Fraud Detection by Focusing on Readability of MD&A Disclosure: Evidence from Japan

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I. Introduction

Existing accounting studies focusing on impression management in financial reporting have relied on agency theory (Jensen and Meckling 1976), examining whether managers obfuscate narrative information to deflect investors' perceptions of financial performance (Smith and Taffer 1992b; Curtis 1998; Jones 1998; Clatworty and Jones 2003; Clatworty and Jones 2006; Li 2008; Hirose et al. 2017).

As Merkle-Davis (2007, 20-21) mentioned, management engages in impression management by using strategies, such as reading ease manipulation and thematic manipulation, to obfuscate negative organizational outcomes to improve market participants' perception of a firm's performance. Figure 1 presents the types of manipulation and strategies, procedures, and proxies used for obfuscation of impression management as managerial discretional behavior. If managers face negative organizational outcomes and execute financial statement fraud, they may attempt to implement readability ease manipulation for narrative disclosure to mislead financial statement users. [See Figure 1, pg. 295]

Accounting fraud detection studies that use MD&A as narrative information include those by Churyk et al. (2009), Lee et al. (2013), and Nakashima et al. (2021). Churyk et al. (2009) and Lee et al. (2013) found that restatement firms contain more words, suggesting that managers attempt to make the text difficult to mislead investors. Nakashima et al. (2021) conducted a text analysis—including co-occurrence network analysis—of the Japanese MD&A disclosure and found a lack of logical consistency in the text.

In this study, we use univariate analysis to examine whether there is a difference in reading ease manipulation and semantic manipulation between fraudulent and non-fraudulent firms, using the Japanese Management Discussion and

Analysis of Financial Condition and Results of Operations Disclosure (MD&A). We examine 402 public firms in Japan that published fraudulent financial statements from 2007 to 2017 (Tokyo Shoko Research 2018). Therefore, the purpose of this study is to determine whether there are significant qualitative differences between the narrative information in the annual reports of fraudulent and non-fraudulent firms in our sample by comparing their MD&A disclosures. This study is significant because the results of studies on English-speaking countries may not apply to the Japanese setting, which varies not only in language but also corporate culture and reporting requirements. For example, management styles based on cultural factors, such as selflessness for the sake of a company's survival and secrecy, may have caused the differences among the text-analysis results of English-speaking countries and Japan.

So far, studies have examined the relationship between financial data and fraudulent financial statements (Persons 1995; Summers and Sweeney 1998; Skousen 2009; Song et al. 2016; Nakashima 2021).[1] However, detection methods that use quantitative data are problematic due to the amount of time that elapses until financial data become available, and judgment-based investigation is time-consuming (Churyk et al. 2009, 27). Another problem is that fraud detection is not enough to mitigate financial difficulties (Lee et al. 2013, 35).

In addition, researchers often assume the use of discretionary accruals as attitudes or rationales for detecting fraudulent financial statements. Since managerial intent is unobservable (Dichev 2013, 2), it is difficult for researchers to identify whether the management of accruals based on managerial intent manifests itself through discretionary accruals. Thus, we need to implement text-mining analysis to identify the results that reflect managers' attitudes/rationalizations.

Some studies have suggested that accounting fraud can be detected through MD&A information Churyk et al. 2009; Lee et al. 2013). These fraud-detection procedures nullify judgment-based issues and time-consuming methods to create a detection model. However, studies on English-language firms do not apply to the Japanese setting. In Japan, since

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[1] Some studies have shown an association between financial statement data and fraud. Persons (1995, 45) suggested that associations exist between financial leverage, capital turnover, asset composition, and firm size and the likelihood of fraudulent financial reporting. Summers and Sweeney (1998, 144) documented that inventory is relative to sales, return on assets, and fraud occurrence. Song et al. (2016) found associations between accruals quality, performance, non-financial measures, off-balance sheet activities, conservatism, and market-related incentives as well as between conservatism and accounting fraud. Thus, extant archival studies (Peasons 1995; Summers and Sweeney 1998; Song et al. 2016; Nakashima 2021) have examined whether the detective model that uses financial ratios, can identify fraudulent financial statements by focusing on management's motivations to manage earnings.

Skousen et al. (2009) and Nakashima (2021) conducted empirical studies using the fraud triangle theory and indicated that share ownership and control of the board of directors are associated with the occurrence of fraud, but that the number of independent auditors on the audit committee is negatively related to fraud. Nakashima (2021) documented that financial targets and profitability serve to pressure firms, ineffective governance impels them to seek greater opportunities, and management discretion is used as a form of attitudes/rationalizations—all of which are significantly associated with fraudulent financial statements.

Song et al. (2016, 56–57) documented that the various dimensions of earnings quality, such as discretional accruals, and factors specific to Japan, such as the cross-holding of shares, are useful for detecting accounting fraud.

the accounting system reform in the 2000s, accounting standards have been promulgated for international convergence, and most financial statement figures correspond with those of English-speaking countries. Thus, it is difficult to identify management intentions and cultural features unique to Japanese businesses merely through financial statement figures.

The Financial Services Agency (FSA)[2] requires issuers in Japan to describe the analysis and consideration from the management's point of view, using classifications described in company-wide information and segment information associated with business policies and strategies, as well as other items described in the Annual Securities Report (FSA 2019, 13). As a result, narrative information may reflect management intentions and the unique culture of decision-making in Japan. Therefore, by examining the possibility that fraud can be detected using MD&A disclosures in Japanese, this study contributes to the literature on the relationship between cultural factors and fraud, identifying clues that aid in fraud detection.

