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Determinants of the Readability of Board of Directors' Report: An Applied Study on Firms Listed on the Egyptian Stock Exchange

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Abstract

This study aims to examine the readability level of board of directors' reports for firms listed on the Egyptian stock exchange. Further, it also aims to investigate the effect of profitability, corporate risk, earnings management and firm size on the readability of the board of directors' reports. While controlling for firm age, audit quality, financial loss, board size, board independence, and CEO duality. The readability of board of directors' reports refers to the ability of stakeholders to comprehend firms' valuation-relevant information because of writing style. The study used the Lasbarhets index (LIX) to measure the readability of the board of directors' reports. The research sample consists of 33 non-financial firms listed in the Egyptian stock exchange from the period 2015 to 2022, resulting in a final sample of 264 firm-year observations. The study provided evidence that the readability of the board of directors' report ranges from difficult to very difficult to read. Profitability and firm size have a positive relationship with the readability of the board of directors' reports; earnings management has a negative relationship with the readability of the board of directors' reports. On the other hand, the study failed to provide any evidence for the existence of a relationship between corporate risk and the readability of the board of directors' reports.

KeyWords: Readability, Board of Directors' Report, Profitability, Corporate risk, Earnings management, Firm size.

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محددات قابلية قراءة تقرير مجلس الإدارة: دراسة تطبيقية على الشركات المدرجة بالبورصة المصرية

ملخص البحث

يهدف هذا البحث الي تحديد مدي قابلية قراءة تقارير مجلس الإدارة للشركات المدرجة في البورصة المصرية. بالإضافة الي فحص العلاقة بين الربحية، مخاطر الشركات، إدارة الارباح، حجم الشركة، وقابلية قراءة تقارير مجلس الإدارة. في حين استخدام عمر الشركة، جودة المراجعة، الخسارة المالية، حجم مجلس الإدارة، استقلالية مجلس الإدارة، الازدواجية بين منصب المدير التنفيذي ورئيس مجلس الإدارة كمتغيرات رقابية. قابلية قراءة تقارير مجلس الإدارة، تشير الي مدي قدرة اصحاب المصلحة على فهم المعلومات ذات الصلة بالشركة نتيجة لأسلوب الكتابة. استخدمت الدراسة lasbarhets index (LIX)لقياس قابلية تقارير مجلس الإدارة للقراءة. تتكون عينة البحث من 33 شركة غير مالية مدرجة في البورصة المصرية من عام 2015 الي عام 2022، مما نتج الي الحصول على 264 مشاهدة نهائية. قدمت الدراسة أدلة ان تقيم تقارير مجلس الإدارة يتراوح بين صعب القراءة الي صعب جدا. كما أنها وجدت أن الربحية وحجم الشركة لها علاقة إيجابية مع قابلية قراءة تقارير مجلس الإدارة؛ في حين أن إدارة الأرباح لها علاقة سلبية مع قابلية قراءة تقارير مجلس الإدارة. من ناحية أخرى، فشلت الدراسة في تقديم أي دليل على وجود علاقة بين مخاطر الشركات وقابلية قراءة تقارير مجلس الإدارة.

الكلمات المفتاحية: قابلية القراءة، تقرير مجلس الإدارة، الربحية، مخاطر الشركات، إدارة الأرباح، حجم الشركة.

1- Introduction

Narrative disclosures are the all-contextual information that accompanies the financial statements, regardless of their name, such as audit reports, chairman's statements, managing director's/CEO messages, management discussion and analysis (MD&A), corporate social responsibility report, etc. (Rowbottom & Lymer 2010). They represent 80% of the annual report; hence, they have a crucial role in conveying the full image of firms to stakeholders (Lo et al., 2017). Narrative disclosures emerged because of the traditional financial statements' failure to plug the information gap between managers and stakeholders (Arayesh 2017). They are indispensable for capital market efficiency because they provide stakeholders with incremental information about their firms (Soepriyanto 2021). Accordingly, narrative disclosures could help in reducing information asymmetry, agency costs, and improving stakeholders' ability to predict the future performance of firms (Chakraborty & Bhattacharjee 2020; Tu et al. 2023).

Although narrative disclosures have a significant informative function, they have a strategic weakness since they are subject to the managers' judgment and are not subject to any regulations guiding or audited by auditors (Neu et al., 1998; Brennan and Merkle-Davies, 2013); hence, opportunistic managers could exploit narrative disclosures to conceal bad news and communicate distorted information about their firms (Gianfelici et al., 2021).

Arayesh (2017); Dadashi & Norouzi (2020); and Du & Yu (2021) argue that managers probably try to manipulate narrative disclosures in the same way as they could manipulate financial statements. Thoms et al. (2020) believe that narrative disclosures don't perform their mission effectively since they are very complex and written in incomprehensible language.

Dempsey et al. (2012); Ajina et al. (2016); Le Maux & Smaili (2020); Nguyen (2020); Nakashima et al. (2022) argued that managers exploit the readability of narrative disclosures to gain personal benefit and conceal bad news, weak performance, opportunistic practices such as earnings management, or illegal practices such as fraudulent financial reporting.

Loughran & McDonald (2014) defined the readability of narrative disclosures as the ability of stakeholders to realize firms' valuation-relevant information. It's used as a tool to appraise the extent of communication effectiveness between managers and stakeholders (Nabilah et al., 2013).

Simple and clear narrative disclosures are a critical requirement since they reduce the brunt of the agency problem between managers and stakeholders, enhance informational efficiency, and improve financial reporting quality (Hesarzadeh & Rajabalizadeh 2019; Arianpoor & Sahoor, 2022). Investors consider the readability of narrative disclosures as an indicator of managers' integrity (Brochet et al., 2016). Clear and concise narrative disclosures prompt investors to trade significantly firms' stocks, thereby improve stock liquidity, especially in emerging markets that are commonly known for complex disclosures and wide information asymmetry (Aldoseri & Melegy, 2023).

Bushee et al. (2018) argued that there are two different objectives for complex narrative disclosures: information and obfuscation, both of which affect information asymmetry differently. The aim of obfuscation is to conceal poor performance from stakeholders. While the purpose of information is to provide more extensive disclosures for stakeholders to enhance comprehension through jargon and wordy disclosures, obfuscation raises the information gap between stakeholders and managers, contrary to information that aims to reduce the information asymmetry.

Ponce et al. (2023) found that managers intentionally raise the complexity of the chairman's statements as the most readable section in the United Kingdom, Spain, and Jordan to obfuscate low financial performance and earnings management practices. This result is consistent with Ferri et al. (2023), who examined determinants of financial risk disclosure readability for banks listed in the five largest European countries: the United Kingdom, Germany, France, Italy, and Spain. Their study found a negative relationship between earnings management practices and readability and a positive relationship between profitability and readability.

Xu et al. (2022) argued that corporate risk is one of the financial performance indicators that has a negative impact on the readability of narrative disclosures. Kim and Sun (2023) found that firms with high corporate risk have low readability narrative disclosures. These results are consistent with Ben-Amar & Belgacem (2018), who noticed that the length of the management discussion and analysis section of Canadian firms is associated with high corporate risk.

In addition, Dempsey et al. (2012) provided evidence that firm size positively affects the readability of narrative disclosures. This result is consistent with Courtis (1995), who found that large profitable firms have more readable narrative disclosures than others, and Ginesti et al. (2018), who found a positive relationship between firm size and the readability of the narrative disclosures of Italian firms.

The current study focuses on board of directors' report to evaluate the readability level of narrative disclosures in Egypt, and how profitability, corporate risk, earnings management, and firm size affect the readability of non-financial firms listed on the Egyptian stock exchange.

This study contributes to the accounting literature by examining the readability level and the determinants of narrative disclosures for non-financial firms listed in a large developing country such as Egypt. Determining management's writing style will help stakeholders perceive underlying incentives for managers' actions and realize firms' historical events, current status, and future prospects correctly.

2- Research Problem

Despite the prominent role of narrative disclosures in enhancing communication between managers and stakeholders, Allini et al. (2017), Du Toit (2017); Ayuningtyas & Harymawan (2021), and Noh (2021) found that narrative disclosures are difficult to read and their writing style inhibits stakeholders' ability to extract firms' valuation relevant information. (Ajina et al. 2016; De Souza et al. 2019; Jayasree & Shette 2021; Mnif & Kchaou 2021; Goncalves et al. 2022) argue that opportunistic managers intentionally release complex narrative disclosures to manage stakeholders' impressions and obfuscate low financial performance and

earning management practices. While Roiston & Harymawan (2020) and Pratama & Narsa (2022) associate low-readable narrative disclosures with firm size, Mihaela & Christos (2019) argue that the complex business operations of large firms negatively affect the readability of narrative disclosures. In Egypt, few studies evaluated the writing style of narrative disclosures and defined various determinants that affect the readability, such as Ali (2021), who examined the determinants of the readability of financial statements' footnotes for Egyptian firms. This research seeks to plug the existing literature gap by evaluating the BOD report readability level for non-financial firms that are listed on the Egyptian stock exchange and investigating the relationship between corporate profitability, corporate risk, earnings management, firm size, and the readability of the BOD report for these firms.

