

# The Textual Similarity of KAM Disclosures for Spanish Companies

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**Abstract.** We investigate and document the textual similarity of key audit matter (KAM) disclosures by using KAM items in auditor's reports of Spanish companies in fiscal years 2017 and 2018. The main objective is to understand how similar KAMs are disclosed from one year to another. Following prior literature, we use the cosine similarity to measure the textual similarity between KAM items in terms of word usage. We classify and analyze KAM items for two consecutive years based on the following three combinations: (1) KAM topic, (2) KAM topic and auditor, and (3) KAM topic, auditor, and industry of the client being audited. The results indicate that auditors from the same accounting firm tend to have a recurring textual similarity under each KAM topic, and such similarity increases for clients within the same industry. The results add empirical evidence to the understanding of the recurring textual similarity of KAM disclosures.

Keywords: Key audit matter, cosine similarity, auditor's report, text mining.

## 1. INTRODUCTION

Key audit matters (KAMs) are “*matters that, in the auditor’s professional judgment, were of most significance in the audit of the financial statements of the current period* (IAASB 2015a).” Auditors need to determine, communicate, and disclose KAM item(s) for audits of clients’ financial statements. The KAM communication is designed to provide users of auditor’s reports with incrementally more useful information than the prior standardized auditor’s reports. Moreover, auditors are expected to identify and disclose KAM(s) reflecting the specific circumstance to the client. Whether auditors communicate distinct KAMs for each individual client becomes an important issue that should be addressed (Cordoş & Fülöp 2015; Moroney et al., 2021). Given the importance of such disclosure in auditors’ reports, it is critical for KAMs to serve as a beneficial mechanism for enhancing financial reporting quality (Gold et al., 2020). There should be information embedded in its contents and not “boilerplates” which are expected but provide less relevant information to the users of the reporting (IAASB 2015b; Pelzer 2016; PwC 2015; Segal 2017; Velte & Issa 2019). However, to our best knowledge, there are few academic papers investigating and documenting the boilerplate issue of KAM disclosures. Therefore, this study aims to provide the empirical evidence in the textual similarity of KAM disclosures by analyzing the difference of KAM disclosures in terms of word usage from one fiscal year (FY) to the preceding one.

We collect KAM items in auditor’s reports from available Spanish companies in FYs 2017 and 2018, then classify those KAM items based on the following three combinations: (1) KAM topic, (2) KAM topic and auditor, and (3) KAM topic, auditor, and industry. Textual analyses are performed based on these three dimensions, respectively. Consistent with other accounting research (Bozanic & Thevenot 2015; Brown & Tucker 2011; Hoberg & Phillips 2016; Lang & Stice-Lawrence 2015; Loughran & McDonald 2016; Peterson et al., 2015), we utilize cosine similarity (CS) to measure the textual similarity between two KAM items. Words in a KAM item are transformed into a vector representing the frequency of each word appearing in the item, and the CS value is calculated between any two vectors (two items). The values of CS vary between zero and one; the higher the CS values, the more similar the two KAM items are.

The empirical results reveal that, generally, KAM items are more similar under the combinations of (1) KAM topic and auditor, therefore, suggesting a recurring textual similarity for the same client; and (2) KAM topic, auditor, and industry in FY 2018 than in FY 2017, therefore suggesting a recurring textual similarity from one year to another. Furthermore, we identify that auditors from one accounting firm had highly similar word usage in those 8 (12) KAM items for the topic provisions for litigation and procedures for their client in the financial services – banking (financial services – capital markets) industry in FY 2017 (2018). Such results might suggest a strong level of textual similarity, delivering a more standardized wording and, consequently, reducing the potential benefit from auditor's reports.

This research contributes to the accounting literature by offering empirical evidence of the textual similarity of KAM disclosures. This evidence is beneficial to researchers, practitioners, regulators, and, especially, standard setters in their review of the auditing standard. Although the study only covers two consecutive fiscal years, further analysis with more FYs can be done to understand if the similarity of KAM disclosures is gradually increased. Moreover, researchers can also examine the association of the KAM disclosure similarity with the market reaction.

This paper is organized as follows. The literature review about KAM research is provided in Section 2. We summarize the data and the methodology utilized in Section 3, and the empirical results are presented in Section 4. Additional analyses are performed in Section 5 and discussions of the results are in Section 6. Lastly, the research is concluded in Section 7.

