Empirical Evidence on Readability of Key Audit Matters in NZ Audit Reports

Syarifah Nur Sakinah Tuan Besar

Supervisors: Richard Fisher & Girish Prayag

ACCT694

University of Canterbury

A thesis submitted in fulfilment of the requirements for the degree of

Master of Commerce in Accounting

2021

Abstract

This thesis provides empirical evidence on the readability of Key Audit Matters (KAMs) and its determinants. The analyses are based on the New Zealand publicly listed companies with its audit reports in 2017 and 2019. This study aims to explore and observe the first and third year of International Standard of Auditing (ISA) 701 implementation as KAM disclosures are made mandatory in the publicly listed entities' financial statements. First, the readability scores show that it is extremely difficult to read Key Audit Matters in the independent auditors' reports for NZ publicly listed companies as it requires an education attainment level at least 11th grade level. It is not surprising that expanded reporting allows more complex information being disclosed regardless of the length of the narratives, questioning the effectiveness of the ISA NZ 701 implementation as its main purpose is to effectively communicate to users matters that are of significance material to their decision making. Second, readability scores are significantly different between KAM categories where all KAM types are not easy to read at all and the least difficult section in the audit report was the definition of KAM. This section does little or no variation by year or auditors because the commonality of KAM's description. Third, the multivariate analyses illustrates that the number of KAMs, fiscal year, and auditors either the Big Four or the non-Big Four audit firms are the determinants of KAM's readability level. As the quantity of KAM increases, so does the readability scores i.e., it is more difficult to read KAMs. Furthermore, the Big Four firms produce a lower readability level for their audit reports due to the client's higher business complexity. On the other hand, as auditors become more familiar with KAM disclosures, its readability level would decrease over time. To summarise, the efficacy of KAM's disclosures to enhance audit report's communicative value remains inconclusive as it is extremely difficult to read audit report, much less to understand it.

Acknowledgements

In the name of God, the Most Merciful and the Most Gracious.

I would like to express my sincere gratitude to my supervisors, Associate Professor Richard Fisher and Professor Girish Prayag for their valuable knowledge, comments, and suggestions. This thesis would not have been possible without their continuous support, guidance, and suggestions.

A special thanks to my parents, family and friends who have been supportive of me throughout my journey. To my parents, this is my gift to you. I would not be able to walk this journey without your encouraging words every single day. It means the world to me.

I would like to thank my friends, Petra Westropp, Ana Natalie, Will Shannon, and Micky Lu who have been by my side, supporting me with their love and encouragement.

I would like to express my gratitude to the UC Business School and my employer, the Strategy and Planning team for their understanding and encouragement throughout this journey.

And lastly, I would like to thank the readers for taking the time to read my thesis and I hope that this piece of work will contribute or add something to your knowledge.

Thank you.

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1 Introduction

Expanded audit reporting has recently been introduced as communicative and educative tool designed to inform users of relevant entity-specific information, financial and non-financial information and the responsibilities of both audited entity's management and auditors (PCAOB, 2017; IAASB, 2016). Changes have been advocated for years e.g., the Cohen Commission in 1974, the Treadway Commission in 1985 to improve overall communication to users of financial statement, but the only result has been the addition of a paragraph explaining the nature and scope of the audit in greater detail (Jermakowicz, 2018). The transformation on audit reporting model marks a change in audit reporting as traditional reports have contained primarily generic and highly standardized content (Porter, Ó hÓgartaigh & Baskerville, 2009; Church et al., 2008; Vanstraelen et al., 2012). Based on 278 extended audit reports in the United Kingdom (UK) and discussion with key stakeholders, the Financial Reporting Council (FRC) (2009) has shown that the investors greatly value the enhanced information in expanded audit reporting but importantly believe auditors could provide further information. Although auditors may agree that disclosing more information will result in a reduction in the expectation and information gaps, there is a concern with information overload and the need to balance the "competing demands of clarity and conciseness", which have the potential to undermine the objectives of effective communication to the users (FRC, 2016).

The aim of this study is to analyse the effect of the adoption of NZ ISA 701- Key Audit Matters on the readability of audit reports. In 2015, New Zealand Auditing and Assurance Standards Board (NZAuASB), a committee of the External Reporting Board (XRB) introduced NZ ISA 701, which is equivalent to International Standard of Auditing 701 (ISA 701). ISA 701 was introduced to fulfil the demands of various users of the annual report such as investors, lenders, and enhance confidence in the annual report and audit. Investors have expressed their concerns regarding the nature of standardised audit reports, the binary pass/fail model which

limits the communicative value of the audit reporting (Public Company Accounting Oversight Board (PCAOB), 2014). The new reporting initiative has the potential to significantly lengthen the standard form of audit reporting, possibly resulting in a higher or lower difficulty in readability and comprehension.

Despite the expectation that KAM disclosures may increase the effectiveness of auditors' communication of matters of significance to the user, evidence from the recent literature remains inconclusive (Bedard et al., 2018; Sirois et al., 2018; Kachelmeier et al., 2020). The increase in content, in specific situations, may hinder the readability of the text and increase the potential for undesirable consequences for readers, encouraging them to use other sources of information that they are more familiar with (Marques et. al., 2021). The lack of readability threatens to undercut the purpose of the new disclosure. Indeed, the readability of annual report content in general has been a concern since the early 1950s until the present (Fakhfakh, 2016). Regulators, such as the U.S. Securities and Exchange Commission (SEC) and others, recently stressed the importance of plain English reporting (SEC, 1998, 2021 & FRC, 2009, 2016). Somewhat ironically, audit report readers may have found that the consistent use of boilerplate language facilitated their understanding of elements of the audit report. However, whether the expanded audit report's emphasis on entity-specific information has had the opposite effect is largely the empirical question. Therefore, this paper evaluates the effectiveness of ISA 701's implementation KAM disclosures in the audit report through an analysis of archival data across two time periods. More specifically, it seeks answers to the following research questions: how readable KAM disclosures are in audit reports of New Zealand publicly listed companies, and what are the determinants of KAMs' readability in those reports?

This study provides several contributions. It also poses questions in terms of the determinants on KAMs' readability levels given that there are three studies, at this stage, has

been published on KAMs' readability. Velte (2018; 2019) focused on the characteristics of audit committee members such as financial and industry expertise including gender diversity improves KAM's readability. Ong et al., (2021) found that KAM disclosures were easier to be understood when they were more readable, and auditors disclosed specific numbers and figures associated with the KAM. Overall, there is a gap in the literature on KAM's readability and this exploratory research contributes by determining KAM's readability since its inception in 2015 and discussing the objectives of KAMs, which are to enhance audit report communication and thus, improve user's confidence in the financial statements. This is relevant to standard setters and auditors as this study highlights the importance of KAM's readability to ensure effective communication to the readers of financial statements. Without clear and transparent KAM disclosures, investors and lenders' confidence in financial statements and audit reports may deteriorate due to the lack of information precision in KAM sections. Besides, this study provides evidence on the determinants of KAM's readability, which adds value to the accounting and readability literature by highlighting significant variables that influence KAM's readability.

The remainder of this thesis is organised as follows. Section 2 discusses the research background on KAM and its impact on users including the readability literature. Section 3 explains the motivation behind the research questions of this study. Section 4 elaborates on the research design including the variables and its measurements. Sample distribution and data collection are discussed in Section 5 and data analysis are explained in the following section. In Section 8, additional analysis is presented where quadratic regression model is included to test the interaction between number of KAM and readability. Finally, Section 9 discussed the findings of this study and addresses the limitations and future research that could be done following this research.

2 Background

2.1 Research on KAM

According to the ISA 701, Key Audit Matters are defined as the most significant matters in the financial audit related to higher risks of material misstatements that require professional auditor's judgement to be communicated to the boards of directors of companies (IAASB, 2016), which is also known Critical Audit Matter (CAM) under the U.S. jurisdiction (PCAOB, 2017). Both concepts, KAM and CAM are based on a principles-based framework i.e., KAM/CAM disclosures are subject to auditor's judgement in determining KAM/CAM and for instance, there is no minimum quantity for KAM/CAM to be disclosed nor a minimum number of pages of the audit report to fit a certain length of report (XRB, 2017). On top of that, both concepts are aimed to reduce information asymmetry between investors and auditors, who should in turn reduce the information asymmetry between investors and management, in regard to the company's financial performance. This allows for transparent communication between the users and the preparers of financial statements and therefore, boost users' understanding, consumption, and confidence in the companies' annual report. Therefore, this study aims to explore the communicative value of KAM disclosures whether the disclosures are readable after the first and third year of NZ IAS 701 implementation.

In addition, the only significant difference between CAM and KAM is that auditors are required to disclose CAM under the PCAOB standards and KAM under the IAASB standards (Jermakowicz, 2018; PCAOB, 2017; IAASB, 2016; Bedard et al., 2014). The literature, therefore, assumes that Based on the XRB's report on KAM disclosures in 2017 and 2020, the top three KAM categories did not change since the first KAM report in 2017. These were goodwill and intangible assets impairment, valuation of property, plant and equipment (PPE), and revenue recognition. The first category of was disclosed because of the increase in business

combinations, which was common in all sectors, leading to intangible asset valuation issues and, subsequently, impairments including goodwill. The valuation of PPE was disclosed as a KAM as auditors frequently found it necessary to challenge management's and experts' assumptions on determining the value of properties, and investment decisions. KAM, as a concept, is also known as Justification of Assessment (JOA) under the France authority (Bedard et al., 2014). Therefore, in this paper, I will use the term KAM to encompass KAMs, CAMs and JOAa as their objectives and definitions are broadly similar (Velte, 2018; 2019).

The purpose of KAM disclosure is to enhance communication of audit reporting by informing users regarding matters that are of significance and providing a basis to engage with management and those charged with governance. KAM disclosures are required for audit of financial statements of listed companies where each country's jurisdiction applies ISA in their audit reporting (i.e., there were 130 jurisdictions who adopted ISA in 2019 based on a report by the International Federations of Accountants (IFAC) (2019)). In fact, New Zealand impose a requirement for financial-regulated entities to disclose KAM as they have high public accountability (Companies Office, 2021). However, mandatory KAM disclosures do not necessarily mean that auditors must disclose at least one KAM but if there is no KAM to be communicated in the audit report, auditors must provide justification behind their judgement not to disclose any KAM.

Based on the objectives of KAM disclosures, the IAASB expects a positive impact for the stakeholders including a reduction of the expectation and information gaps from KAM disclosures. Simnett (2014) has outlined three types of gaps associated with auditor communication: an expectation gap, information gap and a communication gap based on the communication theory. Shannon and Weaver (1949) emphasizes on the flow of information from a primary source through a channel which is described as a linear model of communication. In this case, the auditor as the source produces an audit report as the channel

of communication. A communication gap is described as the differences between what the users expected to understand and the intended message by the auditors (Simnett, 2014). Although this may not have been addressed explicitly by the IAASB, arguably imply that the approach of communicating audit report content using the boilerplate language creates a gap between the expectation of the audit performed and the actual audit process required. However, from the shareholder's perspective, boilerplate language may result in easier comprehension due to the lack of substantial variation except for the audit opinion and the basis of opinion. In Contrast, the information gap is related to the difference between information users' need to make an informed decision and the information that is available to them (Vanstraelen et al., 2012). Auditors may discuss their findings and the procedures performed in KAM disclosures which is in line with the audit reporting model suggested by Vanstraelen et al. (2012) and the IAASB's framework.

The expectation gap, on the other hand, conceived by Porter (1993) is divided into a reasonableness gap and a performance gap (which consists of two deficiencies: performance and standards). The reasonableness gap is largely attributable to the unrealistic expectations of users for auditors to, for example, provide an absolute level of assurance with a guarantee of the absence of fraud. This expectation gap occurs due to the lack of knowledge of users in understanding the limits and the range of the external audit performed (Velte, 2019; Porter, 1993). Consequently, with KAM disclosures, the expectation, information and communication gaps are all expected to be reduced by providing relevant and entity-specific information for users' decision-making, consistent with regulator's objectives (Simnett, 2014; Bédard et al, 2016).

2.1.1 The Impact of KAM disclosure

The consequences of KAMs within audit reporting have been controversial due to the mixed empirical results from the previous accounting literature. In this section, three stakeholder groups' responses to KAM disclosures (investors, auditors and the audited entity's management) will be discussed.

2.1.1.1 Shareholders

Disclosing KAMs within the audit report provides value-added information for the users of financial statements (Cordos and Fülöp, 2015). Based on an experiment on 189 postgraduate students representing non-professional investors in Australia, results showed that the respondents regarded the audit as valuable with the presence of KAMs and this effect is larger for Non-Big Four firms than Big Four Firms due to a ceiling effect imposed on the latter (Moroney et al., 2020). The ceiling effect, in this case, described the perceived impact of a Big Four firm had on the audit quality where the auditee of the Big Four firms were associated with less earnings management, fewer restatements including lower cost of capital (Yasar, 2013; DeAngelo,1989). KAM disclosures allow users to focus their attention on significant matters, such as fair value estimates (Christensen, Glover & Wolfe, 2014), goodwill impairment (Köhler, Ratzinger-Sakel and Theis, 2016) and valuation of property, plant and equipment (External Reporting Board (XRB), 2017). Christensen, Glover and Wolfe (2014) indicate that the inclusion of a KAM provides informational value to the investors rather than the traditional footnote disclosure in US annual reports. Regardless of the KAM disclosures positive or negative tendency in terms of its communicative value i.e., communicating negative issue related to company's financial standing, it acts as an informational indicator to divert the attention of both professional and non-professional investors to salient matters relevant for their decision-making (Köhler et al., 2016). Indeed, KAM disclosures do bring the intended benefits sought by the international standard setters as research suggests that users value this

information positively regardless of its negative message (Köhler et al., 2016). On the contrary, Sirois, Bédard and Bera (2018) had shown that the users pay relatively more attention to disclosures related to KAMs. Although this provides effective information acquisition to the users, it is important to highlight the substitution effect whereby the users pay less attention to non-KAM-related disclosure as KAM disclosures are perceived to be more concise and credible (Christensen et al., 2014; Sirois et al., 2018).

2.1.1.2 Auditors

From the auditor's perspective, the inclusion of KAMs has resulted in higher credibility of the audit performed, especially those by Non-Big Four audit firms as compared to the Big Four firms (which consists of Deloitte, Ernst & Young, KPMG and PricewaterhouseCoopers) (Moreney, Phang & Xiao, 2020). This is explained by the ceiling effect for the Big Four firms, which suggests that they are expected to conduct a credible and valuable audit even in the absence of KAMs. According to Pinto and Morais (2019), higher audit fees result in higher number of KAMs disclosed due to the client's associated risk and complexity. Auditors are concerned with risk associated with disclosing KAMs as there is a potential misinterpretation risk due to a potential lack of education and knowledge in users (Segal, 2019). Thus, this may widen the expectation gap, which is contradictory to the objectives of KAMs. However, auditors have indicated that there is no increase in audit fees aside from the inflation effect despite having multiple layers of internal review of KAMs (Segal, 2019). This may be explained by the limited representation of the sample of 20 experienced auditors who had been directly involved with KAM disclosures in South Africa. As more risk areas are disclosed in KAMs, it may be a double-edged sword where additional disclosures may reduce the information gap but on the other hand, it may lead to the increased litigation risk associated with disclosing more information on certain client's risks (Church et al., 2008; Vanstraelen et al., 2012).

