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Article

The Effect of Management Characteristics on Audit Report Readability

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Abstract: The present study investigates the relationship between management characteristics (managerial entrenchment, CEO narcissism, overconfidence, board effort, real and accrual-based earnings management) and the audit report readability of listed firms. In other words, this paper seeks to answer the question of “whether management characteristics can have a favourable effect on the audit report readability or not.” The multivariate regression model is used for this study. Research hypotheses were also examined using a sample of 1004 observations on the Tehran Stock Exchange during 2012–2018 and by employing multiple regression patterns based on a panel data technique and fixed effects model. The results show a negative and significant relationship between managerial entrenchment and real and accrual-based earnings management and the audit report readability, based on the FOG index, and a positive and significant relationship between management narcissism, CEO overconfidence, and board effort and the audit report readability, based on the FOG index. Moreover, a negative and significant relationship exists between management entrenchment, CEO overconfidence, real and accrual-based earnings management, and audit report readability based on text length and Flesch indices. A positive and significant relationship was evident between CEO narcissism and board effort and audit report readability based on the same indices. Besides, research models were also examined for more confidence using other additional methods, including FE, T + 1, ABB, and GMM, which confirm the study’s preliminary results. Since the present study is the first paper to investigate such a topic in the emergent markets, it provides valuable information about intrinsic and acquisitive characteristics of management for users, analysts, and legal institutions that contribute significantly to financial statement readability.



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Keywords: managerial entrenchment; CEO overconfidence; real and accrual-based earnings management; audit report readability; board effort

1. Introduction

Audit report communications’ effectiveness is partly a function of ease of readability and understanding of audit reports. Hence, the audit report is the main factor between auditors and financial statement users. Therefore, for such a relationship to be effective, the auditor’s presented report should be easily understandable for the users and their references to make sound decisions. In other words, financial statement users should be able to read the audit report easily and understand it. To some extent, comprehending a written text is under the influence of the existing degree of difficulty in that text. The previous studies, including [Still \(1972\)](#); [Regazzi \(1974\)](#); and [Soper and Dolphin \(1964\)](#), show that readability contributes to the effectiveness of the relationship between the auditor and financial statement users.

Therefore, the audit report source of the business annual financial reports is essential, since financial statements are provided based on such annual reports. The audit report

is an inseparable part of the relationship between financial statement users and business economic information. Readability is a criterion for measuring the existing complication within a text. Within a standard report for business, text narration indicates information disclosure from the managers' side. The US Securities and Exchange Commission (SEC) acted clearly for the audit firms' extremely complicated reports. As suggested by the head of the Commission, some direct and transparent measures should be adopted for combating complicated reports. According to SEC, the main reason for presenting and disclosing information from the business firms' side is to inform the investors and other financial statement users. Therefore, the presented reports should be understandable for the public users, such that, by referring to them, the financial statement users can easily make decisions about their economic plans (SEC 2007). Li (2008) declares that the annual report's readability has enhanced the performance of business firms. Readability improves auditing; some argue that the type of audit opinion affects investment analysts' investment decisions (Duréndez Gómez-Guillamón 2003; Zimon and Chlodnicka 2019), loan lending (Duréndez Gómez-Guillamón 2003; Goicoechea et al. 2021) and investors' decisions (Chen et al. 2020; Kausar and Lennox 2017; Köhler et al. 2020; Ianniello and Galloppo 2015). The audit report readability is important because audit reports are essential to analysts as a signal of financial statements' reliability (Coram et al. 2011).

Burgstahler and Dichev (1997) state that managers conceal their earnings management and managerial misbehavior, and complicate the financial statements. Although businesses deliver good news about reaching the objectives, they also have some derivers for concealing the tools used to fulfil the objectives. When the reported performance is different from basic principles, the managers are expected to make the annual reports lengthier and use circumlocution to hide their earnings management actions and misbehaviors.

Given the abovesaid facts, the present study assesses the relationship between management characteristics and audit report readability. In addition, this paper investigates whether management entrenchment, CEO narcissism and overconfidence, board effort, and real/accrual-based earnings management can enhance or debilitate the readability and understanding of audit reports. Since no study has been carried out so far on such a topic by considering the economic and political conditions of the emergent countries, including Iran, the obtained results from this paper can provide the scholars and experts with helpful information. Moreover, this paper's results help develop science and knowledge in this field and fill the existing literature gap to show the relationship between management characteristics on auditors' report readability. In the following, we discuss the theoretical principles and conducted studies in this field, methodology, data analysis, discussion, and conclusion.

