KAMs reported by auditors provide more reliable arguments about the accounting or other aspects of the audited firm, as the inclusion of the KAMs tends to improve the quality of the audit, and this, as a result, implies greater reliability of the reported earnings. So, the informativeness of the KAMs, under the scope of Signaling Theory, contributes to reducing the analysts' forecasting error, that is, the difference between the analyst's estimate and the actual earnings per share, thus defining hypothesis 2 (H₂).

H₂: the informational value of the KAMs reported in IARs reduces the financial analysts' forecasting error.

Additionally, it is understood that the forecast should be evaluated under the lens of bias; that is, it is necessary to determine the accuracy of the analysts' forecast (Martinez, 2004, 2007). Lima (2017) clarifies that the analyst's activity is impacted by the informativeness, given that analysts' role in the capital market is to capture information and, using their skills and competences, report their analyses to shareholders and other interested parties. Thus, the question to ask is whether KAMs are associated with an increase in financial analyst reliability and, consequently, if they have provided support for analysts to estimate earnings per share more accurately.

In terms of informational relevance, Lima (2017) reinforces the idea that, when carrying out their activities, analysts encounter data that provide improvements in or hinder the performance of their estimations. On the other hand, analysts develop their attributions based on the effect of learning through repetition; that is, based on their errors and those of the competition, they revise and formulate new forecasts issued into the market

(Lima, 2017; Martinez, 2004). Thus, with the disclosure of KAMs, analysts can make a preliminary forecast for the quarter following the KAMs being reported and subsequently rectify it to improve their accuracy over the other consecutive quarters.

Han and Liu (2019) highlight the importance of understanding the circumstances that contribute to analysts providing more accurate information to the market, not only due to their professional reputation, but also through their estimates being inputs for other market participants and a proxy for evaluating the efficiency of the business environment (Sohn, 2012). Within this context, hypothesis 3 (H_3) tests the effect of KAMs on promoting the accuracy of the financial analysts' forecast, known in the literature as absolute errors.

H_3: the informational value of the KAMs reported in IARs increases the accuracy of the financial analysts' forecast.

Given the uncertainty about the understanding of KAMs for each one of the information users (Boolaky & Quick, 2016; Köhler et al., 2020; Lennox et al., 2019), there is a lack of clarity about the association and the sign (positive or negative) of the types of KAM in the properties of analysts' forecasts, leading to the belief that the informational content featuring in KAMs can cause positive or negative analyst reactions. Therefore, through signaling informational content (lower asymmetry), KAMs promote an alteration in analysts' forecasts and, as a result, reduce the error and raise the accuracy of the earnings per share estimation.

3. METHODOLOGICAL PROCEDURES

The sample consists of all the non-financial companies, as financial firms have their own particularities in terms of accounting regulations and equity structure (Sierra-García et al., 2019), listed on the B3 and with analyst forecast data available in the Thomson Reuters Eikon® database, thus totaling 137 organizations, as shown in Table 1.

Table 1
Composition of the study sample

Composition of the final sample	2016	2017	2018
1. Non-financial companies with reported KAMs	293	307	304
2. (-) Without analyst data in the Thomson database	(-156)	(-170)	(-134)
3. Final sample		n = 137	%
Cyclical consumption		43	31.39
Industrial goods		20	14.60
Public utility		22	16.06
Basic materials		12	8.76
Non-cyclical consumption		15	10.95
Health		13	9.49
Oil, gas, and biofuels		6	4.38
Information technology		3	2.19
Communications		3	2.19

KAM = key audit matters.
Source: *Elaborated by the authors.*

Table 2 presents the proxies for the financial analysts' forecast (dependent), for the KAMs (independent variables of interest), and for control, as well as the metrics and theoretical support.

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Table 2
Research construct

	Description	Abbreviation	Metric	Theoretical support	Predicted sign		
					C	E	A
Dependent	Earnings per share forecast	EPSf	Consensus on the mean quarterly earnings expected per share according to data from the I/B/E/S Earnings Consensus Information	Behn et al. (2008), Martinez (2004, 2007)		NA	
	Forecast error	EEPSf	Difference between the actual earnings and the analysts' forecasted earnings per share divided by actual earnings (modulus) [(EPS – EPSf)/⎪EPS⎪]	Dalmácio et al. (2013), Martinez (2004, 2007)		NA	
	Accuracy of the forecast	AEPSf	Absolute difference (modulus) between the analysts' forecast consensus and the actual earnings per share, weighted by the lagged share price (t-1). [⎪(EPSf – EPS)⎪/ share price]	Behn et al. (2008), Martinez (2004, 2007)		NA	
Interest	Total number of KAMs reported	QKAM	Logarithm of the quantity of KAMs reported annually per company	Lennox et al. (2019), Sierra-García et al. (2019)	+	-	+
	Matters reported	KAM	Quantity of matters reported per year and company categorized into six items: Sector-specific matters (SpMatt) / Assets / Impairments / Liabilities / Complex matters (CompMatt) / Controls	ACCA (2018)	+	-	+
Control	Company size	SIZE	Natural logarithm of total assets	Behn et al. (2008), Sierra-García et al. (2019)	+	-	+
	Return on assets	ROA	Earnings before income tax divided by total assets	Behn et al. (2008), Martinez (2004)	+	-	+
	Growth opportunity	MB	Market value divided by book value (price to book)	Behn et al. (2008), Martinez (2004)	+	-	+
	Earnings for the period	Loss	Dummy taking the value 1 when the company presented a loss in the period and 0 otherwise (profit)	Chu et al. (2018), Sierra-García et al. (2019)	-	+	-
	Earnings per share in the previous period	EPSp	Actual value of earnings per share for the company in the period prior to the analysis period	Behn et al. (2008), Martinez (2004)	+	-	+
	Auditing firm	BIG	Dummy taking the value 1 if the company was audited by a Big Four firm and 0 otherwise	Behn et al. (2008), Sierra-García et al. (2019)	+	-	+
	Age of the forecast	Age	Natural logarithm of the quantity of days between the date of the earnings per share forecast and the date of the actual earnings per share announcement	Behn et al. (2008), Martinez (2004)	NA	+	-
	Analyst coverage	QAnalyst	Quantity of analysts who monitored the company in the period	Behn et al. (2008), Martinez (2004)	+	-	+
	Forecast bias	DoTip	1 for optimistic forecast and 0 for pessimistic forecast	Martinez (2004, 2007)	+	-	+
	Operating sector	Sector	Sector where the company operates, according to the B3 website. Dummy for each sector, taking the communication sector as a reference	Sierra-García et al. (2019)	+	+	+
	Year the KAMs were reported	Year	Dummies for 2017 and 2018, based on the year 2016	Sierra-García et al. (2019)	+	-	+

A = accuracy of the forecast; B3 = B3 S.A. – Brasil, Bolsa, Balcão; C = forecast consensus; E = forecast error; NA = not applicable; KAM = key audit matters.
Source: *Elaborated by the authors.*

It warrants mentioning that the consensus refers to that statistical convergence that compiles the forecasts formulated at different times and by different analysts for a company, resulting in an approximate value of what would be the mean (or median) of the forecasts (Martinez, 2007).