## **2. LITERATURE REVIEW**

The International Auditing and Assurance Standards Board (IAASB) issued International Standard on Auditing (ISA) 701: *Communicating key audit matters in the independent auditor's report* in 2015. Auditors need to communicate key audit matters (KAMs) in auditor's reports for audits of financial statements whose ending period lies on or after December 15, 2016 (IAASB 2015a). The KAM disclosures are designed to provide users of auditor's reports with more information specific to the client and conveyed directly from the auditor's perspective. Specifically, paragraph A44 states that “[r]elating a matter directly to the specific circumstances

*of the entity may also help to minimize the potential that such descriptions become overly standardized and less useful over time (IAASB 2015a)."* Moreover, *"it may be useful for the auditor to highlight aspects specific to the entity (...) in order to make the description more relevant for intended users. This also may be important in describing a key audit matter that recurs over periods (IAASB 2015a)."* Therefore, to empirically and comprehensively compare KAM disclosures among all available auditor's reports and understand their textual similarity would become a critical issue to perceive the specific fact and circumstances in each disclosure. This comparison is the objective of this research.

Many papers investigated the impact of the implementation of expanded auditor's reports in different countries. For instance, Gutierrez et al. (2018) found little evidence that the requirement to issue expanded auditor's reports in the U.K. had effects on market reaction, audit fees, and audit quality. Bédard et al., (2019) also found that the justifications of assessments (JOAs) in expanded auditor's reports<sup>1</sup> had no significant impact on the market reaction, audit fees, audit quality, and audit report lag in France. Hollie (2020) documented early evidence for the implementation of critical audit matter (CAM) communication for large accelerated filers in the U.S. All of such studies may suggest the low importance of KAMs for market participants. Such outcomes, perhaps, are from the lack of sufficient precision in the KAM disclosures. However, little prior literature investigated and documented the empirical evidence for the across-year consistency of KAM disclosures by different KAM topics, auditors, and industries. Therefore, this research intends to fill this gap and contribute to the literature by comparing the KAM disclosures in terms of word usage and raises the research question (RQ) as follows:

**RQ:** What is the textual similarity of KAM disclosures from Spanish public companies classified by KAM topic, auditor, and industry?

### **3. DATA AND METHODOLOGY**

A KAM disclosure, typically, contains three major sections, including (1) the title of the KAM item, (2) the description about the KAM item to elaborate why the auditor would identify this specific issue as a KAM, and (3) the procedures to

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<sup>1</sup> The justifications of assessments (JOAs) in expanded auditor's reports in France share a similar objective with the KAMs, intending to increase the information content embedded in expanded auditor's reports (Bédard et al., 2019).

address this KAM item. We collect the original PDF files of auditor's reports for consolidated financial statements from all Spanish public companies in fiscal years (FYs) 2017 and 2018, convert into DOC files, and manually extract individual KAM item one by one.

We conducted this study in Spain since it is a market that has a unique characteristic as the regulator has required that all auditors' reports (both public interest entities and private owned entities – all the entities) to should include KAM(s). Therefore, it is a market that potentially could have a higher textual similarity as auditors could following a more similar description of risks and audit approach to avoid inconsistency risk for similar matters among their client bases. However, such hypothesis would have to be tested in a further study of a different market where KAM are not being used for all entities to conclude if the Spanish requirement increase textual similarity or not. We also have collected only public companies' auditors report as they were the most readily available data. Differences of textual similarity between private own companies and public companies could exist but it is an area that further investigation would be required.

**Panel A. The Codes for KAM Topics\***

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<b>Topic Code</b>	<b>The Name of the Topic</b>
01	Real estate assets: valuation and impairment
02	Acquisitions and business combinations
03	Capitalization of R&D expenses
04	Impairment of customers
05	Stocks: Other
06	Stocks: Valuation
07	Going Concern
08	Taxes: Other
09	Taxes: Recoverability of deferred assets
10	Taxes: Transfer pricing
11	Property, plant and equipment: Valuation and impairment

12	Derivative financial instruments
13	Intangibles: Assessment and deterioration
14	Listed financial investments: Valuation, existence and possession
15	Financial investments in group companies and associates
16	Unlisted financial investments: Valuation
17	Other provisions
18	Others
19	Presentation of relevant facts
20	Debt provisions
21	Provisions for litigation and procedures
22	Provisions for pensions
23	Provisions for insurance
24	Revenue recognition: Integrity
25	Revenue recognition: Occurrence
26	Revenue recognition: Several
27	Information security and control systems

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\*The KAM topics are derived from Audit Analytics KAM taxonomy (non-public available).