3- Research objectives

The purpose of this research to examine the readability level of board of directors' report and its determinants for 33 non-financial firm listed on the Egyptian Stock Exchange from 2015 to 2022.

The primary five main objectives of this research are as follows:

- To examine readability level of board of directors' reports.
- To examine the relationship between profitability and readability of board of directors' report.
- To examine the relationship between corporate risk and readability of board of directors' report.
- To examine the relationship between earnings management and readability of board of directors' report.
- To examine the relationship between firm size and readability of board of directors' report.

4- Research Importance

The research holds value due to its numerous academic and practical contributions.

Academically, few studies in the Middle East examined the readability of narrative disclosures and their determinants. In addition to that, the existing studies applied to the Middle East investigated only narrative disclosures written in English, except for Alsuwaah (2019); Algendy (2020); Ali (2021); and Hussien (2021), who examined the readability of financial statements' footnotes for Egyptian firms written in Arabic using the length of narrative disclosures. While Ezat (2019) examined the readability of the board of directors' report for Egyptian firms listed on EGX 100 written in Arabic language from 2013 to 2015 using the LIX index, to the best of the researcher's knowledge. The findings of this research contribute to the literature by examining the readability level of board of directors' reports written in Arabic language using the LIX index for such an important emerging country as Egypt from the year 2015 to 2022 and investigating the relationship between corporate profitability, corporate risk, earnings management, firm size, and readability of board of directors' report.

Practically, the study provides evidence that the majority of non-financial firms listed on the Egyptian stock exchange don't communicate effectively with their stakeholders. Determining management's writing style will help stakeholders perceive the underlying incentives of management's actions and realize companies' historical events, current status, and future prospects correctly. The findings suggest that the board of directors' report is used as a tool to manage the impressions of the stakeholders instead of providing incremental information about the firm.

5- Research Organization

The remainder of the study is structured as follows: the next sections present

5.1 Theoretical framework.

5.2 Literature review and hypotheses development.

5.3 Research Methodology

5.4 Results and Discussion

5.5 Hypotheses Discussion

5.6 conclusion, limitations, and recommendations.

5-1 Theoretical Framework

Both agency theory and signaling theory explain managers' incentives writing style in different ways. Based on agency theory, shareholders (principals) delegate some decision-making authority to managers (agents) to manage the firm in the interest of shareholders. The separation between ownership and management leads to conflict of interest and information asymmetry between managers and shareholders resulting in an agency conflict (Jensen & Meckling, 1976).

Managers write various narrative disclosures to provide shareholders with incremental information about firms to reduce the intensity of the agency problem and aid shareholders in making informed decisions regarding their future investments. Nevertheless, Nabilah et al. (2013) found that managers aren't neutral in preparing narrative disclosures; they conceal bad performance through low-transparency narrative disclosures.

Mirza et al. (2018) found that managers take advantage of information asymmetry and misrepresent narrative disclosures to influence stakeholders' impressions. EDT et al (2018) explained that as agents to principals, managers are motivated to prepare easy to read narrative disclosures when these disclosures convey only a good performance, but if performance is bad, managers use complex sentences, difficult words, and long explanations, in order to deteriorate the readability level of disclosures and obfuscate the truth. Managers increase information asymmetry by opportunistically using the readability of narrative disclosures to blur bad information and illuminate good information (Dalwai et al., 2021).

The incomplete revelation hypothesis (IRH), or the commonly known "obfuscation hypothesis", derived from agency theory, posits that information that is costly to extract from available public data is less completely reflected in current

stock prices. Based on IRH, managers deliberately write complex narrative disclosures to reduce investors' ability to perceive information that could negatively affect stock prices. However, IRH emphasized that all management efforts to conceal bad news and keep stock prices from declining are temporary; they slow market reactions toward bad news, but they don't forbid it (Bloomfield 2002).

In 1973, Michael Spence introduced the signaling theory for the first time to explain labor market behavior. Spence indicated that there is an information asymmetry between employers and job applicants, as employers don't know the applicants well, thus applicants signal their quality through their qualifications and skills. Signaling theory is concerned with reducing information asymmetry between different parties (Spence 2002). Prior studies explained that managers use the readability of narrative disclosures to send signals about the outstanding performance of firms. Rutherford (2003) indicated that managers seek to signal the good performance by writing quite clear narrative disclosures with common words and simple sentences, while concealing the bad performance through deterioration of the readability levels of narrative disclosures. While agency theory concentrates on managers' conduct during the bad performance of firms, signaling theory concentrates on managers' conduct during the superior performance of firms. Managers tend to signal this superiority by writing easy-to-read narrative disclosures (Merkl-Davies & Brennan, 2007). When firms achieve good performance and maintain earnings persistence, managers are motivated to provide more readable narrative disclosures to send signals for shareholders about the strength of financial position, but if firms achieve a poor performance, managers attempt to hide the weakness of the financial position through writing less readable disclosures (li, 2008). Ezat (2019) argued that managers tend to write simple narrative disclosures to signal the high quality of earnings to shareholders.

5-2 Literature review and hypotheses development

This section presents the definition of narrative disclosures and board of directors' reports, in addition to the meaning of readability and its measures. The evaluation of readability, further to the relationship between profitability, corpo-

rate risk, earnings management, firm size, and readability, and ends with the development of research hypotheses.

5-2-1 Board of directors' Report

Narrative disclosures are the all-contextual information that accompanies the financial statements, regardless of their name, such as audit reports, chairman's statements, managing director's/CEO messages, management discussion and analysis (MD&A), corporate social responsibility reports, etc. (Rowbottom and Lymer, 2010). (Khojah, 2018) argued that the importance of narrative disclosures increased because of three factors: the financial crisis, the changing nature of business, and the rising focus on corporate social responsibility.

Narrative disclosures have a pivotal role in reducing the information gap and enhancing communication between managers and different stakeholders (Lo et al., 2017). They are a substantial element in the annual report that help shareholders make informed decisions about their investments in the firm (Dalwai et al., 2021). Narrative disclosures aid managers in providing simple explanations of the complex financial information included in financial statements, in addition to presenting firms' achievements and future plans to stakeholders (Khojah, 2018). Tiaine (2010) considers narrative disclosures as a strategic tool for managers to persuade stakeholders about a firm's current financial performance and position. While Efretuei (2013) argued that narrative disclosures give managers the opportunity to convince stakeholders that the firm can grow and their investments are safe, even the financial statements don't reflect that.

A significant number of prior studies in literature used the whole annual report to measure the readability of narrative disclosures. (Dalwai et al., 2021; Noh, 2021; Alduais, 2022; Aldoseri et al., 2023), while some other studies focused on a specific section of annual report such as chairman's statements (Abdul Raman et al., 2012), corporate social responsibility report CSR (Abu Bakar & Ameer, 2011), footnotes (Ali, 2021) and management, discussion and analysis section (MD&A) (Jayasree & Shette, 2021).

In Egypt, issuing an annual report isn't a mandatory requirement; hence, a large number of firms do not prepare it due to the preparation cost. However, the Egyptian stock exchange requires all listed firms to prepare the board of directors' report (Ezat, 2019). The board of directors' report is a mandatory report that managers prepare to disclose some important issues, such as operational results and factors that led to these results, capital resources, liquidity, and expected future growth. The present study focuses on the board of directors' report to evaluate the readability level of narrative disclosures and their determinants in Egypt.

5-2-2 Readability Meaning

Content analysis is a nonreactive research technique used in studying qualitative data to extract valid and replicable inferences (Neuman, 2014; Krippendorff, 2019). There are two types of content analysis: thematic analysis and syntactic analysis. Thematic analysis aims to determine how many certain words (objective analysis) or certain themes (subjective analysis) appear in the text. While syntactic analysis examines the writing style of the texts to define text readability (Al-Shaer et al., 2022).

Readability is the ease of understanding because of the writing style (Klare, 1963). Readability is a textual feature that facilitates text comprehension and memorization based on many aspects, such as the average length of sentences, the number of new words, and the grammatical complexity (Fernbach, 1990; Richards et al., 1992). McLaghlin (1969) defined readability as the degree to which a specific group of individuals perceive particular reading material as compelling and comprehensible. While Pound (1981) defined it as a relative measure of the difficulty readers encounter in understanding written texts.