We chose the mean, as this more accurately represents the magnitude of the estimates, and not simply the number of these, so that all the forecasts have the same weight in the consensus calculation (Martinez, 2004, 2007).

Regarding the forecast error, Martinez (2004) explains that, if it is negative, it indicates a negative surprise, that is, a higher estimate than the actual result. On the other hand, if the actual result is higher than the estimate, there is a positive surprise. Accuracy is covered as such: the lower its value, the greater the accuracy, and if the independent variables have a negative relationship, they indicate more accurate forecasts (Martinez, 2004, 2007).

The information regarding the KAMs and the auditing firm were obtained from the IAR on the B3 website and the accounting information was obtained from the Economatica® database. Content analysis by sentence was carried out, in order to understand the constant communication of KAMs, and the quantitative supports were analyzed in an interpretative-descriptive way. The study period is *ex post* in relation to the implementation of the KAM standard, which was first required for financial statements disclosed for the 2016 financial year (CFC, 2016).

With regard to the quantity (QKAM) and the informational content of the KAMs, this was categorized according to IBRACON (2017, 2018), which contemplates a list with 25 types of KAM. These include the following: (i) if the title and/or the description of a KAM reported in the IAR involved two or more of the IBRACON (2017, 2018) categories, they were split and computed separately; and (ii) if in a particular company more than one KAM reported in the IAR for the year of analysis covered the same IBRACON (2017, 2018) category, it was considered for that more than once. For example, the KAMs described as "intangible assets and financial assets derived from concession contracts" were segregated and categorized as: (i) intangible assets; and (ii) concession and sector-based assets and liabilities.

Based on the IBRACON classification, subclassification was carried out into six of the ACCA (2018) strata, with the aim of qualifying the informational content of the KAMs to improve the understanding of their effect on the proxies for the financial analysts. Thus, each matter envisioned by the ACCA (2018) was assessed as an independent variable of interest to the analysts' forecasting consensus, error, and accuracy. Seeking robustness and sensitivity of the findings, we also analyzed the two groups described by Lennox et al. (2019) and Sierra-García et al. (2019), verifying whether the matters related to accounting (account-level risk) or not (entity-level risk) influence the analysts' forecast differently. Table 3 presents the KAM categories used in the study.

Table 3

Categories of key audit matters (KAMs) used in the study

IBRACON (2017, 2018)	ACCA (2018)	Lennox et al. (2019), Sierra-García et al. (2019)
Concession and sector-based assets and liabilities	Sector-specific matters	Account-level risk (RAccount)
Realization of the impact of deferred income		
Investments		
Stock		
Property for investment		
Biological assets	Assets	
Fixed assets		
Accounts receivable		
Intangible assets		
Assets available for sale/discontinued operations		
Recoverable value of non-financial assets	Impairments	
Reduction to recoverable value of financial assets		
Contingencies	Liabilities	
Post-employment benefit		
Other liabilities		
Revenue	Complex matters	
Financial instruments		
Business combination	Complex matters	Entity-level risk (REntity)
Laws and regulations		
Tax		
Transaction with related parties	Controls	
Assumption of operational continuity		
Liquidity management		
Internal controls – Information technology		
Fiduciary statements		

Source: *Elaborated by the authors.*

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To ascertain whether the informational content of the KAMs influences the financial analysts' forecast consensus (EPSf), the model represented by equation 1 was estimated, using generalized least squares (GLS) and quantile regression in relation to the variables of interest (QKAM and informational content of the KAMs) and the control variables.

The aim of using quantile regression is to understand whether the companies for which there is a consensus, an error, and accuracy of extreme forecasts (highest and lowest quantiles) receive more or less analyst monitoring, whether for public scrutiny, liquidity, company size, economic importance, or a financially fragile situation, and whether they also have greater relevance for auditors in terms of them reporting more or fewer KAMs.

$$EPSf_{it+1} = \beta_0 + \beta_1 KAM_{it} + \beta_2 QKAM_{it} + \beta_3 SIZE_{it} + \beta_4 ROA_{it} + \beta_5 MB_{it} + \beta_6 Loss_{it} + \beta_7 EPSp_{it} + \beta_8 BIG_{it} + \beta_9 QAnalyst_{it} + \beta_{10} DoTip_{it} + \beta_{11} Sector_{it} + \beta_{12} Year_{it} + \varepsilon_{it}$$

<div align="right">[1]</div>

It is recorded that the econometric model used to estimate the error ($EEPSf_{t-1}$) and the accuracy ($AEPSf_{t-1}$) of the forecast differs from equation 1 in relation to the dependent variable and included the age of the forecast (*Age*), remaining identical to the other variables of interest and control. For *EPSf*, *t* is the quarterly analysis period from 01/01/2017 to 12/31/2019, as the 2016 disclosures were weighted, affecting the earnings per share forecast consensus for the quarters of 2017 and, successively, in 2018 and 2019. This denotes whether the risks disclosed by the auditors in the IAR (KAM) in year *t* were priced in the analysts' earnings per share forecast in *t + 1*, given that the earnings estimate is elaborated *ex post* (Brown et al., 2010). Thus, the analysts make their estimates based on past evidence, represented in this study especially by the KAMs. Subsequently, it is common for them to revise their projections, considering the initial estimation and the elements they were based on. Besides the quarterly analysis, we investigated the effect of the KAMs on the dependent variables relating to the annual period (x + 1), since at the close of the period the expected earnings can be estimated more accurately (Martinez, 2007). Also, given the relevance of the annual findings in the panel data, the quantile regression was also based on the year.

The accounting variables used in the model, regarding both the forecast consensus and error and accuracy, were the

ones from the same year the KAMs were reported, according to the understanding of the literature than analysts estimate their forecasts based on historical accounting data (Begley & Feltham, 2002; Behn et al., 2008). In addition, the analysts work based on the learning effect; that is, they revise their estimates and, based on their errors and those of their peers, they issue new forecasts to the market (Lima, 2017; Martinez, 2004). For that reason, the temporal investigation of the KAMs cited from 2016 to 2018 with the error and accuracy of the earnings per share forecast was carried out with the aim of capturing whether the content of the KAMs improved the performance of the analysts' forecast, which depends on the quality of the *ex-ante* elements it was based on (Barton & Mercer, 2005; Winchel, 2015).