### **Panel B. The Codes for Accounting Firms**

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<b>Firm Code</b>	<b>The Name of the Firm</b>
01	BDO
02	Deloitte
03	Joint Deloitte-PwC
04	E&Y
05	KPMG

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06	Mazars
07	Others
08	PwC

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**Panel C. The Codes for Industries of each Client Being Audited\***

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<b>Industry Code</b>	<b>The Name of the Industry</b>
01	Business and professional services – business services – industrial
02	Business and professional services – business services – other
03	Consumer business – consumer products
04	Consumer business – food and beverages
05	Consumer business – gaming and betting
06	Consumer business – hospitality and leisure
07	Consumer business – retail
08	Consumer business – travel and aviation
09	Energy and Resources – metals and mining
10	Energy and Resources – oil and gas
11	Energy and Resources – power and utilities
12	Financial services – asset owner/infrastructure funds
13	Financial services – banking
14	Financial services – capital markets
15	Financial services – insurance
16	Financial services – investment management
17	Healthcare and life sciences – healthcare and life science
18	Infrastructure services and real estate – business services – industrial

19	Infrastructure services and real estate – contracting/construction
20	Infrastructure services and real estate – real estate investment trust
21	Manufacturing – manufacturing – other industrial
22	Manufacturing – manufacturing – process and packaging
23	TMT – media
24	TMT – technology
25	TMT – telecommunications

\*The codes for industries are derived based on the company industry classification in Spain for tax returns.

Table 1. The Codes for Key Audit Matter (KAM) Item Classifications

Considering this and the public companies auditors' report, the number of available KAM items is 358 (545) in FY 2017 (2018). These KAM items are classified according to the following three combinations: (1) KAM topic, (2) KAM topic and auditor, and (3) KAM topic, auditor, and the client's industry. The textual analyses of KAM items based on the above three combinations will be helpful to obtain more insights on their disclosure similarity. The codes and names for KAM topics, auditors, and industries are disclosed in Panel A, B, and C of Table 1, respectively. The KAM topics (Panel A of Table 1) are derived from Audit Analytics KAM taxonomy (non-public available) and the industry classification (Panel C of Table 1) is based on the company industry classification in Spain for tax returns. The number of possible observations among three combinations to classify KAM items in FYs 2017 and 2018 is disclosed in Table 2.

Combinations	Fiscal Year 2017	Fiscal Year 2018
(1) KAM topic	26	27
(2) KAM topic and auditor	100	102
(3) KAM topic, auditor, and industry	327	400

Table 2. The Number of Possible Observations among Three Combinations to classify KAM items in Fiscal Years 2017 and 2018



Cosine similarity (CS) has been used to measure the resemblance of documents in the accounting literature (Bozanic & Thevenot 2015; Brown & Tucker 2011; Hoberg & Phillips 2016; Lang & Stice-Lawrence 2015; Loughran & McDonald 2016; Peterson et al., 2015). Moreover, comparing to other textual documents, word usage in KAM disclosures is not dynamically changed. Therefore, we continue using the CS to measure the textual similarity of KAM items in this research.

It is necessary to preprocess textual documents before calculating CS values. Specifically, we perform the following preprocessing steps, including (1) tokenization, (2) removal of non-alphabets, (3) removal of stop words, (4) stemming, (5) removal of punctuations, and (6) conversion of all lower cases. Furthermore, we follow Loughran and McDonald (2011) and implement the term frequency-inverse document frequency (TF-IDF) weighting function to incorporate the weighting scheme during the calculation of the CS values. All of the above steps are performed in Python environment<sup>2</sup>.

To obtain CS between two KAM items ( $K_1$  and  $K_2$ ), we split these KAM items into two vectors ( $X$  and  $Y$ ), representing the frequency of  $N$  words appearing in each KAM item. The CS value between the two KAM items is calculated as (Loughran & McDonald 2016):

$$\text{cosine similarity } (K_1, K_2) = \frac{\sum_i^N X_i Y_i}{\sqrt{\sum_i^N X_i^2} \sqrt{\sum_i^N Y_i^2}} \quad (1)$$

The CS values range from 0 to 1 because the frequency of words is always positive<sup>3</sup>. Higher CS value indicates the two KAM items are more similar; in the extreme case, the two KAM items are exactly the same in terms of the word usage if their CS value equals 1. The CS values, however, do not indicate the percentage of textual similarity between two KAMs. For instance, it does not imply that two KAM items are 95% similar in terms of word usage if their CS value is 0.9500.

<sup>2</sup> The Python codes used in the analysis are available by contacting the corresponding author.