The FSC released the Report of the First Subcommittee of the Financial System Council, *Promoting Reform of the Securities Market*, and the issuers of annual financial reports were mandated to disclose MD&A information based on the historical development of MD&A disclosure requests in the U.S. (FSC 2002). Since then, MD&A disclosures have attracted research interest in Japan. Several studies have shown a significant association between MD&A and market valuation of the company's stock in Japan (Noda 2006; Nakano 2010; Ito 2015). Other studies have investigated the determinants of the readability of MD&A disclosures. Using the same approach as Li (2008), Hirose et al. (2017) found an association between the readability of MD&A disclosures and future performance. However, this study did not consider cultural factors that may affect readability.

Our study extends the usability of fraud-detection methods based on narrative information to a non-English setting. As Kumar (2014) mentioned, culture influences the readability of financial reports; thus, we predict that special features of the Japanese language affect the readability of Japanese narrative information. Shibano (2020) observed that organizational culture influences fraud by using text mining on corporate philosophy statements.

Thus, this study investigates whether there is a difference in Japanese narrative disclosures by comparing MD&A disclosures of public firms that have committed accounting fraud with a paired sample. First, we found that there is a significant difference in the grade of the Japanese language and number of predicates per sentence used in reports. As

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[2] The FSA is an administrative agency in Japan that was established as an external agency of the Cabinet Office. For details, see: https://www.fsa.go.jp/common/about/fsainfo.html)

predicted, it is likely that the readability of fraudulent firms' reports is degraded by managerial obfuscation.

Second, we found that the length of the narrative text is not significant. Our prediction is based on the integration of the effects of several theories, including Mito's (1991) theories on Japanese corporate culture. The information content theory's bad news hypothesis (Bushee et al. 2018) and cover-up mentality of corporate culture (Mito 1991) suggest that MD&A disclosures should be shorter for fraudulent firms because the management does not want to provide a lot of information.

Like mentioned above, this study contributes to the literature in several ways. First, it extends the usability of a fraud detection method into a non-English setting by examining Japanese MD&A disclosure. Since the total market capitalization of Japan's stock exchange is the third largest globally, it is important for stakeholders of public firms in Japan to read and analyze their corporate information from a global perspective. However, only a limited number of Japanese firms disclose narrative information in English. Notably, fraudulent firms tend to not publish an English version of their MD&A disclosure. Therefore, it is meaningful for foreign investors to consider the factors that are innately common among MD&A disclosures of fraudulent firms in Japan.

Second, few studies have investigated the readability of MD&A disclosures while focusing on the influence of corporate culture. We predict that Japanese MD&A disclosures reflect specific management behaviors and corporate culture that are different from business cultures in other countries.

The remainder of the article is organized as follows. Section II describes the development of MD&A disclosure in Japan, while Section III reviews the extant literature. Section IV develops the hypotheses and Section V presents the research design. Section VI describes the empirical analyses and results, and Section VII summarizes and concludes the study.

II. MD&A Disclosure in Japan

Detailed regulation of MD&A information was not required until the FSA issued the 2017 revision draft of the *Ordinance on the Disclosure of Corporate Affairs of 1973*.[3] After the agency received comments from the public, the FSA published a revision of the *Ordinance* in 2017, which mandated the detailed disclosure of non-financial information, such as an analysis of financial position, performance, and cash flow conditions. The FSA mandates issuers to enrich the

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[3] This revision mandated that the management policy in Kessan Tanshin must be disclosed in the issuer's annual report and the management policy must be added to the annual report of the Disclosure Working Group Committee of the Financial System Council published in April 2016. https://www.fsa.go.jp/news/29/sonota/20171024/01.pdf

disclosure of information to help investors make decisions by unifying the statements of financial position, performance, and cash flow conditions, and communicating them properly (FSA 2017).

Based on a proposal by the Working Group on Corporate Disclosure of the Financial System Council,[4] the FSA issued the Principles Regarding the Disclosure of Narrative Information in June 2019[5] to encourage issuers to enrich corporate disclosure. Although the Securities and Exchange Commission (SEC) (1998) had previously issued a plain English disclosure regulation requesting issuers to publish company information that investors could understand more easily. However, according to a report by the Working Group, the disclosure of MD&A in Japan does not include sufficient analyses from a management perspective (Working Group 2017, 5). Since accounting estimates and assumptions are directly linked to investment and management decisions, nuanced disclosure must be provided, involving the management (Working Group 2017, 6).

As for MD&A disclosure, the FSA indicates that public firms should provide a concrete and understandable description of the analysis, considering the relevant management results from the management's point of view (FSA 2019, 12–13) under Items Required by Laws and Regulations to disclose management analysis of financial conditions, operating results, and cash flow status. Furthermore, the FSA indicates that MD&A disclosure enables investors to predict future management results more accurately based on the confirmation of the appropriateness of the business policies and strategies formulated by the firm, as well as current trend discussions that the management is aware of (FSA 2019, 13). The FSA indicates that MD&A is not just an explanation of numerical increases and decreases in financial information, it also includes evaluation provided by the management on company-wide or segment information, including current trends that the management is aware of (FSA 2019, 14).