Seeking to operationalize the regression model, we used the winsorization technique at a 1% level for the continuous variables, except those that are in logarithm form. It was observed that only the *RAccount* variable presents a normal distribution; that is, most of the data do not present normality (Shapiro-Wilk test) and, in that case, the adequate correlation matrix is the Spearman's one. The panel analyzed was unbalanced, as most of the companies listed on the B3 are not monitored by analysts and, for that reason, they have no data in Thomson Reuters Eikon® (Lima & Almeida, 2015). Tests were carried out to identify the best statistical model for the dependent variables (Table 4).

Table 4

Specification and reliability tests of the models (six categories)

Test		Metric	EPSf	EESPf	AEPSf
Pooling *vs*. RE	Breusch-Pagan	Prob.	0.000	0.000	0.000
		Effect	RE	RE	RE
FE *vs*. Pooling	Chow	Prob.	0.000	0.000	0.000
		FE	FE	FE	FE
FE *vs*. RE	Hausmann	Prob.	-119.060	0.1243	0.000
		Effect	RE	RE	FE
Most appropriate estimation		**Effect**	**RE**	**RE**	**FE**
Autocorrelation	Wooldridge	Prob.	0.000	0.000	0.001
Heteroscedasticity	Wald	Prob.	0.000	0.000	0.000
Multicollinearity	VIF		4.950	4.900	4.860

FE = fixed effects; RE = random effects; VIF = variance inflation factors.
Source: *Elaborated by the authors.*

With the aim of capturing the indiscriminate effects omitted in the fixed effects modeling, as well as the comparability of the results, we used random effects estimation in all the analyses, the most appropriate type in most of the regressions. Also, no multicollinearity problems were detected, but autocorrelation and heteroscedasticity problems were discovered, which were corrected using clusterization, making the errors robust.

4. ANALYSIS AND INTERPRETATION OF THE RESULTS

Table 5 contemplates the descriptive statistics of the variables, except year and sector.

Table 5
Descriptive statistics

Analysis	Variable	Obs.	Mean	SD	Median	Min.	Max.
Consensus	EPSf	1,368	1.179	0.876	1.010	-0.025	2.815
	QAnalyst	1,184	4.236	2.365	4.000	1.000	8.000
	EPSp	1,597	0.685	1.126	0.594	-1.127	2.696
	DoTip	1,368	0.915	-	-	0.000	1.000
Error and accuracy	EEPSf	1,329	-0.822	1.179	-0.300	-3.459	0.278
	AEPSf	1,326	0.058	0.074	0.023	0.002	0.231
	Age	885	5.499	0.492	5.635	4.500	7.020
	QAnalyst	887	2.945	1.756	3.000	1.000	6.000
	EPSp	1,561	0.442	1.056	0.464	-1.421	2.206
	DoTip	1,355	0.855	-	-	0.000	1.000
Consensus, error, and accuracy	QKAM	1,608	1.077	0.423	1.099	0.000	2.079
	SpMatt	1,644	0.100	0.338	0.000	0.000	2.000
	Assets	1,644	0.818	0.856	1.000	0.000	4.000
	Impairments	1,644	0.533	0.518	1.000	0.000	2.000
	Liabilities	1,644	0.526	0.637	0.000	0.000	3.000
	CompMatt	1,644	0.964	0.796	1.000	0.000	4.000
	Controls	1,644	0.180	0.432	0.000	0.000	2.000
	SIZE	1,632	15.769	1.402	15.719	12.285	20.573
	ROA	1,628	3.533	5.041	3.660	-4.745	11.624
	MB	1,576	2.084	1.578	1.452	0.470	5.432
	Loss	1,644	0.253	-	-	0.000	1.000
	BIG	1,624	0.909	-	-	0.000	1.000

SD = standard deviation.
Source: *Elaborated by the authors.*

In the analysis of the earnings per share consensus, the forecasts were mostly (91.5%) optimistic (*DoTip*), consistently with the positive result of 0.685 for actual mean earnings per share (*EPSp*), as well as denoting the absence of analyst monitoring (*QAnalyst*), thus ratifying Lima and Almeida (2015) and Martinez (2004). *EEPSf* was negative by a mean of 0.822, revealing that, on average, the analysts projected higher earnings per share than achieved, thus corroborating Sohn (2012). Accuracy, in turn, had a value close to zero (*AEPSf* of 0.058), indicating lower errors computed in the forecast, which is an opposite finding to that of Dalmácio et al. (2013). Regarding *Age*, it is noted that the forecasts went to the market on close dates – with a standard deviation of 0.492.

The QKAM per category varied from 0 to 6; that is, in some companies, no KAM was reported in a certain category. The Big Four firms audited approximately 90% of the sample, which for some authors may be considered beneficial, as it provides a greater client and sector understanding, as well as more credible forecasts (Abernathy et al., 2018; Behn et al., 2008). On the other hand, 25% of the sample presents a loss (*Loss*).

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Table 6 features the correlation matrix related to the forecast consensus. It was observed that *QKAM* denoted a significant and negative relationship at 1% with the forecast, where the sign diverged from the one expected. This may be due to the diversity of matters that the auditors judged relevant per company, for which the mean was three, and to the content of the KAMs contemplating, in some cases, aspects of uncertainty regarding the audited firm (Boolaky & Quick, 2016). For example, in Siderúrgica Nacional, there was reiteration, in 2018, of the KAMs on

Table 6

Spearman's correlation matrix (consensus of the EPSf)

	(1) EPSf	(2) QKAM	(3) SpMatt	(4) Assets	(5) Impairments	(6) Liabilities	(7) CompMatt	(8) Control
(1)	1							
(2)	-0.09***	1						
(3)	0.20***	0.11***	1					
(4)	-0.12***	0.43***	-0.11***	1				
(5)	-0.12***	0.21***	-0.07**	-0.21***	1			
(6)	0.02	0.35***	-0.02	-0.10***	-0.01	1		
(7)	-0.02	0.38***	-0.15***	-0.06*	-0.02	-0.16***	1	
(8)	-0.04	0.27***	0.06**	-0.02	-0.11***	0.04	-0.11***	1
(9)	0.16***	0.23***	0.19***	-0.05	-0.02	0.26***	0.06**	0.12***
(10)	0.48***	-0.25***	0.05	-0.24***	-0.02	0.01	-0.14***	-0.05
(11)	0.14***	-0.07**	-0.04	-0.13***	0.04	-0.08***	0.07**	-0.05*
(12)	-0.41***	0.18***	-0.05*	0.12***	-0.03	0.05	0.13***	0.08**
(13)	0.75***	-0.12***	0.12***	-0.12***	-0.07**	0.04	-0.09***	-0.03
(14)	0.21***	-0.22***	0.05	0.01	-0.14***	-0.08**	-0.16***	-0.15***
(15)	0.05*	-0.02	-0.01	-0.04	-0.02	0.12***	0	-0.06*
(16)	0.42***	-0.12***	0.09***	-0.14***	0.09***	-0.04	-0.07**	-0.11***

Cont.