<sup>3</sup> Typically, the cosine values of any two vectors are ranging from -1 to 1 when negative numbers are possible to be appeared in vectors. In this research, numbers in vectors represent the frequency of words used in KAM items and are always to be positive; therefore, the CS values are ranged from 0 to 1.

#### 4. EMPIRICAL RESULTS

We present the *average* CS values for each KAM topic in FYs 2017 and 2018 in Panel A and B of Figure 1, respectively. For example, the KAM Topic 3 (Capitalization of R&D expenses) has three KAM items in FY 2017 – KAM 3\_1, 3\_2, and 3\_3. Because the CS only measures the textual resemblance between two documents, we further calculate and present the *average* CS. The average CS of KAM Topic 3 in FY 2017, *0.1913*, is the average of 0.3011 (between 3\_1 and 3\_2), 0.1122 (between 3\_1 and 3\_3), and 0.1606 (between 3\_2 and 3\_3).

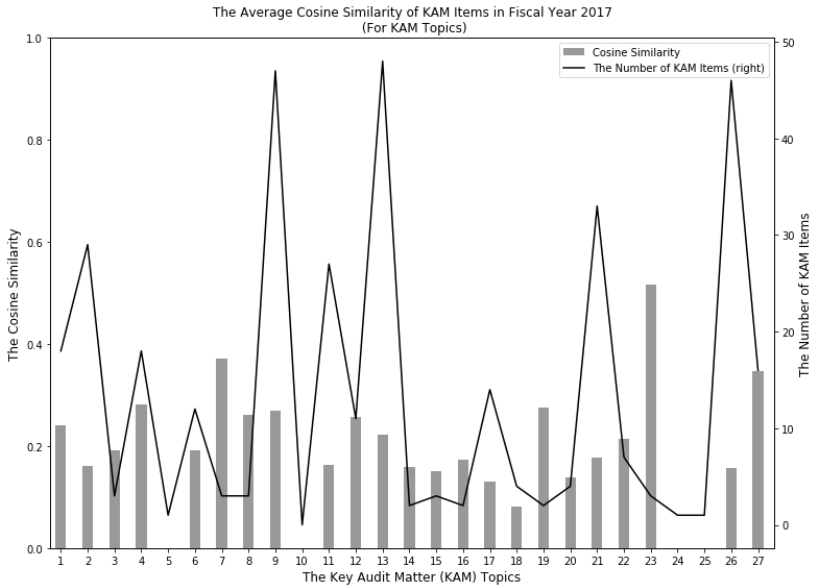
The three KAM topics with highest average CS are Topic 23 (CS = 0.5165 with 3 KAM items), 7 (CS = 0.3707 with 3 KAM items), and 27 (CS = 0.3471 with 16 KAM items) in FY 2017, and Topic 4 (CS = 0.3805 with 9 KAM items), 23 (CS = 0.3618 with 5 KAM items), and 20 (CS = 0.3305 with 24 KAM items) in FY 2018. KAM Topic 10 has no CS value is because there is no KAM item for the topic in FY 2017, and KAM Topic 5, 24, and 25 (14, 16, and 19) have only one KAM item that classified for each topic in FY 2017 (2018).

Panel A and B of Figure 2 present the top 20 average CS of combinations of KAM topic and auditor in FYs 2017 and 2018, respectively. The combination with the highest average CS in FY 2017 is 26\_07<sup>4</sup> (CS = 0.9335 with 2 KAM items), meaning that the two KAMs related to *revenue recognition: several* (Topic 26) issued by the Accounting Firm 07 are highly similar. In FY 2018, 03\_08, the code for KAM items related to *capitalization of R&D expenses* (Topic 03) issued by the Accounting Firm 08 has an average CS value equal to 1, indicating that the two KAM items in this combination are exactly the same.

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<sup>4</sup> The codes for combinations of KAM topics and accounting firms have two parts with the order and separated by one underline. For instance, 03\_02 represents the KAM Topic 03 (Capitalization of R&D expenses) issued by Accounting Firm 02.