2. Theoretical Issues and Hypothesis Development

The audit report generally has a standard framework, and auditors are obliged to be aligned with that for expressing their opinions. In a paragraph peculiar to opinion principles, the auditor expresses a set of results that contain distortion, limitation, and ambiguity. In this paragraph, the auditor is not limited to a particular framework and voices his opinions relative to his experience and knowledge. Such a paragraph should be understandable for all users, because a good relationship with the audit report users will be established when the report is understandable for the readers. Today, auditing is a well-established career, and all users are fully aware of the effect of decision-making (Endaya and Hanefah 2013; Arena and Azzone 2009). However, it is noteworthy that some factors will lower such effectiveness (Mihret and Yismaw 2007). Auditors should identify such factors and neutralize their influences in their reporting, because users of audit reports have relied on them for any kind of decision. In case of mistakes or dissatisfaction, their professional credentials will be subject to question, and they will lose their position. One factor affecting users' inappropriate decisions, and even misleading them, is the audit report's unreadability. Writing audit reports will perplex the reader, for which specialization and knowledge are required, and public users will not benefit from the audit report.

According to Standard 200, auditors' primary duty is to assess the accuracy of annual reports and give credit to financial statements by voicing their opinions. Hence, the less the financial statement disorders, the higher the quality is expected to be from the audit report. It is worth mentioning that the simpler the language of such reports, the better the users can benefit from them, since several financial statement users may not have the required specialization in this field. Therefore, the report should be readable and straightforward to understand by the users and applicable for their decisions. In this regard, Li (2008) posits that investors less attract firms with less readable annual reports. Tan et al. (2015) show that better readability of financial statements will improve future decisions and investors and users of financial statements. Sultan (2016) studied the relationship between annual reports' readability and the auditing role. He found that less readable financial statements increase audit costs.

On the other hand, Lo et al. (2017) indicate that those business firms that embark on either real or accrual-based earnings management have had highly complicated and lengthy annual reports in that year. Ajina et al. (2016) also obtained similar findings to Lo et al. (2017). Earnings management is a method that is increasingly used for manipulating financial results. However, a few studies have assessed the effect of that on the readability of the independent auditor's report. Pentland (1993); Carrington and Catasús (2007) show that earnings management has a negative effect on the working volume of auditors and ease of the auditing process (e.g., risk of non-discovery due to nonrealization of errors and mistakes). According to the conducted studies, including Guénin-Paracini et al. (2014), earnings management, especially real earnings management, causes auditors' workload. Lobo and Zhou (2001) express that, in firms with readable information, since their disclosure policy and the amount of disclosure are easily tractable by the shareholders, managers are less willing to manipulate the earnings. Ajina et al. (2016) show that earnings management would decline financial statement readability. Cheng et al. (2018) show a positive and significant relationship between real and accrual-based earnings management and financial statement readability. Salehi et al. (2020a) observe a negative and significant relationship between accrual-based earnings management and family and nonfamily firms' reputation. Seifzadeh et al. (2021) declare a significant relationship between real and accrual-based earnings management and financial statement comparability. Moardi et al. (2019) perceive that opportunistic earnings management is negatively and significantly associated with future cash flows and shows no significant relationship between accrual-based earnings management and future cash flows in the pharmaceutical industry. Such a relationship is negative and influential in the car industry. So, the first and second hypotheses of the study are as follows:

Hypothesis 1 (H1). *There is a significant relationship between real earnings management and audit report readability.*

Hypothesis 2 (H2). *There is a significant relationship between accrual-based earnings management and audit report readability.*

The relationship between management entrenchment and board effort and audit reports' readability'.

In recent years, the amount of research carried out was mostly about the readability of financial statements and less attention to audit reports' readability. In this study, we seek the readability of auditors' reports and their relationship with management characteristics. On the other hand, according to corporate governance mechanisms, the CEO has always been the first executive power in organizations, and this factor arms him with a considerable influence on the board of directors. Thus, a conflict of interests between managers and shareholders, given managers' executive power, raises some organizations' problems. Moreover, the CEO's dual role causes the managers to dominate the board of directors to the extent possible and control the board's receivable information. Broadly, compared

