the impact of corporate governance structure on the readability of board of directors' report in Egyptian environment

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Abstract:

The main purpose of this study is to investigate the impact of corporate governance structure on the readability of Egyptian board of directors' reports. The sample includes all EGX100 companies listed from 2013 to 2015, and the study uses multiple regression analysis to test the main hypotheses. Readability level is measured by applying the LIX formula, which suits the Egyptian context. The results demonstrate that board reports for EGX100 companies are complex and hard to read. In addition, four corporate governance variables, namely separation between CEO and chairman roles, number of board of directors' meetings, foreign board members. and number of audit committee meetings have an impact on the readability level of board reports for EGX100 companies. Further, all control variables except company performance are significantly associated with readability. Greater awareness of the complex style of disclosure reports is crucial for emerging markets to easily convey the required information and enhance communication with stakeholders. Based on the limited literature addressing readability, the current study contributes by investigating the impact of corporate governance structure on readability of corporate board of directors' reports in an emerging market.

Keywords – Egypt, readability, corporate governance, LIX formula

1. Introduction

An annual report is the formal communication medium intended to convey all required information (e.g., historical events, current status, and future prospects) to diverse readers (Courtis, 1995).

However, much argument has been made about the effectiveness of disclosing information to stakeholders in annual reports due to the increased complexity of accounting rules and the technical language of financial information (Kumar, 2014; Guay *et al.*, 2016). These factors may in turn lead to complex and incomprehensible language in annual reports that may result in failure to communicate the intended information. Consequently, some academic researchers in the accounting field have suggested overcoming this issue by increasing narrative disclosures in annual reports to clarify the intended meanings and convey the required information (Jones, 1988; Iu and Clowes, 2001).

Accounting narratives are relatively new phenomena that constitute a key component of the annual report (Clatworthy and Jones, 2003). Both quantified and narrative information have the same importance and should be considered in the financial statements (AICPA, 1973).

As a result of the increased demand for such narrative information from a range of readers who may find technical financial information more difficult to understand than a narrative, narrative disclosure in annual reports has increased, constituting approximately 80 % of the total annual report (Iu and Clowes, 2001; Clatworthy and Jones, 2001; Lo *et al.*, 2017). Courtis (1998) demonstrates the importance of making narrative information more comprehensible to increase effective communication with readers. With a wider group of stakeholders interested in obtaining information related to companies and their performance, narrative sections have become more attractive than pure financial information (Moreno and Casasola, 2016).

Accordingly, it should be possible for information intended to be disclosed by the sender (the company) to be interpreted correctly by the receiver (readers), which means that disclosed narrative information should be written at a level that can be comprehended by readers (Courtis, 1995, 1998). The emergence of corporate governance, international integrated reporting, and other disclosure norms have shifted the interest from disclosure content (what is being disclosed) to textual narratives (how it is being disclosed), which will lead to improved disclosure quality (Srinivasan *et al*., 2017).

There are two main trends in accounting narratives: content analysis and readability (Clatworthy and Jones, 2001). The former concentrates mainly on examining the topic in the text (thematic analysis), while the latter demonstrates the syntactical difficulty of the text (syntactic analysis).

One of the main functions of annual reports is to provide more readable and understandable information to stakeholders (Soper and Dolphin, 1964). Therefore, ease of reading or "readability" has derived much interest throughout the years in an effort to make the annual report more informative.

Readability refers to the ease with which words and sentences (the text) can be understood and read at an optimum speed (Drago *et al.,* 2017; Fakhfakh, 2016a, b). To convey the required information effectively, it should be written in a style and structure that is easy to read and understand (Subramanian *et al.*, 1993). Therefore, readability plays a crucial role in the communication process between management and stakeholders.

Several formulas have been introduced in studies to measure the level of readability of a given text (Subramanian *et al.,* 1993). Formulas depend on a process that calculates a score for written text without any participation by a reader. The score obtained is interpreted against a predetermined scale of difficulty ranging from "very difficult" to "very easy."

Despite the limitations of readability formulas, they are still widely used in many accounting narrative studies due to their simplicity and convenience because they calculate the readability level for the selected text in one single score (Coutris, 1998). As a result, readability formulas have become more common and popular in accounting literature. Among these formulas are the Dale and Chall index, Flesch reading ease, Flesch-Kincaid grade level, Gunnin-Fog score, SMOG index, and LIX index.