	(9) SIZE	(10) ROA	(11) MB	(12) Loss	(13) EPSp	(14) BIG	(15) QAnalyst	(16) DoTip
(1)								
(2)								
(3)								
(4)								
(5)								
(6)								
(7)								
(8)								
(9)	1							
(10)	-0.15***	1						
(11)	-0.08***	0.39***	1					
(12)	0.02	-0.66***	-0.29***	1				
(13)	0.12***	0.68***	0.16***	-0.58***	1			
(14)	-0.16***	0.21***	0.16***	-0.18***	0.16***	1		
(15)	0.33***	0.06	0.22***	-0.10***	0.09***	-0.03	1	
(16)	0.06*	0.34***	0.25***	-0.47***	0.38***	0.17***	0.11***	1

*** = $p < 0.01$; ** = $p < 0.05$; * = $p < 0.10$.
Source: *Elaborated by the authors.*

investment in the controlled company Transnordestina Logística S.A. (TLSA) as it was "an area of risk due to the uncertainties inherent to the process of determining the estimates and judgements involved in the elaboration of future cash flows and dividends discounted at present value" (TLSA, 2018).

The audit proceeded with various procedures and considered the premises and methodologies used by the TLSA to be reasonable for evaluating the recoverable value of those assets.

In Table 6, regarding the categories of matters reported, the heterogeneity (quantity) of KAMs in the IAR, as well as the wording of these matters by the auditor, may have stimulated the occurrence of diverse, positive and negative signs. Positively significant (1%) results were also observed for *SIZE*, *ROA*, *MB*, and *EPSp*, and negatively significant (1%) ones were observed for *Loss* with the EPSf, which denotes that the analysts value the companies' historical data (Abernathy et al., 2018; Begley & Feltham, 2002; Behn et al., 2008; He et al., 2019; Healy & Palepu, 2001; Lima & Luca, 2016).

4.1 Relationship between the KAMs and the Earnings per Share Forecast

Table 7 elucidates the panel data regression and quantile regression between the earnings per share forecast and the KAMs.

Table 7

Relationship between the key audit matters (KAMs) and the earnings per share forecast consensus

EPSf	GLS panel data regression					Quantile regression						
	t + 1	t + 2	t + 3	t + 4	x + 1	0.05	0.1	0.25	0.5	0.75	0.9	0.95
Constant	-0.64	-0.98	0.08	1.79	0.57	-1.46**	-0.83	0.36	0.43	-0.41	-1.41*	-1.25*
QKAM	0.14	0.05	0.18	0.35	0.36**	-0.50**	-	-	-	-	0.42	0.60**
SpMatt	-0.23	-0.02	-0.12	-0.22	-0.28	0.29**	0.06	-0.06	-0.05	0.06	-0.10	-0.26*
Assets	-0.13	-0.06	-0.04	-0.16*	-0.16***	0.19**	0.01	-0.01	-0.02	-0.06*	-0.20*	-0.28***
Impairments	-0.13	-0.14	-0.08	-0.20*	-0.23***	0.19**	-0.02	-0.02	-0.04	-0.07	-0.20*	-0.29***
Liabilities	-0.08	-0.06	-0.07	-0.11	-0.18***	0.12	-0.02	-0.06*	-0.05*	-0.04	-0.19	-0.24**
CompMatt	0.00	-0.03	-0.03	-0.03	-0.15**	0.22**	0.06*	0.09***	0.05**	0.13***	0.00	-0.10
Controls	-0.01	-0.06	0.01	-0.07	-0.11	0.12	0.07	0.06	0.02	0.1267*	0.05	-0.05
SIZE	0.05	0.07	0.00	-0.06	0.02	0.02	0.04	-0.03	-0.02	0.02	0.10**	0.11***
ROA	-0.02	000	0.00	-0.01	-0.01	0.01	0.00	0.00	-0.01	0.00	0.01	0.01
MB	0.08**	0.03	0.00	0.03	0.04	-0.02	-0.01	0.02	0.01	0.01	0.02	0.04*
Loss	0.28**	0.29**	0.30**	0.05	0.17**	0.10	0.07	0.14**	0.42***	0.61***	0.32**	0.15
EPSp	0.46***	0.39***	0.52***	0.41***	0.28***	0.33***	0.42***	0.62***	0.76***	0.64***	0.44***	0.34***
BIG	0.36***	0.26**	0.32**	0.10	0.19*	0.44***	0.17*	0.13*	0.17**	0.32***	0.42***	0.20
QAnalyst	-0.03	0.00	0.02	0.00	-0.01	0.01	0.01	0.0167*	0.01	-0.01	-0.02	-0.03*
DoTip	0.25	0.49***	0.31***	0.19	0.33***	0.14	0.13	0.00	0.14*	0.62***	0.96***	1.12***
Year_2017	-0.12	-0.02	0.14	-0.18**	-0.12**	0.10	0.04	0.05	0.05	0.00	-0.08	-0.20**
Year_2018	-0.05	0.00	0.17**	-0.10*	-0.03	0.11*	0.08	0.07	0.05	-0.01	-0.11	-0.16*
Observations	249	278	281	284	1092	1.092	1.099	1.099	1.099	1.099	1.092	1.092
R²/pseudo R²	0.2	0.18	0.35	0.37	0.22	0.32	0.39	0.43	0.46	0.47	0.44	0.36

Note: *The operating sectors were controlled, but they were not significant.*
*** = p < 0.01; ** = p < 0.05; * = p < 0.10.
Source: *Elaborated by the authors.*

In Table 7, based on the annual GLS regression (x + 1), *QKAM* was shown to be positively and significantly related at the 5% level with the earnings per share forecast consensus (EPSf). Regarding the quarters, the relationship is also positive, but without significance. With relation to the KAM categories, the questions involving assets, impairments, and liabilities were significant at the 1% level and the complex matters were significant at 5%, all with a negative sign in the analysis of x + 1 (annual).

These results reveal that the QKAM and the KAM categories more strongly affect the annual forecasts, suggesting that the analysts adjust/revise their expectations

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up to close to the close of the period, at which point their estimates tend to be more predictable, since more information becomes available over the year (Lima, 2017; Martinez, 2004).

The quantile regression, in turn, highlights that the coefficient of the *QKAM* variable is negative and significant for the lowest mean values of the forecast consensuses (first quantile), while for the highest values (last quantile) the relationship becomes significantly positive. In contrast, the KAMs related to sector-specific matters, assets, impairments, and complex matters significantly and positively (negatively) affect the lowest (highest) values of earnings per share consensuses, suggesting that these provide informational content, which minimizes informational asymmetry.