In accounting literature, Loughran & McDonaldd (2014) defined the readability of narrative disclosures as the ability of stakeholders to realize firms' valuation-relevant information. Following Elbaz (2024), the readability of narrative disclosures is defined as the efficiency of disclosing all information related to the firm's events and operations, in addition to the effectiveness of presenting and communicating this information to stakeholders regardless of their cultural and scien-

tific background, to enable them to make sound decisions at the appropriate time.

Despite the difference between the concepts of readability and understandability, people always merge the two terms. Readability is a text attribute, while understandability is a reader attribute (Harrison, 1980). Sattari et al. (2011) viewed readability as the cornerstone of understandability, since the ease of reading facilitates realization and comprehension. Readability measures the difficulty of a text based on linguistic factors, especially word length and sentence length. While understandability measures the ability of a reader to gain knowledge from a text. It doesn't rely only on writing style but also on reader characteristics such as the reader's background, prior knowledge, interest, and general reading ability (Jones and Smith, 2014).

5-2-3 Readability's Measures

Readability could be measured by three different measures: readability formulas, length of text, and file size of text (Loughran & McDonald, 2014; Bonsall et al., 2017; Ali, 2021; Dalwai, 2023). The readability formula is an analytical technique that determines texts' readability level, which ranges from very easy-to-read to very difficult-to-read, and the number of education years the individual needs to read the text. It can be applied to different types of texts, such as education books, scientific journals, daily newspapers, etc. (Kondru, 2006). There are several formulas to determine the readability level of texts, such as the Simple Measure of Gobbledygook (SMOG), the Fry readability formula (FRY), Dale-Chall, and the BOG index (BOG) (Hackos & Stevens, 1997; Bonsall et al., 2017). Nevertheless, the most commonly used in accounting research are the Flesch reading ease score, the Gunning fog index, the Flesch-Kincaid formula, and the Lasbarhets index (LIX). All these formulas depend on counting the number of words, the number of sentences, and the number of difficult words (difficult words refer to words with many syllables) to evaluate the readability level. However, these formulas are used only to determine the readability of texts written in the English language, except for the LIX index, which is developed basically for non-English texts such as French, German, Greek, and Arabic.

Readability formulas have many features, as they are text-based formulas and easy to use because they are applied by computer software. They don't need any human participation; hence, they are objective and maintain time, money, and energy (Zamanian & Heydari, 2012). Moreover, readability formulas help the authors write in the most appropriate style for the target audience since they define the educational level the individuals need to read the text (Bailin & Grafstein, 2001). However, as with any other research measures, readability formulas have some limitations; they ignore the cultural background and interests of readers (Kirkwood and Wolfe, 1980). In addition, they neither take into consideration account syntax, logic, organization, the motivational nature of the text, the way new concepts are introduced, the unusual positioning of sentence components or clauses, nor the elements of format such as length of type line, hyphenated words, long paragraphs, or the absence of punctuation (Bertram & Newman, 1981). Over and above, there are various readability formulas; hence, there is a prospect of getting different readability assessments for the same text (Zamanian & Heydari, 2012). However, readability formulas can provide the writers with some information about the anticipated readability of text for target audiences (Courtis, 1998).

Length of text is one of the factors that influence the readability of annual reports (You & Zhang, 2009; Miller, 2010). The Security and Exchange Commission (SEC) and Financial Accounting Standards Board (FASB) expressed stakeholder concerns about the inverse impact of long disclosures on their ability to extract and comprehend value-relevant information. Many studies found that short and concise disclosures are easier to read and comprehend than long and wordy disclosures (Li, 2008; Melloni et al., 2017; Luo et al., 2018). The length of the text is a simple measure and appropriate to the nature of accounting disclosure. Moreover, it's not affected by the difference in linguistic attributes between the English language and other languages (Cho et al., 2019; Lewis & Young, 2019).

Chall (1985) emphasized that long texts distract the stakeholders. The efficiency of conveying information depends on the degree of difficulty Stakeholders

face in obtaining value-relevant information. Information overloading influences the readability level of disclosures and complicates the process of extracting relevant information for stakeholders (Lou et al., 2018). Financial analysts believe that exaggerating the length of narrative disclosures doesn't guarantee their quality; on the contrary, it may have an inverse impact. Since there is a vast consensus that firms use information overloading as a smokescreen to conceal poor quality disclosures and weak performance, However, evaluating the quality of narrative disclosures through length alone can be insufficient (Plumlee et al., 2015).

Loughran & McDonald (2014) recommended using the file size as a proxy for narrative disclosure readability. The study argued that file size is easy to compute and replicate and has a positive relationship with other readability measures such as the number of words and the number of complex words. Moreover, it's less prone to measurement errors and doesn't need any parsing for narrative disclosures. The study found that large file sizes are associated with earnings forecast dispersion, earnings forecast errors, and high return volatility. However, Bonsall et al. (2017) believe that file size isn't a suitable measure for the readability of narrative disclosures because it doesn't depend on actual analysis for linguistic complexity and is probably affected by other content than text, such as pictures, graphs, etc.

5-2-4 Hypotheses Development

- Evaluation of Readability

Many studies examined the readability level of narrative disclosures: chairman's statement (Abdul Raman et al., 2012), integrated report (Du Toit, 2017), footnotes (Allini et al., 2017), management discussion and analysis MD&A (Ayuningtyas & Harymawan, 2021), sustainability report (Mnif & Kchaou, 2021), and the whole annual report (Noh, 2021).

Habib & Hasan (2020) examined the readability of annual reports for non-financial firms in the United States for the period 1994–2013 using the BOG index developed by (Bonsall et al., 2017). They found that reports have a poor readability level. This result is consistent with Bradbury et al. (2020), who exam-

ined the readability of both the annual report and summary of the annual report in New Zealand for the year 2015 only using the Flesch reading ease score. The study provided evidence that both disclosures are difficult to read.

Gyasi (2019) found that the most read sections in the annual reports of banks in Ghana—the chairman's statement, the auditor's report, and corporate governance—were written using polysyllabic1 words and complex grammar. Furthermore, the study noted that listing banks on stock exchange doesn't make any improvement in writing style. This result is consistent with Jayasree and Shette (2021), who found that the MD&A sections of Indian banks are difficult to read, but they remain more readable than the MD&A sections of US firms.

Smeuninx et al. (2020) analyzed the readability of narrative disclosures for firms in different countries: the United States, the United Kingdom, (non-U.K.) Europe, Australia, and India, using the Flesch reading ease score, Flesch-Kincaid, and Gunning Fog. The study found that managers use the same complex writing style in preparing financial and non-financial disclosures, but the level of complexity varies from country to country. Adhariani & du Toit (2020) examined the readability level of the sustainability report for all firms listed on the Indonesian Stock Exchange for the period 2015–2017 using three different readability formulas: the Flesch reading ease score, Flesch-Kincaid, and Gunning Fog. They argued that the difficulty of the Indonesian sustainability report reduces its usefulness and obstructs stakeholders' ability to extract valuable information. This result is inconsistent with Soepriyanto et al. (2021), who examined the readability level of the annual report for all firms listed on the Indonesian Stock Exchange for the period 2014–2017 using the FOG index. They found that the readability of Indonesian annual reports is ideal and requires only high school education. Mankayi et al. (2023) evaluated the readability level of the chairman's statement for 40 firms listed on Johannesburg Stock during 2021 using the FOG index. They found that managers used complex writing styles in preparing the chairman's statement for these firms.

[I] Polysyllabic: words that have more than one syllable

Based on reviewing the prior literature, most studies found that different narrative disclosures are difficult or very difficult, except Soepriyanto et al. (2021), hence the study hypothesizes that:

H1: *The readability level of the board of directors' report is difficult or very difficult to read.*

- Determinants of the readability of board of directors' report

There are several factors that affect the readability of narrative disclosures, such as the desire of managers to obfuscate the truth about receiving unjustified compensation (Laksmana et al., 2012), the adaptation of international financial reporting standards (IFRS) (Richards & Staden, 2015), the complexity of business operations (Cazier & Pfeiffer, 2016), the business strategy adopted by the firm (Lim et al., 2018), and the firm's life cycle (Bakarich et al., 2019). However, many scholars argue that the main factors that affect the readability of narrative disclosures are weak financial performance and firm characteristics (Dempsey et al., 2012; Melloni et al., 2017; Ginesti et al., 2018; Gianfelici et al., 2021; Ferri et al., 2023). This section reviews and discusses the relevant literature on the relationship between corporate profitability, corporate risk, earnings management, firm size, and the readability of the annual financial report.

- Corporate Profitability and Readability of Board of directors' report

Scholars debated the relationship between corporate profitability and the readability of narrative disclosures. Bayerlein & Davidson (2015) tested the relationship between profitability and readability of chairman addresses for 87 firms listed on the Australian stock exchange using the Flesch readability score. They found that despite the difficulty of chairman addresses, managers don't try to conceal the decline in profitability through syntactic complexity. This result is consistent with Moreno et al.'s (2019), who examined the relationship between corporate profitability and the readability of the chairman's statements of the Guinness firm from 1948 to 1996. They found that corporate profitability doesn't affect the length of the chairman's statements. Dalwai et al. (2021) found no relationship

between corporate profitability and the length of narrative disclosures in Oman's financial sector.