### Panel A Fiscal Year 2017



### Panel B Fiscal Year 2018

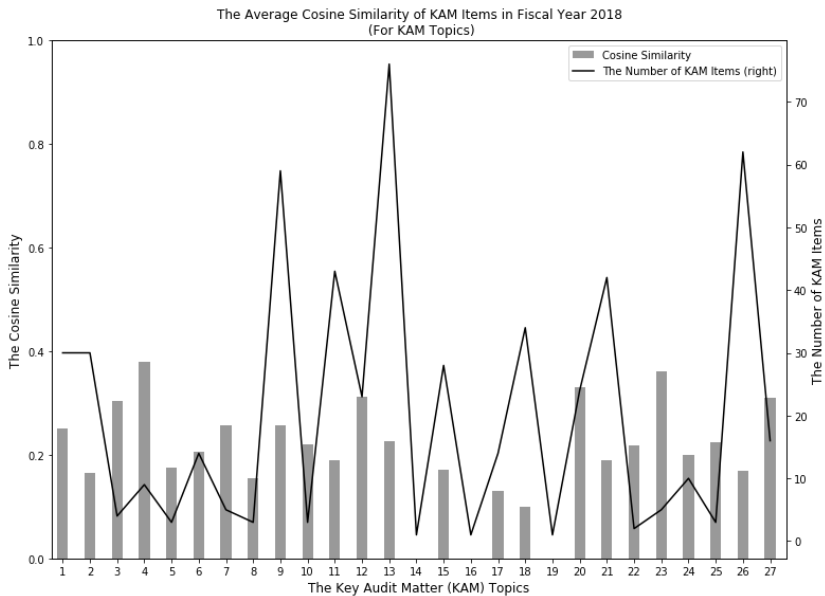
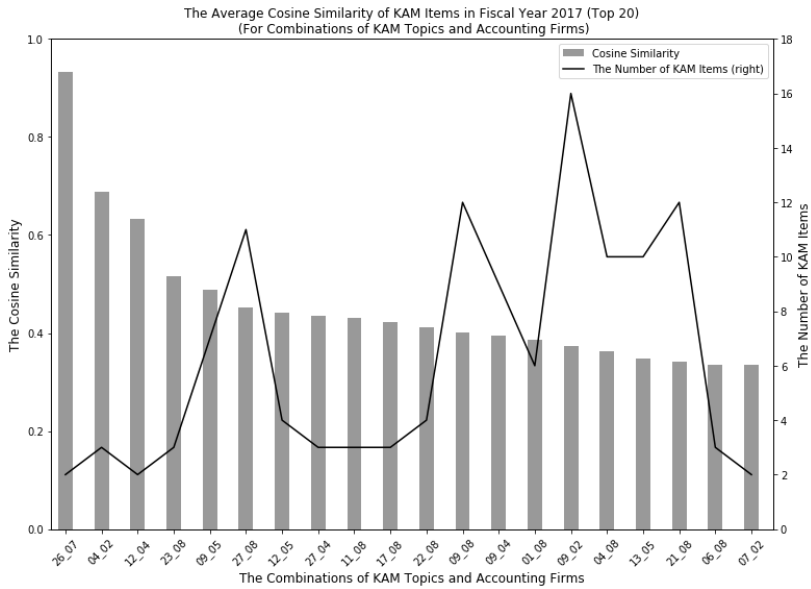


Figure 1. The Average Cosine Similarity of KAM Items for Each KAM Topics

Panel A Top 20 in Fiscal Year 2017



Panel B Top 20 in Fiscal Year 2018

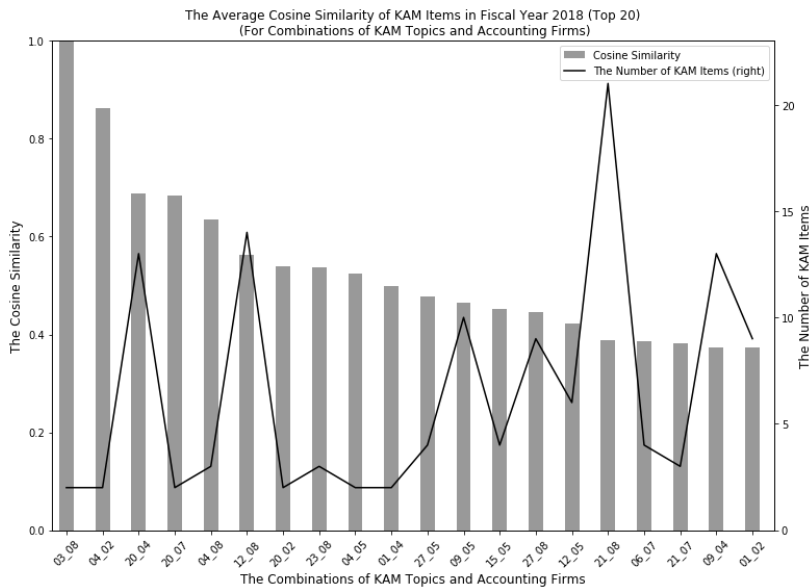


Figure 2. The Average Cosine Similarity of KAM Items for Each Combination of KAM Topics and Accounting Firms

One more interesting finding is that the combination of 04\_02 has the second-highest average CS in both FYs 2017 and 2018, revealing that KAM items related to *impairment of customers* (Topic 04) issued by Accounting Firm 02 are consistently and highly similar in both FYs in terms of word usage.