2.1.1.3 Client's Management

According to Carver and Trinkle (2017), investors tend to be more sceptical of the management's credibility when earnings just meet expectation due to the disclosure of a KAM despite the auditor's assurance that management's accounting choices conform with the generally accepted accounting principles (GAAP). This indicates that the users of financial statements have contradictory perceptions on the credibility of the management's judgement and the auditing work performed. In brief, due to KAM disclosures, users of financial statements scrutinise the credibility of management and the auditors differently especially if the audit is performed by a Big Four firm rather than a Non-Big Four firm. Users expect audit reports to confirm that financial statements of an entity are free from material misstatements, thus, leading to a higher degree of confidence in users that the company is well-managed (Asare & Wright, 2012). However, Hatherly et al. (1991) noted a halo effect in audit reports in which users ascribe positive meaning to dimensions of an audit message that were not intended by the auditors. Thus, KAM disclosures may or may not add to the credibility of the client's management including auditors.

2.1.1.4 Criticisms of KAMs

With regards to the positive effects of disclosing KAMs, they may have unintended consequences amongst the users of financial statements. Köhler et al (2016) and Christensen et al. (2014) both found that non-professional investors obtain no communicative value from a KAM section as investors' decisions were found to remain the same with or without KAM disclosures. This shows that investors may have difficulties in processing the information in KAM sections. This is supported by Moroney, Phang and Xiao (2020) who found that KAMs reduced the level of audit report's readability but did not affect the users' understanding of the audit report or their perceptions of audit quality. In addition, users of financial statements show mixed reactions towards KAM disclosures. Segal (2019) interviewed the audit partners who

unanimously responded negatively to KAM disclosures. However, Cordos and Fulop (2015) believe that users will benefit from the increased volume of information reported. It is undeniable that the length of an audit report will be longer due to KAM disclosures. In short, KAM disclosures bring discomfort and increased burden to auditors as they believe that communicating longer audit reports may not improve the transparency of the financial information and influence users' decision making as intended.

As a solution to assist auditors and audit committees in identifying appropriate and significant KAMs, the IAASB (2016) has provided a judgement-based decision-making framework. Köhler et al. (2016) suggest that the IAASB illustrative audit report provides relevant guidelines that may be utilised as a generic example for KAM disclosures. However, there are some concerns regarding the framework for assessing and disclosing KAMs due to the insufficient guidelines and generic examples provided by the IAASB. Thus, the framework will not necessarily be helpful to preparers and the audit committee if the audited entities were loosely regulated or operated in specialised industries. Importantly, Velte and Issa (2019) have highlighted the heterogeneity of the stakeholders' reactions within their comprehensive literature review. This highlights that many stakeholders possess limited knowledge and experience with KAMs. Thus, to overcome this barrier, the auditors should provide a transparent and readable audit report to achieve the objectives of ISA 701.

The readability literature has addressed the consequences of KAM disclosure, but there are two research papers addressed the readability of KAM disclosures (Velte, 2018; Velte & Issa, 2019). This section examines the concepts of readability and understandability, two independent but related constructs. Notwithstanding this, some researchers assumed the terms as equivalent to each other (Jones & Shoemaker, 1994). To ensure the objectives of the new standard are achieved, KAMs should be readable in the sense the less sophisticated readers are

able to comprehend the information. In this section, I will provide the understanding od the impact of KAMs which will be discussed in the next section.

2.2 Research on Readability

Measuring readability is one means of evaluating the effectiveness of an audit report in communicating its intended message. Readability, in generic terms, is defined as the ease of reading words and sentences. According to Flesch (1948), readability is considered as the difficulty in comprehension. Since these readability formulae are often criticised due to its inability to capture meaning of the text, the qualitative analysis based on linguistic indicators such as sentence complexity, lexical density, length of sentences is relevant to address the divergence between readability and understandability (Jones & Shoemaker, 1994; Fakhfakh, 2016). Both concepts are often oversimplified and perceived as synonymous to each other (Courtis, 1998; Jones & Shoemaker, 1994). The latter is reader-related in which the reader's background, knowledge, reading purpose and the overall reading ability affect the reader's understanding. On the other hand, readability is text-related which has zero influence by these factors (Jones & Shoemaker, 1994). Qualitative measurements provide reliable estimates of the level of difficulty of the text by assessing the linguistic features to indicate the level of comprehensibility. Jang et al. (2016) has utilised cloze test to determine the understandability of Korean financial statements which have been impaired due to the adoption of the International Financial Reporting Standards (IFRS). In short, both qualitative and quantitative measurements complement each other by validating the link between readability and understandability in assessing the difficulty of accounting texts.

Jones & Smith (2014) experimented four textual comprehension measures (the C-test, the MIT test, SVT test, and Cloze test) with UK undergraduate students and the results showed that the students' understanding was below average.

2.3 KAMs and Readability

As far as this study is concerned, there are two research papers that directly address the determinants of KAMs readability as KAM disclosures are relatively new and most of the accounting literature focuses on the impact of KAMs. Velte (2019) focuses on the influence of the audit committees' financial and industry expertise (FIE) upon the readability of KAMs in the UK. The author finds that both FIE are positively correlated with KAMs readability and combined FIE have a stronger effect on the link between FIE and KAMs readability. In addition, Velte (2018) has analysed the impact of audit committee composition on the KAMs readability. The evidence has shown that having gender diversity improves the readability of KAMs. This highlights that there is a gap in literature in determining the factors that influence the readability of KAMs. On a different note, Ong et al. (2021) investigated the characteristics of KAM to influence on the understandability of financial statements and the results showed that it was easier to understand KAMs when they were more readable and included numbers and figures in KAM disclosures.

There is a gap in the accounting literature regarding the readability of KAM disclosures and its determinants. This paper hopes to enlighten its readers regarding the opportunities to analyse KAMs' readability and its contributing factors.

3 Development of the Research Questions

KAM disclosures are introduced by the standard-setting agencies in order to add or improve communicative value of audit reports, and thus, building or reinforcing user's confidence in financial statements (Cordos and Fülöp, 2015). By disclosing matters of significance specific to the auditee in the KAM section, it places emphasis on issues that are material and relevant for decision making, which aligns with the purpose of expanded audit reporting. The departure from traditional audit reporting model, consisting of boilerplate language and basic, standardised information to the expanded audit reporting, it transforms the way auditors communicate and the users of financial statements find it very useful (FRC, 2016). Although expanded audit reporting increases the length of audit report, including KAM disclosures, Velte and Issa (2019) did a literature review on the impact of KAM disclosures on users based on 49 empirical studies. They found that the users expressed heterogenous views on the effects of KAM disclosures, but the results were insignificant in line with agency theory, assuming that KAM disclosure should be lowering information asymmetry and expectation gap. Furthermore, the literature has shown that narrative disclosures in annual reports were very difficult to read (Courtis, 1995; Courtis and Hassan, 2002; Moroney et al., 2020), which is a concern of ineffective communication. In fact, users must obtain a high level of education to be able to read and understand annual reports.

There are little empirical studies have examined KAM's readability and its determinants and therefore, this study aims to fill in the gap in the literature. This is important for several reasons. First, it provides a closer investigation on the auditors, who are the authors of the audit report by examining the relationship between auditors and KAM's readability. In contract to Velte's study (2019), it focused on the characteristics of audit committee, which is the monitoring body for the audit reporting. The audit committee's members would contribute their expertise and knowledge to the annual audit and make decision on issues that requires a

high level of critical thinking and problem solving. Therefore, this study explores the relationship between auditors and KAMs readability and examines any group differences between auditors in terms of KAM disclosures. Furthermore, Ong et al., (2021) examined the relationship between KAM's readability and understandability. The findings shows that users found it easier to understand KAM disclosure when KAMs were more readable. This highlights the importance of KAM's readability as it contributes to KAM's understandability. However, in this study, variables related to auditors, auditee and KAM disclosures are investigated to observe any association with KAM's readability. Lastly, determinants of KAM's readability will be investigated under the multivariate regression analysis to produce

In summary, the study addresses the following questions:

RQ$_1$: How readable of KAM disclosures in audit reports of New Zealand publicly listed companies after the first and third years of NZ ISA 701 implementation?

RQ$_2$: What is the relationship between readability and other independent variables?

RQ$_3$: What are the determinants of readability of KAM disclosures?

4 Research Design

This section explains the quantitative research design employed in this study to examine the readability of KAMs, and the relationship between KAMs' readability and its determinants. It begins with the measurement of KAMs' readability, and then the measurement of independent variables, and other control variables. Finally, this section shows the empirical models for my research questions.

4.1 Measurement of Readability Scores

Quantitative and qualitative measurements for readability have been established by famous scholars in the 1990s. In Table 1, quantitative readability measurements are outlined based on their formulas. The most common readability index within the accounting literature is the Flesch reading ease scale (Flesch, 1948), Gunning-Fog Index (Gunning, 1952), Simple Measure of Gobbledygook (SMOG) and Flesch-Kincaid test (Fakhfakh, 2016). These have been widely used due to its simplicity and ease of calculation based on syllables per word and words per sentence. Furthermore, the Gunning-Fog index is used to estimate the level of formal education required for an average person to be able to read and comprehend the text (Gunning, 1952; Smith, 2016; Loughran & McDonald, 2014). In order to utilise Gunning-Fog index to measure readability, it requires at least 100 words in the text passage which is similar to Coleman-Liau index. Similarly, the SMOG formula is a relatively quick and easy formula to use as it relies on one variable, the number of polysyllabic words in 30 sentences which computes the level of an USA grade (Jones & Shoemaker, 1994). If there is less than 30 sentences for the text passage, SMOG index is not statistically valid.

In this study, readability measures are used to assess changes in readability of KAM over time and to provide evidence on the determinants of KAM's readability. Flesch Reading Ease Scale is the main indicator of readability in this research due to its extensive usage in the readability and accounting literature (Courtis, 2015). This allows the results of this paper to be

comparable for current and future research and possibly be utilised as an impetus to drive further investigation of KAM disclosures and their communicative value. In addition, this study uses an additional readability measures besides Flesch Ease Scale (refer Table 1) to ensure the robustness of the study's findings. Texts with a greater number of words require a higher processing cost, given that they present greater complexity (Marques et. al., 2021) and consequently, number of words features in most of the measures. Each of the reliability measures was originally developed based on the English language and used varying criteria to compute the readability including sentence length, syllables count, words count, or combinations thereof. The readability indices measure the text's readability on a scale, resulting in two types of outputs: reading score scale or U.S. grade level. Lower scores on the Flesch Reading Ease Score indicate a relatively higher difficulty level for the text's readability. For contrast, lower scores on the other seven readability scores indicate more readable text. The dependent variable, *READABILITY*, is a continuous variable irrespective of the measure (Flesch-Kincaid Scores, SMOG Index, Automated Readability Index, Coleman-Liau Index, Linsear Write and Dale-Chall) or scores (Flesch Reading Ease Scale or Fog Index).

Table 1

Overview of linguistics requirements for calculating readability

Readability Measure	Linguistic Criteria	Interpretation of Output
Flesch Reading Ease	$206.835 - 1.015\left(\frac{total\ words}{total\ sentences}\right) - 84.6\left(\frac{total\ syllables}{total\ words}\right)$	• 90 – 100 = 5th grade • 80 – 90 = 6th grade • 70 – 80 = 7th grade • 60 – 70 = 8th and 9th grade • 30 – 50 = college • ≤ 30 = college graduate
Flesch-Kincaid grade level	$0.39\left(\frac{total\ words}{total\ sentences}\right) + 11.8\left(\frac{total\ syllables}{total\ words}\right) - 15.59$	U.S. grade level of education required to comprehend the text.
Gunning-Fog Index	$0.4\left[\left(\frac{total\ words}{total\ sentences}\right) + 100\left(\frac{complex\ words}{words}\right)\right]$	Score is positively associated with U.S. grade level where, for instance, 6 = 6th grade and 17 = college graduate.
SMOG Index	$1.0430\sqrt{number\ of\ polysyllables \times \left(\frac{30}{total\ sentences}\right)} + 3.1291$	Score is positively associated with grade level, where for example, ≤ 6 = 6th grade level and ≥ 14 = college level
Automated Readability Index	$4.71\left(\frac{characters}{words}\right) + 0.5\left(\frac{total\ words}{total\ sentences}\right) - 21.43$	Score is positively associated with grade level, where for instance, ≤ 1 = kindergarten and 14 = college students
Coleman-Liau Index	$0.058\left(\frac{total\ letters}{100\ words}\right) - 0.296\left(\frac{total\ sentences}{total\ words} \times 100\right) - 15.8$	Score is positively associated with grade level, where for example, ≤ 6 = 6th grade level and ≥ 14 = college sophomore
Linsear Write	$\left(\frac{R + 3C}{number\ of\ sentences}\right)$	Score is an estimate of U.S. grade level.

	• Then: • If r > 20, divide by 2 • If r ≤ 20, subtract 2, and then divide by 2	
Dale-Chall	$0.1579\left(\frac{difficult\ words}{words}\right) \times 100 + .0496\left(\frac{total\ words}{total\ sentences}\right)$	4.9 and lower = 4th grade 5.0-5.9 =5th/6th grade 6.0 - 6.9 = 7th/8th grade 7.0 - 7.9 = 9th/10th Grade Level 8.0 - 8.9 = 11th / 12th grade student 9.0 - 9.9 = 13th grade or higher / college student

Note: R = the number of words ≤ 2 syllables; C = the number of words ≥ 3 syllables.

An important aspect of these narratives is the need for effective communication, including meaningful sharing between creators and users of information (Smith & Taffler, 1992a). Effective communication in financial statements takes place only if the intended meaning of the source of the information is precisely specified within the destination of the messages in the financial statements (Smith and Smith, 1972). Effective communication is essential to understanding financial information, such as annual reports and audit reports. Without such an understanding, financial and non-financial information will not be efficiently and effectively processed and will not provide a suitable and reliable basis for decision making. There have been countless studies on the effectiveness of financial reporting in expanded reporting with current concerns regarding the obfuscation and impression management and their potential negative impact on effective communication (Jones & Smith, 2014). Jones and Smith (2014) discussed the difference between readability and understandability where the former is considered to be passive and text-centred, while the latter is interactive and reader-focused. This emphasises the importance of distinguishing between both features of effective communication, which the previous literature assumed readability corresponds to understandability.

Prior literature has highlighted that most of the financial statements is difficult to read based on empirical evidence. From the first readability paper in 1952 until 1993, the annual reports were very difficult to read based on their content analysis using the Flesch reading ease scale as a readability index (Jones & Shoemaker, 1994; Barnett and Leoffler, 1979; Pound, 1981; Fakhfakh, 2016). This indicates that many users of financial statements are required to possess a high level of education in order to comprehend consolidated reports. Linguistic indicators have shown that the Tunisian reports are not able to deliver informational communication despite the contributions of the international audit standardisation (Fakhfakh,

2016). Additionally, regarding narrative disclosure, Courtis (1995) indicated that the readability of chairman's address and footnote disclosure was very low between Western countries and Hong Kong. This emphasises the occurrence of inefficient communication because only a small portion of the adult Hong Kong population may comprehend the messages contained within these narrative passages given that they have acquired commensurate educational level. Moreover, it is interesting to find that the bilingual readability of narratives disclosures affects different reading behaviours and potentially may influence users' decision making (Courtis and Hassan, 2002). Courtis and Hassan (2002) have provided evidence that the English paragraphs in Malaysian annual reports were easier to read than Hong Kong annual reports. Moreover, Moroney et al. (2020) have indicated that non-professional investors find KAM disclosures does not affect their understanding of the audit reports, but it does make the audit report more difficult to read. In short, various elements of the financial statements including the audit reports are deemed as difficult to read based on the previous literature.