Hassan et al. (2019) investigated the relationship between corporate profitability and the annual report readability of Qatari listed firms from 2014 to 2016 using the Flesch Reading Ease score and the Flesch-Kincaid grade level score. They found that Qatari listed firms strategically use the readability of annual reports to hide bad news such as declines in profitability through writing complex disclosures with difficult words and sentences and expose good news such as increasing in profitability or attaining target earnings by writing easy to read disclosure using common words and simple sentences. This result is consistent with Gu & Dodoo (2019), who used a sample consisting of 15 firms listed on the Ghana Stock Exchange between 2008 and 2017. The study found that any increase in firms' profitability leads to increases in the readability of narrative disclosures in Ghana.

Jayasree & Shette (2021) argued that management's decision about the clarity degree of narrative disclosures is contingent on operational performance results. The study affirmed that poor-performing firms write complex narrative disclosures to hide bad news. Alm El-Din et al. (2021) examined the impact of corporate profitability on the association between voluntary disclosure and the readability of the annual report using the LIX score to examine the readability and return on assets (ROA) for profitability on 90 firm-year observation from non-financial firms listed on the Egyptian stock exchange (EGX 100). The study found that poor-performing firms increase voluntary information in their annual reports to reduce the readability level. However, the sample was too small to be generalized.

Alduais (2022) conducted a study on all Chinese non-financial firms listed on the Chinese stock exchange from 2008 to 2021and used the FOG index and number of words to evaluate readability and return on equity (ROE) to measure profitability. Analysis revealed a difference in the writing styles of good-performing firms and weak-performing firms, Good-performing firms have

short and plain narrative disclosures with low accounting terms compared to weak-performing firms.

Based on reviewing prior literature, it seems most managers all over the world tend to write simple and plain narrative disclosures when corporate profitability is high. Hence, the study hypothesizes that

H2: *There is a positive relationship between corporate profitability and readability of the board of directors' report.*

- **Corporate Risk and Readability of Board of directors' Report**

Corporate risk refers to the possibility of firm being incapable of fulfilling its obligations towards creditors, because of the high level of debt, managers consider high corporate risk similar to low profitability, both of which indicate poor performance (Moreno et al. 2019). Bacha & Ajina (2020) tested the effect of corporate risk measured by financial leverage on the readability of the annual report measured by the FOG index and the Flesh Reading Ease score for non-financial French-listed firms from 2013 to 2016. They found that managers tend to write difficult-to-read narrative disclosures to obfuscate their financing decisions and capital structure choices. While Park (2023) examined the relationship between corporate risk and readability of narrative disclosures of United States (USA) firms for the period 1994–2013 using file size, Bog Index, and Fog Index as a proxy for readability. The study found that US firms with great external financing have complex narrative disclosures.

Hassan et al. (2022) examined the association between corporate risk and the readability of narrative disclosures for all banks listed on the Gulf Cooperation Council Stock Exchanges between 2014 and 2019. The study used file size and financial leverage as proxies for readability and corporate risk. They found that there is a negative relationship between corporate risk and the readability of narrative disclosures. However, after adding corporate risk as a moderating variable for the relationship between the tone of narrative disclosures and readability, the study found that banks with high corporate risk tend to write easy-to-read disclosures with a negative tone. Hassan et al. (2022) believes that managers of

banks with high financial risk prefer to explain the reasons for the high risk to stakeholders; however, their feelings toward the risk are reflected in the disclosures. This result is consistent with Mnif & Kchaou (2022), who investigated the relationship between corporate risk and the readability of sustainability reports for 584 firms operating in sustainability-sensitive industries from all over the world from 2016 to 2018, using the FOG index as a measure for readability and financial leverage as a measure for corporate risk. The study found that highly leveraged firms write complex sustainability reports in order to manage creditors' impressions of firms' long-term success.

Smith et al. (2006) found that high corporate risk motivates managers to write simple narrative disclosures to reflect their high creditworthiness, while other firms have difficulty obtaining credits. The result depended on examining the readability of the chairman's statement using the Flesch Reading Ease score for 242 firms listed on Bursa Malaysia in 2002. This result is consistent with Bradley & Sun (2021), who found that highly leveraged firms in the United States within the period 1993 to 2016 had a plain annual report measured by the BOG index.

However, Kumar (2014) didn't find any relationship between corporate risk and the readability of management discussions and analysis sections for 68 U.S.-listed Asian firms in 2010, using the Flesh Reading Ease score as a proxy for readability. While Moreno & Casasola (2016) found no relationship between the readability of narrative disclosures measured by Flesh Reading Ease and corporate risk. The study depended on analyzing the readability of two firms different in size and activity in Spain; one is a multinational oil firm, while the other is a privately held medium-sized firm that works in food and beverage.

Based on reviewing prior literature, there is a clear debate about the relationship between corporate risk and the readability of narrative disclosures. However, most studies conducted all over the world agree that there is a negative relationship between corporate risk and the readability of narrative disclosures. Hence, the study hypothesizes that:

H3: *There is a negative relationship between corporate risk and readability of board of directors' report.*

- **Earnings Management and readability of Board of directors' Report**

Earnings management is an intentional intervention from managers in the procedures of financial reporting in order to make unwarranted changes between actual earnings and reported earnings to attain a personal or firmwide goal (Brooks, 2010). Motivations that induce managers to be involved in earnings management are diverse; however, the main motivations for earnings management are: meeting or beating earnings benchmarks to maintain stock returns; enhancing managers' compensation plans and securing their positions; reducing tax burdens; preserving long-term debt contracts in case of debt covenant violations; and blurring their inefficient investment decisions (Rahman et al., 2013; Bzeouich et al., 2019).

Although earnings management doesn't only benefit managers' interests but shareholders as well, in some cases, managers always seek to hide earnings management practices and ensure that stakeholders won't detect them. Salehi et al. (2020) emphasized that if stakeholders detect that the reported results were manipulated, they won't longer rely on financial statements in their decision-making processes, which in turn will deteriorate the firm's reputation and raise the cost of capital.

Scholars argue that managers utilize the writing style of narrative disclosures as one of their impression management techniques to obfuscate their earnings manipulation practices. Ajina et al. (2016) examined the relationship between accrual-earnings management measured by the modified Jones model developed by Dechow et al. (1995) and the readability of annual reports measured by the FOG index for 163 French firms from 2010 to 2013. They found a negative relationship between accrual-earnings management, and the readability of narrative disclosures. The researchers believe that explaining the truth to individuals is easier than explaining lies. Managers need to ensure consistency between reported results and textual information that clarifies factors that led the firm to these

results; hence, they raise the complexity of narrative disclosures to distract stakeholders. Lo et al. (2017) argue that earnings management puts cognitive stress on managers, which negatively affects their writing style. They found that managers who managed earnings to meet or beat earnings benchmarks wrote complex narrative disclosures deliberately to cover up their opportunistic behavior. The result depended on analyzing (MD&A) section of sample consists of 4855 firms listed on the American Stock Exchange from 2000 to 2012, the FOG index, and the Jones model (1991) as a proxy for readability and accruals earnings management.

In China based on sample consists of 5196 firm-year observation of non-financial firms within period 2012 to 2016. Cheng et al. (2018) found that when managers notice a decline in earnings, they intervene through earnings management practices to adjust earnings levels. In this context, managers seek to conceal these inferior conducts through less-readable narrative disclosures. Cheng et al. (2018) argue that managers use earnings management and the writing style of narrative disclosures as complementary tools to hide bad performance. However, Kim et al. (2019) demonstrated that earnings management raises the risk of stock price crashes for firms with poorly readable narrative disclosures. While Dadashi & Norouzi (2020) found that managers' attempts to mask earnings management through writing complex narrative disclosures bear firms a high cost of capital in Iran.

In Egypt, Ali (2021) examined the relationship between accruals-earnings management and the readability of financial statements' footnotes. The study used the modified Jones model developed by Dechow et al. (1995) and the natural logarithm for the number of words to measure the readability of 40 firms listed on the Egyptian stock exchange from 2014 to 2019. Ali (2021) found that earnings management practices affect the length of financial statements' footnotes negatively. Alm El-Din et al. (2021) argued in this context that managers use narrative disclosures as a flexible tool to mislead stakeholders. When managers manipulate earnings, they intend to write complex narrative disclosures to make the annual report less readable and conceal their practice.