with their peers, dual managers are more willing to better show the performance of the business firm (Davidson et al. 2005). One of the motivational factors for manipulating accounting earnings to show the performance of an organization better by managers is CEO compensation, because one of the appropriate criteria for allocating the compensation of managers is measuring their performance; furthermore, CEO compensation is positively associated with the size and firm performance, and so CEO duality moderates the positive association between CEO compensation and firm performance. Since there are no good criteria for allocating rewards to managers, managers' performance evaluation has always been a metric for granting rewards. Hence, accounting figures and information are a kind of available criterion for measuring managers' rewards, among which accruals are one of the major contributing factors for managers when signing contracts (Kazan 2016). Accruals' presence provides the opportunity for managers to employ accounting policies to manage the accruals and manipulate the firm's real financial events to preserve their benefits (Bianchi and Chen 2015). Li and Kuo (2017) show a positive relationship between CEO compensation and earnings management. Besides, managers with financial specialization will carry out better earnings management due to more familiarity with accounting techniques and accounting policies.

Further, Krishnan et al. (2009) posit that managers with financial knowledge are more competent than others in earnings management through accruals and carry out some real activities, including excessive production and the decline of optional costs. In other words, managers with financial experience guide the analysts more frequently, and the earnings management less so. They have a more in-depth understanding of financial information disclosure's advantages concerning the increased firm value and decreased information asymmetry (Matsunaga and Yeung 2008; You and Zhang 2009).

Managerial entrenchment is a phenomenon that can be either useful or detrimental to the business firm. Such a phenomenon occurs when the manager has a dual role (CEO duality means the manager is both the head or vice president of the board and the CEO of the firm at the same time (Salehi et al. 2018)). The presence of entrenched managers can have favorable influences on the firm in the long run, but such a phenomenon can hurt the Stock Exchange. For example, lowering the dividend can cause the nonsatisfaction of short-term investors, reluctance of such investors, and withdrawal of capital from the Stock Exchange (Salehi et al. 2018; Frankel and Kelly 2019; Wong et al. 2011). Moreover, Zhou (2017) indicates that older managers present more readable reports than newer ones. The tenure of managers is one of the salient features used to calculate managerial entrenchment in this paper. In addition, there is a determining role in the quality of papered financial statements and management characteristics that affect the readability of financial statements (Seifzadeh et al. 2020). Smulders (1973) declares a significantly negative relationship between management entrenchment and the firm's financial leverage.

Levy and Szafarz (2016) show that parallel ownership when new shares are waiting and should be granted to the management is a vital tool for the management entrenchment. Salehi et al. (2018) found a significant relationship between management entrenchment, innovation, and firm reputation. Martins (2019) states a negative and significant relationship between management entrenchment and cash holding. Akbari et al. (2018) perceive a significant relationship between managerial characteristics and tax avoidance. Meo et al. (2017) show that management entrenchment can have some advantages for the business firms and their owners. When there are some motivations for increasing the firm performance, the entrenched managers are less willing to be involved in earnings management activities that endanger shareholders' interests. Salehi et al. (2020b) indicate no significant relationship between management ability and competition in the product market, which means management ability has no impact on competition in the product market. Salehi and Moghadam (2019) reveal a positive and significant relationship between managerial characteristics, namely management ability, and CEO confidence and firm performance. These two managerial features enhance the performance level of business firms. Surroca et al. (2020) indicate that management entrenchment is not always unwell-

come, and social responsibility is not always beneficial. That management entrenchment is entangled with social responsibility, and each of them can, in some specific ways, increase the interests of shareholders and the value of business firms. [Lari Dashtbayaz et al. \(2020\)](#) show that board independence, financial expertise, and audit committee are associated negatively and significantly with relational capital. The relationship between audit committee independence and relational capital is positive and significant. Moreover, their study results show that there is also a positive relationship between board independence and human capital, and the relationship between audit committee size and human capital is significant and negative. [Seifzadeh et al. \(2021\)](#) posit that managerial entrenchment is negatively associated and significantly with financial statement comparability.

Further, the board effort and financial statement comparability are associated positively and significantly. [Salehi et al. \(2020a\)](#) observe that firms' management entrenchment and financial performance, based on the indices of return on assets and Tobin's Q, have a positive and significant relationship. Moreover, their results show that there is a positive and significant relationship between management entrenchment and social responsibility, so the third and fourth hypotheses are as follows:

Hypothesis 3 (H3). *There is a significant relationship between board effort and audit report readability.*

Hypothesis 4 (H4). *There is a significant relationship between management entrenchment and audit report readability.*

The relationship between CEO narcissism and audit report readability.