Nevertheless, it is vital to highlight that there are factors that influence readability of financial statements and external audit reports. One of the reasons that contributes to the readability of audit reporting is the development of international auditing standards (ISA). As mentioned previously, insufficient standards lead to the widening of the expectation gap due to the lack of detailed guidelines from regulators to provide clarity in communicating financial information (Porter, 1993). Fakhfakh (2015) has indicated that the international auditing standards (ISA) provide an audit report that is not readable by all users of financial statements. This creates ambiguity of accounting information and the complexity of the financial statements which may increase information asymmetry and expand the expectation gap. Linsley and Lawrence (2007) suggested that in order to improve the understanding of a company's risk position, the readability of the risk disclosures must be improved to enhance

communication before requiring directors to provide more risk information. Similarly, Hay (1998) has highlighted that simplicity of audit reporting affects the reading and interpretation of audit information. Audit reports prepared by structured and unstructured audit firms are significantly different due to the audit structure as a form of market differentiation (Hay, 1998). This has allowed highly structured firms to devote their resources to create a cost advantage with clients either in stable or rapidly changing environments as compared to unstructured firms. Thus, regulators and standard setters may consider revising the auditing standards to improve readability and ensure simplicity and clarity within audit reporting for both preparers and readers.

Another factor that influences the readability of financial statements is deliberate obfuscation in order to disguise negative message within positive narratives. Bayerlein and Davidson (2012) have investigated the effects of connotation on the readability of chairman reports in Australia which shows that the middle section of the chairman addresses was significantly difficult to read as compared to the first and the last sections. The existence of this comprehension difficulty may be an attempt to overshadow negative information within the provision of positive news (Courtis, 1998). This is supported by Subramaniam et al. (1993) and Li (2008) where US annual reports were more readable for well performing companies than the companies whose profits had declined over the previous year. This is highly relevant to auditors in audit reporting by identifying and limiting ambiguous mixed message sentences. Therefore, this minimizes the reading difficulty of narratives and mitigates the risk of information obfuscation. On the other side of the coin, Linsley and Lawrence (2007) have found no signs of intentional obfuscation in the information provided by the companies' directors. Thus, whether there is a deliberate attempt of obfuscating information or not, audit

reports should be clear, concise and transparent to allow users to be able to read and comprehend the messages within the audit reports.

4. 2 Measurement of Determinants of Readability

Readability determinants are based through the auditor's characteristics and other variables, which are discussed in detail in the subsections below.

4.2.1 Auditors characteristics

As the author, auditors are the primary contributors to the readability of audit reports. The input, processes, judgement and output are primarily influenced by the auditors, client's management and any third parties that may be involved in the procedures. First, audit fees (*FEE*) are taken into account into my regression model as a general proxy for the client's inherent risk, complexity and litigation risk (Simunic, 1980; Church et al., 2008; Vanstraelen et al., 2012). These factors may lead to the need for more technical and specialised working of KAM disclosure, in addition to longer sentences (Pinto & Morais, 2019). However, a study by Brasel et al., (2016) finds that users may perceive KAMs as a disclaimer, limiting their attribution of liability to auditors. Consequently, in the presence of greater liability risk, auditors may be incentivised to improve the readability of KAMs. Hence, the effect of *FEE* is unclear.

For the audit quality variable, there are no definite variables to best describe the audit quality performed by the auditors due to the complexity in defining audit quality based on the literature (Knechel et al., 2013). Hence, I use abnormal accruals as a proxy to represent the audit quality, the same as in this research by Li et al. (2019) because it indicates the auditor's ability to detect and correct material misstatements in the annual report. Therefore, if the auditors are able to detect and disclose material events in the audit report, leading to a higher

audit quality, I would expect auditors to disclose longer and more complex KAM including audit procedures to mitigate any risk associated with the KAM.

An additional measure of audit quality is *AUDITOR. AUDITOR* is a binary indicator that takes the values of 0 when the auditor is a member of the Big Four audit firms, and 1 otherwise. This variable is frequently used as a proxy for audit quality (Moreney, Phang & Xiao, 2020), so I would expect to observe a higher quality auditor associated with audit reports that communicate their messages more effectively. *OPINION* is a dichotomous variable in which 0 indicates unqualified audit opinion and 1 if otherwise.

For the purpose of the regression analyses, the categories of KAM disclosures may be collapsed into 4 categories: *KAM1*, *IA_GW; Others* and *RESI*. *KAM1* is a type where the definition of KAM, in general, is explained in the audit report. *IA_GW* indicates the most disclosed KAM type related to intangible assets and goodwill. The category, *Others* include all the other types of KAM disclosures. *RESI* includes all the sections in the audit report excluding the KAM's definition, disclosure i.e., audit opinion, basis of opinion, responsibility of the auditors and management. The types of KAM were operationalised as individual dummies for each type of KAM. They were categorised according to their subject matter or accounting treatment, which resulted in 18 categories (see Appendix G for definitions of each KAM). This classification was based on my interpretation of the XRB report on KAM classification in which 16 KAM categories were produced (XRB, 2017).

In addition, the number of KAMs was operationalized into the model. Pinto et al., (2020) and Velte (2018, 2019) found that KAMs had a linear relationship with readability, but not a significant association. On the other hand, Marques et al. (2020) assumed a quadratic relationship between readability and the number of KAMs disclosed. This shows that the interaction between readability scores and KAM's quantity has a parabola shape, which shows

that as the number of KAM increases, readability increases in a quadratic, U-shaped relationship. Therefore, I will proceed with the assumption of a linear relationship between readability and the number of KAM for my initial regression analysis and perform a further analysis based on the quadratic relationship.

To capture the effect of the adoption of NZ ISA 701 over the readability of KAM disclosures, a dummy variable for the year of adoption of NZ ISA 701 was included in which 0 for the year 2017 and 1 for 2019.

4.2.2 Measurement of Other Factors

I measure firm size by using a proxy indicator, *LOGTA*, which means the natural log of total assets. The profitability of the firm is measured by profit margin, which is calculated as net income divided by total revenue. *SOLVENCY* is measured by current ratio, calculated by current assets divided by current liabilities to indicate financial solvency in covering its long-term obligations. *GROWTH* is the percentage change in sales. *INDUSTRY* is a dummy variable that indicates 0 if the company is in the financial industry and 1 for other industries.

4.3 Regression Model for RQ3.

The regression model used int this study is shown below.

$$READABILITY = \beta_0 + \beta_1 OPINION + \beta_2 NUMKAM + \beta_3 FEE + \beta_4 AUDITOR + \beta_5 FY + \beta_6 INDUSTRY + \beta_7 CATEGORY + \beta_8 AUDIT\ QUALITY + \beta_9 SIZE + \beta_{10} PROFITABILITY + \beta_{11} SOLVENCY + \beta_{12} GROWTH$$

where:

READABILITY	The readability scores of each section of the audit reports, indicated by Flesch Reading Ease Scale, Flesch-Kincaid Grade Level, Gunning-Fog Index, SMOG Index, Automated Readability Index, Coleman_Liau index and Linsear-Write index. (Source: Annual Reports and Jupyter Notebook (Anaconda))
OPINION	A dummy variable to indicate audit opinion issued by the auditors that is equal 1 for unqualified opinion and 0 otherwise. (Source: Annual Reports)
NUMKAM	Number of KAMs disclosed in the audit report. (Source: Annual Reports)
FEE	The total fees charged for the audit service excluding other non-assurance services. (Source: ORBIS)
AUDITOR	A dummy variable that equals 0 if the auditor is one of the Big Four (EY, PWC, KPMG & Deloitte), and 0 otherwise. (Source: ORBIS)
FY	A dummy variable that equals 0 for 2017 and 1 for 2019 fiscal year. (Source: ORBIS)
INDUSTRY	A dummy variable that equals 0 for financial-related sectors and 1 otherwise. (Source: ORBIS and NZX Main Board)
CATEGORY	Type of KAMs disclosed in the audit report where 1 equals to Residuals (Non-KAM related), 2 equals KAM1 (KAM's definition), 3 is for

	IA_GW (Intangible assets and goodwill), 4 equals to ACQ_ACCT (acquisition accounting related) and 0 otherwise.
AUDIT QUALITY	Audit quality is proxied by abnormal accruals measured in Li et al., (2019). Li et al., (2019) measured abnormal accruals, which are the residuals of this regression model: Total Assets = $\beta_0 + \beta_1$ (1/Lagged Total Assets) + β_2 (ΔRevenue/Lagged Total Asset – ΔReceivables/Lagged Total Assets) + β_3 (PPE/LaggedTotal Assets) + ε.
SIZE	Natural log of total assets. (Source: ORBIS)
PROFITABILITY	Profit margin is measured by net income divided by total revenue. (Source: ORBIS)
SOLVENCY	Current ratio is calculated by current assets divided by current liabilities. (Source: ORBIS)
GROWTH	Percentage change in revenue. (Source: ORBIS)

5 Sample and Data

This study collected data from a secondary data source, where independent auditor's reports were published in the annual reports of the publicly listed companies on the New Zealand Exchange Main Board (NZSX). As of 22 June 2020, a sample of 100 companies was selected randomly out of 180 total population. To ensure an equal representation of the total population sorted by market capitalisation, stratified sampling was used to produce four groups which resulted in 25 companies that were selected per group.

There are several pre-conditions to be fulfilled in the sample selection process. First, companies must be operating in both fiscal year 2017 and 2019 to observe the readability of KAM disclosures after the first and third year of ISA 701 implementation. It is important to note that KAM disclosures were made mandatory after 15 December 2016 (XRB, 2017) and therefore, the year 2016 annual reports were excluded as KAM disclosures were voluntary and the lack of participating companies and auditors to disclose KAM in their audit reports. Furthermore, all companies were ensured not to be under a liquidation process to ensure business continuity to fit within the timeframe of this research. Another important aspect to realise is that auditors may express a different audit opinion or disclose further information under a different heading, for instance, 'Emphasis on Matter' or 'Material Uncertainty on Going Concern' on the going concern issue of the auditee. As a consequence of falling under a liquidation process, this affects the valuation of the company's assets and thus, the issue may not be classified as KAM as it falls under a different section of the audit report and may not fit within KAM's definition. In addition, for a company that issued multiple equity instruments, particularly in the case of the financial-related industry, one instrument was randomly selected to represent the company. Eight companies were dropped as they were foreign corporations with their primary equity listings outside of New Zealand.

For the final sample size of 92 companies, each audit report was manually collected from the NZX website, the New Zealand capital market regulator and all economic and financial data was collected from the ORBIS database and the company's financial statements. All the data were cross validated against the financial statements. Several discrepancies, in fact, were detected and resolved by referring to the annual reports including financial statements. These reports were downloaded in PDF format, converted into DOC (Microsoft Word), analysed using content analysis.

Readability formulas were designed for use on narrative, continuous text that consists of complete sentences. To obtain the most accurate results from reports, titles, phrases, fragments, headers, lists, phone numbers, URLs, tables, dates, and signatures were removed from the content analysis. In the same way, periods that do not mark the end of a sentence, such as numerals in a number of lists, abbreviations and periods used in decimals were deleted from the text selection because these may mislead the content analyses by recognising the text as part of a sentence, word or syllable, which it may not be. In fact, most of the readability tests rely on the semantic units (such as word frequency) and syntactic structure (such as number of words, sentences, and syllables). For this reason, it is essential to ensure the texts were thoroughly cleaned from any potential misleading syntactic, semantic, and lexical error (for instance, misspellings, replacements, or deletion of letters). Finally, I ran the readability analyses through Python programming on Jupyter (see Appendix B for the Python script) and further analysis using SPSS software, version 27.

6 Descriptive Statistics

Table 2 displays the descriptive statistics for fiscal year 2017 and 2019. First, the Flesch reading ease scores show that the audit reports, in general, are very difficult to read such that it requires a college graduate to be able to comprehend the audit report's content either in 2017 or 2019 respectively ($Mean_{FRE}$ = 0.81, S.D. = 34.2956; $Mean_{FRE}$ =26.32, S.D. = 11.9423). Similarly, for other readability measures, the lowest grade level required to read the audit reports is 12th U.S. grade and above, as demonstrated by Dale-Chall score below. When the readability scores are broken down according to the KAM categories (see Appendix D), it, in fact, reaffirms the findings above where all KAM disclosures are not easy to read as it needs at least a college or undergraduate qualification in order to read the audit report. Not surprisingly, out of all the sections in the audit report, *KAM1,* a component that provides the definition of KAMs in general, is the least difficult section to read. However, an 11th U.S grader is still the minimum education requirement for such section ($Mean_{DChall}$ = 8.98, S.D. = 0.3777). To further elaborate this point, it is vital to emphasise that the least difficult section to read does not necessarily mean that it is an easy element to read. To provide an initial tentative answer for my first research question, then, the preliminary findings show that it is difficult to read audit reports (any of the sections of audit reports including KAM disclosures) in both years.

Second, the number of KAM, *NUMKAM*, disclosed in audit report is, on average, 2 KAMs as illustrated in Figure 1 ($Mean_{2017}$ = 2.23, S.D. = 0.9296; $Mean_{2019}$ = 1.97, S.D. = 0.9688). This result is similar to the XRB's report on KAM in 2017 (XRB, 2017) including its follow up KAM report in 2020 (XRB, 2020). Nevertheless, it is important to highlight that there are no specific guidelines from the standard setters in terms of the minimum number of KAM to be disclosed (XRB, 2020). Consequently, it is a matter of professional judgement. KAMs contain entity-specific information to highlight significant issues that may influence the decision making of financial statements' users. Hence, it is expected that KAM disclosures will

vary between audit reports, but not necessarily in relation to KAM's length or affected by the number of KAM.

Table 3 further illustrates the breakdown of auditors in disclosing the number of KAM in 2017 and 2019. Based on the results, I found that auditors would disclose at least one KAM in 2017 whereas in 2019 (see Appendix C), there are four non-Big Four audit firms who do not disclose any KAM at all as they issued a modified audit opinion, or they disclosed a paragraph under 'Material Uncertainty Related to Going Concern'. Although going concern is commonly disclosed as a KAM, auditors should not communicate material uncertainty related to going concern matters as a KAM even though it might appear to fit under the KAM definition due to its nature (Institute of Chartered Accountants in England and Wales (ICAEW), 2021). If auditors have information to be communicated about events or conditions that potential cast doubt on entity's ability to continue as a going concern, they should be disclosed in 'Material Uncertainty Related to Going Concern' paragraph, and there is no need to disclose any KAM related to the going concern of the auditee. However, if there is no material uncertainty about going concern, disclosing going concern related KAMs can enhance the communicative value of the audit reports by providing transparency on the audit processes performed. Consequently, a KAM may be warranted in that circumstance. Another interesting observation in Table 3 is that one Big Four firm, PwC, appeared to favour reporting fewer KAMs on average than other firms – this inconsistency across audit firms may be a concern for regulations.