Therefore, the KAM information set affects the analysts' forecast (Köhler et al., 2020) over time, but there is no immediate effect of their disclosure in the IAR regarding the formulation of earnings per share forecast expectations. Thus, the informational effect of the KAMs is incorporated over time, impacting the annual forecast. In addition, it is understood that the KAMs provide a reduction in informational asymmetry, and this may be related to the quality of the content of the matter reported. Hence, in light of Signaling Theory, it is inferred that auditors convey, through the KAMs reported in the IAR, relevant elements for the formation of financial analysts' forecasts, and so H$_1$ cannot be rejected.

It was also found that *EPSf* is explained at the 1% level by the earnings from the previous period (*EPSp*) in all quarters, thus corroborating Martinez (2007). This ratifies the understanding that analysts trust the accounting information (Abernathy et al., 2018). The *Loss* variable was significant, which corroborates the findings regarding the utility of the historical data reported for financial analysts (Begley & Feltham, 2002), while the forecast bias (*DoTip*) was also significant, consistently with the assumption that analysts' characteristics persist over time (Simpson, 2010). Also, the earnings per share forecast consensus is positively influenced by Big Four auditing firms.

It was identified that non-financial information, for example controls, had less relevant content for the earnings per share forecast. It occurs that, in general, they are data that lack systemic disclosure, which restricts analysts from evaluating them in full and comparing them historically (Simpson, 2010).

The quality of the analysts' forecast is dependent on the informativeness (Lima, 2017). Therefore, the increased information in the IAR, characterized in this study by the

KAMs reported by the auditor, raises the significance of the power of dissemination of information with auditor credibility for analysts, reducing the informational asymmetry among these agents.

4.2 Relationship between the KAMs and the Error and Accuracy of the Earnings per Share Forecast

Table 8 illustrates the correlation matrix of the error (*EEPSf*) and the accuracy (*AEPSf*) of the financial analysts' earnings per share forecast.

In Table 8, the variable of interest *QKAM* indicated significance at 1% and a negative and positive sign, respectively, for the error and accuracy of the analysts' forecast. Regarding the matters, questions about controls and assets showed a positive sign and significance at 1%, while specific matters had a positive sign at 10%, for accuracy.

For the error (*EPSf*), impairments and sector-specific matters denoted a negative sign at 10% and assets indicated a negative sign at 5%. Liabilities and complex matter items were not significant either for the error or for accuracy (*AEPSf*), nor were impairments for accuracy or controls for the error.

The control proxies *Age* and *Loss* have a negative sign in relation to the error and a positive sign for accuracy, both significant at 1%. This result is consistent with the assumptions established by Behn et al. (2008), who highlight that the forecast age is negative when the space of time is long, so that the estimates can be made quite some time in advance of the actual earnings announcement. In light of this, it seems reasonable to suppose that the analysts may have used the KAMs immediately after the publication of the IARs, generally in the first quarter of the financial period subsequent to disclosure, in order to formulate estimates regarding the year end, affecting the error and accuracy.

The actual earnings from the previous period (*EPSp*) revealed positive significance for the error and negative significance for accuracy, both at 1%. Auditing firm (*BIG*), company size (*SIZE*), quantity of analysts (*Qanalyst*), growth opportunity (*MB*), and return on assets (*ROA*) were significant at 1% for accuracy. In turn, *ROA* and *MB* were significant at 1% and 5% for the forecasting error, respectively. However, *BIG*, *SIZE*, and *QAnalyst* were not significant for the forecasting error.

Table 9 illustrates the panel and quantile data for the error variable (*EEPSf*) in relation to the six KAM categories of the study.

Table 8

Spearman's correlation matrix (error and accuracy)

	(1) EEPSf	(2) AEPSf	(3) QKAM	(4) SpMatt	(5) Assets	(6) Impairments	(7) Liabilities	(8) CompMatt	(9) Control
(1)	1								
(2)	-0.47***	1							
(3)	-0.09***	0.15***	1						
(4)	-0.07*	0.06*	0.08**	1					
(5)	-0.08**	0.11***	0.46***	-0.15***	1				
(6)	-0.06*	0.05	0.25***	-0.07**	-0.19***	1			
(7)	0.04	0.04	0.37***	-0.03	-0.04	-0.01	1		
(8)	-0.04	-0.01	0.38***	-0.17***	-0.07**	0.01	-0.14***	1	
(9)	0.01	0.1***	0.25***	0.03	0.03	-0.11***	-0.01	-0.11***	1
(10)	-0.03	0.13***	0.23***	0.18***	-0.02	-0.01	0.29***	0.06	0.08**
(11)	0.45***	-0.41***	-0.31***	0.07**	-0.29***	-0.03	0.00	-0.18***	-0.06*
(12)	0.08**	-0.46***	-0.11***	-0.03	-0.14***	0.04	-0.07**	0.06*	-0.16***
(13)	-0.28***	0.41***	0.21***	-0.08**	0.15***	0.01	0.04	0.14***	0.1***
(14)	0.53***	-0.38***	-0.14***	0.1***	-0.21***	-0.1***	-0.01	0.03	-0.07**
(15)	0.02	-0.23***	-0.24***	0.02***	0.00	-0.14***	-0.1***	-0.12***	-0.2***
(16)	-0.12***	0.14***	0.00	-0.01	-0.03	0.05	0.01	0.01	-0.01
(17)	0.02	-0.11***	-0.03	-0.01	-0.02	-0.01	0.1***	-0.01	-0.11***
(18)	0.04	-0.28*	-0.21*	0.11*	-0.20*	0.04	-0.02	-0.07	-0.24*

Cont.