We further classify KAM items into different combinations of KAM topic, auditor, and industry to which clients belong and present the average CS among the combinations in FYs 2017 and 2018 in Panel A and B of Figure 3, respectively. The combination 04\_02\_13<sup>5</sup> (CS = 0.6885 with 3 KAM items) has the highest average CS in FY 2017. It represents that the three KAM items related to *impairment of customers* (Topic 04), issued by Accounting Firm 02, and issued for clients in the industry of financial services – banking (Industry 13) are highly similar to each other.

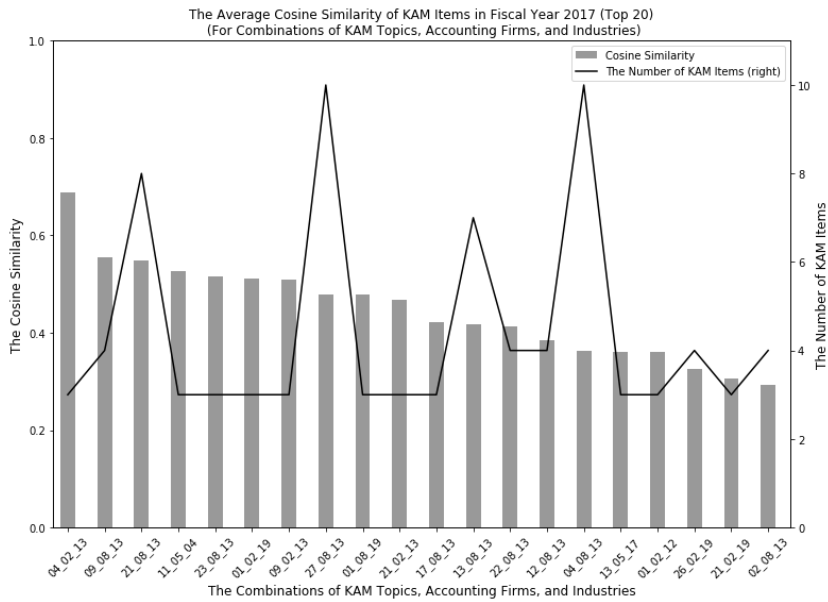
Two important findings are identified after comparing Panel A and B of Figure 3. First, the average CS values in FY 2018, generally, are higher than in FY 2017; even the number of KAM items of combinations with the top 5 highest average CS values are higher in FY 2018. This uncovers the trend that, generally, auditors in the same accounting firm tend to issue similar KAM items related to the same KAM topic for clients within the same industry in FY 2018 than in FY 2017.

Second, the combinations 21\_08\_13 (CS = 0.5477 with 8 KAM items) and 21\_08\_14 (CS = 0.9272 with 12 KAM items) occupy with the third (FY 2017) and the first (FY 2018) highest average CS values, respectively (indicated in Figure 3). It reveals that auditors in Accounting Firm 08 had highly similar word usage in those 8 (12) KAM items for the KAM topic 21 *provisions for litigation and procedures* for their client within the Industry 13 financial services – banking (Industry 14 financial services – capital markets) in FY 2017 (2018). Those highly similar KAM items might deliver less incrementally useful information specific to the client for the users of auditor's reports.

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<sup>5</sup> The codes for combinations of KAM topic, auditor, and industry have three parts with the order and separate by two underlines. For instance, 04\_02\_13 represents KAM items of KAM Topic 04 (Impairment of customers) issued by Accounting Firm 02 (Deloitte) for clients within Industry 13 (Financial services – banking).