Figure 1

Number of KAM disclosed by Year

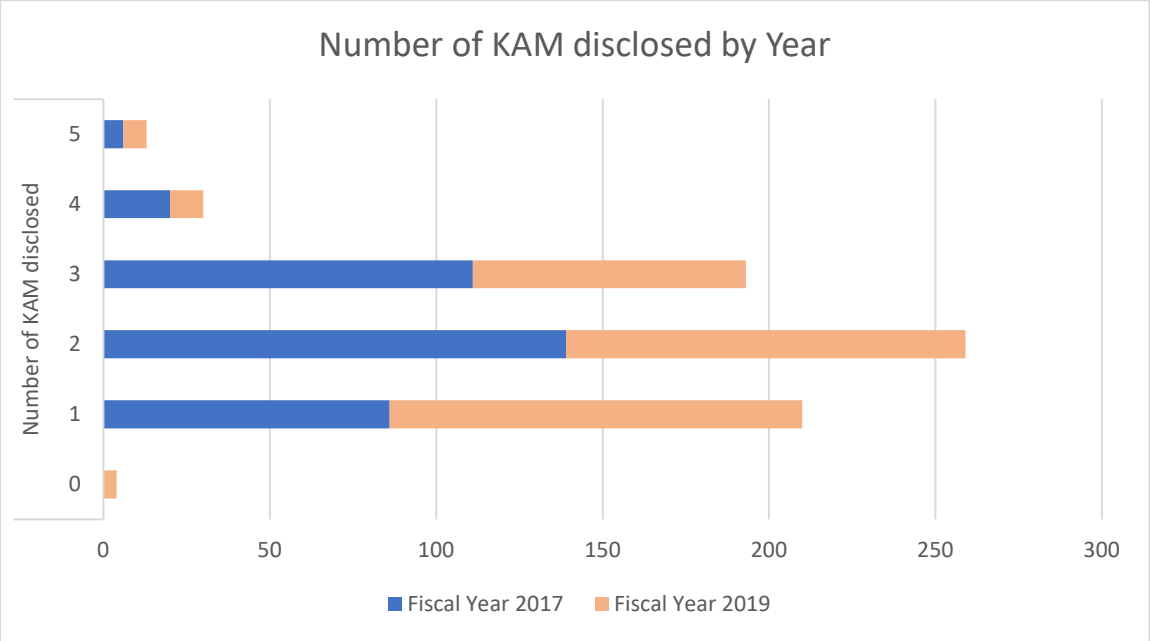


Figure 2

Top five KAMs most disclosed across New Zealand Sectors

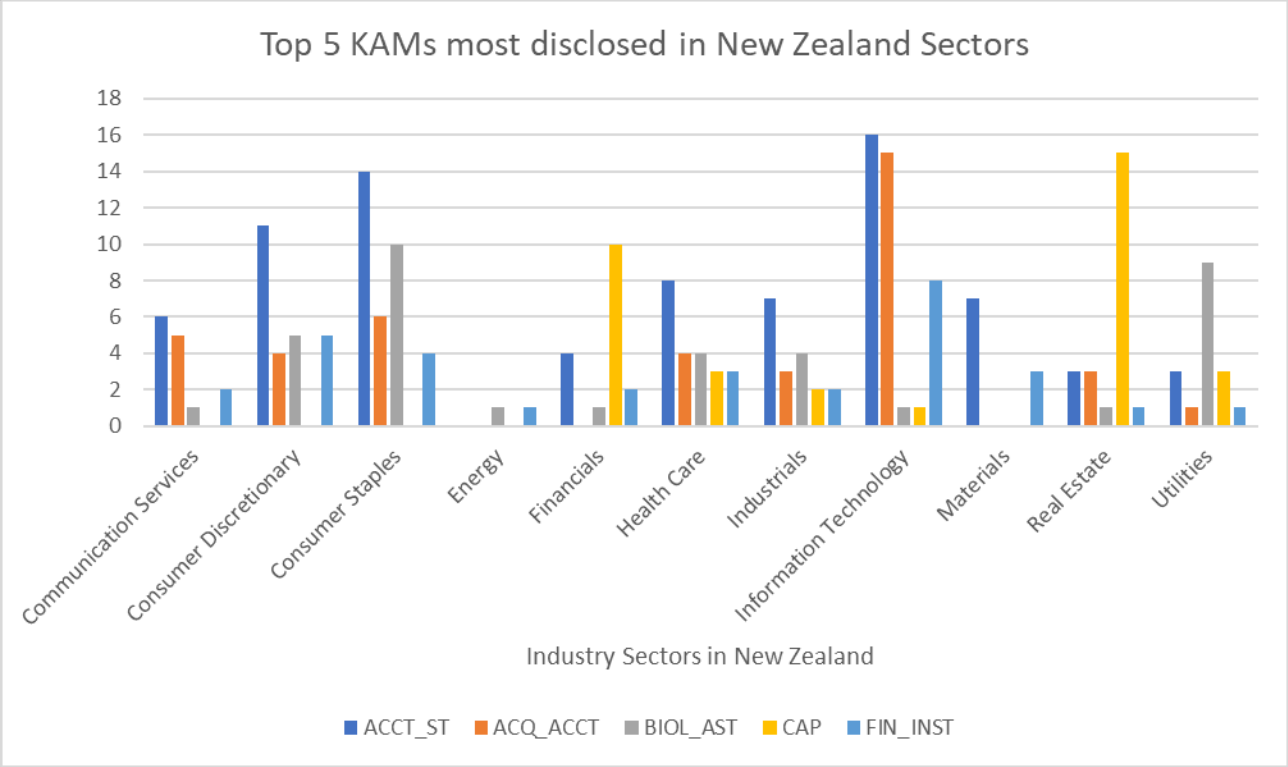


Table 2

Descriptive Statistics (2017, N = 362; 2019, N = 347)

	2017				***2019***			
	Min	Max	Mean	S.D.	Min	Max	Mean	S.D.
FRE	-241.50	53.55	0.81	34.2956	-40.90	55.27	26.32	11.9423
FK	11.60	115.30	27.01	11.6649	11.60	40.30	17.37	3.3674
FOG	12.96	116.40	27.31	11.9029	11.30	40.82	17.43	3.2612
SMOG	9.10	33.90	21.26	5.6759	12.00	31.30	17.49	2.6397
ARI	12.80	145.20	32.68	14.9594	12.80	49.10	20.02	4.1470
Cliau	10.28	21.08	15.25	2.1642	10.16	18.69	14.38	1.5704
Lwrite	12.17	86.00	37.82	23.4828	7.50	81.00	22.42	9.9440
Dchall	8.17	21.53	10.14	1.6067	6.85	11.64	8.86	0.7115
FY	0.00	0.00	0.00	0.0000	0.00	1.00	1.00	0.0537
OPINION	0.00	0.00	0.00	0.0000	0.00	1.00	0.02	0.1305
NUMKAM	1.00	5.00	2.23	0.9296	0.00	5.00	1.97	0.9688
AUDITORS	0.00	1.00	0.16	0.3673	0.00	1.00	0.18	0.3812
FEE	5,000.00	1,323,000.00	275,662.31	273,608.5813	5,000.00	1,260,000.00	303,992.47	283,806.0068
SOLVENCY	12.54	98.85	59.93	20.0571	-21.90	99.88	53.71	23.1888
PROFITABILITY	-74.07	87.20	10.08	25.5545	-98.90	99.70	8.02	32.5841
GROWTH	-556,488.00	1,044,268.00	24,194.81	135,377.1530	-679,128.00	1,960,074.00	69,895.30	294,396.1657
AUDIT QUALITY	5548.86	8,682,999,999.07	1,039,503,282.49	1,877,212,600.5856	9,310.98	9,656,999,998.88	1,192,027,151.16	2,201,802,591.0052
CATEGORY	0.00	4.00	1.33	1.2043	0.00	4.00	1.25	1.1209
SIZE	5,549.00	8,683,000,000.00	997,976,739.69	1,817,399,064.9233	9,311.00	9,657,000,000.00	1,151,142,360.31	2,143,655,677.0526
INDUSTRY	0.00	1.00	0.90	0.2959	0.00	1.00	0.89	0.3163

Table 3

Number of KAM disclosed by Auditors

			KPMG, EY, Deloitte, PWC vs Non big four											
			DELOITTE		EY		KPMG		Non-Big4		PWC		Total	
YEAR			N	%	N	%	N	%	N	%	N	%	N	%
2017	Number of KAM	1	6	8.5%	6	15.4%	15	17.6%	18	31.0%	42	38.2%	87	24.0%
		2	31	43.7%	8	20.5%	36	42.4%	24	41.4%	40	36.4%	139	38.3%
		3	29	40.8%	19	48.7%	34	40.0%	10	17.2%	19	17.3%	111	30.6%
		4	5	7.0%	6	15.4%	0	0.0%	0	0.0%	9	8.2%	20	5.5%
		5	0	0.0%	0	0.0%	0	0.0%	6	10.3%	0	0.0%	6	1.7%
	Total		71	100.0%	39	100.0%	85	100.0%	58	100.0%	110	100.0%	363	100.0%
2019	Number of KAM	0	0	0.0%	0	0.0%	0	0.0%	4	6.6%	0	0.0%	4	1.2%
		1	19	24.7%	9	26.5%	24	33.8%	12	19.7%	59	57.3%	123	35.5%
		2	44	57.1%	16	47.1%	25	35.2%	20	32.8%	15	14.6%	120	34.7%
		3	14	18.2%	9	26.5%	15	21.1%	15	24.6%	29	28.2%	82	23.7%
		4	0	0.0%	0	0.0%	0	0.0%	10	16.4%	0	0.0%	10	2.9%
		5	0	0.0%	0	0.0%	7	9.9%	0	0.0%	0	0.0%	7	2.0%
	Total		77	100.0%	34	100.0%	71	100.0%	61	100.0%	103	100.0%	346	100.0%
Total	Number of KAM	0	0	0.0%	0	0.0%	0	0.0%	4	3.4%	0	0.0%	4	0.6%
		1	25	16.9%	15	20.5%	39	25.0%	30	25.2%	101	47.4%	210	29.6%
		2	75	50.7%	24	32.9%	61	39.1%	44	37.0%	55	25.8%	259	36.5%
		3	43	29.1%	28	38.4%	49	31.4%	25	21.0%	48	22.5%	193	27.2%
		4	5	3.4%	6	8.2%	0	0.0%	10	8.4%	9	4.2%	30	4.2%
		5	0	0.0%	0	0.0%	7	4.5%	6	5.0%	0	0.0%	13	1.8%
	Total		148	100.0%	73	100.0%	156	100.0%	119	100.0%	213	100.0%	709	100.0%

Table 4 displays the quantity of audit reports included in this study's sample. It can be observed that the Big Four's audit reports represent approximately 80% of the total sample size (N_{2017} = 305; N_{2019} = 285). However, unlike the XRB's KAM report in 2020, the XRB did not disclose the number of audit reports collected in 2017 and thus, the sample distribution in this research cannot be compared with the standard-setting agency's KAM report. However, it is important to note that the non-Big Four firms issued six qualified audit opinion in 2019 whereas none of the Big Four issued any modified audit opinion in both fiscal years although the majority of this sample consists of the Big Four firms. It is vital to acknowledge the limitation of this study where non-standard reporting was not captured such as material uncertainty relating to going concern, emphasis of matter, other matter, disclaimer on going concern and disclaimer. These sections of the audit report were included as part of the *RESI* category.

Table 4

Audit Opinion by Auditors

Year			DELOITTE		EY		KPMG		PWC		Non-Big4		Total	
			N	%	N	%	N	%	N	%	N	%	N	%
2017	Audit Opinion	Unqualified	71	19.56%	39	10.74%	85	23.42%	110	30.30%	58	15.98%	363	100%
	Total		71	19.56%	39	10.74%	85	23.42%	110	30.30%	58	15.98%	363	100.00%
2019	Audit Opinion	Qualified	0	0.00%	0	0.00%	0	0.00%	0	0.00%	6	1.65%	6	1.70%
		Unqualified	77	22.65%	34	9.37%	71	19.56%	103	28.37%	55	15.15%	340	98.30%
	Total		77	22.25%	34	9.37%	71	19.56%	103	28.37%	61	16.80%	346	100.00%
Total	Audit Opinion	Qualified	0	0.00%	0	0.00%	0	0.00%	0	0.00%	6	1.65%	6	0.80%
		Unqualified	148	21.05%	73	20.11%	156	42.98%	213	58.68%	113	31.13%	703	99.20%
	Total		148	20.87%	73	20.11%	156	42.98%	213	58.68%	119	32.78%	709	100.00%

7 Empirical Analyses

7.1 Bi-variate analyses

In terms of KAM categories, 18 KAM types were consolidated into the top four most common KAMs to be disclosed in the audit reports. As the assumption of homogeneity of variances was violated, Welch's ANOVA, was conducted to determine if there were differences in readability scores between KAM categories that differed by their nature or accounting treatment: the "*KAM1*" (n = 182), "*RESI*" (n = 184), "*IA_GW*" (n = 79), "*ACQ_ACCT*" (n = 32) and "*OTHERS*" (n = 232) KAM types. Mean Flesch readability scores were statistically significantly different between KAM types (Welch's F (4, 15.231) = 157.511, $p < .001$). The results were similar to the other readability measures (see Appendix G). Furthermore, there was a decrease in Flesch reading ease scores from the *KAM1* group (Mean = 36.54, S.D. = .7039) to *Others* category (Mean = 6.87, S.D. = 2.1883), with a mean decrease of 29.68, 95% (CI [23.37, 35.99]) which can be observed in Table 6 below and the results, likewise, are similar for other KAM categories as well. Moreover, the KAMs, intangible assets (including goodwill) and acquisition accounting illustrates the lowest Flesch reading ease scores in this order ($\text{Mean}_{\text{IA\_GW}}$ = 2.70, S.D. = 32.2924; $\text{Mean}_{\text{ACQ\_ACCT}}$ = -12.29, S.D. = 38.9014). To conclude, this result reaffirms my initial finding where *KAM1,* the section which defines KAMs in general is the least difficult content to read as compared to other KAMs.[1] It is also likely to be more likely to contain 'boilerplate' wording.

[1] The results were relatively similar to the findings above when Welch's ANOVA and Games-Howell post hoc test were run for the other seven readability tests. The post hoc comparisons between other categories were reported to be not statistically significant except for *KAM1* against other categories – see Appendix G.

Table 5

Descriptive Statistics and Multiple Comparisons

						95% Confidence Interval for Mean	
		N	Mean	S. D.	S.E.	Lower Bound	Upper Bound
FRE	Others	232	6.8655	33.33113	2.18830	2.5539	11.1771
	Residuals	184	7.4148	15.48081	1.14126	5.1631	9.6665
	KAM1	182	36.5445	9.49560	0.70386	35.1557	37.9333
	IA_GW	79	2.6959	32.29239	3.63318	-4.5372	9.9291
	ACQ_ACCT	32	-12.2881	38.90142	6.87686	-26.3136	1.7373
	Total	709	13.2976	28.84820	1.08342	11.1705	15.4247

Games-Howell		Mean Difference (I-J)	S. E	Sig.	95% Confidence Lower Bound	Upper Bound
KAM1	Others	29.67899*	2.29871	0.000	23.3672	35.9908
	Residuals	29.12972*	1.34086	0.000	25.4501	32.8093
	IA_GW	33.84856*	3.70073	0.000	23.5310	44.1661
	ACQ_ACCT	48.83263*	6.91279	0.000	28.8461	68.8192

There were 703 unqualified audit opinions were issued over two years and 6 modified audit opinions in 2019 alone. A Mann-Whitney U test was run to determine if there were differences in readability scores between unqualified and qualified audit opinion (see Table 7). Distributions of the readability scores between both audit opinions were similar, as assessed by visual inspection. Median readability score was not statistically significantly different between unmodified and modified audit opinion, except for Dale-Chall score ($U = 3253.5, z = 2.291, p = .022$).

In regard to the type of industry association with the readability scores, five readability tests suggest that that there are no differences between financial and non-financial sectors under

the Mann-Whitney U test (FRE, FOG, SMOG, ARI and DChall, $p > .05$). On the other hand, readability tests i.e., FK, ARI and CLiau show a statistically significantly lower scores in financial-related sector than non-financial industry (mean rank $_{\text{financial}}$ =21.51;25.25; 14.33; mean rank $_{\text{non-financial}}$ = 22.38, 26.62, 14.88 respectively; $p < .05$) (see Table 6). On that note, the readability scores for the three tests were relatively similar, as in the results show that it is difficult to read the audit reports irrespective of the industry sectors.