One of the formulas that has been extensively applied in countries in which English is not the first language is the LIX formula. LIX (the Lesbarhets index) formula was first introduced by the Swedish scholar Carl-Hugo Bjornsson in 1968 (Anderson, 1981). The LIX formula is practical because it can be applied to documents written in any non-English language (Lewis *et al.,* 1986). Accordingly, it can be used as a measure for assessing readability of accounting reports that are not written in English (Courtis, 1995; Lo *et al.,* 2017). Therefore, the current study employs the LIX formula to measure the readability level of EGX100 listed companies as it is more suitable than any other formula for measuring Arabic text.

Prior studies have introduced many factors to justify the importance of examining the readability level of a report. The first factor is the adoption of "plain English" disclosure rules by the SEC in 1998 to supply more readable narrative information and restrict management's use of vague language in reports (Bushee *et al.,* 2018; Bonsall IV, 2017)

Second, the accelerating rate of International Financial Reporting Standards (IFRS) adoption increases the importance of readability. The global application of IFRS requires translating them into non-English languages, which increases the awareness of readability (Morunga and Bardbury, 2012; Jang and Rho, 2013).

The third factor is the expected impact of disclosure readability on investors' judgment and decisions. Investors will rely on more readable narrative disclosures than complex ones to acquire the required information (Rennekamp, 2012).

Fourth is the obfuscation hypothesis, which suggests that management may use the complexity of narrative disclosures to intentionally obtain certain benefits. The need to test this suggestion increases the desire to study readability of narrative information to identify whether readability is related to deliberate manipulation by the company (the obfuscation hypothesis) (Courtis, 1995) or reflects the complexity of the transactions performed.

Most readability studies are conducted in the context of Western countries where the dominant language for both preparers and users of annual reports is English (Courtis, 1995). However, there are few that examine the readability of disclosure reports written in non-English languages (Courtis and Hassan, 2002; Jeanjean *et al.,* 2010) or in the context of developing countries.

According to signalling theory, companies may use the readability of narrative disclosures to signal a specific situation by concealing undesirable events that may have an impact on their competitive position. On the other hand, agency theory proposes that the textual structure of companies' reports may reflect complicated language needed to describe and disclose their complex transactions and events, creating information symmetry problems because readers are unable to understand them. Both rationales influence the quality of narrative disclosure, which affects stakeholders' decisions and behavior.

Recently, the responsibility of corporate governance (CG) structures has been maximized to strengthen their controlling role over management. CG includes a set of various interacting relationships among different parties of a company (such as the board of directors, management, and other stakeholders). Good CG will lead to an increase in the quality of disclosure through the controlling role performed by CG practices. Therefore, based on agency and signalling theories, the CG structure will govern the role of management and is expected to have an impact on the readability of companies' annual reports (Obigbemi *et al.,* 2016; Dempsey et *al.,* 2010). The CG structure is represented by two main groups of variables in the current study: board composition variables and audit committee (AC) variables.

Consequently, the main objectives of the current study are twofold. The first goal is to explore the ease of reading board of director's reports for Egyptian listed companies using the LIX formula. The second is to investigate whether corporate governance structure has an impact on the readability of annual board reports.

The study contributes to existing knowledge in two ways. First, as most prior studies of readability have been conducted in the context of Western countries focusing on documents written in English, the current study will apply on one of the devolving countries, namely Egypt. Some previous studies have called for exploring readability levels in different cultures and in non-English languages (Moreno and Casasola, 2016). Accordingly, this study aims to measure the readability level in the board of directors' reports for the EGX100 listed companies by applying the LIX formula to the Arabic language.

Second, the majority of readability studies examine the relationship between the readability levels of annual report sections and company characteristic variables (i.e., size, leverage, company performance, company age). However, less published evidence is available for the impact of corporate governance structure on readability level. Therefore, the current study investigates this relationship in the Egyptian context to fill this gap.

The rest of the paper is organized as follows. The next section introduces the Egyptian context, followed in section 3 by a brief discussion of prior literature and hypotheses formulation. Thereafter, section 4 presents the research methodology. Section 5 discusses the empirical findings and section 6 presents the conclusions.

2. The Egyptian context

The Egyptian government takes many steps to improve the financial reporting preparation and transparency, in addition to updating accounting and auditing standards. One of these steps addresses the Egyptian Stock Exchange (EGX). Recently, many changes were made in the EGX structure to cope with international stock exchanges. One of the noticeable changes is the importance of disclosure and corporate governance rules.