This result is inconsistent with Rahman's (2019), who found that earnings management doesn't influence the readability of narrative disclosures for Indonesian listed firms. While Pajuste et al. (2021) found that the negative relationship between earnings management and the readability of narrative disclosures is limited only to firms that have a highly liquid share. The study argued that severe scrutiny from market participants on liquid firms impels managers to conceal bad performance through earnings management and cover up these conducts through reporting complexity to inhibit shareholders from discovering the truth and selling the stocks, especially in loss-making years.

Based on reviewing prior literature, it seemed most firms in developing and developed countries such as the United States, France, India, and China tend to conceal the manipulation of earnings through writing complex narrative disclosures to distract stakeholders and reduce their ability to understand the underlying truth about the numbers presented in the financial statements. Hence, the study hypothesizes that:

H4: *There is a negative relationship between accruals-earnings management and readability of the board of directors' report.*

- **Firm Size and Readability of Board of directors' Report**

Many studies argued that firm size has an influence on the readability of narrative disclosures, but it isn't clear yet if it's a positive or negative influence. Roiston & Harymawan (2020) examined the relationship between firm size and the readability of the management discussion and analysis section (MD&A) for firms listed on the Indonesian Stock Exchange from 2014 to 2016, using the Flesch-Kincaid grade level and SMOG index and the natural logarithm of total assets as a measure of firm size. The study found that the complexity of business processes in large firms is reflected in the difficulty level of the MD&A section, since complex operations need jargon to be explained accurately. Moreover, large firms have well-skilled managers who can exploit the content of disclosures for their own interests by obfuscating bad performance and protruding achievements. This result is consistent with Hassan et al. (2022), who found that large banks

listed on Gulf Cooperation Council stock exchange produce difficult-to-read disclosures.

Boritz et al. (2016) investigated the relationship between firm size and the readability of annual reports for United States firms from 2004 to 2014 using the FOG index. They found that large firms in the United States write plain annual reports to reduce agency costs. Moreno & Casasola (2016) found that the readability of large and public firms in Spain is better than the readability of small and private firms; thus, there is a positive relationship between firm size and the readability of narrative disclosure. Dalwai et al. (2023) found that large finance firms have more readable disclosures than small finance firms in Oman. The study depends on a sample consisting of 36 firms listed on the Muscat Securities Market from 2014 to 2018 using the Flesch Reading Ease score and Flesch-Kincaid grade level as a proxy for readability. These results are consistent with Elbaz (2024), who argued that large firms listed on the Saudi Exchange from 2018 to 2022 tend to write plain and easy-to-read narrative disclosures to guarantee that their variety of stakeholders will realize and comprehend the disclosures easily.

While Smith et al. (2006) and Abu Bakar & Ameer (2011) found no relationship between firm size and the readability of the chairman's statement, and the corporate social responsibility (CSR) report of firms listed in Malaysia.

Based on reviewing prior literature, there is a clear argument about the relationship between firm size and the readability of narrative disclosures. However, most studies conducted in developed and developing countries like the United States, Spain, Oman, and Saudi Arabia agree that there is a positive relationship between firm size and the readability of narrative disclosures. Hence, the study hypothesizes that:

H5: *There is a positive relationship between firm size and readability of board of directors' report.*

5.3 Research Methodology

5.3.1 Sample Selection and data collection

The population of the study consists of all non-financial firms listed on the Egyptian stock exchange from 2015 to 2022, since financial firms are subject to a unique set of accounting standards and regulations. The study excludes firms that present financial statements in dollars to maintain the consistency between the data. Further, all firms that don't provide any text needed for analysis in their board of directors' report are excluded. This screening process leaves a final sample consisting of only 33 non-financial firms listed on the Egyptian stock exchange from 2015 to 2022, resulting in a final sample of 264 observations.

Secondary data used in the study are collected from the annual financial reports downloaded from the firms' websites and the Egyptian stock exchange website.

Table 1: the sample of the research classified by industry sectors

Number	Sector	Number of firms in sector	Percentage
1	Real Estate	8	24.24
2	Travel & Leisure	5	15.15
3	Building Materials	4	12.12
4	Textile & Durables	2	6.06
5	Basic Resources	2	6.06
6	Paper & Packaging	1	3.03
7	Food, Beverages and Tobacco	5	15.15
8	Health Care & Pharmaceuticals	4	12.12
9	Contracting & Construction Engineering	1	3.03
10	Industrial Goods, Services and Automobiles	1	3.03
Total		33	100%

Source: prepared by the researcher

5-3-2 Measurement of Research Variables

- Dependent Variable

The current study used the Lasbarhets index (LIX) to measure the readability of the board of directors' reports. The LIX index is an analytical technique that determines texts' readability level, which ranges from very easy-to-read to very difficult-to-read text, based on the length of sentences and the length of words. Prior studies used the LIX index to measure readability (Moreno and Casasola, 2016; Boubaker et al., 2019; Ezat, 2019) in Spain, France, and Egypt, since it's more appropriate for non-English-speaking countries. LIX index is calculated as follow:

$$\text{LIX Score} = 100 * (\frac{LW}{W}) + (\frac{W}{S})$$

LW is the number of long words > 6 letters; W is the number of words; S is the number of sentences.

The first component, 100 (LW/W), reflects word length, and the second component, (w/s), reflects sentence length. The evaluation of text readability depends on the calculated score. If the LIX readability score is >50, it means that the text is easy to read, while scores between 50 and 60 means that the text is difficult, score over 60 means that text is very difficult (Lewis et al., 1986).

To calculate the readability level, we first converted all board of directors' reports from jpg to Word format. Second, we removed all the tables, figures, and graphs from the reports (Li, 2008). Finally, we uploaded the remaining text from each report to the "charactercounttool.com" website to calculate the number of long words, words, and sentences (Ezat, 2019).

- Independent Variables

- **Profitability**: measured using return of assets (ROA), which equals net income divided by total assets. The study used (ROA) as a profitability measure because it is a widely used measure based on prior studies (Ginesti et al.,

2017; Hassan et al., 2019; Gu & Dodoo; Dalwai et al., 2021; Alm El-Din, 2022).

- **Corporate risk**: measured using financial leverage (LEV), which equal total liabilities divided by total assets. Several empirical studies proxied corporate risk by financial leverage (Kumar, 2014, Moreno & Casasola, 2016; Hassan et al., 2019; Bacha & Ajina, 2020; Park, 2023; Hassan et al., 2022).
- **Firm size**: measured through the Natural logarithm of the firm's total assets. This proxy for firm size has been adopted by several studies in prior literature (Boritz et al., 2016; Roiston & Harymawan, 2020; Ali, 2021; Alm El-Din et al., 2022; Dalwai et al., 2023).
- **Accruals earnings management**: calculated using modified jones model developed by Dechow et al. (1995). The study used Modified jones model because it is a widely used measure based on prior studies (Ajina et al., 2016; Lo et al., 2017; Cheng et al., 2018; Dadashi & Norouzi, 2020; Goncalves et al., 2022). Modified jones model Dechow et al. (1995) is calculated as follows:

Step 1: Calculate the total accruals as follows:

$$TACC_{it} = \Delta CA_{it} - \Delta Cash_{it} - \Delta CL_{it} + \Delta STD_{it} - DEP_{it}$$

Where,

$TACC_t$ = Total accruals of firm i in year t,

ΔCA_t = Change in current assets of firm i in year t,

$\Delta Cash_t$ = Change in cash and cash equivalents of firm i in year t,

ΔCL_t = Change in current liabilities of firm i in year t,

ΔSTD_t = Change in short term debt included in current liabilities of firm i in year t,

DEP_t = Depreciation and amortization expense of firm i in year t.

Step 2: After computing total accrual items, parameters α_1, α_2, α_3 were estimated in order to determine non-discretionary accruals through the following formula:

$$\frac{TACC_{it}}{A_{it-1}} = \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \frac{(\Delta REV_{it} - \Delta REC_{it})}{A_{it-1}} + \alpha_3 \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it}$$

Where,

$TACC_t$ = Total accruals of firm i in year t,

ΔREV_t = Change of revenues of firm i between year t and year $t-1$,

ΔREC_t = Change of receivables of firm i between year t and year $t-1$,

PPE_t = Gross property plant and equipment of firm i in year t,

A_{t-1} = Total assets of firm i in year $t-1$,

α_1 , α_2 , α_3 = Parameters to be estimated,

ε_t = Residuals of firm i in year t.

Step 3: Calculating non-discretionary accruals through this formula

$$NDA_{it} = \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \frac{(\Delta REV_{it} - \Delta REC_{it})}{A_{it-1}} + \alpha_3 \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it}$$

NDA_t = Non-discretionary accruals of firm i in year t,

ΔREV_t = Change of revenues of firm i between year t and year $t-1$,

REC_t = Change of receivables of firm i between year t and year $t-1$,

PPE_t = Gross property plant and equipment of firm i in year t,

A_{t-1}= Total assets of firm i in year $t-1$,

$\alpha_1, \alpha_2, \alpha_3$= Estimated parameters,

ε_t= Residuals of firm i in year t.