Table 8 shows Pearson (above) and Spearman (below) correlation coefficients for my regression model including the correlation coefficient amongst the readability indices. First, Flesch reading ease score is negatively correlated with the other seven readability metrics ($p <$ 0.01). This reinforces our understanding that lower Flesch reading score results in higher difficulty in reading comprehension, while increasing scores for the rest of the metrics indicate lower level of readability. Both Spearman and Pearson correlations indicate that there is a weak negative association between the number of KAM and the Flesch reading score (r_s = -.157, r = -.149, $p < .01$). Similar to the previous result, there is a statistically significant positive association between KAM's quantity and other readability scores except Linsear-Write test. Therefore, this aligns with my expectation that the quantity of KAM disclosed has a positive correlation with the readability scores, which in turn, translates into higher difficulty in readability of KAMs.

In terms of auditor's fee, there is no statistically significant correlation between the audit fees and Flesch reading ease score (r_s = -.022, r = -.023, $p > .05$). However, the results show that audit fees are statistically significantly and positively correlated with the number of KAM (r_s = .137, r = .187, $p < .05$;). This, indeed, conforms to my expectation that the audit fees have a positive relationship with the number of KAMs disclosed as expanded audit reporting including KAMs results in an increase in audit fees (Velte & Issa, 2019; Ratzinger-

Sakel & Theis, 2017; Almulla & Bradbury, 2018; and Li et al., 2018). Therefore, this finding is in line with the expectation that a higher audit fees charged for the services provided including disclosing more KAMs as there are more material and significant issues identified as KAMs associated with risk areas that auditors may be liable for litigation (Brasel et al., 2016) unless the auditors have performed due diligence in eliminating or mitigating risks related to each KAM.

Solvency ratio, a proxy for auditee's ability to cover its long-term debts by determining the likelihood of a company will defaults on its debt obligations. Based on the Spearman and Pearson correlation coefficients, most readability scores (FK, FOG, ARI, LWrite & DChall), for example, Flesch-Kincaid grade level has a positive association with the company's ability to pay its debts in the long run (r_s = .097, r = .086, p < .05). On the other hand, I found that the solvency of a company is statistically significantly and negatively correlated with the quantity of KAM, audit fees, auditee's size, audit quality and growth. This illustrates that if an auditee's cash flow is stable i.e., able to pay its debts in the long term, there is less KAMs to be disclosed and consequently resulting in the decrease in audit fees. This implies that with none or less KAMs being reported, it may result in lower audit quality as shown in Table 8.

Moreover, abnormal accruals indicate audit quality which in turn, has a positive medium correlation with audit fees, company's size, and profitability (r_s = .668, r =385, r_s = 1.000, r = .626, r_s = .452, r = .341, p <.05 respectively). This shows that when the quality of an audit is higher or better, it is expected to have an increase in auditor's compensation where KAMs, either entity level or individual account level, are likely to be disclosed when firms face higher levels of financial distress (Camacho-Miñano et al., 2020). This, in fact, reiterate the previous finding where company's ability to pay its debt obligations is negatively associated with the number of KAMs disclosed.

Table 6

Independent-Samples Mann-Whitney U Test Summary between Industry Sectors (Financial and non-Financial industries)

	FRE	**FK**	**FOG**	**SMOG**	**ARI**	**CLiau**	**LWrite**	**DChall**
Total N	709	709	709	709	709	709	709	709
Mann-Whitney U	20530.00	26898.00	26054.00	26564.00	27418.50	27201.50	21993.50	25106.00
Wilcoxon W	222460.00	228828.00	227984.00	228494.00	229348.50	229131.50	223923.50	227036.00
Test Statistic	20530.00	26898.00	26054.00	26564.00	27418.50	27201.50	21993.50	25106.00
Standard Error	1666.979	1666.900	1667.202	1667.044	1667.181	1667.199	1666.957	1667.167
Standardized Test Statistic	-1.779	2.042	1.535	1.841	2.353	2.223	-0.901	0.966
Asymptotic Sig. (2-sided test)	0.075	**0.041**	0.125	0.066	**0.019**	**0.026**	0.368	0.334

Notes: statistical significances are bolded at $p < .05$.

Table 7

Spearman and Pearson Correlation Coefficient (N = 709)

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*
1	1.000	**-0.981**	**-0.970**	**-0.625**	**-0.974**	**-0.705**	**-0.511**	**-0.837**	**0.443**	0.033	**-0.149**	-0.025	-0.023	0.005	-0.005	-0.065	0.023	0.039	0.067
2	**-0.965**	1.000	**0.994**	**0.559**	**0.998**	**0.581**	**0.514**	**0.863**	**-0.487**	-0.041	**0.135**	0.013	0.010	-0.011	-0.010	**0.086**	-0.051	-0.049	-0.031
3	**-0.943**	**0.977**	1.000	**0.535**	**0.996**	**0.574**	**0.479**	**0.897**	**-0.490**	-0.045	**0.143**	0.014	-0.006	-0.028	-0.017	**0.091**	-0.068	-0.049	-0.034
4	**-0.820**	**0.790**	**0.785**	1.000	**0.551**	**0.681**	**0.429**	**0.343**	**-0.391**	-0.027	**0.123**	-0.032	0.054	0.021	0.033	0.045	-0.015	-0.035	-0.061
5	**-0.944**	**0.992**	**0.979**	**0.781**	1.000	**0.578**	**0.500**	**0.873**	**-0.496**	-0.041	**0.142**	0.011	0.012	-0.012	-0.014	**0.085**	-0.056	-0.048	-0.030
6	**-0.787**	**0.657**	**0.669**	**0.701**	**0.651**	1.000	**0.247**	**0.537**	**-0.225**	0.002	**0.229**	0.045	**0.089**	0.007	0.033	-0.051	0.061	0.006	**-0.179**
7	**-0.589**	**0.655**	**0.601**	**0.484**	**0.645**	**0.229**	1.000	**0.212**	**-0.391**	-0.038	-0.003	-0.007	-0.033	-0.024	0.011	**0.089**	-0.064	-0.057	**-0.083**
8	**-0.606**	**0.604**	**0.677**	**0.397**	**0.620**	**0.546**	**0.116**	1.000	**-0.454**	-0.068	**0.171**	-0.008	-0.029	-0.042	-0.008	**0.092**	-0.062	-0.027	-0.008
9	**0.449**	**-0.515**	**-0.520**	**-0.344**	**-0.535**	**-0.247**	**-0.371**	**-0.523**	1.000	**0.095**	**-0.130**	0.022	**0.077**	0.045	-0.035	**-0.148**	0.039	**0.100**	-0.033
10	0.024	-0.033	-0.039	-0.016	-0.031	-0.008	-0.037	**-0.086**	**0.095**	1.000	0.038	**0.206**	-0.027	**-0.290**	**-0.114**	**-0.139**	-0.052	-0.019	0.043
11	**-0.157**	**0.144**	**0.159**	**0.112**	**0.153**	**0.219**	-0.010	**0.203**	**-0.139**	0.057	1.000	0.050	**0.187**	-0.034	**-0.117**	**-0.126**	-0.011	-0.006	0.024
12	0.018	-0.027	-0.006	-0.048	-0.029	0.027	0.005	-0.039	0.022	**0.206**	0.028	1.000	**-0.319**	**-0.367**	-0.060	**-0.086**	**-0.200**	**0.196**	0.025
13	-0.022	0.016	-0.014	0.054	0.017	0.062	-0.013	-0.045	0.071	-0.049	**0.137**	**-0.324**	1.000	**0.587**	0.058	**-0.323**	**0.385**	-.076*	0.028
14	-0.004	-0.010	-0.050	0.033	-0.013	0.032	-0.018	-0.064	0.056	**-0.145**	-0.019	**-0.350**	**0.659**	1.000	**0.342**	**-0.107**	**0.626**	-0.012	-0.072
15	-0.012	-0.014	-0.033	0.032	-0.020	0.050	0.022	-0.033	-0.028	-0.068	**-0.197**	-0.036	**0.146**	**0.426**	1.000	**0.174**	**0.341**	**0.088**	**-0.091**
16	-0.071	**0.097**	**0.096**	0.037	**0.092**	-0.035	**0.087**	**0.102**	**-0.145**	-0.066	**-0.089**	**-0.079**	**-0.297**	**-0.079**	**0.156**	1.000	**-0.087**	**-0.150**	0.003
17	0.001	-0.014	-0.051	0.021	-0.019	0.013	-0.010	-0.061	0.046	**-0.151**	-0.075	**-0.295**	**0.668**	**1.000**	**0.452**	**-0.099**	1.000	**0.108**	**-0.123**
18	-0.037	0.031	0.022	0.052	0.033	0.054	-0.039	0.052	0.005	**-0.075**	0.029	**-0.090**	**0.133**	**0.144**	**0.218**	-0.038	**0.173**	1.000	-0.021
19	**0.201**	**-0.140**	**-0.162**	**-0.176**	**-0.141**	**-0.288**	0.008	**-0.093**	-0.023	0.037	-0.010	0.022	0.011	-0.061	**-0.089**	0.010	-0.066	-0.059	1.000

Notes:

1. Table 8 reports the Spearman and Pearson correlation coefficient between the variables employed in my regression analyses. The Spearman (Pearson) correlations are below (above) the diagonal. A correlation coefficient in bold indicates that correlation is statistically significant at the 10 percent level or better.
2. See Appendix A for variable definitions.
3. 1 = *FRE*; 2 = *FK*; 3 = *FOG*; 4 = *SMOG*; 5 = *ARI*; 6 = *CLiau*; 7 = *LWrite*; 8 = *DChall*; 9 = *FY*; 10 = *OPINION*; 11= *NUMKAM*; 12 = *AUDITORS*; 13 = *FEE*; 14 = *SIZE*;15 = *PROFITABILLITY*; 16 = *SOLVENCY*; 17 = *AUDIT QUALITY*; 18 = *GROWTH*; 19 = *CATEGORY*

7.2 Multivariate Analyses

In this section, multivariate regression analyses were run to observe the linear relationship between readability scores and independent variables. To ensure that all six assumptions are not violated under the linear regression, I perform several tests to check linearity, independence of observations, outliers, homoscedasticity, multicollinearity, and normality. Based on Table 9, it can be seen that all Durbin-Watson values in all eight regressions models are close to 2, which show the independence of residuals. In terms of linearity, a scatterplot of readability scores against other variables displays a linear relationship between the variables based on the visual inspection. Similarly, there is homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardised predicted values. For the fourth assumption, collinearity statistics illustrate all tolerance values are greater than 0.1 and thus, there is no multicollinearity issue between variables (Hair et al., 2014). Moreover, casewise diagnostics show several residuals that may be representative of an outlier if the residuals are greater than ±3 standard deviations. However, due to the different cases outlined in every regression model, I choose not to exclude any cases from the regression analyses to ensure the models are based on the same cases. To check the normality assumption, a visual inspection of histogram and P-Plot displays that the residuals are normally distributed. Now that all the assumptions have been met, I will proceed to discuss the findings of the multiple regression models.

Table 8 presents linear regression estimates for the readability scores. The dependent variable, *READABILITY,* is measured as a continuous variable based on the scale of each readability indices. All independent variable definitions are provided in Appendix A. Table 9 displays eight models based on eight readability tests to measure KAM's readability. As discussed in Section 7.1, despite the statistically significant correlations between independent variables, there is an absence of multicollinearity in the regression models as none of the

independent variables are highly correlated with each other. The models are significant as indicated by the ANOVA statistics ($p < 0.0005$). The R^2 of each model shows a range from 12.1% to 25.2%, indicating high goodness of fit.

Based on all models, the results show that fiscal year could statistically significantly predict KAM's readability levels such that readability scores in 2019 will be higher by 26.58 (Flesch Reading Ease scale) than 2017. Similarly, other models also indicate that it would be less difficult to read KAMs as auditors gain more experience and familiarity with KAM disclosures since its mandatory disclosure in 2016. In some cases, auditors may communicate the same KAM consecutively and provide an update on the matter the following year, which potentially could influence KAM's readability. However, it important to highlight that based on the preliminary findings in this paper, it provides a contradictory result such that KAM disclosures require at least an 11^{th} U.S. grader to be able to read the audit reports regardless of the fiscal year. Therefore, fiscal year, in this case, is considered as a significant determinant of KAM's readability.

In addition, the number of KAMs determines the KAM's readability level based on the regression models, *FRE*, *FOG* and *DChall* (B= .027; .037 & .001 respectively, $p < .05$). This indicates that as more KAMs are communicated in the audit reports, the lower the readability level i.e., it is more difficult to read KAM disclosures. If the users of financial statements find KAM disclosures are very difficult to read as the number of KAMs increases, the communicative value of KAM disclosures is no longer valid. This, also, potentially can be a concern to the users that auditors may deliberately attempting to obfuscate information in the audit reports and consequently, user's decision making is affected. To sum up, the number of KAMs may determine its readability level as it is statistically significant based on the three models.

Lastly, the type of auditors is statistically significant in determining the Coleman-Liau readability level (B= .486, $p < .05$). Under this model, I found that the Big Four audit firms have a higher readability score than the Non-Big Four firms. This indicates that KAM disclosures made by the Big Four firms are more difficult to read than the rest. This could be due to the fact that client's attributes such as size and complexity of operating environment influence KAM's readability level. This, in turn, results in a higher audit risk and fees for the services. Hence, the type of audit firms does play an important role in ascertaining KAM's readability level.

There are three determinants of KAM's readability: fiscal year, auditors and the number of KAMs based on the regression models, which answers my third research question. As for the rest of the independent variables, it is found that audit fees and audit quality's Beta coefficients are very small to the point that the change in both variables (one at a time), results in marginal change in all readability scores. Lastly, although industry is not statistically significant as a contributing factor to KAM's readability, it is important to acknowledge that financial-related industry has a higher readability scores by 9.85 and 0.457 (Flesch Reading Ease score & SMOG index respectively) than the non-financial sectors.

Table 8

Linear Regressions of Readability Scores on Independent Variables, and Control Variables

	Model	***FRE***	***FK***	***FOG***	***SMOG***	***ARI***	***CLiau***	***LWrite***	***DChall***
1	*(Constant)*	10.488	**23.795**	**24.611**	**17.049**	**29.008**	**15.244**	**42.779**	**9.754**
	Industry	9.851	-3.382	-3.149	0.457	-4.225	-0.186	-7.678	-0.197
	FY	**26.583**	**-9.984**	**-10.114**	**-3.752**	**-13.052**	**-0.875**	**-16.405**	**-1.248**
	OPINION	-18.268	5.661	4.689	3.323	6.358	0.276	1.793	0.091
	NUMKAM	**-2.704**	0.742	**0.882**	0.383	1.007	0.347	-1.171	**0.203**
	AUDITOR	-5.899	1.547	1.225	0.191	1.838	**0.486**	-0.301	-0.016
	*FEE**	-0.000	1.165	0.000	0.000	0.000	-0.000	0.000	0.000
	SIZE	-0.534	0.179	0.129	0.169	0.198	-0.016	0.357	-0.004
	SOLVENCY	-0.097	0.038	0.038	-0.003	0.048	0.000	0.038	0.005
	PROFITABILITY	0.016	-0.011	-0.011	0.006	-0.015	0.004	-0.014	0.000
	*QUALITY**	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000
	CATEGORY	1.600	-0.349	-0.379	-0.179	-0.456	**-0.245**	**-1.825**	-0.007
	Durbin-Watson	1.713	1.699	1.707	1.997	1.693	1.930	2.377	1.812
	R Square	0.227	0.257	0.258	0.166	0.266	0.138	0.181	0.228
	Adjusted R^2	0.212	0.243	0.243	0.150	0.252	0.121	0.166	0.214
	F	15.236	17.940	17.985	10.301	18.761	8.287	11.485	15.342
	p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: * = The slope coefficients are very small that the actual values cannot be fully displayed within 3 decimal places. The bold values are statistically significant at $p < .05$.