Here, we examine MD&A disclosures in Japan. Following Shuto and Inogata (2009), while most large firms disclosed current analyses, including performance analyses (92.5%), financial position (61.7%), and cash flow (56.5%), only a small percentage reported information such as factors affecting performance (16.7%), current prospects (13.3%),

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[4] The Working Group on Corporate Disclosure proposed that a principle-based guidance, which includes the concept of disclosure, preferred contents for disclosure, and methods to make such efforts, should be created to promote a firm's efforts to enhance sufficient disclosure; this report was released in June 2018 (FSA 2019, 1).
See the details: https://www.fsa.go.jp/en/refer/councils/singie_kinyu/20180927/01.pdf

[5] The FSA suggests that the MD&A involves retrospection from the management's point of view regarding the management results of the term under review—the outcome of operating the business in accordance with the business policies and strategies—and an analysis and examination of the main causes of the changes in management results (FSA 2019, 13). See the provisional translation of the Japanese report.
https://www.fsa.go.jp/en/news/2019/20190606-3/01.pdf

and future prospects (5.8%) are included from a managerial perspective (Shuto and Inogata 2009, 31). Since the objective of MD&A information disclosure is to help investors read and understand the information (SEC 1998), it must include detailed information from a managerial perspective.

III. Literature Review

Readability and Financial Performance

Impression management is defined as a process that is used by people to influence other's perceptions of their beliefs and ideas (Leary and Kowalski 1990). It has been examined by testing the obfuscation hypothesis (Merkl-Davis 2007). When management adopts obfuscation for impression management, they use strategies reading ease manipulation as a form of obfuscation (Merkel-Davis 2007, 21). Smith and Taffler (1992b) found that the readability of the chairman's statement is significantly related to the overall financial performance, and poor readability is associated with poor performance.

Measuring readability and the length of annual reports, Li (2008) documented that although firms with poor performance produce reports that have lower readability, annual reports of firms with positive earnings have higher readability. Hirose et al. (2017, 87) found that firms that reported special income and had greater year-end market capitalization are likely to produce reports that are harder to read. Using the same approach as Li (2008), it has been sound that firms with extensive histories have fewer total characters in their reports. Hirose et al. (2017) concluded that in Japan, MD&A information in annual reports possesses useful value as an analytical object.

Non-Financial Data and Fraud Detection

Churyk et al. (2008) found that there are qualitative differences in the language characteristics under the MD&A sections in the annual reports of firms that are mandated by the SEC to restate their financial statements. They also documented that such reports also embody lower positive emotion and higher MD&A total word count. Lee et al. (2013) built on Churyk et al.'s (2008) approach and used a backward stepwise regression with the following four variables: fewer terms indicating positive emotion, fewer present tense verbs, presence of an increased number of words, and fewer colons.

Ohno (2020) and Nakashima et al. (2021) conducted a text analysis of MD&A information of firms in Japan using KH Coder. The results for fraudulent firms revealed that the terms are plotted far from the origin, suggesting that

managers of fraudulent firm possibly use distinct words as a form of obfuscation to mislead investors.

Fraud, Culture, and Management Style in Japan

The types of accounting fraud in Japan are different from those in English-speaking countries. The characteristics of Japanese management styles are embodied in the characteristics of accounting fraud in Japan. The number of instances of fraud committed by senior management is less than that of company-wide fraud (Nakashima and Ziebart 2019). Management and employees prioritize the company's wellbeing over their own in Japanese public firms that practice the traditional Japanese management style, featuring a seniority system and long-term employment. An entire company orchestrating accounting fraud for the sake of the company's survival is a unique characteristic in the Japanese context. For this reason, information is shared only among the company's people and is not leaked to outsiders. Mitsubishi Motors' company-wide coverage of fraud is a case in point.[6]

IV. Readability of MD&A Disclosures and Hypothesis Development

Textual Difficulty

The SEC (1998) issued a plain English disclosure regulation asking issuers to help investors by making company information more readable. Levitt (1998, 3) asserted that if information is disclosed in plain English, then it can be read and understood easily. Some analyses of narrative information have focused on information content theory and managerial obfuscation. Firms that perform poorly often attempt to hide their results with obfuscated text (Jones 1988; Subramanian et al. 1993; Courtis 2004).

Li (2008) documented how managerial obfuscation predicts a negative relationship between a firm's current performance and the readability of its annual reports. The findings of this study support the "incomplete revelation hypothesis"[7] and suggest that firm managers with poor performance may opportunistically manipulate the readability of annual reports to hide adverse information from investors (Li 2008, 244).

Using the same approach as Li (2008), Hirose et al. (2017, 96) indicated that firms with a large market capitalization and firms that present extraordinary profit and loss items produce complexly written reports, while firms with a substantial

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[6] As for the 2004 vehicle defect scandal, see Tanikawa (2000). https://www.nytimes.com/2000/08/23/business/mitsubishi-admits-to-broad-cover-up-of-auto-defects.html

[7] This hypothesis, proposed by Bloomfield (2002), means that information that are more costly to exact from public data, it is less completely revealed in market prices.

history since their listing produce relative simpler reports.

Using the agency theory, Kumar (2014) indicated that agents and principals recognize that reducing information asymmetry by providing accounting disclosures can be useful. However, Hope et al. (2008) argued that the culture of secrecy may hinder the disclosure of information even by managers who are inclined to share it in order to reduce information asymmetry. Therefore, Kumar (2014, 6) argued that firms that want to reduce information asymmetry produce more readable annual reports. However, firms in countries where the culture of secrecy is prevalent, try to obscure information by burying it in complex language.