Today, the management of business firms has a determining role in increasing efficiency and output. The increasing complication of societies has caused efficient managers to be recruited for managing business firms. Most scholars believe that decision-making is among the most critical management cores that influences a firm's failure or success ([Daft 1989](#)). On the other hand, according to psychology, making an appropriate decision from the managers' side is also influenced by personal characteristics (narcissism and overconfidence) and behaviors. Narcissism and overconfidence are a type of psychological disorder, showing itself with some signs, including self-superiority, ignoring others, excessive reward-seeking, and being at the center of attention ([Tamborski et al. 2012](#)). Hence, such people in business firms, in terms of dominating others, annoying people, and making decisions in such units, are based on agitation. So, such firms' operations and performance face serious interventions, because the managers have the intransitive power to affect the unit's strategies and general structure. The firm's performance will be afflicted. The conducted studies (e.g., [Conger 2002](#); [Chatterjee and Hambrick 2007](#); [Olsen et al. 2014](#); [Olsen and Stekelberg 2016](#)) show that narcissistic managers utilize the business as a tool for increasing their benefits, so such firms suffer from a weak organization. Hence, some factors, such as risky operations, fraud, earnings management, and rules and regulations infringement, are rampant ([Johnson et al. 2013](#); [Amernic and Craig 2010](#)). Since the responsibility for providing financial reports is up to the board and business management is one factor to be considered, in this paper, the effect of narcissistic and overconfident managers, managerial entrenchment, and board efforts on audit report readability is explored, because such managers have personality characteristics, such as selfishness, exploiting others, and seeking dominance ([Campbell et al. 2011](#)). Self-superiority is more likely than others to present fraudulent and complicated financial reports. This occurs because such managers gain personal benefits, satisfy the sense of superiority and arrogance, do not mind the presented rules and regulations, manipulate financial reports, make them complicated, and conceal their misbehavior actions to draw the admiration and attention of others ([Capalbo et al. 2018](#)). This will decline financial statements' readability and follow the independent auditor's report ([Bloomfield 2008](#)). Therefore, we can claim that narcissism can contribute to the managers' judgment about the chance of their success. Extremely narcissistic managers may consider those actions deemed impossible publicly, or with little

chance of success, as optimistic and perform such bold efforts to attract others' attention (Wallace and Baumeister 2002). According to Nietzsche, narcissistic managers are "superior men." The regular rules cannot be applied. Such a belief can increase the chance of immoral actions, such as earnings management, and justifying them. Zhang and Wiersema (2009), Hasan (2017) show that competent managers publish more readable financial reports. Ajina et al. (2016); Bonsall and Miller (2017); Ertugrul et al. (2017) also note that financial statement readability leads to the decline in debt costs. Ham et al. (2017) also declare that narcissistic managers often have the decision-making process under their dominance and are unwilling to consult with others. Hence, the chance of earnings management is higher in business with narcissistic managers. Ham et al. (2018) show a negative and significant relationship between narcissistic managers and performance in business firms. Church et al. (2019) identify a meaningful relationship between auditors' narcissism and aggressive reporting. Salehi et al. (2020c) indicate a negative and significant relationship between managers' overconfidence and conservatism. They conclude that a negative and significant association exists between CEO overconfidence and real earnings management. When overconfident Iranian managers have financial problems, they are not involved in real earnings management. This does not increase the firm value in the long run, but hurts the business units. Seifzadeh et al. (2020) show a positive and significant relationship between managers' narcissism, overconfidence, and financial statement readability. So, the fifth and sixth hypotheses of the study are as follows:

Hypothesis 5 (H5). *There is a significant relationship between CEO narcissism and audit report readability.*

Hypothesis 6 (H6). *There is a significant relationship between managers' overconfidence and audit report readability.*

3. Research Methodology

The statistical population of this paper includes all listed firms on the Tehran Stock Exchange. The systematic elimination method is used for samplings and, after imposing the following conditions, the statistical sample of the study will be selected with the following conditions:

Firms should be enlisted on the Tehran Stock Exchange until the end of 2011;

The required financial information should be presented completely during the period of the study;

Firms should not be affiliated with investment firms, banks, insurance, and financial intermediaries.

Concerning these limitations at the end of 2018, the final sample was obtained according to Table 1.

Table 1. The number of firms in the statistical population.