8 Additional Analyses

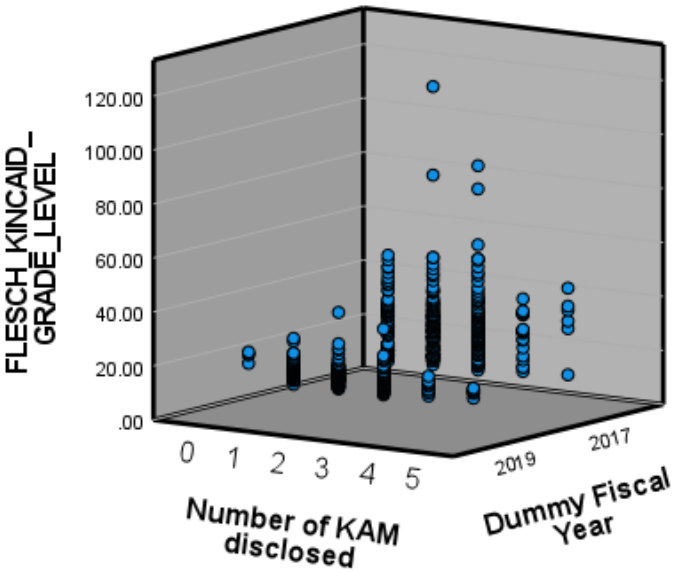
This section will elaborate on the additional analyses in this study where the interaction between readability and number of KAM is based on a quadratic functional from, U-shaped (inverse U-shaped for Flesch Reading ease score).

8.1 Quadratic Regression

In this section, the assumption of readability scores having a linear relationship with the number of KAM is tested, following the results found in Marques et al., (2021). In my previous regression models, I assume that the number of KAMs disclosed in the audit report has a positive linear relationship with the readability of KAMs based on the visual inspection on scatterplot. It means that as more KAMs are being disclosed, the more difficult it is to read the KAMs. In fact, Marques et al., (2021) assumed a quadratic U-shaped relationship between the number of KAMs and readability level. To observe the existence of a quadratic relationship, I have built a simple 3-D scatterplot diagram by year as shown in Figure 3 below.

Figure 3

A 3-D scatterplot between FRE and NUMKAM by Fiscal Year



In this model, I transform the variable, *NUMKAM* into *NUMKAM2* by squaring the variable to produce the following model 2. The regression model used in this study is shown below.

$$\boldsymbol{READABILITY}$$

$$= \beta\_0 + \beta\_1\, OPINION + \beta\_2\, NUMKAM + \beta\_3\, FEE + \beta\_4\, AUDITOR$$

$$+ \beta\_5\, FY + \beta\_6\, INDUSTRY + \beta\_7\, CATEGORY$$

$$+ \beta\_8\, AUDIT\ QUALITY + \beta\_9\, SIZE + \beta\_10\, PROFITABILITY$$

$$+ \beta\_11\, SOLVENCY + \beta\_12\, GROWTH + \beta\_13\, NUMKAM\text{^}2$$

Table 9 presents the interactions between readability and other variables. The models are statistically significant based on the ANOVA statistics and the variances in the models are explained by $R^{2,}$ ranging from 14.2% to 26.6%. In terms of fiscal year, it provides similar findings as the previous linear regression model as 2019 financial year has a higher readability as compared to 2017 ($p < .05$). Moreover, the assumption of quadratic relationship between the number of KAM and readability is not met because the signs of the *NUMKAM'*s coefficients remain the same between Table 8 and Table 9 except for SMOG index, which is not statistically significant ($p > .05$). Therefore, this study provides further evidence that the number of KAM has a linear relationship with readability rather than a quadratic U-shaped functional form.

Table 9

Linear Regressions of Readability Scores on Independent Variables, and Control Variables

	Model	***FRE***	***FK***	***FOG***	***SMOG***	***ARI***	***CLiau***	***LWrite***	***DChall***
1	*(Constant)*	9.765	**23.449**	**23.760**	**18.618**	**28.225**	**15.483**	**45.546**	**9.653**
	Industry	9.210	-3.293	-3.159	0.815	-4.083	-0.019	-8.650	-0.175
	FY	**26.675**	**-9.990**	**-10.100**	**-3.821**	**-13.059**	**-0.900**	**-16.324**	**-1.249**
	OPINION	-17.264	5.805	5.237	2.024	6.733	-0.017	0.868	0.136
	NUMKAM	**-1.574**	0.917	**1.524**	-1.113	1.457	0.016	-2.326	**0.257**
	NUMKAM2	-0.224	-0.037	-0.132	0.303	-0.094	**0.066**	0.248	-0.011
	AUDITORS	-5.818	1.545	1.244	0.122	1.840	0.464	-0.259	-0.017
	*FEE**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	SIZE	-0.523	0.185	0.143	0.143	0.212	-0.019	0.305	-0.003
	SOLVENCY	-0.098	0.037	0.037	-0.001	0.047	0.000	0.040	0.004
	PROFITABILITU	0.017	-0.011	-0.012	0.006	-0.015	0.004	-0.012	0.000
	*GROWTH**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	*QUALITY**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	CATEGORIES	1.601	-0.349	-0.378	-0.181	-0.455	**-0.245**	**-1.828**	-0.007
	Durbin-Watson	1.715	1.699	1.705	2.011	1.692	1.938	2.379	1.812
	R Square	0.227	0.257	0.258	0.173	0.266	0.142	0.182	0.229
	Adjusted R^2	0.210	0.240	0.241	0.154	0.249	0.122	0.163	0.211
	F	12.862	15.129	15.181	9.127	15.826	7.215	9.730	12.945
	p-value	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Note: *= The values are too small to be presented in 3 decimal places. Bold values are statistically significant at $p < .05$.

9 Conclusion

KAM disclosures aim to add communicative value to the audit report and thus, improving user's decision making but previous research has shown that there are mixed views on the effectiveness of KAM disclosure. Therefore, this exploratory study is designed to investigate KAM disclosures' readability across eight readability measures since the first and third year of NZ ISA 701 implementation. To answer the first research question, the study presents that New Zealand audit reports, in general, are very difficult to read. When the audit reports are broken down into several sections based on KAM categories, the results show that KAM disclosures require at least an 11th U.S. grade level to be able to read the audit report.

The second research question is to investigate the relationship between readability and other variables. These results present that the number of KAM, auditee's solvency and audit quality has a positive association with KAM's readability. This means that KAM's readability increases when there is fewer KAMs being disclosed and thus, this suggests that auditors are trying to limit the length of the audit report and trading off readability for greater conciseness. In terms of the third questions, the findings show that there are three determinants of KAM's readability such fiscal year, auditors, and the number of KAMs based on the regression models.

There are limitations in this study. According to the accounting standard-setting agency, the users of financial reports are expected to have financial literacy, much less on technical knowledge where users specifically asked for simplified language in the financial reports (XRB, 2015). Additionally, in terms of classifying KAMs into categories, I mainly take into account the subject matter which is similar to XRB reports in 2017 and 2020. XRB did not disclose the way they classify KAMs into separate categories. Therefore, it is essential to note that this KAM categorisation may be mixed with accounting treatments on top of the subject matter. Further, there may be errors in the data collected as audit reports does not have any standard formatting except for disclosing certain information such as audit opinion, basis of

opinion, KAM section, responsibilities of management and auditors. I try to mitigate the errors as much as possible via semi-automated data cleaning and manual inspecting for any discrepancies. Based on the data cleaning procedures that have been taken in this study, I believe the data in this study is sufficiently accurate to support the findings. Another limitation is that this paper excludes non-NZX listed companies. Nilipour et al. (2020) reported that cross-listed companies had an impact on readability based on regions. Therefore, there is an opportunity for future research to further extend this research by including instruments or companies that are listed on stock exchanges of other countries.

Appendix A – Definition of Variables

Variables	Definitions
READABILITY	The readability scores of each section of the audit reports, indicated by Flesch Reading Ease Scale, Flesch-Kincaid Grade Level, Gunning-Fog Index, SMOG Index, Automated Readability Index, Coleman_Liau index and Linsear-Write index. (Source: Annual Reports and Jupyter Notebook (Anaconda))
OPINION	A dummy variable to indicate audit opinion issued by the auditors that is equal 1 for unqualified opinion and 0 otherwise. (Source: Annual Reports)
NUMKAM	Number of KAMs disclosed in the audit report. (Source: Annual Reports)
FEE	The total fees charged for the audit service excluding other non-assurance services. (Source: ORBIS)
AUDITOR	A dummy variable that equals 0 if the auditor is one of the Big Four (EY, PWC, KPMG & Deloitte), and 0 otherwise. (Source: ORBIS)
FY	A dummy variable that equals 0 for 2017 and 1 for 2019 fiscal year. (Source: ORBIS)
INDUSTRY	A dummy variable that equals 0 for financial-related sectors and 1 otherwise. (Source: ORBIS and NZX Main Board)
CATEGORY	Type of KAMs disclosed in the audit report where 1 equals to Residuals (Non-KAM related), 2 equals KAM1 (KAM's definition), 3 is for IA_GW (Intangible assets and goodwill), 4 equals to ACQ_ACCT (acquisition accounting related) and 0 otherwise.
AUDIT QUALITY	Audit quality is proxied by abnormal accruals measured in Li et al., (2019). The abnormal accruals, which are the residuals of this regression model: Total Assets = $\beta_0 + \beta_1$ (1/Lagged Total Assets) + β_2

	(ΔRevenue/Lagged Total Asset – ΔReceivables/Lagged Total Assets) + β_3 (PPE/LaggedTotal Assets) + ε.
SIZE	Natural log of total assets. (Source: ORBIS)
PROFITABILITY	Profit margin is measured by net income divided by total revenue. (Source: ORBIS)
SOLVENCY	Solvency raio is calculated by total net income includes depreciation divided by short-term and long term liabilities. (Source: ORBIS)
GROWTH	Percentage change in revenue. (Source: ORBIS)
FRE	Flesch Reading Ease Score (Source: Jupyter Notebook (Anaconda))
FK	Flesch-Kincaid Grade Level (Source: Jupyter Notebook (Anaconda))
FOG	Gunning-Fog Index (Source: Jupyter Notebook (Anaconda))
SMOG	SMOG Index (Source: Jupyter Notebook (Anaconda))
ARI	Automated Readability Index (Source: Jupyter Notebook (Anaconda))
CLiau	Coleman_Liau index (Source: Jupyter Notebook (Anaconda))
LWrite	Linsear-Write index (Source: Jupyter Notebook (Anaconda))

Appendix B – Python Script for Readability Tests

```
# -*- coding: utf-8 -*-
import time, datetime     # for timestamp
import pandas as pd     # to store data in dataframes
from textstat.textstat import textstat    # https://pypi.org/project/textstat/
from openpyxl import load_workbook     # interact with excel
import numpy as np

# modify three items below #
#####
ExcelFile = 'filename.xlsx'
Sheet = 'Sheet1'
Field_ID = 0    # first field/column in XLSX is 0
#####

# Process XLSX
book = load_workbook(ExcelFile)
writer = pd.ExcelWriter(ExcelFile, engine='openpyxl', mode='a') # UPDATED: mode 'a'
writer.book = book
df = pd.read_excel(ExcelFile, sheet_name=Sheet)

# initialize lists for readability scores
flesch_reading_ease=[]
flesch_kincaid_grade_level=[]
gunning_fog=[]
syllable_count=[]
lexicon_count=[]
sentence_count=[]
smog_index=[]
automated_readability_index=[]
coleman_liau=[]
linsear_write=[]
dale_chall=[]

for index, row in df.iterrows():
    flesch_reading_ease.append(textstat.flesch_reading_ease(row[Field_ID]))
    flesch_kincaid_grade_level.append(textstat.flesch_kincaid_grade(row[Field_ID]))
    gunning_fog.append(textstat.gunning_fog(row[Field_ID]))
    syllable_count.append(textstat.syllable_count(row[Field_ID]))
    lexicon_count.append(textstat.lexicon_count(row[Field_ID]))
    sentence_count.append(textstat.sentence_count(row[Field_ID]))
    smog_index.append(textstat.smog_index(row[Field_ID]))
```

```
automated_readability_index.append(textstat.automated_readability_index(row[Field_ID]))
    coleman_liau.append(textstat.coleman_liau_index(row[Field_ID]))
    linsear_write.append(textstat.linsear_write_formula(row[Field_ID]))
    dale_chall.append(textstat.dale_chall_readability_score(row[Field_ID]))

# add readability values to df UPDATED to add datatype
flesch_reading_ease = pd.Series(flesch_reading_ease, dtype='object')
flesch_kincaid_grade_level = pd.Series(flesch_kincaid_grade_level, dtype='object')
gunning_fog = pd.Series(gunning_fog, dtype='object')
syllable_count = pd.Series(syllable_count, dtype='object')
lexicon_count = pd.Series(lexicon_count, dtype='object')
sentence_count = pd.Series(sentence_count, dtype='object')
smog_index = pd.Series(smog_index, dtype='object')
automated_readability_index = pd.Series(automated_readability_index, dtype='object')
coleman_liau = pd.Series(coleman_liau, dtype='object')
linsear_write = pd.Series(linsear_write, dtype='object')
dale_chall = pd.Series(dale_chall, dtype='object')

df['flesch-reading-ease']=flesch_reading_ease.values
df['flesch-kincaid-grade-level']=flesch_kincaid_grade_level.values
df['gunning-fog']=gunning_fog.values
df['syllable-count']=syllable_count.values
df['lexicon-count']=lexicon_count.values
df['sentence-count']=sentence_count.values
df['smog-index']=smog_index.values
df['automated-readability-index']=automated_readability_index.values
df['coleman-liau']=coleman_liau.values
df['linsear-write']=linsear_write.values
df['dale-chall']=dale_chall.values

# timestamp for XLSX sheet
tstamp=time.time()
ts=datetime.datetime.fromtimestamp(tstamp).strftime('%Y-%m-%d %H-%M-%S')

# write new sheet in existing XLSX
df.to_excel(writer, sheet_name='update'+ts)
writer.save()
writer.close()
print ('done')
```