Step 4: Calculate the discretionary accruals as follows:

$$DA_{it} = TACC_{it} - NDA_{it}$$

- **Control Variables**

Several prior studies provided extensive empirical work examining the relationship between corporate governance, firm characteristics and readability of narrative disclosures (Lo et al., 2017; Ezat, 2019; Deshmukh & Zhao, 2020; Hassan et al., 2019; Alm El-Din et al., 2022; E-Vahdati et al., 2022). In order to remove the impact of these organizational characteristics, the study controlled for these characteristics in the regression model. The following subsections provide an explanation behind the selected control variables and their measurement.

- **Firm Age**

Li (2008) argued that there is a positive relationship between firm age and the readability of narrative disclosures since shareholders of old firms have more precise information about the firm's business model, so managers are less likely to misrepresent narrative disclosures. Laksmana (2012) indicated that old firms are characterized by low information asymmetry and uncertainty that affect the readability of narrative disclosures. These results are consistent with Noh & Park (2023), who found a positive relationship between the readability of narrative disclosures and the age of US firms.

Roiston & Harymawan (2020) explained that old firms possess managers who are quite familiar with shareholder profiles; hence, they could manage their impressions and disguise bad news through the writing style of narrative disclosures. Seifzadeh et al. (2021) found that Iranian old firms have poorly readable financial statement footnotes. The study used the natural logarithm firm's number of year from incorporation to the study year to measure firm age (Li 2008; Roiston & Harymawan, 2020).

- **Financial Loss**

Li (2008) argued that financial loss requires more explanations to clarify the causes of management failure in achieving profits, which is likely to affect readability negatively. Alduais (2022) affirmed that there is a difference in the length of narrative disclosures between profitable firms and loss-making firms. Lo et al.

(2017) found that financial loss has a negative impact on the readability of the MD&A section. Pajuste et al. (2021) found that the complexity of reporting increases in loss-making years. The study uses dummy variable equal 1 if the net income is less than 0, 0 otherwise (Lo et al., 2017; Alduais, 2022).

- **Audit Quality**

Bakarich et al. (2019) found a negative relationship between audit quality and the readability of narrative disclosures. Deshmukh & Zhao (2020) found that clients' characteristics of Big 4 audit firms are different from clients' characteristics of other firms. The Big Four clients have complex business models that require extra explanation and technical descriptions that negatively affect the readability of narrative disclosures for these firms. While Karim & Sarkar (2020) found that firms audited by the Big 4 have more readable financial statements' footnotes than firms audited by non-Big 4 auditors. The study uses dummy variable equal 1 if the firm was audited by one of the big four audit firms, and 0 otherwise (Ali, 2021)

- **Board Size**

Board size refers to the total number of directors, either executive or non-executive (Ginesti et al., 2018). Nadeem (2022) found that board size has a positive impact on the readability of narrative disclosures. Raimo et al. (2022) noted that firms with large boards have more readable integrated reports. Unyime & Akpan (2023) recommended the necessity of raising the number of the Board of Directors in order to improve the readability of narrative disclosures. While Ginesti et al. (2018) found a negative relationship between board size and the FOG index.

- **Board Independence**

Board independence refers to the number of non-executive members on the board of directors Harjoto et al. (2020). Independent directors are a significant control mechanism. Independent directors are effective in reducing the information gap between managers and shareholders and enhancing transparency (Wu

et al., 2019). Harjoto et al. (2020) found a positive relationship between board independence and the readability of CSR reports. E-Vahdati et al. (2022) found that independent directors improve the readability of narrative disclosures.

- **CEO Duality**

CEO duality refers that the chief executive officer of the firm is the chairman at the same time (Ferri et al., 2023). Tahir et al. (2020) argued that the concentration of power in the same person reduces the effectiveness of the board's oversight. CEO duality boosts the power of the CEO in making corporate decisions, thereby increasing agency problems within the firm (Ammari, 2021). Qadri et al. (2018) found that CEO duality has an adverse influence on disclosure quality. Ginesti et al. (2018) found that the concentration of the roles of chairman and CEO in the same person has a negative impact on the readability of narrative disclosures. Ezat (2019) found that firms that have a separation in the chairman and CEO roles have more readable board of directors' reports. Ferri et al. (2023) emphasized that firms must separate between the positions of CEO and chairman to reduce the risk of disclosure manipulation and increase readability. The study uses dummy variable equal 1 if the chairman is also the CEO, 0 otherwise (Ezat, 2019).

- **Research Model**

$$READ_{it} = \beta_0 + \beta_1 PROFT_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \beta_4 EM_{it} + \beta_5 AGE_{it} + \beta_6 LOSS_{it} + \beta_7 BIG4_{it} + \beta_8 BSIZE_{it} + B_9 BINDEP_{it} + \beta_{10} DUALITY_{it} + \varepsilon_{it}$$

Dependent variable = Readability of narrative disclosures (READ).

$\beta_0 =$ Denotes a constant of the regression equation.

β_1 = PROFT denotes regression coefficient of profitability.

β_2 = LEV denotes regression coefficient of corporate risk.

β_3 = SIZE denotes regression coefficient of firm size.

β_4 = EM denotes regression coefficient of earnings management.

$\beta_5, \beta_6, \beta_7, \beta_8, \beta_9, \beta_{10}$ = denotes control variables, regression coefficient of firm age (AGE), financial loss (LOSS), audit quality (BIG4), board size (BSIZE), board independence (BINDEP), and CEO duality (DUALITY).

I_t = Firm i in period t.

T_i = Year fixed effect.

ε_{it} = Standard error term.

Table 2: Study variables and their measurements

Variable	Abbreviation	Type	Measures	Supporting literature
Profitability	PROFT	Independent	Return on Assets (ROA) = Net Income \ Total Assets	Ginesti et al 2017; Hassan et al 2019; Dalwai et al 2021; Alm El-Din 2022.
Corporate Risk	LEV	Independent	Total liabilities/total assets	Kumar 2014, Moreno & Casasola 2016; Bacha & Ajina 2020; Park 2023; Hassan et al 2022.
Earnings Management	EM	Independent	Modified jones model developed by Dechow et al (1995).	Ajina et al 2016; Lo et al 2017; Cheng et al 2018; Goncalves et al 2022.
Firm Size	FS	Independent	The Natural logarithm of the firm's total assets	(Boritz et al 2016; Roiston & Harymawan 2020; Dalwai et al 2023)
Readability of Board of Directors' Report	READ	Dependent	LIX SCORE	Ezat 2019; Boubaker et al 2019; Alm El-Din 2022
Firm Age	AGE	Control	Natural logarithm firm's number of year from incorporation	Li (2008); Roiston & Harymawan (2020)
Financial Loss	LOSS	Control	Dummy variable equal 1 if the net income is less than 0, 0 otherwise.	Lo et al (2017); Alduais (2022)
Audit Quality	BIG4	Control	Dummy variable equal 1 if the firm was audited by one of the big four audit firms, and 0 otherwise.	Karim & Sarkar (2020); Ali (2021)
Board Size	BSIZE	Control	Total number of directors in the board.	
Board Independence	BINDEP	Control	The proportion of independent directors to total number of directors in the board.	Harjoto et al. (2020); E-Vahdati et al. (2022)
CEO Duality	DUALITY	Control	Dummy variable equal 1 if the chairman is also the CEO, 0 otherwise.	Ezat (2019); Ferri et al (2023)

Source: prepared by the researcher

5-4 Results and Discussion

5-4-1 Data Management

The practice of modifying data in order to make it more comprehensible or to better organize it is known as data management. The manner in which the data were processed will be dissected in this part of the report (Dhudasia et al., 2021). After collecting the information using the financial reports of non-financial firms, the dataset becomes a secondary data ready for further data cleaning to ensure unbiased results.

- Earning management is computed through the Modified jones model Dechow (1995).
- Readability is computed according to Lix score such that values higher than a certain cutoff would be characterized by difficulty rather than simplicity. After calculating descriptive for readability, Lix score was further computed as

$$Lixc_i = \frac{1}{LIX_i}$$

Such that the lower the LIXc, the more difficult the report, on the other hand, the higher LIXc, the simpler the report and the more it is readable.

- Some years witnessed missing observation; therefore, a regression model is built for those variables to forecast the missing values. The interpolation process helped in imputing the missing values with higher level of accuracy than imputing using measures of central tendency. It also took into consideration each panel values and gave an indication for extrapolated values.
- The stationarity test was conducted; it was found that all the variables were stationary. For multicollinearity test, all variables had VIF<five except for audit quality and CEO Duality. Thus, they were omitted from further model building.

This would result in having a clean dataset ready for further inferential analysis. The analysis will be conducted using Stata 17.