In the same vein, CG has been under-researched. Egypt applied several CG reforms at the international level to attract more foreign investment. The reforms involved issuing the first CG code for corporations, setting out executive CG rules for listed companies, and finally updating the CG code in August 2016 by developing a new one that maximizes the role of the board of directors and increases the effectiveness of reporting practices (Khalil and Maghraby, 2017).

With the enhanced role of the board of directors and reporting practices, it is worthwhile examining the influence of CG structures in the Egyptian context on one of the arguable narrative disclosure issues, the level of readability.

Regarding the disclosed reports, most Egyptian listed companies provide only their financial statements and audit reports. Few companies present their annual reports on their web sites. However, the EGX requires all listed companies to prepare board of directors' reports, which are similar to an annual report's management discussion and analysis (MD&A) section. Some Egyptian companies disclose their board of directors' reports separately, while others attach them to their financial statements. Accordingly, the most common report that contains narrative disclosures and provides useful information about the company's business and activities, financial condition, and operation status in the Egyptian context is the annual board of directors' report. Consequently, the current study focuses on this report for EGX100 listed companies.

Study of the readability level of reports for Egyptian companies is of significance for a number of reasons. First, there is a need to explore the readability level of prose passages in different non-Anglophone countries where the reports are written in non-English languages. The reasons behind the need for this exploration are the different legal and economic conditions of countries, which make generalization of previous studies conducted in other countries problematic. In this regard, Moreno and Casasola (2016) and Courtis (1995) argued the need for investigating the ease of reading reports for non-Anglophone countries.

Second, despite the multiple updates of the CG code in Egypt, prior studies have reported some weaknesses in board responsibilities, disclosure, and transparency in Egyptian CG practices (Ebrahim and Fattah, 2015). Egypt has a different CG structure, characterized by unique attributes that might affect narrative disclosures and the level of readability. In addition, one of the updates to CG structures is establishment of an audit committee that has has an extended supervision role in the company (Khlif and Samaha, 2016). Therefore, investigating the impact of this CG structure on the level of readability for Egyptian companies is an interesting research area.

Third, this study extends prior studies conducted in the Egyptian context regarding disclosure and corporate governance (Ebrahim and Fattah, 2015; Samaha *et al.*, 2015; El-Diftar *et al.* 2017; Khalil and Maghraby, 2017) to provide evidence on the impact of corporate governance variables on a rare perspective of narrative disclosure, the ease of reading, as well as explore the level of readability of the board of directors' report.

3. Literature review and hypotheses development

Existing empirical literature indicates there are many points that could be considered. First, the overwhelming majority of prior studies were conducted in Anglophone developed countries; these studies found the readability level ranged from "difficult" to "very difficult" (Jones and Shoemaker, 1994).Second, most studies apply the Flesch formula to measure readability level (Courtis, 2004; Jang and Rho, 2013; Moreno and Casasola, 2016). Third, prior studies concentrate on the chairman's message section in annual reports to measure the readability level (Courtis, 1986; Jones, 1988; Subramanian *et al.*, 1993). Finally, company characteristics are the mainstream variables widely examined in prior studies as the determinants of readability. These variables are company performance (Courtis, 1986; Baker and Kare, 1992; Subramanian *et al.*, 1993; Rutherford, 2003; Courtis, 2004; Li, 2008), size (Baker and Kare,1992; Courtis,1995; Rutherford, 2003; Richards and Staden, 2015), risk (Courtis, 1986; Rutherford, 2003; Kumar, 2014; Moreno and

Casasola, 2016), type of sector (Courtis, 1995; Jang and Rho, 2013), complexity (Li, 2008), auditor size (Jang and Rho, 2013), company age (Jang and Rho, 2013), volatility (Richards and Staden, 2015), earnings persistence (Li, 2008) and earnings management (Lo *et al.*, 2017).

Excluding Drago et al. (2017), who empirically consider the impact of family involvement in the board on readability, and (Ginesti et al., 2017) who examine few CG variables regarding the readability of the MD&A, the association between CG variables and readability level have not been broadly examined. The current study fills this gap by examining the impact of various CG variables on the readability level of the annual board of directors' reports for EGX100 listed companies from 2013 to 2015 using the LIX formula.

3.1 Corporate governance and readability

Although many prior studies have examined the relationship between corporate governance and disclosure, the empirical findings are inconclusive and mixed (Samaha *et al.*, 2015).