Panel A Top 20 in Fiscal Year 2017



Panel B Top 20 in Fiscal Year 2018

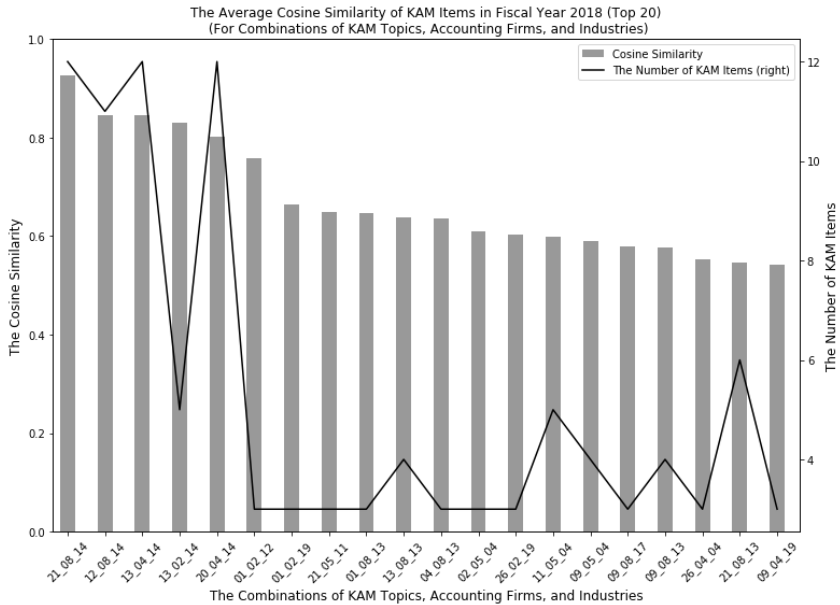


Figure 3. The Average Cosine Similarity of KAM Items for Each combination of KAM Topics, Accounting Firms, and Industries

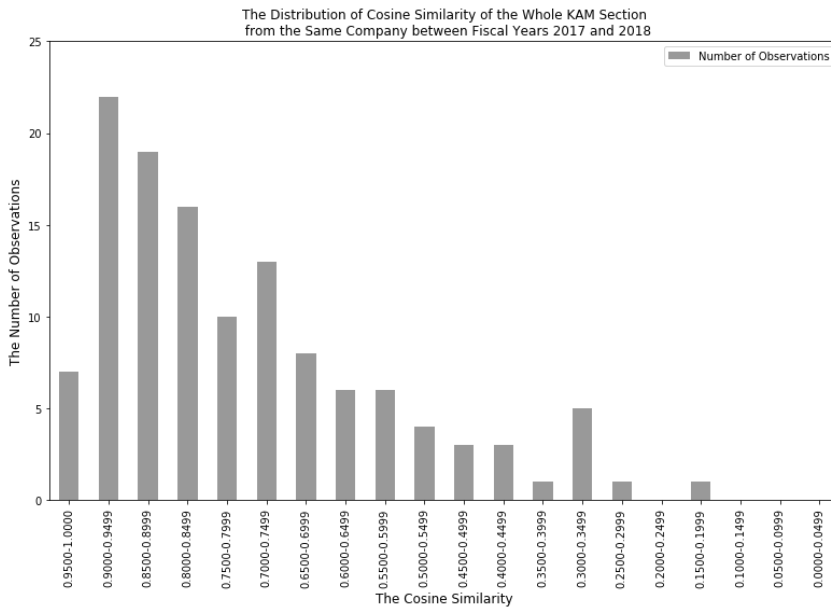
## 5. ADDITIONAL ANALYSES

We perform two additional analyses other than the three-level comparisons in the previous section. Specifically, we compare the KAM disclosure section in auditor's reports of the same company between FYs 2017 and 2018 and calculate their CS value. This comparison will provide a broad view of the consistency in KAM disclosures from the same company between different years. Furthermore, we calculate the CS for KAM items within the same KAM topic from the same company between FYs 2017 and 2018, narrowing down to understand the KAM disclosure difference in each KAM topic from the same company between different years.

We identify 125 companies existing in both FYs 2017 and 2018 and calculate the CS values of the whole KAM section from the same company between both years. Panel A of Figure 4 summarizes the distribution of the CS values. There are 48 ( $38.4\% = 48/125$ ) companies with CS values higher than 0.8500, indicating their KAM disclosure section between FYs 2017 and 2018 are relatively similar.

To obtain a more granular understanding of the similarity of KAM disclosures, we further identify KAM items within the same KAM topic from the same company between FYs 2017 and 2018 and calculate the CS values. 258 KAM item pairs are identified, and the distribution of the CS values is summarized in Panel B of Figure 4. There are 133 ( $51.6\% = 133/258$ ) KAM item pairs with CS values higher than 0.8500, revealing that auditors tend to use similar words when they discussed the same KAM topic for the same client between both FYs. This might alert the lack of precision in KAM disclosures, therefore, the potential use of boilerplates.