Description	Eliminated Firms in Total Periods	Total No. of Firms
Total listed firms on the Tehran Stock Exchange		395
Eliminating financial intermediaries, financial supply, insurance, and investment firms	88	
Eliminating firms entered the Stock Exchange during the study period	24	
Eliminating due to lack of access to information	133	
Statistical population		150

3.1. Data Collection and Method

The primary and raw information and data for hypothesis testing were collected using the Tehran Stock Exchange information bank, including Tadbir Pardaz and Rah Avarde

Novin. The published reports of the Tehran Stock Exchange were obtained via direct access (by analyzing the released reports in the Codal Website and manually collected data) to CDs and by referring to rdis.ir website and other necessary resources.

3.1.1. Data Analysis Method

The data analysis method is cross-sectional and year-by-year (panel data). This paper uses the multivariate linear regression model for hypothesis testing. Descriptive and inferential statistical methods are used for analyzing the obtained data. Hence, the frequency distribution table is used for describing data. At the inferential level, the F-Limer, Hausman test, normality test, and multivariate linear regression model are used for hypothesis testing.

3.1.2. Research Model

The following models are used to examine the hypotheses of the study:

Model (1)

$$\text{FOG}_{it} = a_0 + a_1\text{ME}_{it} + a_2\text{Over.Conit} + a_3\text{CEO_NAR}_{it} + a_4\text{RE}_{it} + a_5\text{AE}_{it} + a_6\text{BE}_{it} + a_7\text{age}_{it} + a_8\text{roa}_{it} + a_9\text{lev}_{it} + a_{10}\text{GRW}_{it} + a_{11}\text{size}_{it} + a_{12}\text{IINV}_{it} + a_{13}\text{Intang}_{it} + a_{14}\text{OWN}_{it} + a_{15}\text{seg}_{it} + a_{16}\text{busy}_{it} + a_{17}\text{current}_{it} + a_{18}\text{rest}_{it} + a_{19}\text{loss}_{it} + a_{20}\text{mtb}_{it} + a_{21}\text{Year}_{it} + a_{22}\text{Industry}_{it} + \varepsilon_{it}$$

Model (2)

$$\text{textindex}_{it} = a_0 + a_1\text{ME}_{it} + a_2\text{Over.Conit} + a_3\text{CEO_NAR}_{it} + a_4\text{RE}_{it} + a_5\text{AE}_{it} + a_6\text{BE}_{it} + a_7\text{age}_{it} + a_8\text{roa}_{it} + a_9\text{lev}_{it} + a_{10}\text{GRW}_{it} + a_{11}\text{size}_{it} + a_{12}\text{IINV}_{it} + a_{13}\text{Intang}_{it} + a_{14}\text{OWN}_{it} + a_{15}\text{seg}_{it} + a_{16}\text{busy}_{it} + a_{17}\text{current}_{it} + a_{18}\text{rest}_{it} + a_{19}\text{loss}_{it} + a_{20}\text{mtb}_{it} + a_{21}\text{Year}_{it} + a_{22}\text{Industry}_{it} + \varepsilon_{it}$$

Model (3)

$$\text{flashindex}_{it} = a_0 + a_1\text{ME}_{it} + a_2\text{Over.Conit} + a_3\text{CEO_NAR}_{it} + a_4\text{RE}_{it} + a_5\text{AE}_{it} + a_6\text{BE}_{it} + a_7\text{age}_{it} + a_8\text{roa}_{it} + a_9\text{lev}_{it} + a_{10}\text{GRW}_{it} + a_{11}\text{size}_{it} + a_{12}\text{IINV}_{it} + a_{13}\text{Intang}_{it} + a_{14}\text{OWN}_{it} + a_{15}\text{seg}_{it} + a_{16}\text{busy}_{it} + a_{17}\text{current}_{it} + a_{18}\text{rest}_{it} + a_{19}\text{loss}_{it} + a_{20}\text{mtb}_{it} + a_{21}\text{Year}_{it} + a_{22}\text{Industry}_{it} + \varepsilon_{it}$$

where:

Dependent variables

Auditor's report readability is computed using the following three indices:

FOG Index:

FOG: Audit report readability. To calculate the audit report readability, according to the study of (Lawrence 2013) Zhang, You, Lawrence, and Ajina et al., the following index is used, the reliability and validity of which for examining Persian text readability are confirmed by some local scholars. The audit report readability index is FOG (FOGIND), which is a function of two variables of sentence length (based on words) and complicated words (defined in the form of the number of three or multi-syllable words), and is calculated as follows:

$$\text{FOG index} = (\text{average no. of words in each sentence} + \text{percentage of complicated words}) \times 0.4$$