5-4-2 Data Analysis

- Descriptive Statistics

Table 3: Descriptive Statistics summary

Variable	Mean	Std. Dev.	Min	Max
Earnings Management	-.001	.259	-.745	2.37
Firm Size	21.097	1.524	18.087	23.833
Profitability	.006	.13	-.692	.206
Corporate Risk	.509	.584	.001	4.706
Board Size	8.324	2.392	5	15
Board Independence	.219	.187	0	.8
Firm Age	22.241	14.948	1	67
Financial Loss	.338	.475	0	1
CEO Duality	.386	.489	0	1
Audit Quality	.483	.501	0	1

Source: Calculations based on sample from 2015-2022 using Stata 17

DA, has a sign of -0.001, which implies that on average, accruals are based on discretion but slightly lean on the negative side. The understanding here is that the standard deviation of 0.259 which indicates a high variation of the discretionary accruals in the sample implies a wide range of values against the backdrop and that the values can run from the minimum of -0.745 to maximum of 2.37.

The firm size average is 21.097 and its standard deviation is 1.524. It is proportional to the natural logarithm of total assets. It signifies that the firms are of different sizes in the sample, with the values lies from 18.087 to 23.833. The firm sizes in variation are considerably close with low variation. The average profitability ratio, return on assets (ROA), is 0.006, implying poorly profitable position. The standard deviation of .13 represents high deviation in the profitability between sample groups with the range from minimum of -0.692 to the maximum of 0.206.

The corporate risk, seen in the ratio of total debt to total assets of all the companies in our data-set, has a mean value of 0.509, suggesting a moderate level of leverage in this data-set. Although there is a relatively high dispersion of 0.584, the measured risk makes it possible for corporations to run safely with a minimum of 0.001 and a maximum of 4.706 risk. While majority of companies had lower corporate risks, only a few companies recorded an extreme value for cor-

porate risk as Rakta Paper Manufacturing ranging from 2.04 in 2018 until it reached value of 4.706 in 2021.

The board size has a mean value of 8.324 directors, with the standard deviation of 2.392 indicates a diverse spectrum of the board size. It is in the range of 5 to 15 directors in the sample. The board independence, defined as the proportion of independent directors, has a mean of 0.219, showing average level of independence, a bit lower than desirable, but acceptable with variations mostly based on sample. The average age of the firm is 22.241 years and the standard deviation is 6.949 years, which means that the firms in the sample have ages from 1 year to 66 years. Besides, the values obtained through descriptive statistics of the sample companies that incurred financial loss account for almost 33.8%, in contrast to 38.6% where the chief executive officer is also the board chair and about 48.3%, where the organization is having their accounts audited by the Big 4 accounting firm.

Testing the first hypothesis H1 concerned with examining the readability level of the board of directors' report

Table 4: Tabulation of Readability

Readability	Freq.	Percent	Cum.
Simple	45	31.03	31.03
Difficult	48	33.10	64.14
very difficult	52	35.86	100.00
Total	145	100.00	

Source: Calculations based on sample from 2015-2022 using Stata 17

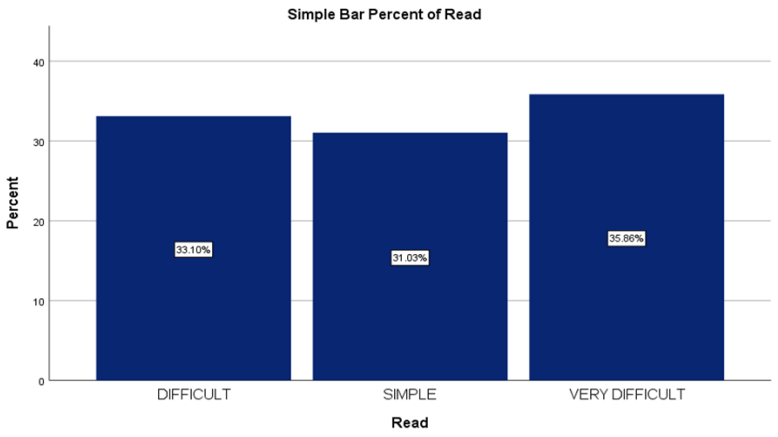

Figure 1: Read graph analysis

Source: Calculations based on sample from 2015-2022 using Stata 17

Observing table 4 and figure 1, it is noticeable that the majority of the reports had been characterized by difficult readability. 68.96% of the reports had difficult and very difficult level of readability. On the other hand, only 31.03% of reports in sample were simple level of readability.

Table 5: Proportion estimation for levels of Readability

	Proportion	**Standard Error**	**95% confidence Interval**	
Simple	0.310	0.038	0.240	0.391
Difficult	0.331	0.039	0.259	0.412
Very Difficult	0.359	0.040	0.284	0.441

Source: Calculations based on sample from 2015-2022 using Stata 17

Observing table 5, further in-depth analysis of the readability levels, it is found that at 95% confidence level, from 24% to 39% of the non-financial firms in Egypt would have financial reports characterized by being simple. At 95% confidence level, from 25% to 41% of the non-financial companies in Egypt will be characterized by difficult level. From 28.4% to 44.1% of non-financial firms is characterized by having very difficult financial report at 95% confidence level.

- Correlation Analysis

Table 6: Pairwise correlations of phenomenon

Variables	EM	FS	Prof.	CR	BS	BI	FA	FL	CEOD	AQ	Read
EM	1.000										
FS	-0.218	1.000									
Prof.	-0.117	0.344	1.000								
CR	0.281	-0.097	-0.781	1.000							
BS	0.381	0.390	0.190	-0.080	1.000						
BI	-0.324	0.184	0.105	-0.134	-0.201	1.000					
FA	0.251	-0.382	-0.518	0.414	-0.333	-0.092	1.000				
FL	-0.186	-0.290	-0.584	0.297	-0.189	-0.003	0.337	1.000			
CEOD	-0.232	-0.056	0.022	-0.005	0.011	-0.219	-0.089	0.062	1.000		
AQ	0.373	0.481	0.243	-0.152	0.187	0.259	-0.434	-0.223	-0.313	1.000	
Read	-0.144	0.133	0.168	0.076	0.082	0.062	-0.140	-0.054	0.059	-0.206	1.000

Source: Calculations based on sample from 2015-2022 using Stata 17

Observing the Table 6, readability had negative significant weak linear relationship with Earning Management, Firm Age and Audit quality at 95% confidence level. At 0.05 level of significance, there is a positive significant linear relationship of earning management with firm size, profitability and board size. Audit quality and financial loss were reported to have a relationship with other independent variables in the phenomenon. Thus, it will give an indication of multicollinearity. Further investigation is required as computing VIF to ensure the existence of multi collinearity. Pearson correlation coefficient cannot efficiently test the hypotheses because it does not consider the effect of other variables.

5-4-3 Model Building

Building up the model, first the stationarity using Levin Lin Chu2 was tested such that, it puts out the notion of giving each panel an enhanced Dickey Fuller test. For every panel, it assumes a common autoregressive parameter. The following are the hypotheses in relation to the test:

H_0: Panel contain unit roots.

H_1: Panel is stationary.

All the variables are found to be stationary as p-value is less than 0.1. Therefore, at 90% confidence level, the variables are stationary without taking lags. The Random and fixed effect models are employed. A few statistical techniques are developed to deal with the panel data after checking stationarity as fixed effect model and random effect. Fixed effect ui are unique attributes of individuals that do not vary over time. That is, the unique attributes for a given individual i are time t invariant.

$$Yit=\alpha i+\beta 1Xit+ui+vit$$

On the other hand, if there are unique, time constant attributes of individuals that are not correlated with the individual regressors, then the random effect will be utilized. Knowing that disturbance vit in model always have normal distribution.

$$Yit=\alpha i+\beta 1Xit+ui+vit, vit\sim distribution$$

Random effects will be more efficient and according to Beltagy (2021) and Greene (2012). They should be considered as a model in many cases because they tackle real life data and phenomenon. To compare between the two models and decide which will be used, the Hausman test should be conducted. The null hypothesis of the test is that the random effect model should be utilized.

[2] It is panel unit root estimate test for the non-stationarity of panel independent variables with lags and time effect (Vyrostková et al., 2021)

Each of the models takes into consideration a different type of error composition. Both aim to model the phenomenon and eliminate the impact of time variable. Its objective is to study the impact of independent on dependent variables.