	(10) SIZE	(11) ROA	(12) MB	(13) Loss	(14) EPSp	(15) BIG	(16) Age	(17) QAnalyst	(18) DoTip
(1)									
(2)									
(3)									
(4)									
(5)									
(6)									
(7)									
(8)									
(9)									
(10)	1								
(11)	-0.17***	1							
(12)	-0.12***	0.41***	1						
(13)	0.05	-0.68***	-0.32***	1					
(14)	0.05	0.65***	0.23***	-0.55***	1				
(15)	-0.13***	0.22***	0.21***	-0.24***	0.2***	1			
(16)	0.05	-0.03	-0.04	0.04	0.01	0.03	1		
(17)	0.27***	0.05	0.19***	-0.1***	0.02	-0.04	-0.16***	1	
(18)	0.03	0.49*	0.28*	-0.65*	0.49*	0.17***	-0.12*	0.01	1

*** = $p < 0.01$; ** = $p < 0.05$; * = $p < 0.10$.
Source: *Elaborated by the authors.*

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Table 9

Relationship between the key audit matters (KAM) and the forecasting error

EEPSf	GLS panel data regression					Quantile regression						
	t + 1	t + 2	t + 3	t + 4	x + 1	0.05	0.1	0.25	0.5	0.75	0.9	0.95
Constant	2.79	-3.24	-3.25*	-0.39	-0.40	-0.69	-3.33**	-2.47	-0.09	1.15***	1.55***	1.77***
QKAM	0.22	0.09	0.48	-0.26	0.21	2.25***	-	-	-	-	0.22*	0.31**
SpMatt	-0.09	0.09	-0.56	0.11	-0.12	-1.36***	-0.41*	-0.45	0.19**	0.01	-0.04	-0.07
Assets	0.05	0.04	-0.04	0.10	0.01	-0.79***	0.11	0.06	0.02	0.01	-0.05	-0.11**
Impairments	0.00	-0.04	-0.22	0.01	-0.06	-0.91***	-0.06	-0.15	-0.08	-0.06	-0.12**	-0.15***
Liabilities	-0.10	-0.21	-0.28	-0.07	-0.19	-0.96***	-0.10	-0.10	0.02	-0.01	-0.06	-0.14**
CompMatt	0.05	0.06	0.00	-0.09	-0.01	-0.71***	-0.02	0.06	0.00	-0.03	-0.14***	-0.18***
Controls	-0.03	0.22	-0.44	-0.24	-0.12	-0.99***	-0.06	-0.31	-0.12*	-0.05	-0.09	-0.13**
SIZE	0.09	0.04	0.14*	0.14	0.11	0.07	0.21***	0.23**	0.06*	0.01	-0.02	-0.02
ROA	0.09***	0.08***	0.11***	0.09***	0.08***	0.22***	0.18***	0.11***	0.05***	0.02***	0.01**	0.01*
MB	0.05	-0.04	-0.02	-0.06	-0.05	-0.08	-0.01	-0.01	-0.02	-0.01	-0.02	-0.02*
Loss	0.54	0.65*	0.94***	-0.70*	0.27	0.70**	0.77***	0.30	-0.13	-0.44***	-0.33***	-0.27***
EPSp	0.61***	0.60***	0.65***	0.16	0.48***	0.58***	0.84***	0.69***	0.32***	0.21***	0.18***	0.14***
BIG	-0.72***	-0.40	-0.17	0.00	-0.44**	-0.24	0.25	-0.17	-0.20**	-0.18***	-0.20***	-0.12*
Age	-0.65	0.33	0.23	-0.04	-0.19***	-0.15	-0.11	-0.15	-0.08	-0.10***	-0.08**	-0.07**
QAnalyst	-0.10	0.05	0.02	-0.06	-0.01	0.00	-0.03	-0.10	-0.02	-0.03*	-0.03**	-0.03**
DoTip	-1.59***	-1.27***	-1.69***	-1.74***	-1.53***	-2.71***	-3.11***	-2.28***	-1.09***	-0.79***	-0.56***	-0.53***
Year_2016	-0.40	0.32	-0.04	-0.17	0.05	-0.23	-0.29	-0.24	0.02	-0.08	0.00	-0.05
Year_2017	-0.20	0.05	-0.15	0.00	0.00	-0.16	-0.31**	-0.12	0.01	0.01	0.04	0.01
Observations	172	211	220	230	833	833	837	837	837	837	833	833
R²/pseudo R²	0.22	0.31	0.41	0.38	0.23	0.24	0.31	0.24	0.17	0.12	0.10	0.05

Note: *The operating sectors were controlled, but they were generally not significant.*
GLS = generalized least squares.
*** = p < 0.01; ** = p < 0.05; * = p < 0.10.
Source: *Elaborated by the authors.*

It is noted, in Table 9, that the KAM variables of interest were not significant for the forecasting error in the GLS regression. However, from observing the findings of the quantile regression, it can be seen that *QKAM* is significant in the lowest quantile (0.05) and in the highest quantile (0.95), in which the lowest and highest earnings per share forecast errors are found, respectively.

For the lowest forecast errors (first quantile), the quantity (positive) and the matters reported (negative) – sector-specific matters, assets, impairments, liabilities, complex matters, and controls – have significance, implying that the KAMs in themselves dispel doubts about the matter addressed, contributing to the quality of the analysts' forecast. The disclosure of KAMs can be considered as generating an adjustment ("fine tuning") of these forecasts.

In the highest forecast errors (last quantile), the QKAM also presents a positive and significant sign for the forecast error, implying that a high number of KAMs causes a bigger forecast error, that is, they do not maximize the

outlook for more assertive projections, when the errors are bigger. However, in the biggest errors, the questions about assets, impairments, liabilities, complex matters, and controls, by presenting a negative and significant sign, indicate explanatory power of utility (content) of the KAMs for reducing informational asymmetry in the formation of a forecast.

The actual earnings from the previous period (*EPSp*) were significant at 1% in the multiple and quantile regression, highlighting the importance of publicly-available accounting information with a history of disclosure, as it can be incorporated into the analysts' projections up to the forecast regarding the close of the financial period (Lima, 2017; Martinez, 2004).

With relation to H₂, it is observed that the KAMs reduce the error, but with greater significance in the lowest quantile; that is, they favor the fine tuning of the analysts' forecast errors. When the error is bigger (0.95 quantile), the quantity of KAMs also shows an

influence, but with less significance. In the highest quantile, there is a greater reduction of the biggest analyst errors when the auditor reports KAMs about controls, liabilities, assets, impairments, and complex matters. In the lowest quantile, in turn, all six categories contributed to reducing the smallest errors, that is, KAMs of a financial nature or not.