Following Hofstede (1980), Kumar (2014, 12) indicated that the culture score for secrecy in Japan is one hundred. Further, listed Asian firms whose domestic culture is more secretive, produce less readable financial statements (Kumar 2014, 10). Gray (1988, 8) defined secrecy versus transparency as a preference for confidentiality and restricting the disclosure of information about the business only to those who are closely involved with its management and financing. This is different from transparency, which is an open and publicly accountable approach. Hope et al. (2008, 362–363) constructed their measure of secrecy as the sum of Uncertainty Avoidance and Power Distance scores, minus the Individualism score. They found that firms in more secretive cultures are less likely to hire Big Four auditors (Hope et al. 2008, 371).

Hope et al. (2008, 359) suggested that Uncertainty Avoidance and Power Distance are negatively related to disclosure. Japan's index scores of Power Distance and Uncertainty Avoidance are 54 and 92, respectively (Hofstede 2001, 127, 151).[8] Secrecy is calculated by adding Power Distance and Uncertainty Avoidance and subtracting Individualism and Collectivism, which equals one hundred (Kumar 2014, 12). Devroux (2003, 101) suggested that management follows a top-down model organized under strict hierarchical lines. Further, Kumer (2014, 5) suggested that when Power Distance is large, managers are expected to hide and not disclose information to preserve power inequalities.

Therefore, based on the Japanese culture's tendency toward Uncertainty Avoidance, Power Distance, and secrecy, we predict that Japanese managers are incentivized to construe narrative information with complicated explanations that make reports difficult to read. Accordingly, we propose the following hypothesis.

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[8] Following Hofstede (2001, 83, 145–146), Power Distance is the degree of inequality of power between a less powerful Individual (I) and a more powerful Other (O), wherein I and O belong to the same social system. Uncertainty Avoidance signifies the degree to which members of a society attempt to cope with anxiety.

H1: In Japan, the textual difficulty level of MD&A disclosure of fraudulent firms is higher than that of non-fraudulent firms. [See Figure 2, pg. 295]

Length

The determinants of variable length are supported by the following theories and previous studies. Li (2008) found that the length of the MD&A disclosure of firms with lower earnings is longer. Using the same approach as Li (2008), Hirose et al. (2017) found that firms with extensive histories have fewer total characters in their reports.

Churyk et al. (2009) and Lee et al. (2013) documented that reports of firms with restated earnings have a higher total word count. We can extend the findings of these studies to the Japanese setting. Further, we can apply Japanese management and decision-making theory to understand the readability of narrative information. Managers of fraudulent firms find it difficult to justify their unethical behavior. This may trigger them to make more excuses in disclosures, in an attempt to defend themselves.

Moreover, fraudulent firms may shorten the length of their documents because of bad news. In addition, Japanese firms tends to have a bias toward concealment, suggesting that the score for secrecy in Japanese society is high. This influences the production of shorter content in order to hide fraud. Based on the Japanese mentality, directors and managers try to conceal fraud-related matters to protect their firm (Mito, 1991). Thus, we set up the following unidirectional hypothesis:

H2: The length of MD&A disclosures of fraudulent firms is shorter than that of non-fraudulent firms. [See Figure 3, pg. 296]

V. Research Design

Fraudulent Firms Selection

We selected a fraudulent firm sample from the Tokyo Shoko Research's (TSR)[9] *Investigation Report* (Tokyo Shoko Research 2018). According to the report 402 public firms in Japan published fraudulent financial statements from 2007 to 2017.[10] This sample revealed that inappropriate accounting affected prior financial statements issued from April

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[9] Tokyo Shoko Research is a private credit research agency in Japan. It was established in 1892. See http://www.tsr-net.co.jp/en/outline.html
[10] Nakashima and Ziebart (2019) studied the innate characteristics of fraudulent firms by using fraudulent financial statements from April 2007 to

2007 to March 2017 in the *Investigation Report* or would affect their future annual reports (Tokyo Shoko Research 2018).

Figure 3 depicts the occurrences of fraud from April 2007 to March 2017. These are divided into three groups, showing that the parent companies' management committed a greater amount of fraud than the subsidiaries. The amount of accounting fraud gradually increased from 2012 to 2017. This is because many public firms in Japan established a "public interest whistleblowing system" in accordance with the Whistle-blower Protection Act of 2006.[11] It is likely that there was a dramatic increase in 2017 because a notorious instance of fraud at Toshiba drove both internal and external auditors to put more efforts into their external auditing. Additionally, it is likely that the 2015 amendment of the Company Act enhanced corporate governance system in public firms and prompted internal auditors to be more vigilant in detecting fraud (Nakashima and Ziebart 2020). [See Figure 3, pg. 296]

The TSR data, which include 402 fraudulent firms, categorizes the types of fraud into company-wide fraud led by management, management-committed fraud for their private gain, subsidiary-related fraud, and employee-related fraud. We define company-wide fraud by management as financial statement fraud, in which management and employees work together for their company's survival. Management committed fraud for their private gain is defined as asset misappropriation, bribery, and corruption by management. Subsidiary-related fraud is defined as financial statement fraud through subsidiary managers' leadership and asset appropriation, bribery, and corruption. Employee-related fraud is defined as asset appropriation by employees. Since company-wide fraud led by management signifies manipulation through financial statement fundamentals, which reflects in their MD&A disclosure, we use MD&A disclosures to detect fraud.