Appendix C – Number of KAM Disclosed by Industry Sectors

	Industry Classification																						Total	
	Communication Services		Consumer Discretionary		Consumer Staples		Energy		Financial		Health Care		Industrials		Information Technology		Materials		Real Estate		Utilities			
Fiscal Year	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
2017 ACCT_ST	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	3.7	1	0.3
ACQ_ACCT	2	10.0	3	6.3	2	3.4	1	25.0	0	0.0	2	6.3	2	6.7	4	7.5	3	15.0	1	2.9	1	3.7	21	5.8
BIOL_AST	0	0.0	0	0.0	6	10.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	6	1.7
CAP	1	5.0	1	2.1	0	0.0	0	0.0	0	0.0	1	3.1	1	3.3	6	11.3	0	0.0	1	2.9	1	3.7	12	3.3
FIN_INST	1	5.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	7.4	3	0.8
FIN_STRUC	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	1.9	0	0.0	1	2.9	0	0.0	2	0.6
GC	0	0.0	0	0.0	0	0.0	0	0.0	1	2.9	1	3.1	1	3.3	2	3.8	1	5.0	0	0.0	0	0.0	6	1.7
IA_GW	3	15.0	7	14.6	7	11.9	0	0.0	2	5.7	4	12.5	3	10.0	7	13.2	4	20.0	2	5.9	2	7.4	41	11.3
INV	0	0.0	7	14.6	4	6.8	0	0.0	3	8.6	0	0.0	2	6.7	1	1.9	0	0.0	0	0.0	0	0.0	17	4.7
INV_AST	0	0.0	0	0.0	0	0.0	0	0.0	4	11.4	2	6.3	1	3.3	0	0.0	0	0.0	8	23.5	1	3.7	16	4.4
KAM1	5	25.0	12	25.0	15	25.4	1	25.0	11	31.4	8	25.0	8	26.7	11	20.8	5	25.0	9	26.5	6	22.2	91	25.1
LIAB	0	0.0	1	2.1	0	0.0	0	0.0	2	5.7	1	3.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	1.1
Other	1	5.0	0	0.0	1	1.7	0	0.0	1	2.9	2	6.3	1	3.3	0	0.0	1	5.0	0	0.0	0	0.0	7	1.9
PPE	0	0.0	3	6.3	5	8.5	1	25.0	1	2.9	1	3.1	2	6.7	1	1.9	0	0.0	1	2.9	5	18.5	20	5.5
RESI	5	25.0	12	25.0	15	25.4	1	25.0	10	28.6	8	25.0	8	26.7	12	22.6	5	25.0	9	26.5	6	22.2	91	25.1
REV	2	10.0	2	4.2	4	6.8	0	0.0	0	0.0	2	6.3	1	3.3	8	15.1	0	0.0	2	5.9	1	3.7	22	6.1
Tax	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	5.0	0	0.0	1	3.7	2	0.6
Total	20	100.0	48	100.0	59	100.0	4	100.0	35	100.0	32	100.0	30	100.0	53	100.0	20	100.0	34	100.0	27	100.0	362	100.0

2019	ACCT_ST	0	0.0	0	0.0	1	1.8	0	0.0	1	2.6	2	6.3	1	3.3	0	0.0	0	0.0	0	0.0	0	0.0	5	1.4
	ACQ_ACCT	0	0.0	2	4.5	2	3.6	0	0.0	2	5.1	1	3.1	0	0.0	4	7.5	0	0.0	0	0.0	0	0.0	11	3.2
	BIOL_AST	0	0.0	0	0.0	3	5.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	0.9
	CAP	1	5.0	0	0.0	0	0.0	0	0.0	0	0.0	2	6.3	1	3.3	5	9.4	0	0.0	1	3.4	1	4.2	11	3.2
	FIN_INST	0	0.0	1	2.3	0	0.0	0	0.0	2	5.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	8.3	5	1.4
	FIN_STRUC	1	5.0	0	0.0	1	1.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	4.2	3	0.9
	GC	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	3.1	1	3.3	0	0.0	1	5.9	0	0.0	0	0.0	3	0.9
	IA_GW	3	15.0	4	9.1	7	12.5	0	0.0	2	5.1	4	12.5	4	13.3	9	17.0	3	17.6	1	3.4	1	4.2	38	11.0
	INV	0	0.0	6	13.6	4	7.1	1	33.3	0	0.0	0	0.0	0	0.0	0	0.0	2	11.8	0	0.0	0	0.0	13	3.7
	INV_AST	0	0.0	0	0.0	0	0.0	0	0.0	6	15.4	1	3.1	1	3.3	1	1.9	0	0.0	7	24.1	2	8.3	18	5.2
	IT	0	0.0	0	0.0	0	0.0	0	0.0	1	2.6	0	0.0	0	0.0	1	1.9	0	0.0	0	0.0	0	0.0	2	0.6
	KAM1	5	25.0	12	27.3	14	25.0	1	33.3	11	28.2	8	25.0	8	26.7	12	22.6	5	29.4	9	31.0	6	25.0	91	26.2
	LIAB	1	5.0	3	6.8	0	0.0	0	0.0	2	5.1	0	0.0	1	3.3	1	1.9	0	0.0	0	0.0	0	0.0	8	2.3
	Other	0	0.0	0	0.0	1	1.8	0	0.0	0	0.0	0	0.0	1	3.3	0	0.0	1	5.9	1	3.4	0	0.0	4	1.2
	PPE	1	5.0	2	4.5	5	8.9	0	0.0	0	0.0	3	9.4	2	6.7	0	0.0	0	0.0	0	0.0	4	16.7	17	4.9
	RESI	5	25.0	12	27.3	15	26.8	1	33.3	12	30.8	8	25.0	8	26.7	12	22.6	5	29.4	9	31.0	6	25.0	93	26.8
	REV	3	15.0	2	4.5	2	3.6	0	0.0	0	0.0	2	6.3	2	6.7	7	13.2	0	0.0	1	3.4	0	0.0	19	5.5
	Tax	0	0.0	0	0.0	1	1.8	0	0.0	0	0.0	0	0.0	0	0.0	1	1.9	0	0.0	0	0.0	1	4.2	3	0.9
	Total	20	100.0	44	100.0	56	100.0	3	100.0	39	100.0	32	100.0	30	100.0	53	100.0	17	100.0	29	100.0	24	100.0	347	100.0

Appendix D – Independent T-test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
FRE	Equal variances assumed	3.280	0.071	-0.879	707	0.380	-10.39540	11.82928	-33.62012	12.82933
	Equal variances not assumed			-2.631	5.861	0.040	-10.39540	3.95072	-20.11849	-0.67231
FK	Equal variances assumed	2.154	0.143	1.095	707	0.274	4.44668	4.06137	-3.52711	12.42047
	Equal variances not assumed			3.066	5.741	0.023	4.44668	1.45054	0.85811	8.03526
FOG	Equal variances assumed	2.788	0.095	1.186	707	0.236	4.90577	4.13641	-3.21534	13.02688
	Equal variances not assumed			3.662	5.922	0.011	4.90577	1.33981	1.61690	8.19464
SMOG	Equal variances assumed	4.089	0.044	0.721	707	0.471	1.43001	1.98333	-2.46390	5.32393
	Equal variances not assumed			1.632	5.466	0.159	1.43001	0.87644	-0.76638	3.62641
ARI	Equal variances assumed	2.671	0.103	1.097	707	0.273	5.73357	5.22673	-4.52820	15.99534
	Equal variances not assumed			3.484	5.984	0.013	5.73357	1.64581	1.70374	9.76340

CLiau	Equal variances assumed	0.007	0.932	-0.046	707	0.964	-0.03639	0.79819	-1.60350	1.53072
	Equal variances not assumed			-0.046	5.086	0.965	-0.03639	0.79589	-2.07191	1.99914
LWrite	Equal variances assumed	2.285	0.131	1.012	707	0.312	8.18296	8.08382	-7.68821	24.05412
	Equal variances not assumed			2.137	5.402	0.082	8.18296	3.82877	-1.44293	17.80884
DChall	Equal variances assumed	0.863	0.353	1.809	707	0.071	1.03962	0.57472	-0.08876	2.16799
	Equal variances not assumed			3.365	5.308	0.018	1.03962	0.30893	0.25915	1.82008

Appendix E – Descriptive Statistics by KAM categories in 2017

KAM	ACQ_ACCT				BIOL_AST				CAP				FIN_INST			
Tests	**Mean**	**S.D.**	**Min**	**Max**	**Mean**	**S.D.**	**Min**	**Max**	**Mean**	**S.D.**	**Min**	**Max**	**Mean**	**S.D.**	**Min**	**Max**
ARI	45.29	16.9944	26.00	103.7	33.80	17.1866	18.50	62.70	32.32	9.7871	15.30	45.90	25.43	3.7287	22.80	29.70
CLiau	17.09	1.9935	14.17	21.08	15.55	1.6807	13.48	17.83	17.10	1.3941	14.22	19.05	17.46	0.4828	17.07	18.00
DChall	11.34	1.8350	9.47	17.66	10.27	1.6558	8.49	13.14	10.60	0.9972	8.70	11.95	9.94	0.8032	9.03	10.55
FK	36.92	13.2976	21.10	82.5	27.92	13.3803	15.90	50.50	26.51	7.4017	14.40	37.60	21.83	2.7429	20.20	25.00
FOG	37.22	13.6743	22.47	86.8	28.02	12.9561	17.38	50.04	27.44	7.5593	13.91	38.94	20.68	2.7240	18.95	23.82
FRE	30.16	36.0524	139.99	14.36	-2.50	38.9248	67.59	33.28	-1.98	19.9993	-34.10	31.82	5.21	6.3122	-1.32	11.28
Lwrite	32.63	17.2709	17.50	73	16.76	3.0488	12.80	22.00	30.96	22.4132	14.20	77.00	29.06	7.3302	24.33	37.50
SMOG	26.90	4.6804	14.50	33.7	22.85	6.7613	16.40	33.70	22.73	3.7666	15.80	28.30	20.93	1.2583	19.60	22.10

KAM	INV_AST				KAM1				LIAB				Other			
Tests	**Mean**	**S.D.**	**Min**	**Max**	**Mean**	**S.D.**	**Min**	**Max**	**Mean**	**S.D.**	**Min**	**Max**	**Mean**	**S.D.**	**Min**	**Max**
ARI	36.71	14.0424	18.90	73.9	18.48	2.5820	14.20	33.70	39.28	18.7512	12.80	56.00	31.91	10.0297	19.00	44.00

CLiau	16.65	1.0814	14.99	18.07	12.40	1.0202	10.28	14.98	16.61	3.9147	11.02	19.92	15.98	1.5733	14.34	17.77
DChall	10.96	1.5122	8.88	14.74	8.98	0.3772	8.17	10.80	11.18	1.8979	8.59	13.02	10.38	0.6795	9.36	11.13
FK	30.28	10.8058	16.70	58.7	15.88	2.2213	12.30	28.30	33.13	15.0500	11.60	46.00	25.77	8.0833	15.50	36.00
FOG	30.84	11.2289	16.93	60.72	15.97	2.0690	12.96	27.68	33.56	13.2923	15.11	45.97	27.36	7.0018	18.63	36.21
FRE	-12.26	27.8022	-83.49	20.42	37.72	8.9833	1.10	53.55	-23.68	49.6298	-55.92	49.86	4.50	24.7815	-29.84	34.29
Lwrite	36.70	23.0346	12.17	83	19.71	2.9662	15.33	38.50	28.99	10.9354	14.63	38.00	25.33	10.1762	13.50	37.00
SMOG	23.23	5.2842	12.30	33.2	14.51	1.5524	11.60	18.20	22.60	9.2905	14.60	32.30	22.64	4.3061	17.70	29.30

KAM	**FIN_STRU**				**GC**				**IA_GW**				**INV**			
Tests	**Mean**	**S.D.**	**Min**	**Max**	**Mean**	**S.D.**	**Min**	**Max**	**Mean**	**S.D.**	**Min**	**Max**	**Mean**	**S.D.**	**Min**	**Max**
ARI	39.90	7.4953	34.60	45.20	35.90	8.6193	24.30	45.90	40.47	15.1116	21.90	100.70	43.01	28.1591	22.20	145.20
CLiau	16.10	0.3323	15.86	16.33	15.15	1.4171	13.65	17.54	17.05	1.3943	14.17	20.44	16.70	1.6793	13.77	19.57
DChall	11.05	0.6576	10.58	11.51	10.95	0.9427	9.61	12.45	11.35	1.7432	9.45	18.61	11.68	2.7710	9.10	21.53
FK	32.55	5.5861	28.60	36.50	28.85	6.6881	19.50	36.50	32.80	11.6503	18.30	79.40	35.20	22.1714	17.10	115.30

FOG	33.23	5.8548	29.09	37.37	30.61	6.6739	20.88	38.44	33.95	11.9938	20.88	83.01	36.09	22.3569	19.58	116.40
	-						-		-		-		-		-	
FRE	15.44	14.4250	-25.64	-5.24	-0.41	19.1973	25.64	23.84	17.81	30.9852	137.29	27.08	25.21	59.6752	241.50	24.82
Lwrite	20.21	3.4766	17.75	22.67	44.08	20.5096	19.00	72.00	33.29	18.8489	12.50	76.00	30.90	14.4425	15.00	77.00
SMOG	26.15	2.8991	24.10	28.20	18.57	5.3038	13.20	25.70	24.23	5.3006	10.30	32.80	22.48	5.1961	10.30	29.10

KAM	**PPE**				**RESI**				**REV**				**Tax**			
Tests	**Mean**	**S.D.**	**Min**	**Max**	**Mean**	**S.D.**	**Min**	**Max**	**Mean**	**S.D.**	**Min**	**Max**	**Mean**	**S.D.**	**Min**	**Max**
ARI	38.18	20.7229	21.10	111.20	34.31	5.6050	24.10	49.50	38.71	14.4310	17.40	67.10	52.30	21.2132	37.30	67.30
CLiau	16.50	1.2579	13.88	18.77	15.29	0.4645	14.29	16.67	16.44	1.8451	12.78	19.63	15.69	1.3930	14.70	16.67
DChall	10.87	2.1525	9.05	18.28	9.40	0.5340	8.27	10.81	11.06	1.4372	9.17	14.37	12.41	2.2981		
FK	31.32	16.0099	19.20	88.00	28.69	4.3610	20.90	40.30	30.90	11.2217	12.90	52.90	41.90	16.2635	30.40	53.40
FOG	31.85	16.5215	18.74	89.93	28.06	4.3424	20.25	39.73	32.36	11.1199	14.21	54.32	43.74	16.4544	32.10	55.37
	-		-				-						-			
FRE	13.85	42.6017	165.03	15.92	-5.34	11.5508	35.59	14.77	-8.74	32.4613	-73.68	40.99	37.09	46.2448	-69.79	-4.39

Lwrite	27.71	19.4394	13.50	75.00	69.34	12.7247	34.00	86.00	28.51	13.3148	13.40	78.00	33.25	2.4749	31.50	35.00
SMOG	20.56	4.4134	10.30	27.00	24.56	2.0694	20.40	30.30	21.29	6.5240	9.10	33.90	20.35	4.7376	17.00	23.70

Appendix F – Welch Test and Games-Howell Test

Robust Tests of Equality of Means

		Statistic[a]	df1	df2	Sig.
FRE	Welch	157.511	4	155.231	.000
FK	Welch	99.438	4	151.953	.000
FOG	Welch	93.534	4	151.394	.000
SMOG	Welch	274.580	4	154.976	.000
ARI	Welch	94.135	4	151.116	.000
CLiau	Welch	273.610	4	157.004	.000
LWrite	Welch	140.562	4	148.720	.000
DChall	Welch	42.825	4	153.386	.000

a. Asymptotically F distributed.