Table 7: Coefficients of Random and fixed effect model for Readability

LIXc	Random Effect Model			Fixed Effect Model		
	Coefficient	Standard Error	P-value	Coefficient	Standard Error	P-value
DA	-7.707***	2.457	0.000	-0.000515***	0.000193	0.000
Firm Size	-1.155	2.144	0.607	0.007532***	0.00348	0.000
Profitability	30.064*	12.855	0.052	0.056142*	0.025865	0.067
CR	-2.33	4.338	0.608	0.0003406	0.0001916	0.117
Board Size	.44	.887	0.635	1.124423***	0.2436161	0.000
AGE	.147	.207	0.501	-.33	.481	0.515
BOD Independence	-5.965	5.405	0.306	10.522*	4.62	0.057
Constant	78.43	45.264	0.1269	-7.22**	2.547	0.025
Model Evaluation						
Test statistic	23.583			20.008		
P-value	0.000			0.006		
Overall R^2	0.314			0.541		

**** p<.01, ** p<.05, * p<.1*

Source: Calculations based on sample from 2015-2022 using Stata 17

Observing table 7, both models were found to be significant at 99% confidence level. For the fixed effect model, 51.4% of variation in readability was explained by model. However, 31.4% of variation in readability was explained by random effect model based on earning management, firm size, profitability and corporate risk.

Regarding the fixed effect model results, some observations will be made. The earning management had a negative significant impact on readability at 99% confidence level. Therefore, the higher the earning management, the lower the readability of the reports. The result was consistent with result from random effect model.

Observing firm size, it was found to have positive significant impact on readability keeping all other variables at constant level using the fixed effect model. However, the random effect model shows an insignificant impact of firm size on the readability. Table 7 shows that fixed effect model is more appropriate for the data. Therefore, as firm size increases, the readability significantly improved based on dataset.

Profitability was found to have positive significant impact on readability at 90% confidence level. The results were consistent between both fixed effect and random effect models. It shows that increasing profitability could significantly improve readability. This could be explained as profitability of companies increases, they may tend to simplify the reports so it could be apparent to the stakeholders how the company is doing well.

There was not enough evidence that corporate risk has a significant impact on readability. It shows that corporate risk variation does not have a real effect on readability. Some companies facing risks tending to be fully transparent to gain the trust of other stakeholders may explain this. While others choose to complicate the reports to hide corporate risks.

Regarding control variables, financial loss and audit quality were dismissed as stated previously due to multicollinearity. Other variables as board size and independence had a positive significant impact on the readability at 90% confidence level. Firm age had no significant impact on the readability at 0.05 level of significance.

Table 8: Hausman test for fixed and random effect model

Chi-square test value	22.942
P-value	.002

Source: Calculations based on sample from 2015-2022 using Stata 17

To decide which approach will be adopted and Conducting the Hausman test. The null Hypothesis is known to be the usage of random effect model. Since the significant is equal to 0.002 less than 0.05. Therefore, the fixed effect model will be used.

5-5 Hypotheses Discussion

The current research paper aimed to examine five different hypotheses: The first is concerned with examining the degree of difficulty for the readability of annual financial report in Egypt being difficult or very difficult to read and the other four hypotheses were concerned with testing the determinants of readability for narrative disclosures specifically, board of directors' reports.

Regarding the first hypothesis, results of statistical analysis found that 68% of the study's sample range from difficult to very difficult to read providing support to the mentioned hypothesis. Such a result is consistent with Ali (2021), who found that the readability of Egyptian firms' footnotes measured by length is complex, and Hassan et al. (2019), who used the Flesch Reading Ease score to measure the readability of narrative disclosures for Qatari firms and found that narrative disclosures need a postgraduate degree to be read. Dalwai et al. (2023) used the Flesch Kincaid grade level to measure the readability of narrative disclosures for Oman's financial sector. They found that the readability of narrative disclosures is challenging to read, and Ebaid (2024) who examined the readability of Saudi Arbian firms' narrative disclosures using the LIX score and found that narrative disclosures are very difficult to read.

Concerning the second hypothesis, results supported the existence of a positive relationship between corporate profitability and the readability of board of directors' report which give rise to accept the second hypothesis. This result is consistent with Moreno & Casasola (2016), who found a positive relationship between return on assets (ROA) and readability of narrative disclosures in Spain; Ginesti et al. (2017), who found that narrative disclosures of profitable firms are written using simple words and sentences and fewer technical terms in Italy; and Ali (2021), who found a negative relationship between length of narrative disclo-

sures and profitability in Egypt. While Smith et al. (2006) found no relationship between the readability of the chairman's statement and profitability in Malaysia.

Regarding the third hypothesis concerned with the relationship between corporate risk and the readability of board of directors' report, statistical analysis failed to find a significant relationship between the two variables providing no support for the hypothesis. This result is consistent with Kumar (2014), who didn't find any relationship between corporate risk and the readability of narrative disclosures for Asian firms listed in the United States (Moreno & Casasola, 2016), and Ebaid (2024). On the other hand, results contradict with (Bacha & Ajina, 2020; Park, 2023) who found a negative relationship between corporate risk and the readability of narrative disclosures and Smith et al. (2006) and Bradley & Sun (2021) who found a positive relationship between corporate risk and the readability of narrative disclosures.

Concerning the fourth hypothesis, results supported the hypothesis and provided evidence for the existence of a negative relationship between earnings management and the readability of board of directors' report. The result suggests that the higher the accruals earnings management, the more complex the board of directors' reports. This result is consistent with Goncalves et al. (2022), who found a negative relationship between earnings management and the readability of narrative disclosures for European firms; Shauki & Oktavini (2022), who found that in Indonesia, when managers are involved in manipulating earnings, they intentionally write complex narrative disclosures to distract the attention of stakeholders and inhibit them from realizing the manipulation of numbers; and Arora & Chauhan (2022), who found that the higher the earning management, the lower the readability of narrative disclosures in India.

Regarding the fifth hypothesis, results provided evidence for the existence of a positive relationship between firm size and the readability of board of directors' report giving support for the hypothesis. The result suggests that the larger the firm, the better the readability of the board of directors' reports and is consistent with Boritz et al. (2016), who found a positive relationship between firm size and the readability of 126,271 annual report in the United States; and De souza &

Borba (2022), who found that larger firms produce less complex narrative disclosures. The study depends on 51 firm in Brazil within period 2006 to 2019. While Dalwai et al. (2023), who found that large finance firms have more readable disclosures than small finance firms in Oman. Conversely, results contradicted with Kumar (2014), Ginesti et al. (2017), and Hassan et al. (2022) who found a negative relationship between firm size and the readability of narrative disclosures.

5-6 Conclusions, Limitations, and recommendations

The study aims to examine the readability level of the board of directors' reports for firms listed on the Egyptian stock exchange. Further, it also aims to investigate the relationship between profitability, corporate risk, earnings management, and firm size and the readability of the board of directors' reports. The study provided evidence that the readability of the board of directors' report ranges from difficult to very difficult to read. The statistical analysis conducted finds that there is a positive relationship between corporate profitability, firm size and readability, while there is a negative relationship between earnings management and readability. On the other hand, the study failed to provide any evidence for the existence of a relationship between corporate risk and readability.

Based on the findings of the current study, some recommendations can be addressed for managers, investors, and policymakers. Policymakers must be aware of the importance of narrative disclosures' textual features and the possibility of exploiting them to misguide stakeholders, as well as the content of financial statements. It is suggested that policymakers should take steps in order to improve the transparency and prosperity of the capital market by placing requirements on managers to enhance the readability of narrative disclosures. In addition to setting guidelines for an effective writing style for narrative disclosures and constant oversight of narrative disclosures by all firms to detect any attempts to manipulate stakeholders' perceptions. Managers should improve their writing style and discontinue providing distorted disclosures to gain personal interest. Stakeholders should be aware of the possibility of management exploiting the features of narrative disclosures to manage their perceptions. Thus, this may encourage them to depend on multiple sources of information.

The study has some limitations, which lead to potential areas for future research. First, the study applied only to the to the board of directors' reports of non-financial firms listed on the Egyptian stock exchange. Future research studies can examine the readability level and its determinants for the financial sector and the readability of other reports such as audit reports, corporate and social responsibility reports, risk disclosure reports, forward-looking reports, etc. Second, the study examined the relationship between profitability, corporate risk, earnings management, firm size only, and readability, further research is recommended to examine more determinants of narrative disclosure readability, including adoption of international financial reporting standards (IFRS), firms' life cycle, corporate and social responsibility practices, tax avoidance, ownership structure, management characteristics (e.g., managers' overconfidence, CEO narcissism, CEO age), and corporate governance mechanisms (e.g., audit committee characteristics, board gender diversity). Third, the study depended only on one measure for each variable. Future studies could apply other measures to each variable to make comparisons between the results of each measurement. In addition to constructing more accurate measures for the readability of narrative disclosures appropriate for the nature of accounting information written in Arabic. Fourth, the study has taken into consideration syntactic analysis only; future studies could examine thematic analysis of narrative disclosures and investigate the relationship between readability level and tone of narrative disclosures. The researcher recommends also investigating the economic consequences of the readability level. For instance, examine the impact of readability on stock liquidity, agency costs, trade credit, auditors' responses, and individual investors' responses.

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