Agency and signalling theories have been used to explore whether corporate governance structure influences the readability of board of directors' reports. An effective corporate governance structure as a monitoring mechanism will mitigate writing style manipulation in annual reports and hence increase the quality of financial disclosure practices (Karamanou and Vafeas, 2005; Sun and Xu, 2017).

Corporate governance variables are classified into two main groups: board composition variables and audit committee variables.

3.2 Board Composition variables

3.2.1 Board size

Board size is the total number of all members on the board either executive or nonexecutive. A large board may perform high levels of monitoring, mitigate the dominance of the CEO, and provide the firm with diversity and increased experience (Goodstein *et al*., 1994). This argument implies that a large board is an indicator of good CG and quality of narrative disclosure, and hence increases the readability level.

The association between board size and disclosure has mixed results. While Abeysekera (2010) and Allegrini and Greco (2013) reported a significantly positive association, Arcay and Vazquez (2005) and Prado-Lorenzo and Garcia-Sanchez (2010) indicated an insignificant association between the variables. Further, (Ginesti et al., 2017) failed to find an empirical evidence for the impact of board size on the readability of the MD&A

In Egypt, the board is a single tier, consisting of an odd number of members with a minimum of three. The study proposes the following hypothesis:

H1**: There is a significant relationship between board size and the readability level of the annual board of directors' report.**

3.2.2 Role Duality

Role duality occurs when separation is lacking between the person managing the decision (CEO) and the one controlling the decision (chairman); in other words, when both roles are delegated to one person simultaneously. According to agency theory, it is preferable to keep both roles separated to maintain the monitoring function which enhance the management performance (Haniffa and Cooke, 2002). Further, Kelton and Yang (2008) considered separation to be the best situation to maintain board independence. Accordingly, the separation of the two roles will increase readability.

Some empirical studies have revealed a significant relationship between role duality and disclosure (Allegrini and Greco, 2013; Li *et al.,* 2008), while others have found no significant relationship (Haniffa and Cooke, 2002). In addition, (Ginesti et al., 2017) found a negative impact for role duality on the readability of the MD&A.

In Egypt, the managing role and controlling role may be performed by one person who is responsible for management and called executive director

(Elsayed *et al.,* 2010). The following hypothesis proposes a relationship between role duality and readability in the Egyptian context:

***H2*: There is a significant relationship between role duality and the readability level of the annual board of directors' report.**

3.2.3 Non-executive members

Non-executive members are independent and outside members. They act an advisory role on the board as well as a monitoring role over the actions of executive directors. Therefore, the advocates of agency theory argue the advantageous of increasing the number of non-executive directors on the board to protect the interests of stakeholders (Forker, 1992). In addition, increasing the number of non-executive directors is beneficial for monitoring management actions because of the consequences of increasing board independence and directors' expertise (Fama and Jensen, 1983). Some prior studies support this argument (e.g., Adams and Hossain, 1998; Cheng and Courtenay, 2006). This implies that increasing the number of non-executive directors will increase the level of readability.

In Egypt, the code stipulates that the board should include a maximum of three executive members which imply that most of the board composed from non-executive members. Based on the above arguments, the current study proposes that:

***H3*: There is a significant relationship between non-executive directors and the readability level of the annual board of directors' report.**

3.2.4 Board meetings

Board meetings are the time spent sharing all aspects and issues related to the firm with the directors on the board and making rational decisions regarding these issues (Kakanda, 2017).

According to agency theory, more board meetings increase the ability of boards to control management actions and hence alleviate the conflict between management and stakeholders. Based on this argument, Vafeas (1999) documented that firms with more board meetings are characterized by good performance. Moreover, Laksmana (2008) suggested using the number of board meetings as an indicator of corporate governance. He found that a regular number of meetings increased shared information and hence improved decision making.

According to the Egyptian CG code, boards must meet at least once every three months. The board can invite any individual either inside or outside the firm to discuss related issues. Few studies have examined board meetings as an indicator of good corporate governance. Consequently, the current study investigates the association between board meetings and readability of board reports for EGX100 listed companies. The following hypothesis is proposed.

H4: **There is a significant relationship between board meetings and the readability level of the annual board of directors' report.**

3.2.5 Family members on the board

A family company is "a company where members of the founding family are still represented on the board or are block holder of the company" (Chen et al., 2008). To protect their interests, shareholders tend to nominate family members to influence board decisions. Consequently, founding family members usually hold important positions on both the management team and the board; this is an indication of poor corporate governance because it interferes with effective monitoring by the board (Wang, 2006). Family companies may be forced by other stakeholders to disclose more voluntary information. Ali *et al*. (2007) provide empirical evidence that family companies report better quality earnings and provide better financial disclosure when firm performance is poor than non-family companies.