Games-Howell Test

							95% Confidence Interval	
Dependent Variable				Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
FRE	Games-Howell	Others	Residuals	-0.5493	2.46802	0.999	-7.3175	6.2190
			KAM1	-29.67899*	2.29871	0.000	-35.9908	-23.3672

	IA_GW	4.1696	4.24130	0.863	-7.5534	15.8925
	ACQ_ACCT	19.1536	7.21664	0.081	-1.5203	39.8276
Residuals	Others	0.5493	2.46802	0.999	-6.2190	7.3175
	KAM1	-29.12972*	1.34086	0.000	-32.8093	-25.4501
	IA_GW	4.7188	3.80821	0.729	-5.8740	15.3116
	ACQ_ACCT	19.7029	6.97092	0.057	-0.4129	39.8187
KAM1	Others	29.67899*	2.29871	0.000	23.3672	35.9908
	Residuals	29.12972*	1.34086	0.000	25.4501	32.8093
	IA_GW	33.84856*	3.70073	0.000	23.5310	44.1661

			ACQ_ACCT	48.83263*	6.91279	0.000	28.8461	68.8192
		IA_GW	Others	-4.1696	4.24130	0.863	-15.8925	7.5534
			Residuals	-4.7188	3.80821	0.729	-15.3116	5.8740
			KAM1	-33.84856*	3.70073	0.000	-44.1661	-23.5310
			ACQ_ACCT	14.9841	7.77761	0.317	-7.0383	37.0065
		ACQ_ACCT	Others	-19.1536	7.21664	0.081	-39.8276	1.5203
			Residuals	-19.7029	6.97092	0.057	-39.8187	0.4129
			KAM1	-48.83263*	6.91279	0.000	-68.8192	-28.8461
			IA_GW	-14.9841	7.77761	0.317	-37.0065	7.0383
FK	Games-Howell	Others	Residuals	-0.0764	0.90362	1.000	-2.5543	2.4015

	KAM1	7.72263*	0.81702	0.000	5.4779	9.9673
	IA_GW	-1.2972	1.56788	0.922	-5.6319	3.0375
	ACQ_ACCT	-6.6196	2.63912	0.110	-14.1807	0.9415
Residuals	Others	0.0764	0.90362	1.000	-2.4015	2.5543
	KAM1	7.79903*	0.46405	0.000	6.5238	9.0743
	IA_GW	-1.2208	1.41636	0.910	-5.1604	2.7187
	ACQ_ACCT	-6.5432	2.55201	0.101	-13.9065	0.8201
KAM1	Others	-7.72263*	0.81702	0.000	-9.9673	-5.4779

			Residuals	-7.79903*	0.46405	0.000	-9.0743	-6.5238
			IA_GW	-9.01985*	1.36274	0.000	-12.8223	-5.2174
			ACQ_ACCT	-14.34224*	2.52265	0.000	-21.6403	-7.0442
		IA_GW	Others	1.2972	1.56788	0.922	-3.0375	5.6319
			Residuals	1.2208	1.41636	0.910	-2.7187	5.1604
			KAM1	9.01985*	1.36274	0.000	5.2174	12.8223
			ACQ_ACCT	-5.3224	2.85561	0.350	-13.4044	2.7597
		ACQ_ACCT	Others	6.6196	2.63912	0.110	-0.9415	14.1807
			Residuals	6.5432	2.55201	0.101	-0.8201	13.9065
			KAM1	14.34224*	2.52265	0.000	7.0442	21.6403
			IA_GW	5.3224	2.85561	0.350	-2.7597	13.4044
FOG	Games-Howell	Others	Residuals	1.3506	0.91442	0.578	-1.1569	3.8582
			KAM1	8.42345*	0.82509	0.000	6.1564	10.6905
			IA_GW	-1.5829	1.59860	0.859	-6.0030	2.8371

	ACQ_ACCT	-6.0130	2.71862	0.198	-13.8044	1.7785
Residuals	Others	-1.3506	0.91442	0.578	-3.8582	1.1569
	KAM1	7.07284*	0.46389	0.000	5.7978	8.3479
	IA_GW	-2.9336	1.44566	0.260	-6.9550	1.0878
	ACQ_ACCT	-7.3636	2.63160	0.061	-14.9576	0.2304
KAM1	Others	-8.42345*	0.82509	0.000	-10.6905	-6.1564
	Residuals	-7.07284*	0.46389	0.000	-8.3479	-5.7978
	IA_GW	-10.00639*	1.39088	0.000	-13.8878	-6.1250
	ACQ_ACCT	-14.43645*	2.60191	0.000	-21.9645	-6.9084
IA_GW	Others	1.5829	1.59860	0.859	-2.8371	6.0030
	Residuals	2.9336	1.44566	0.260	-1.0878	6.9550
	KAM1	10.00639*	1.39088	0.000	6.1250	13.8878
	ACQ_ACCT	-4.4301	2.94019	0.563	-12.7538	3.8937
ACQ_ACCT	Others	6.0130	2.71862	0.198	-1.7785	13.8044
	Residuals	7.3636	2.63160	0.061	-0.2304	14.9576
	KAM1	14.43645*	2.60191	0.000	6.9084	21.9645

			IA_GW	4.4301	2.94019	0.563	-3.8937	12.7538
SMOG	Games-Howell	Others	Residuals	-2.06038*	0.37663	0.000	-3.0924	-1.0283
			KAM1	5.27419*	0.32326	0.000	4.3869	6.1615
			IA_GW	-1.3934	0.66312	0.226	-3.2296	0.4429
			ACQ_ACCT	-4.16228*	1.04683	0.003	-7.1639	-1.1607
		Residuals	Others	2.06038*	0.37663	0.000	1.0283	3.0924
			KAM1	7.33457*	0.25108	0.000	6.6450	8.0241
			IA_GW	0.6670	0.63109	0.828	-1.0859	2.4199
			ACQ_ACCT	-2.1019	1.02684	0.266	-5.0580	0.8542
		KAM1	Others	-5.27419*	0.32326	0.000	-6.1615	-4.3869

			Residuals	-7.33457*	0.25108	0.000	-8.0241	-6.6450
			IA_GW	-6.66756*	0.60076	0.000	-8.3425	-4.9926
			ACQ_ACCT	-9.43647*	1.00848	0.000	-12.3515	-6.5215
		IA_GW	Others	1.3934	0.66312	0.226	-0.4429	3.2296
			Residuals	-0.6670	0.63109	0.828	-2.4199	1.0859
			KAM1	6.66756*	0.60076	0.000	4.9926	8.3425
			ACQ_ACCT	-2.7689	1.16287	0.136	-6.0513	0.5135
		ACQ_ACCT	Others	4.16228*	1.04683	0.003	1.1607	7.1639
			Residuals	2.1019	1.02684	0.266	-0.8542	5.0580
			KAM1	9.43647*	1.00848	0.000	6.5215	12.3515
			IA_GW	2.7689	1.16287	0.136	-0.5135	6.0513
ARI	Games-Howell	Others	Residuals	0.5897	1.16646	0.987	-2.6089	3.7883
			KAM1	9.99409*	1.04867	0.000	7.1126	12.8756
			IA_GW	-1.7309	2.03734	0.914	-7.3642	3.9025
			ACQ_ACCT	-8.2687	3.38582	0.126	-17.9683	1.4308
		Residuals	Others	-0.5897	1.16646	0.987	-3.7883	2.6089
			KAM1	9.40442*	0.59302	0.000	7.7742	11.0346
			IA_GW	-2.3205	1.84465	0.717	-7.4515	2.8105
			ACQ_ACCT	-8.8584	3.27349	0.075	-18.3027	0.5858
		KAM1	Others	-9.99409*	1.04867	0.000	-12.8756	-7.1126
			Residuals	-9.40442*	0.59302	0.000	-11.0346	-7.7742
			IA_GW	-11.72495*	1.77252	0.000	-16.6716	-6.7783

			ACQ_ACCT	-18.26284*	3.23339	0.000	-27.6180	-8.9076
		IA_GW	Others	1.7309	2.03734	0.914	-3.9025	7.3642
			Residuals	2.3205	1.84465	0.717	-2.8105	7.4515
			KAM1	11.72495*	1.77252	0.000	6.7783	16.6716
			ACQ_ACCT	-6.5379	3.67503	0.397	-16.9344	3.8586
		ACQ_ACCT	Others	8.2687	3.38582	0.126	-1.4308	17.9683
			Residuals	8.8584	3.27349	0.075	-0.5858	18.3027
			KAM1	18.26284*	3.23339	0.000	8.9076	27.6180
			IA_GW	6.5379	3.67503	0.397	-3.8586	16.9344
CLiau	Games-Howell	Others	Residuals	.99962*	0.11521	0.000	0.6835	1.3157
			KAM1	3.40992*	0.12981	0.000	3.0542	3.7657
			IA_GW	-0.3844	0.20378	0.329	-0.9476	0.1788
			ACQ_ACCT	-0.5721	0.36507	0.527	-1.6188	0.4746
		Residuals	Others	-.99962*	0.11521	0.000	-1.3157	-0.6835
			KAM1	2.41031*	0.08743	0.000	2.1703	2.6503
			IA_GW	-1.38401*	0.17978	0.000	-1.8846	-0.8834
			ACQ_ACCT	-1.57168*	0.35224	0.001	-2.5894	-0.5540
		KAM1	Others	-3.40992*	0.12981	0.000	-3.7657	-3.0542
			Residuals	-2.41031*	0.08743	0.000	-2.6503	-2.1703
			IA_GW	-3.79432*	0.18946	0.000	-4.3200	-3.2687

			ACQ_ACCT	-3.98199*	0.35728	0.000	-5.0110	-2.9530
		IA_GW	Others	0.3844	0.20378	0.329	-0.1788	0.9476
			Residuals	1.38401*	0.17978	0.000	0.8834	1.8846
			KAM1	3.79432*	0.18946	0.000	3.2687	4.3200
			ACQ_ACCT	-0.1877	0.39029	0.989	-1.2946	0.9192
		ACQ_ACCT	Others	0.5721	0.36507	0.527	-0.4746	1.6188
			Residuals	1.57168*	0.35224	0.001	0.5540	2.5894
			KAM1	3.98199*	0.35728	0.000	2.9530	5.0110
			IA_GW	0.1877	0.39029	0.989	-0.9192	1.2946
LWrite	Games-Howell	Others	Residuals	-29.93575*	1.70605	0.000	-34.6153	-25.2562
			KAM1	3.54064*	0.96841	0.003	0.8797	6.2016
			IA_GW	-2.4256	2.03373	0.756	-8.0556	3.2044
			ACQ_ACCT	-4.2101	2.97800	0.623	-12.7328	4.3126
		Residuals	Others	29.93575*	1.70605	0.000	25.2562	34.6153
			KAM1	33.47639*	1.43201	0.000	29.5324	37.4204
			IA_GW	27.51015*	2.29105	0.000	21.1955	33.8249
			ACQ_ACCT	25.72563*	3.15932	0.000	16.7724	34.6789
		KAM1	Others	-3.54064*	0.96841	0.003	-6.2016	-0.8797
			Residuals	-33.47639*	1.43201	0.000	-37.4204	-29.5324
			IA_GW	-5.96624*	1.81000	0.012	-11.0181	-0.9144

			ACQ_ACCT	-7.7508	2.82993	0.070	-15.9381	0.4366
		IA_GW	Others	2.4256	2.03373	0.756	-3.2044	8.0556
			Residuals	-27.51015*	2.29105	0.000	-33.8249	-21.1955
			KAM1	5.96624*	1.81000	0.012	0.9144	11.0181
			ACQ_ACCT	-1.7845	3.34765	0.984	-11.2121	7.6430
		ACQ_ACCT	Others	4.2101	2.97800	0.623	-4.3126	12.7328
			Residuals	-25.72563*	3.15932	0.000	-34.6789	-16.7724
			KAM1	7.7508	2.82993	0.070	-0.4366	15.9381
			IA_GW	1.7845	3.34765	0.984	-7.6430	11.2121
DChall	Games-Howell	Others	Residuals	1.29217*	0.11963	0.000	0.9641	1.6203
			KAM1	1.06730*	0.11057	0.000	0.7636	1.3710
			IA_GW	-0.2210	0.22422	0.861	-0.8415	0.3995
			ACQ_ACCT	-0.3523	0.37347	0.878	-1.4233	0.7188
		Residuals	Others	-1.29217*	0.11963	0.000	-1.6203	-0.9641
			KAM1	-.22486*	0.06111	0.003	-0.3927	-0.0571
			IA_GW	-1.51319*	0.20442	0.000	-2.0823	-0.9441
			ACQ_ACCT	-1.64443*	0.36193	0.001	-2.6894	-0.5995
		KAM1	Others	-1.06730*	0.11057	0.000	-1.3710	-0.7636
			Residuals	.22486*	0.06111	0.003	0.0571	0.3927
			IA_GW	-1.28833*	0.19925	0.000	-1.8442	-0.7324

	ACQ_ACCT	-1.41957*	0.35903	0.003	-2.4581	-0.3810
IA_GW	Others	0.2210	0.22422	0.861	-0.3995	0.8415
	Residuals	1.51319*	0.20442	0.000	0.9441	2.0823
	KAM1	1.28833*	0.19925	0.000	0.7324	1.8442
	ACQ_ACCT	-0.1312	0.40860	0.998	-1.2868	1.0243
ACQ_ACCT	Others	0.3523	0.37347	0.878	-0.7188	1.4233
	Residuals	1.64443*	0.36193	0.001	0.5995	2.6894
	KAM1	1.41957*	0.35903	0.003	0.3810	2.4581
	IA_GW	0.1312	0.40860	0.998	-1.0243	1.2868

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
FRE	Regression	118380.024	11	10761.820	15.236	.000[b]
	Residual	402617.357	570	706.346		
	Total	520997.381	581			
FK	Regression	16088.955	11	1462.632	17.940	.000[b]
	Residual	46472.797	570	81.531		
	Total	62561.753	581			
FOG	Regression	16843.163	11	1531.197	17.985	.000[b]
	Residual	48527.918	570	85.137		
	Total	65371.081	581			
SMOG	Regression	2285.959	11	207.814	10.301	.000[b]
	Residual	11499.446	570	20.174		
	Total	13785.405	581			
ARI	Regression	27573.311	11	2506.665	18.761	.000[b]
	Residual	76156.963	570	133.609		
	Total	103730.274	581			
CLiau	Regression	287.089	11	26.099	8.287	.000[b]
	Residual	1795.104	570	3.149		
	Total	2082.192	581			
LWrite	Regression	42264.330	11	3842.212	11.485	.000[b]
	Residual	190697.074	570	334.556		
	Total	232961.404	581			
DChall	Regression	284.553	11	25.868	15.342	.000[b]
	Residual	961.102	570	1.686		
	Total	1245.655	581			

Appendix G- Definition of KAM categories

KAMs	Definitions
ACCT_ST	This includes all changes related to accounting standard where new rules on the standards become effective after a certain period of time.
ACQ_ACCT	This relates to acquisition accounting where business combinations or demerger may occur.
BIOL_AST	This is defined as biological assets.
CAP	This is an accounting treatment, capitalisation on assets.
FIN_INST	This includes issues related with financial instruments where companies may make investment through bonds or shares.
FIN_STRUC	This is related with the financial structure where liability or equity of a company are affected.
GC	This relates to the going concern of a firm.
IA_GW	This includes intangible assets and goodwill, for instance, valuation, revaluation or impairment of assets may occur.
INV	This includes all inventory-related matter.
INV_AST	This relates to investment asset.
IT	This includes IT-related matters which are common given that many sectors are making technological investment.
KAM1	The definition of a KAM.
LIAB	This includes all contingent liabilities or any potential litigation risk that a company may face in the near future. This excludes any liability-financing which is under FIN_STRUC.
Others	This includes all KAMs except KAM1, IA_GW, ACQ_ACCT and RESI.

PPE	This is related to the property, plant and investment (PPE).
RESI	This includes all the non-KAM sections in the audit report, excluding KAM1 and KAMs.
REV	This involves revenue recognition where transactions may be recognised as revenue expenditure or capitalised as part of an asset (falls under CAP)
Tax	This includes all tax-related issues.

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