Of the 402 fraudulent firms, we excluded management-committed fraud for private gain, subsidiary-related fraud, and employee-related fraud. Therefore, we used a sample comprising 195 fraudulent firms that committed company-wide fraud.[12] Of the 195 fraudulent firms, two financial institutions, 55 firms without asset information, and 10 outliers were excluded from the analysis. The final sample comprises 128 fraudulent firms. Table 1 reports the sample selection of the 128 fraudulent firms analyzed in this study. [See Table 1, pg. 296]

Figure 4 presents the managerial fraud trend, depicting an increase in the reported instances of management fraud since 2014. [See Figure 4, pg. 297]

A Paired Sample

To develop a paired sample of fraudulent firms, we coupled them based on industry and size (total assets). Table 2 presents the sample statistics of the means and medians of both fraudulent and non-fraudulent firms. The results of the *t*-tests showed insignificant differences between the two samples. [See Table 2, pg. 298]

March 2015 based on the Investigation Report (Tokyo Shoko Research 2016).

[11] The Act prescribes that its purpose is to protect whistle-blowers by preventing their dismissal on the grounds of whistle-blowing and determine the measures that business operators and administrative organs can take regarding whistle-blowing, as well as promote compliance with the laws and regulations concerning the protection of the lives, bodies, properties, and other interests of citizens, thereby contributing to the stabilization of the general welfare of citizens and to the sound development of socioeconomic interests (Consumer Affairs Agency 2004, Article 1).

[12] The groups concerned include "firm," "firm/subsidiary," "firm and subsidiary," "firm and a certified public accountant," "former executives," "former executives and others," "former representative of the directors," "former representative of the directors and others," "CEO/executive directors," "directors," "directors and an employee," "employee/full-time internal auditors," "senior managing directors," "former representative of the directors, previous representative of directors," "representative of directors, representative of directors and others," "directors, former executives, former executives and others," and "firm and subsidiary."

Readability

We use the two variables of *GRADE* and *LENGTH* as proxies for readability in this analysis. Li (2008) employed the Fog Index and number of words to determine the difficulty level of the sentence and length, respectively. Hirose et al. (2017) employed *GRADE* and number of characters to determine the difficulty level of the sentence and length, respectively. Accordingly, in this study, we analyzed the difficulty level of the sentences and the lengths of MD&A disclosures.

Grade

Following Shibazaki and Tamaoka's (2010) approach we measure the grade of the Japanese language to determine the difficulty level of the sentence. *GRADE* is the percentage of *hiragana*[13] in the entire text. It refers to the so-called "academic year" of the language in elementary, middle, and high schools in Japan and denotes the level of language that a student should learn during each year. According to Shibazaki and Tamaoka (2010), while the percentage of *hiragana* decreases as the *grade* increases, the number of predicates increases. Shibazaki and Tamaoka (2010) suggested that Japanese is a unique language because it can include four types of characters in a single sentence, suggesting that the percentage of each type of character determines the sentence's difficulty level. In addition, they use the number of predicates in a sentence to determine the difficulty level, as a sentence with more than one predicate is more difficult than a sentence with only one predicate.

$GRADE_t = -0.145X_1 + 0.58X_2 + 14.016$

X_1: The percentage of *hiragana* in the entire text.

X_2: The number of predicates in a sentence.

In Japanese, there is one subject–predicate pair in a sentence. The higher the number of predicates per sentence, the harder it is to read the content; therefore, *PREDICATE_RATIO* can be used as another variable to measure the Japanese language difficulty level.

Length

To measure length as a determinant of readability, we counted the total number of characters included in the MD&A disclosure. Following Hirose (2017), we define length as follows and measure the total number of characters accordingly:[14]

$LENGTH_t = \log (N\ Characters)$

Readability Variables of Explained Fraud

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[13] *Hiragana* is a constituent of the Japanese writing system, along with the Chinese characters called *kanji* as well as *katakana* for loan words. It is also a syllabary used in Japanese phonetic notation.

[14] Li (2008) calculated the number of words and claimed that it is convenient to use the number of words to indicate the complexity of the disclosure. In contrast, the number of words possibly correlate with the entire volume of the disclosure.

GRADE	The percentage of *hiragana* in the entire text
PREDICATE_RATIO	The total number of predicates per sentence
LENGTH	Log of the number of total characters

Analysis

We analyzed the content of both the MD&A sections. Then, we used univariate analysis to determine whether there was a difference in language characteristics between the fraudulent and paired samples. A one-tailed *t*-test between the fraudulent and non-fraudulent samples was employed to test the hypotheses. We compared the two variables using *t*-tests and Wilcoxon rank-sum tests for differences or directional hypotheses.

VI. Empirical Results

Univariate Analysis Used to Test H1

Table 3 presents the descriptive statistics for fraudulent and non-fraudulent firms, along with the results of the paired *t*-tests.

There was a significant difference in *GRADE* between fraudulent firms and paired samples (one-tailed *t*-test, $p < 0.1$). We found that fraudulent firms had a greater average and median *GRADE* (10.70 and 10.64, respectively) than non-fraudulent firms (10.56 and 10.54%, respectively). Additionally, there was a significant difference in *PREDICATE_RATIO* between fraudulent firms and the paired sample (one-tailed *t*-test, $p < 0.1$). Additionally, fraudulent firms had a greater average and median of *PREDICATE_RATIO* (2.48 and 2.49, respectively) than non-fraudulent firms (2.34 and 2.31, respectively). A higher ratio of predicates per sentence in fraudulent firms indicates that their content is harder to read.