A few studies have indicated the association between family board members and disclosure is not significant (Al-Shammari and Al-Sultan, 2010; Alfraih and Almutawa, 2017; Shehata, 2017).

Drago et al. (2017) introduced three family-related antecedents to explain the variation in annual report readability: family power, the overlap between firm and family name, and generational stage. They reported that while there is a significantly positive association between annual report readability and family power, both overlap between firm and family name and generational stage have an inverse association.

Many boards of Egyptian listed companies include family members. Consistent with the above argument, it can be inferred that Egyptian companies with a large number of founding family members on their board will be in favor of increasing the readability of their reports. Consequently, the current study proposes the following hypothesis:

H5: **There is a significant relationship between family members on the board and the readability level of the annual board of directors' report.**

3.2.6 Foreign members on the board

Foreign members usually sit on a company's board as representatives of the company's foreign investors. According to regulatory changes over the last few years in both developing and developed countries, foreign investors can now participate in domestic stock markets (Bekaert and Harvey, 2000; Mangena and Tauringana, 2007).

The presence of foreign members on a company's board may improve the board's performance due to the members' knowledge and skills they obtained in their home countries. Further, companies with foreign members may have unique managerial capabilities that will lead the companies to differentiate themselves by disclosing more information (Ebrahim and Fattah, 2015). Therefore, based on signalling theory, these companies may tend to signal their good performance to their shareholders by easing their reports reading level.

Few studies investigate foreign member on the board as corporate governance antecedents. While Shehata, (2017) reports that foreign member are associated significantly with disclosure, Ebrahim and Fattah, (2015) find this relationship insignificantly.

Regarding the Egyptian context, companies nominate foreign members to their boards to attract foreign investments. Egyptian capital market is an emerging market which suffers from the weakness of the internal governance of listed companies due to a shortage of management resources. Accordingly, the nomination of foreign members on the boards of the Egyptian listed companies can play a unique role in solving these weaknesses. Based on this theoretical discussion and empirical evidence, the hypothesis that relates to this variable is:

H6: **There is a significant relationship between foreign members on the board and the readability level of the annual board of directors' report.**

3.3 Audit committee variables

3.3.1 Audit committee size

Audit committee size refers to the number of both inside and outside members of that committee who possess adequate skills and experience to supervise and monitor financial reporting and disclosure.

Through its monitoring role, a larger audit committee has wider knowledge and the necessary strength to have an impact on firm performance; hence, a large committee increases the quality of disclosure and the readability level of reports (Bedard *et al.,* 2004; Karamanou and Vafeas, 2005; Mangena and Pike, 2005; DeFond and Francis, 2005).

Empirical studies that have investigated the association between audit committee size and disclosure are both inconclusive and limited. Some studies provide evidence of a significantly positive association between audit committee size and disclosure (Li *et al.,* 2012; Yang and Krishnan, 2005; Appuhami *et al.,* 2017) whereas Mangena and Pike (2005) found no significant association between the variables.

Since the first CG code in Egypt was enacted in 2005, audit committees have been established to supervise the transparency of firm reporting (Afify, 2009; Khlif and Samaha, 2014). Following the updates stipulated in subsequent CG codes (2011 and 2016), the role of the audit committee has increased because of the additional duties assigned to be performed by it.

Based on the Egyptian CG code, the board of directors selects the audit committee, enjoying greater independence in discharging its duties. The audit committee will elect its own chairman. However, the board of directors is responsible for setting the criteria by which members are nominated and selected. Based on these arguments, the relationship between audit committee size and readability is suggested by the following hypothesis

H7**: There is a significant relationship between audit committee size and the readability level of the annual board of directors' report.**

3.3.2 Audit committee meetings

Audit committee meetings refer to the diligence of audit committee members in performing their responsibilities and duties through the number of meetings held during the year. Holding more meetings enables directors to have the time required to execute their monitoring role over management, which will increase disclosure quality and readability level (Karamanou and Vafea, 2005). In addition, frequent meetings allow audit committee members to be updated on all critical matters regarding disclosure issues (Abbott *et al.*, 2004).