Figure 1 reiterates the understanding that the KAMs, both in terms of quantity and the categories of matters reported, help in fine tuning the analysts' forecast errors. Less dispersion is observed in the extreme quantiles (0.05 and 0.95) of the estimates shown in the graphs with QKAM, controls, liabilities, assets, impairments, and complex matters.
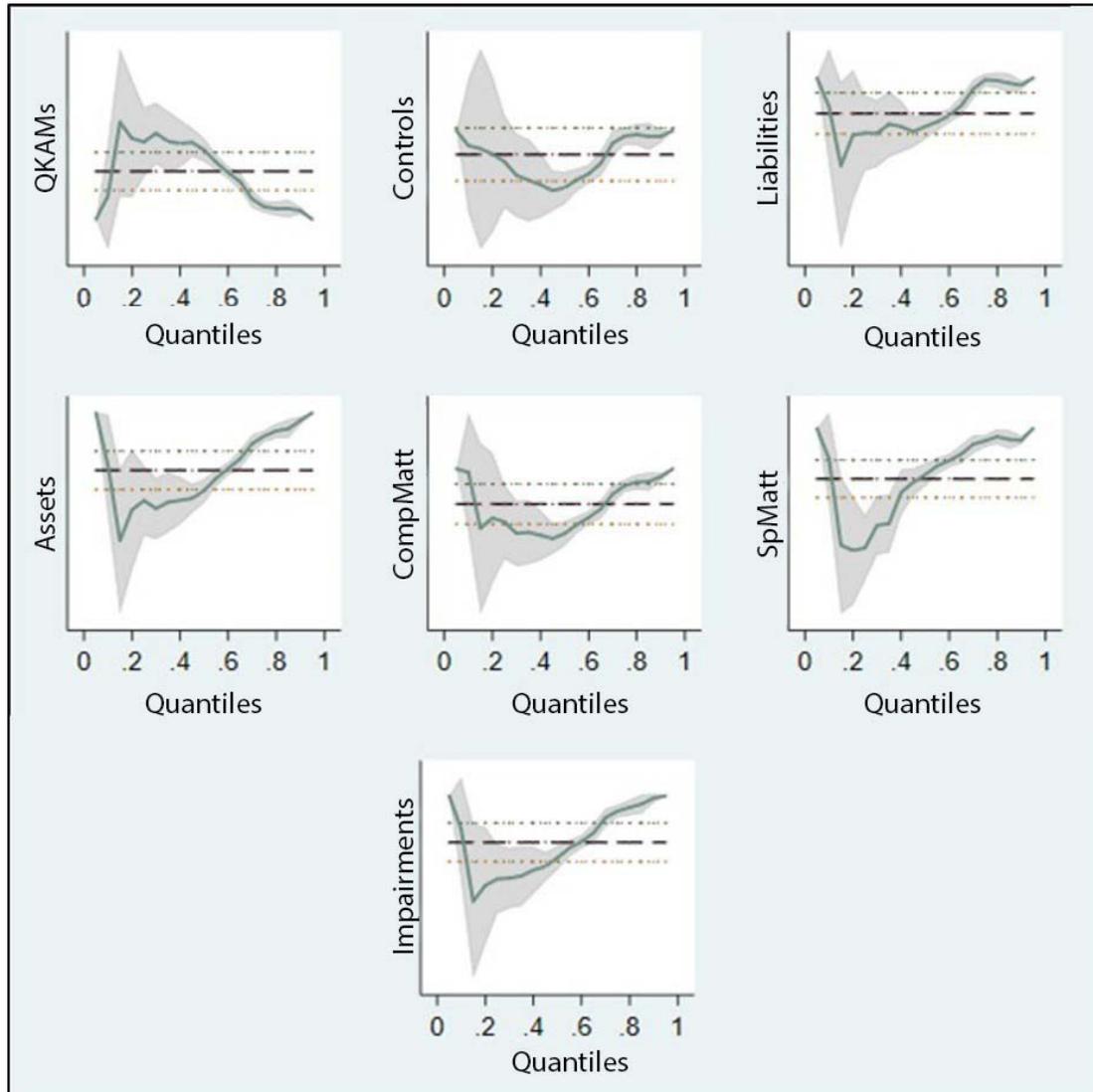
Figure 1 *Graph of the quantile regression – Forecast error*
Source: *Elaborated by the authors.*

The fact that the public information KAMs are associated with the accuracy of the analysts' forecast indicates that their informational content represents incremental and public data of interest to financial analysts and, consequently, the capital market (Han & Liu, 2019). This corroborates the understanding of Signaling Theory that the signals (KAMs) only contribute to the question of asymmetric information

if they are truthful and accurate (Spence, 1973), which are aspects that are expected from independent auditors, due to their role and reputation in the capital market.

Table 10 elucidates the panel data and quantile regressions between the accuracy of the earnings per share forecast and the KAMs, contemplating the six categorizations of the study.

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Table 10

Relationship between key audit matters (KAMs) and forecast accuracy

AEPSf	GLS panel data regression					Quantile regression						
	t + 1	t + 2	t + 3	t + 4	x + 1	0.05	0.10	0.25	0.50	0.75	0.90	0.95
Constant	-0.07	0.05	0.11	0.08	0.08	-0.01	-0.01	0.00	0.16***	0.22***	0.24***	0.28*
QKAM	-0.04	0.01	-0.01	0.04*	0.01	0.00	-	-	-	-	0.00	0.03
SpMatt	0.04*	-0.02	0.00	-0.03**	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
Assets	0.01	-0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Impairments	0.01	0.00	0.01	-0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.01	-0.01
Liabilities	0.01	0.00	0.00	-0.02*	0.00	0.00	0.00	0.00	0.00	0.00	0.01	-0.01
CompMatt	0.01	0.00	0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Controls	0.02	0.00	0.04**	0.01	0.02	0.00	0.00	0.00	0.01	0.01**	0.02***	-0.01
SIZE	-0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.01**	-0.01**	-0.01
ROA	-0.01*	0.00	0.00	0.01**	0.00	0.00	0.00	0.00	0.00	0.00	0.01***	0.00
MB	0.00	-0.01*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01***	-0.01***	-0.01**
Loss	0.02	0.03	0.04**	0.07***	0.03*	0.01**	0.01***	0.02***	0.04***	0.08***	0.12***	0.13***
EPSp	-0.03***	-0.01	-0.02***	-0.02***	-0.02***	-0.01***	-0.01**	-0.01***	-0.01***	-0.02***	-0.02***	-0.02*
BIG	-0.02	-0.03	-0.04**	-0.06***	-0.02	0.00	0.00	0.00	-0.08***	-0.07***	-0.07***	-0.08***
Age	0.05*	0.02	0.02	0.01*	0.01***	0.00	0.00	0.00	0.01	0.01	0.01*	0.01
QAnalyst	0.00	0.00	0.00	-0.01*	-0.01*	0.00	0.00	0.00	0.00	-0.01*	-0.01**	-0.01
DoTip	-0.02	-0.02	0.00	0.04	0.02**	0.01**	0.01***	0.01**	0.00	-0.01	0.01	0.02
Year_2016	-0.02	-0.03**	-0.03**	-0.03***	-0.02***	0.00	0.00	-0.01	-0.01*	-0.02***	-0.03***	-0.03
Year_2017	-0.05**	-0.01	-0.03***	-0.02***	-0.02***	0.00	0.00	0.00	-0.01	-0.01**	-0.02***	-0.01
Observations	172	211	220	230	833	833	837	837	837	837	833	833
R^2 / pseudo R^2	0.36	0.13	0.1	0.12	0.08	0.01	0.03	0.09	0.24	0.45	0.54	0.46

Note: *The operating sectors were controlled, but they were generally not significant.*

GLS = generalized least squares.