This result is consistent with that of Churyk et al. (2009, 35). Churyk et al. (2009, 35) demonstrated that the mean of lexical diversity levels of restating firms and their paired firms are 21.47 and 23.51%, respectively. This supports Hypothesis 1. The purpose of this study was to determine whether there are significant qualitative differences between fraudulent and non-fraudulent firms in the narrative information of the MD&A section of the annual reports in our sample. We documented significant differences in the *GRADE* and *PREDICATE_RATIO* of the narrative information within the MD&A sections between the two types of firms. [See Table 3, pg. 298]

Univariate Analysis Used to Test H2

Table 4 reveals that fraudulent firms had smaller average and median values of *LENGTH* (2,108.35 and 1,816.50, respectively) than non-fraudulent firms (2,100.84 and 1,816.00, respectively). There were no significant differences in *LENGTH* between fraudulent and non-fraudulent firms. This result is inconsistent with Churyk et al. (2009, 35) and Lee et al. (2013), who documented that narrative disclosures of fraudulent firms are characterized by a higher word count than those of non-fraudulent firms.[15]

No significant differences exist between the values of *LENGTH* of fraudulent and non-fraudulent firms. Therefore, the evidence in this study does not support Hypothesis 2. Hirose et al. (2016, 99) indicated that the disclosure of firms with many segments possesses more characters than that of firms with an extensive history.

Here, we consider why our results do not support Hypothesis 2. Information content was measured using two proxies: complex words and longer sentences. Complex words are commonly used in financial contexts to convey informative technical details (Bushee et al. 2018). Longer sentences can convey more information than short sentences

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[15] Churyk et al. (2009, 35) showed that the total words of restating firms and matched firms were 5,386 and 4,553, respectively, and that there was a significant difference in total words. Lee et al. (2013, 53) stated that the mean (median) of the total number of words used in the reports of fraud firms and non-fraud firms in the original sample were 5,703 (4,211) and 5,028 (3936) respectively.

because they define the relationships among various topics (Bushee et al. 2018). Bushee et al. (2018, 1) found that the information component of linguistic complexity is associated with lower information asymmetry, along with an increase in linguistic complexity and transparency when used by managers of firms in complex business environments. Therefore, the narrative information of fraudulent firms may be shorter because it conveys bad news. In addition, the cover-up mentality is quite prevalent in the Japanese corporate culture. Based on this mentality, directors and managers try to conceal fraud-related matters to protect their firms (Mito 1991).

Taken together, there are no significant differences in the narrative information of fraudulent firms. This is because of the shorter sentences conveying bad news, cover-up mentality, and longer sentences that includes many excuses, longer discussions of board meetings, and managerial obfuscation.

VII. Conclusions

This study investigates whether there is a difference in the textual characteristics of Japanese managers' narrative disclosures by comparing the MD&A disclosures of firms that have committed accounting fraud with those that have not, using a paired sample. Our study has two main findings.

First, we found that there is a significant difference in the difficulty level of the Japanese language, determined by *GRADE* and number of predicates per sentence. This suggests that managers of fraudulent firms engage in making narrative information more difficult to read to confuse stakeholders and conceal fraud through managerial obfuscation. As we predicted, it is likely that the readability of reports produced by fraudulent firms is degraded by managerial obfuscation.

Second, our findings suggest that the length of the narrative text is not significant. Following the bad news hypothesis of the information content theory (Bushee et al. 2018) and cover-up mentality of corporate culture (Mito, 1991), MD&A disclosures are shorter because management at fraudulent firms does not want to provide a lot of information about the firm. The lack of significance in the length of MD&A narratives may vary depending on the firm's industry.

In this study, we used univariate analysis to determine the differences between the two pairs. However, our analysis did not determine the reason behind no significant differences in length. Conjectured theories may not explain length either. A pathway for future research would be to conduct a multivariate analysis to draw inferences from different theories in order to test the Japanese management system by comparing fraudulent and non-fraudulent companies' MD&A disclosures across different cultural contexts.

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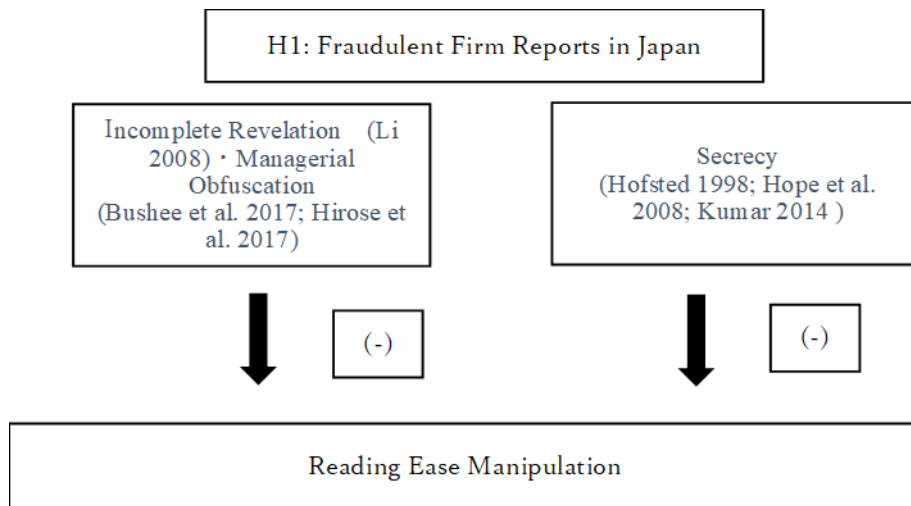Song. M., N. Oshiro, and A. Shuto. 2016. Predicting accounting fraud: Evidence from Japan. *The* Japanese Accounting Review 6: 17–63.