Consequently, some empirical studies have indicated that corporate transparency improved as a result of increasing the frequency of audit committee meetings (Khlif and Samaha, 2016; Li *et al.*, 2012; Kelton and Yang, 2008), illustrating a significantly positive relationship for the impact of audit committee meetings on either financial or non-financial disclosure.

In Egypt, Board committees must meet at least once every three months. Meetings are deemed valid if attended by half the committee members or by the minimum quorum thereof (i.e., 3 members). The current study extends prior research by investigating the relationship between audit committee meetings and readability level of directors' reports of EGX100 companies. The following hypothesis examines this relationship:

H8: **There is a significant relationship between audit committee meetings and the readability level of the annual board of directors' report.**

4. Methodology

4.1 Sample

The unit of analysis for this study is the board of director's report. Therefore, the initial sample includes the board reports of the 100 most actively traded companies on the EGX from 2013 to 2015. The annual board reports are collected from the Egypt for Information Dissemination (EGID) database. The EGX classifies listed companies into nine sectors; all sectors are included in this study to explore the level of readability for all EGX100 companies. The final sample size used to construct the study is based on certain selection criteria. First, missing observations for some companies are excluded due to data unavailability. Second, following Cannon (2104), extreme observations where the standardized residual values are more than three are excluded from the analysis. This results in a final sample consisting of 207 observations. Table 1 outlines the initial and final sample of the study.

Table 1: The initial and final sample

Description	Number of observations
Initial sample (3 years)	300
Less: unavailable board reports	(22)
Less: extreme observation	(71)
Final Size	207

4.2 Research Design

The board of director's report represents the communication medium for voluntary narrative disclosure in Egypt. Further, the board's report contains disclosures related to current and prospective trends for Egyptian companies. The following procedures are used to calculate the readability level of board reports for EGX100 companies:

First, all reports are converted from PDF to Word format to ease the linguistic analysis process. Second, following Lo (2008), tables, figures, and graphs are removed from the text to be analyzed. Third, the text is uploaded in its primary Arabic language to the "*charactercounttool.com*" website, which automatically calculates the components of the LIX formula.

4.2.1 Measurement of readability

The current study employs the ***LIX*** formula to measure linguistic complexity. LIX considers two main components for expressing readability level: word length and sentence length. The LIX formula is:

LIX = 100(B/W) + (S/W)

Where:

W= Number of words

S = number of sentences

B = number of difficult words (> 6 letters)

The first component, 100(B/W), indicates word length, and the second component, (S/W), reflects sentence length.

A LIX readability score of 20 means that the text is very simple, while a score between 50 and 60 and over 60 indicate that the text is complex and very complex, respectively.

4.2.2 Independent and control variables

Eight corporate governance variables are used to examine whether the corporate governance mechanism has an impact on readability level. Table 2 summarizes these variables and their proxies.

Table 2: The variable definitions and their proxies

Variable	Acronym	Proxy
Dependent Variable:		
Readability level	Read	LIX score
Independent Variables:		
Board size	*BS*	The total number of the members on the board
Non-executive members	*NEx*	The ratio of non-executive members to total members on the board.
Role duality	*RD*	Dummy variable equal to 1 if the chairman is the same person as the CEO, 0 otherwise
Boards Meetings	*Meet*	The actual number of board meetings
Family members	*Fam*	Dummy variable equal to 1 if there is a family member on the board, 0 otherwise
Foreign members	*For*	Dummy variable equal to 1 if there is a foreign member on the board, 0 otherwise
Audit committee size	*AC Size*	The total number of the audit committee members
Audit committee meetings	*AC Meet*	The actual number of audit committee meetings
Control variables:		
Size	*size*	Natural logarithm of market capitalisation
Performance	*Per*	Total equity /net profit
Risk	*Lev*	Total liabilities/total assets
Firm Age	*Age*	Number of years since listed in EGX
Industry Type	*Type*	Dummy variable equal to 1 if the company belongs to financial and banks sector, 0 otherwise
Firm growth	*BM*	Book value equity/MV of the equity at the beginning

In addition, the current study includes six control variables that literature commonly describes and examines as having a significant relationship with readability. These variables are: company size (*size*), company performance (*Perf*), risk (*Lev*), company age (*Age*), industry type (*Type*), and company growth (*BM)*. The proxies of the control variables are also illustrated in table 2.