Panel A The Whole KAM Section



Panel B The KAM Items within the Same KAM Topic

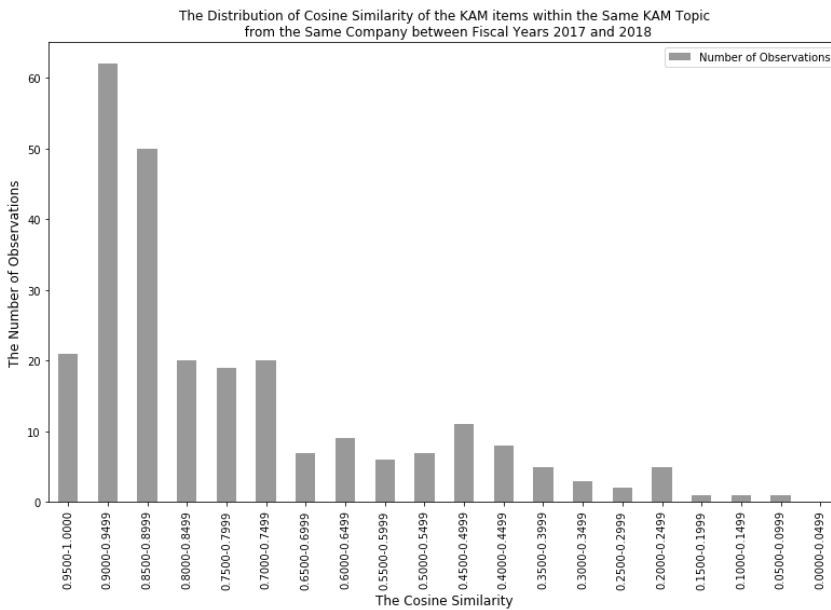


Figure 4. The Distribution of Cosine Similarity from the Same Company between Fiscal Years 2017 and 2018



## 6. DISCUSSIONS

This research documents the textual similarity of KAM disclosures in terms of word usage measured by CS values by using KAM items in auditor's reports from Spanish companies in FYs 2017 and 2018. We perform the analyses in three different levels (combinations). The empirical results, first, show that auditors from the same accounting firm generally tend to express a more similar KAM item for the same topic for clients within the same industry in FY 2017 than in FY 2018, as presented in Figure 3. This might be a result of accounting standards, auditors' risk assessment, and procedures not significantly changing from year to year. Therefore, they could be complying with the procedures established in paragraph 10 of ISA 701. Considering the evidence found about the KAM similarity, if market participants consider that a more granular or customized KAM is necessary, then specific guidance and examples about how to perform such customization would be helpful.

It is observed in the additional analyses that among 258 KAM item pairs from the same company discussing the same KAM topic between FYs 2017 and 2018, more than half of the pairs have CS values higher than 0.8500. The observation shows that there might be a strong similarity for such KAM items. One possible reason is due to the same lack of change of auditors' procedure(s). The use of highly similar KAM might not provide users of auditor's reports with the precise and detailed information that might be useful to support their decision-making, contrary to the spirit of expanded auditor's reports. Whether users of auditor's reports (financial statements) react to the textual similarity of KAM disclosures could be the next research topic that is worthy of investigation.

This research has limitations and potential additional questions that should be considered in ensuing works. First, researchers can include more KAM items in subsequent FYs to obtain more insights into the textual similarity of KAM disclosures with a longer time-series evolvement. Second, the impact of signing partner changes within the same accounting firm on the KAM disclosure similarity for the same company can also be investigated. This investigation may be helpful to understand whether the individual signing partner has the ability to draft KAM disclosures even for the same client. Finally, it also could suggest that a broader discussion between regulators, auditors' and market participants to identify what type of precision would be useful in auditors' disclosure and the reasonable balance

between such disclosure and confidentiality issues. This would avoid substantial competitive harm to the company being audited and prevent disclosure of information that might not be necessary for investors.

## 7. CONCLUSIONS

To fill the gap in the literature, we raise the research question intending to understand the textual similarity of KAM disclosures by using KAM items in auditor's reports of Spanish companies in FYs 2017 and 2018. The CS is used and calculated to measure the KAM textual similarity. We document the empirical evidence that the average CS values in FY 2018, generally, are higher than in FY 2017, indicating the KAM disclosures get more similar. Furthermore, we also observe some accounting firms disclose relatively similar KAM items for specific KAM topics for clients within specific industries.

The observation in textual similarity of KAM disclosures would be helpful for standard setters to understand whether the boilerplate issue empirically exists after the issuance of extended auditor's reports. From the users' perspective, we encourage researchers can investigate whether the textual similarity of KAM disclosures impact on the reaction of users of auditor's reports.

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