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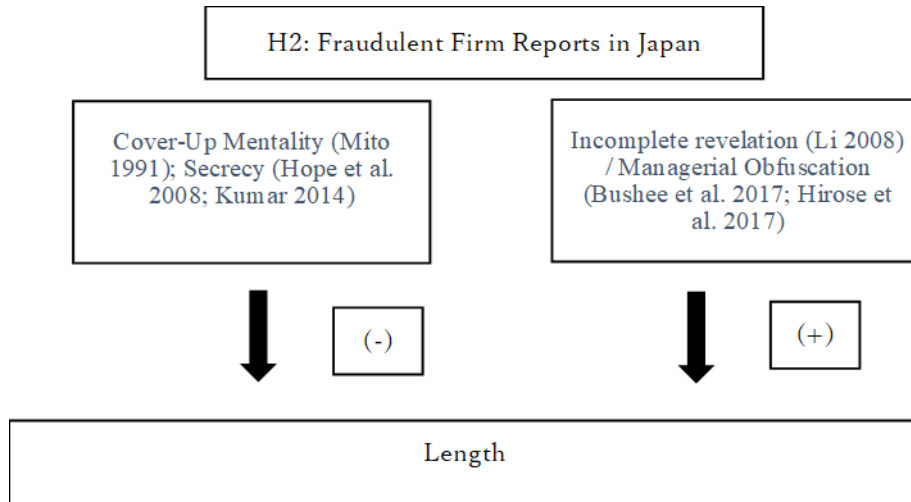
Figure 1: Framework of Impression Management

	Managerial Discretionary Behavior	
	IMPRESSION MANAGEMENT	

Type of manipulation	Manipulation of Disclosure of Information	Manipulation of Presentation of Information
Types of Strategies	Obfuscation of Content	Obfuscation of Form
Procedures	Thematic Manipulation	Reading Ease Manipulation
Proxy of obfuscation	Positive/Negative Words=Tone / Secrecy	Textual Complexity / Distinctive Words
Focus of analysis	Lack of Theoretical Consistency / Nakashima et al. (2021)	Syntactical Features / This study — Jaccard Coefficients/Distance from 0 / Nakashima (2021)

Note: This figure is prepared by author following Merkle-Davis (2013, Figure 2.3)

Figure 2: Hypothesis 1

H1: Fraudulent Firm Reports in Japan

Incomplete Revelation (Li 2008) · Managerial Obfuscation (Bushee et al. 2017; Hirose et al. 2017)	Secrecy (Hofsted 1998; Hope et al. 2008; Kumar 2014)
(-)	(-)

Reading Ease Manipulation

This figure shows a graphics representation of the variables in fraudulent firm managers that impact length and grade based on Li (2008), and Bushee et al. (2017, Figure 1). Predicted signs appear in parentheses.

Figure 3:Hypothesis2

H2: Fraudulent Firm Reports in Japan

Cover-Up Mentality (Mito 1991); Secrecy (Hope et al. 2008; Kumar 2014)

Incomplete revelation (Li 2008) / Managerial Obfuscation (Bushee et al. 2017; Hirose et al. 2017)

(-)

(+)

Length

This figure shows a graphics representation of the variables in fraudulent firm managers that impact length based on Mito (1991) and Bushee et al. (2017, Figure 1). Predicted signs appear in parentheses.

TABLE 1
Sample Selection

Selection Criteria	Number of Observations
Fraudulent firms from Tokyo Shoko Research's (TSR) Investigation Report (Tokyo Shoko Research 2018), that published fraudulent financial statements from 2007 to 2017 and that include fraud into company-wide fraud led by management, management-committed fraud for his or her private gain, subsidiary-related fraud, and employee-related fraud.	402
The firms that commit company-wide fraud led by management	195
Less: the financial institutions	(2)
Less: the firms without total assets infortmaion nor MD&A disclosure	(55)
The firms that we analyzed as fraudulent firms	138
Outliers	(10)
The firms without outliers	128