4.2.3 Research model

To test the hypotheses, an ordinary least squares (OLS) model is constructed as follows:

$$Read = \beta_0+\beta_1\, Size + \beta_2\, Per + \beta_3\, Lev + \beta_4\, Age + \beta_5\, Type+ \beta_6\, BM + \beta_7\, BS+ \beta_8 NEx+ \beta_9\, RD+ \beta_{10}\, Meet + \beta_{11}\, Fam+ \beta_{12}\, For + \beta_{13}\, ACS + \beta_{14}\, ACM+ \varepsilon$$

5. Results and discussion

5.1 Descriptive and univariant analyses

Table 3 exhibits the descriptive findings. Like most previous studies, EGX100 companies are more likely to have more complex board reports. Table 3 shows that the average LIX score is 51.5, which implies that the readability level of the sampled companies is very low; in other words, board reports are difficult to read. Recall that a lower LIX score indicates reading ease, whereas a higher score indicates reading difficulty.

Table3: Descriptive analysis of variables

Variables	Mean	Min.	Max.	Std. Dev.
Panel A: Dependent V.				
Read	51.5	43.9	62.7	3.25
Panel B: Independent and Control V.				
BS	8.18	3	17	8.085
NEx	.7059	.1429	.9333	.1922
Meet	9.93	2	24	4.783
ACS	3.44	2	7	.922
ACM	5.05	1	15	2.351
Size	8.7541	6.6021	10.5232	.7951
Per	.1150	-3.5450	9.2944	.7984
Lev	.4852	.0009	1.5156	.2867
Age	14.5	1	42	8.085
BM	2.0476	.0044	40.4711	3.6526
Panel C: Dummy Independent V.	Frequency		%	
RD: Existence	128		61.8	
Not Existence	79		38.2	
Fam : Existence	78		38.2	
Not Existence	129		61.8	
For : Existence	75		36.2	
Not Existence	132		63.8	
Type: Financial	30		14.5	
Non-Financial	177		85.5	

The results presented in the table exclude outliers

In addition, on average, the sampled companies have boards consisting of eight members who are more likely non-executive, not foreign, not family, and that meet approximately 10 times per year. About 62% of EGX100 companies have a board chairman who plays a dual role. Further, the mean size of audit committees is four members who meet on average five times a year.

Table 4 reports the correlation matrix. Readability is positively correlated with both board size and industry type, while it is negatively correlated with leverage and role duality

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Table 4: Pearson coefficient correlation matrix

	Read	Size	Lev	MV	Per	Age	Type	BS	NEx	RD	Meet	Fam	For	ACS
Size	.11													
Lev	-.16*	.22**												
MV	.12	.29**	-.10											
Per	.10	.24**	-.28**	-.10										
Age	-.11	.09	.14*	-.16*	.06									
Type	.25**	.09	.34**	-.02	-.01	.29**								
BS	.18*	.39**	.09	-.04	.10	.20**	.24**							
NEx	.14	.14*	-.18*	-.03	.04	.19**	.07	.40**						
RD	-.15*	.03	-.11	-.04	.10	.02	-.10	.02	-.06					
Meet	-.11	.15*	.05	-.08	.14*	.06	-.03	.03	-.01	.07				
Fam	.01	-.05	-.05	.14*	-.01	-.13	.06	.20**	-.03	.04	-.35**			
For	.02	.33**	.25**	-.08	.04	-.05	.30**	.26**	.01	-.16*	-.24**	.22**		
ACS	.09	.16*	-.13	-.04	.27**	.19**	-.01	.19**	.16*	.30**	.19**	-.26**	-.23**	
ACM	.13	.09	-.13	-.03	.19**	.10	.01	.01	-.14*	.17*	.34**	-.21**	-.25**	.38**

No serious multicollinearity among the independent variables.

5.2 Multivariate analysis

Table 5 presents the OLS results of the association between CG variables and readability. The adjusted R^2 is 24.1%, which is comparable to Drago *et al.* (2017). All firm characteristic variables are determinants for readability level in the Egyptian environment except firm performance.

Table 5: Regression results

	OLS Model
Constant	**46.490*** **
Size	**2.634*** **
Lev	**-3.376*** **
BM	**1.820** **
Per	-0.449
Age	**3.566*** **
Type	**5.331*** **
BS	1.463
N Ex	.600
RD	**-2.588* **
Meet	**-2.859*** **
Fam	-1.085
For	**-1.957** **
ACS	.385
ACM	**-1.980** **
Other statistics	
F-Ratio (sig.)	**5.668**
Adj. R^2	**.241**
Max. VIF	**1.665**

Note: *, ** and * indicate significant at 10per cent, 5per cent and 1per cent, respectively, No serious multicollinearity.**

The findings reveal that large older companies that belong to financial and bank sectors with high growth opportunities and low risk levels are more likely to have board reports that are complex. This finding is consistent with Li (2008), Kumar (2014), and Bushee *et al.* (2018).