*** = p < 0.01; ** = p < 0.05; * = p < 0.10.

Source: *Elaborated by the authors.*

According to Table 10, *QKAM* and the liabilities matter are significant at 10% in *t + 4*. Matters related to controls were significant at the 5% level in *t + 3*. Questions regarding sector-specific matters were significant at 10% in *t + 1* and at 5% in *t + 4*. Moreover, the year of disclosure of the KAMs (*Year*), forecast age (*Age*), and actual earnings per share (*EPSp*) showed significance at the 1% level in the annual analysis (x + 1).

In general, apart from size (*SIZE*), the other control variables were shown to be relevant (*Age, QAnalyst, MB, EPSp, Loss,* and *Year*) to accuracy in some of the quarters and in the annual analysis. The *DoTip* proxy was only significant in the annual analysis, while *BIG* showed significance in only some of the quarters.

In the quantile regression, only "control," in the highest quantiles, had significance for accuracy. Regarding the control proxies, *SIZE, ROA, MB, BIG, Age, QAnalyst, DoTip,* and *Year* presented significance in some quantiles.

However, those related to the company's earnings (*EPSp* and *Loss*) are the most significant – in all quantiles. This may be due to the shareholders formulating their estimates based on accounting and historical data (Begley & Feltham, 2002).

In this respect, the results found denote weak statistical evidence of the influence of the informational content of KAMs on the accuracy of the analysts' forecast, even if the informational value of the KAMs denotes a positive sign over time, so that H₃ is rejected.

It is understood that the matters reported in the KAMs did not present uniformity of signs in the forecast consensus (Table 7); consequently, in the error and in the accuracy, they continued to reveal different signs (tables 9 and 10). This plurality of signs may be due to the initial judgement made by the auditor to list a KAM and the subsequent examination of the content of that item by the analyst, who may distinguish the aspects regarding

management or financial reports of the audited firm as significant or not (Sierra-García et al., 2019) when formulating their estimates and recommendations to the market. Thus, the content of the KAMs can be significant for elaborating earnings per share expectations, but not essentially implying a smaller absolute error (accuracy) when compared to the earnings announced by the audited firm and the analysts' expectations, if quality does not feature in the content reported.

4.3 Sensitivity Analysis – Classification into Two Categories

For greater robustness, we also analyzed the effect of KAM reporting on the financial analysts' earnings forecast, as well as the error and accuracy, according to the classification of Lennox et al. (2019) and Sierra-García et al. (2019), who divide KAMs into: (i) account-level risk; or (ii) entity-level risk.

By segregating the matters in terms of the risks (two categories) attributed to the entity, overall, and at the level of the accounting record itself, we identified that both are significant at 5% and have a negative sign for the earnings per share forecast. Thus, summarizing the six into two categories maintained consistent the evidence that the KAMs present relevant informational content for financial analysts in terms of contributing to adjusting the consensus, which, on average, was reduced, given that all the signs were generally negative. The same confirmation occurs with respect to the forecasting error, in which the two categories presented the highest and lowest quantiles – a significant association. With respect to accuracy, it is also confirmed that the variables of interest (KAMs), represented by the two categories, were not significant.

5. CONCLUDING REMARKS

The study analyzed the relationship between the informational content of the KAMs reported in the IAR and the financial analysts' forecast, using the earnings forecast for a sample with the companies listed on the B3 in the period from 2016 to 2018, via GLS and quantile regression.

In the analysis of the analysts' forecast consensus and of the informational content of the KAMs (H_1), it was found that the QKAM has a positive relationship, indicating a reduction in informational asymmetry for the analysts' earnings per share forecast. Also, the KAMs on sector-specific matters, assets, impairments, and complex matters signal a greater effect on the lowest forecast consensuses. Thus, it is possible to infer that there is a relationship between the financial analysts and both the quantity and content of the KAMs disclosed by the independent auditors.

Within this context, greater financial analyst trust in the KAMs was verified regarding aspects of the accounting records (for example, accounting estimates), as this is numerical information with a historical record. On the other hand, as they are sporadic and often qualitatively handled, matters related to the entity as a whole (for example, management uncertainties) had a smaller impact on the analysts' forecast.

From analyzing the relationship between the KAMs and the earnings forecast error (H_2), it was observed that the KAMs reduce the biggest and smallest errors, but there is greater significance in the lowest quantiles (smallest errors), in which the QKAM and the matters reported

in the KAMs lead to greater sensitivity – fine tuning – of the analysts' forecast errors. Regarding accuracy (H_3), in turn, based on the findings, weak statistical evidence was denoted related to the influence of the informational content of the KAMs on the accuracy of the analysts' forecast, therefore rejecting H_3.

The actual earnings from the previous period variable was significant in the three analyses (consensus, error, and accuracy), indicating, in accordance with the literature, their informational relevance, given that analysts revise their forecasts based on their past errors or because they have access to information with historical series (Lima, 2017; Martinez, 2004). So, based on the reported KAMs, the analysts may have reassessed their estimates and, throughout the quarters, issued new forecasts to the capital market, providing greater informational utility (KAMs), implying a reduction in informational asymmetry.

Therefore, the quantity and content of the KAMs were shown to be relevant for the analysts, helping in minimizing the informational asymmetry between the parties related to the business, especially matters of an accounting nature. This enables it to be assumed that the IAR is a sign of useful and reliable information, and this evidence corroborates what is envisioned by Signaling Theory.

The findings of this study provide evidence that KAMs are mechanisms that are capable of guiding users' attention to the content of the audit report. This finding may suggest that some matters disclosed by the auditor are not directly related with the process of constructing the

financial analysts' estimates. However, they could provide a starting point (signal) for seeking more elements, as well as influencing the judgements and investment recommendations for a particular company. Moreover, the quantity and questions addressed in the IAR as KAMs could be relevant for financial analysts, but may not necessarily have a positive relationship with their forecasts, as they depend on the quality of the content reported by the auditor.

Therefore, the results lead to the belief that the greater the informational value of the content of the KAMs, the better the quality of that information and, consequently, it contributes to reducing informational asymmetry and forming the earnings per share forecast consensus, as well as improving the analysts' performance, minimizing the

error in their estimates. Along these lines, the idea that KAMs provide informational value to other users of the IAR is also validated, given that if financial analysts, who are sophisticated users of accounting information, use them, then other capital market entities can attribute relevance to the questions annually communicated by the auditors.

Empirically, this study broadens the debate among analysts and independent auditors about raising the quality of auditing and the IAR, as well as the use of accounting information by analysts. In the social respect, the research provides a greater understanding about the real utility of KAMs for regulatory bodies and other IAR users. Future studies could evaluate whether KAMs encourage financial analysts to seek private information about the companies they follow or discourage them from doing so.

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