* 195 fraudulent firms include company-wide fraud led by management, and management-committed fraud for his or her private gain, subsidiary-related fraud, and employee-related fraud.are removed from 195 fraudulent firms.
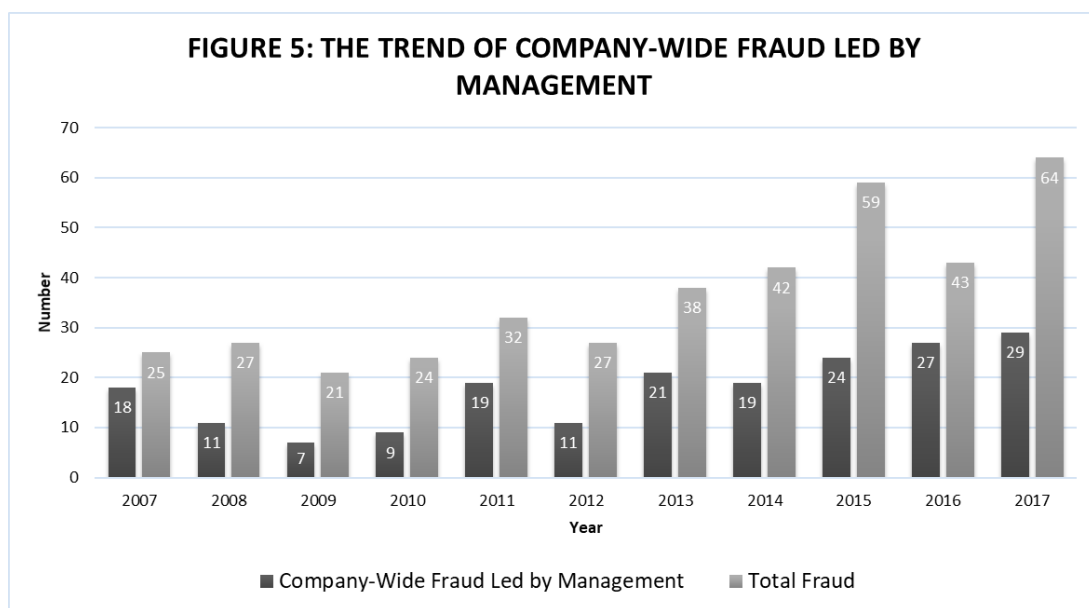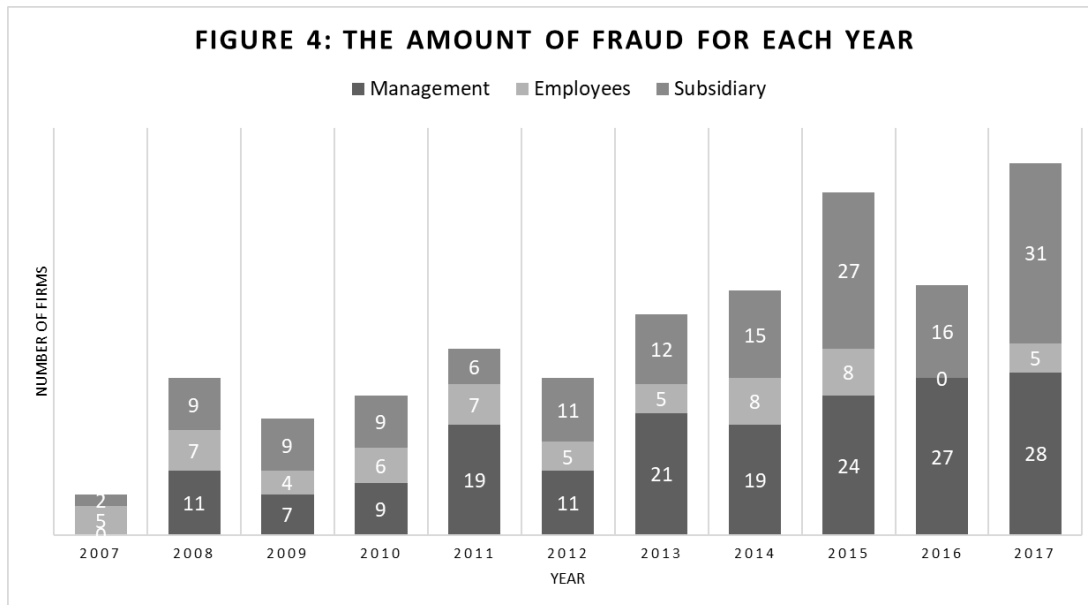
FIGURE 4: THE AMOUNT OF FRAUD FOR EACH YEAR

■ Management ■ Employees ■ Subsidiary

Year	Management	Employees	Subsidiary
2007		5	2
2008	11	7	9
2009	7	4	9
2010	9	6	9
2011	19	7	6
2012	11	5	11
2013	21	5	12
2014	19	8	15
2015	24	8	27
2016	27	0	16
2017	28	5	31

NUMBER OF FIRMS / YEAR

FIGURE 5: THE TREND OF COMPANY-WIDE FRAUD LED BY MANAGEMENT

Year	Company-Wide Fraud Led by Management	Total Fraud
2007	18	25
2008	11	27
2009	7	21
2010	9	24
2011	19	32
2012	11	27
2013	21	38
2014	19	42
2015	24	59
2016	27	43
2017	29	64

Number / Year

■ Company-Wide Fraud Led by Management   ■ Total Fraud

TABLE 2

Mean and Median of Each Sample

Factor	Fraud (138 firms)	Non-Fraud (138firms)
	Mean	Mean
	Median	Median
Total	511,312	446,804
Assets	48,604	43,172

This table is a comparison in total assets between fraud firms and nonfraud firms as paired sample. "We chose pairs based on following total assets. *Total Assets* is defined as total assets as of the closing date in each firm's balance sheet".

TABLE 3
The Results of Fraudulent Firms (128firms) and non-fraudulent firms (128firms)

Variables	Direction of Hypothesis	fraud Means Median (SD)	non-fraud Means Median (SD)	t-Statics z-Value	One-Tailed p-Value	
LENGTH	>	2,108.35 1,816.50 (1,117.84)	2,100.84 1,816.00 (1,364.63)	0.050 0.226	0.480 0.821	
GRADE	>	10.70 10.64 (0.50)	10.56 10.54 (0.56)	2.046 2.069	0.021 0.039	** **
TEXT_TIMES	?	32.26 29.00 (15.54)	33.63 29.00 (22.36)	-0.602 -0.205	0.726 0.838	
'URSIVE KANA_RATI(	?	32.92 33.47 (3.62)	33.29 33.61 (3.33)	-0.834 -0.930	0.800 0.352	
PREDICATE_RATIO	?	2.48 2.49 (0.64)	2.34 2.31 (0.63)	1.858 2.044	0.033 0.041	** **

*: Significant at 10% level, **, Significant at 5% level, ***, Significant at 1% level
Each variable is defined below:
GRADE — Difficulty level of the Japanese language used
TEXT_TIMES — The number of total sentences in the MD&A disclosure
CURSIVE KANA_RATIO — The rate of the cursive kana characters per each sentence
PREDICATE_RATIO — The number of total predicates per one sentence
LENGTH — Log of the total number of characters