Regarding CG structure, only four variables have a significant impact on readability level for board reports of EGX100 companies. The results support hypotheses ***H₂***, ***H₄***, ***H₆***, and ***H₈***. For hypothesis ***H₂***, the findings indicate that separation of the roles of chairman and CEO is significantly related to the readability level of EGX100 companies' board reports ($p < .010$), meaning that companies with a board chairman who is not also the CEO prepare readable reports. This result is consistent with agency theory, which supports the separation between these roles to maintain the board's independence. Therefore, hypothesis ***H₂*** is accepted.

The empirical findings indicate a significantly negative association between the number of board meetings and readability score ($p<.005$). Accordingly, EGX100 companies that hold more board meetings are more likely to have more readable reports. This negative association may be attributed to agency theory. More board meetings increase the board's monitoring of management and enable directors to perform their duties effectively, which promotes disclosure of clearer and more readable information. Therefore, hypothesis ***H₄*** is supported.

In addition, the results show that the coefficient for foreign board members is significant at the 10 percent level, which implies that EGX100 companies with more foreign members on their board produce easier to read reports. Foreign members sitting on EGX100 companies' boards have different knowledge and expertise that lead to improving the performance of these companies. Consequently, based on signalling theory, these companies will signal their good performance by increasing the readability level of their reports. Accordingly, hypothesis ***H₆*** is accepted.

The results for ***H₈***, which predicts a significant relationship between AC meetings and readability, show that the variables are negatively associated; that is, the more frequently AC meetings are held for EGX100 companies, the less the readability score of their board reports. Increasing the number of AC meetings enables members to execute their monitoring role and discuss all critical issues related to the company, which enhances disclosure quality. Consequently, companies with more AC meetings will demonstrate their enhanced disclosure level by ensuring more readable reports. Accordingly, $\boldsymbol{H_8}$ is accepted.

Finally, the multivariate analysis fails to provide empirical evidence for the impact of board size, non-executive members, family members on the board, or AC size on readability level of board reports in the Egyptian context. Therefore, $\boldsymbol{H_1}$, $\boldsymbol{H_3}$, $\boldsymbol{H_5}$, and $\boldsymbol{H_7}$ are not supported.

6. Conclusions

This study extends prior studies on the lexical properties of narrative disclosure by exploring the readability level of annual board of directors' reports in the Egyptian environment. The study aims to empirically investigate the impact of corporate governance mechanisms on the linguistic complexity of board reports for EGX100 companies from 2013 to 2015, which has rarely been examined in prior literature. This study employs OLS analysis to test the formulated hypotheses, using the LIX formula to measure the readability score.

The descriptive results indicate that board reports for EGX100 companies are difficult to read. In addition, the multivariate analysis provides empirical evidence of the impact of certain corporate governance variables on readability. Companies that have separation between the chairman and CEO roles, hold more board and AC meetings, and have more foreign members on their board are more likely to have annual board of directors' reports that are easy to read. Further, the findings demonstrate that all control variables—except firm performance—are determinants of the readability level of Egyptian board of directors' reports.

These findings provide important implications. For academic researchers, this study extends extant studies by exploring the linguistic complexity of disclosure reports in Egypt, a developing country. In addition, the study provides empirical evidence of the influence of corporate governance mechanisms on readability in a developing country context, which complements investigations of the same relationship in developed countries. For managers, recognizing their report writing style will help them convey the required information in an understandable manner.

Egyptian managers may not consider the level of difficulty users might have when reading their reports, which may lead to a lack of communication with stakeholders. Therefore, managers should be aware of the readability level of their reports.

The study has some limitations. First, the study focuses on EGX100 companies from 2013 to 2015. Future research can extend both the sample and time period. Second, the study explores the readability level of board reports for Egyptian companies; future research may make a comparison of the readability levels of these reports and other annual report sections, such as the financial notes. Third, readability scores are measured using the LIX formula. Future research may consider other types of formulas suitable for developing countries and make comparisons among such formulas. Finally, the study concentrates on illustrating the determinants of readability, while future research can examine the expected consequences of readability.

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