The process and manner of determination of audit report level of readability in the above index are as follows:

Selecting a 100-word sample from the beginning, a 100-word sample from the middle, and a 100-word sample from the end of the report, randomly;

Counting the number of sentences of each sample;

Determining average sentence length by dividing the number of words into the number of complete sentences of each sample of 100 words;

Counting the number of existing three-syllable and more than three-syllable words (complicated words) in each 100-word text;

Adding the number of complicated words with the average number of words in sentences;

Multiplying the number of complicated words and average words in sentences by the fixed figure of 0.4;

Calculating no. 4, 5, and 6 for two other 100-word samples;

Calculating the average results of all three samples by adding and dividing by number.

The relationship between the FOG index and readability level is as follows: FOG > 18 means the text is not readable and more complicated; 14–18 (hard text), 12–14 (average text), 10–12 (acceptable text), 8–10 (easy text).

Text length index (INDEX):

The second index for financial reporting readability is text length (index), which is calculated as follows:

Text length index = Ln number of text words.

Since higher values of the above indices indicate lower audit report readability, each calculated index is multiplied by -1 to obtain a direct criterion from the audit report readability index.

Flesch Index: The Flesch index determines the degree of difficulty or simplicity of the text based on two linguistic factors of average sentence length and the number of syllables of each sample.

$$\text{Flesch readability index} = \text{average number of words} \times -1.015 (\text{average words length} \times 262.835 - 84.6)$$

The process and manner of placement of financial reporting readability in the above index are as follows:

Calculating average word length: syllables are counted in the text and divided into total numbers of the text;

Word length is multiplied by 84.6;

The obtained figure from the previous step is subtracted from 206.835;

Calculating the number of average words: the number of words of the text is divided into the number of complete sentences;

The average number of words is multiplied by 1.015;

The obtained figure from the previous step is subtracted from the one calculated in the third step to determine the degree of text simplicity.

The relationship between the Flesch index and readability level is as follows: 71 or higher (extremely simple), between 60 and 70 (normal readability), lower than 60 (hard and unreadable).

Independent variables

ME: managerial entrenchment, for the evaluation of which, according to the study of [Salehi et al. \(2020a\)](#), the following six indices will be used:

Managerial ownership: the number of stocks available to the CEO divided by total published stocks of the firm;

CEO tenure: the duration the CEO has been in position consistently until the year under study;

CEO duality: if the CEO is the head or vice president of the board, 1; otherwise, 0;

Board compensation: the amount of compensation assigned to the approved board of Annual Ordinary General Assembly in the year under study;

CEO change: if the CEO has changed during the year, 1; otherwise, 0;

Board independence: unbounded members to total board members.

This paper uses the exploratory factor analysis to calculate the management entrenchment variable. Factor analysis is a multivariate statistical method for classifying and realizing the available structures among research data. This statistical method is usually used for two purposes: first, the exploratory factor analysis enables us to combine a broad spectrum of corporate governance variables to create managerial entrenchment proxy, while, in the previous studies, either a limited set of corporate governance factors were considered as managerial entrenchment or the problem of multilinearity is taken for

granted, which can be due to the presence of control and independent corporate governance variables in empirical methods, and, on the other hand, controlling the potential mutual relationship between variables is a significant and hard task. Second, one of the exploratory factor analysis characteristics assigns a weight to each involved variable in managerial entrenchment based on the correlation coefficient matrix's output. This method contrasts with the previous studies that assume each corporate governance factor's effect is equal.

As for the calculation of the variable of managerial entrenchment, initially, the information related to six corporate governance factors that affect the motivation and management competency is collected for each year–company. The linear correlation coefficient matrix of the above six variables is extracted, divided by year, and, finally, exploratory factor analysis is carried out. The weight of each sixfold variable is obtained. The factor's total weight coefficient achieves the variable of managerial entrenchment by a numerical value of the related factor.

Over.CON: managers' overconfidence. In this paper, the index of surplus investment in properties is used to measure managers' overconfidence as follows:

Following [Schrand and Zechman \(2012\)](#) study, this index indicates the amount of surplus investment in properties achieved from the residual of total asset growth regression in sales growth, estimated separately for each industry year. If the regression residual is larger than 0, this index equals 1; otherwise, 0 will be assigned. This index's basis is that managers invest more infirm than their peers in firms whose assets go up at a higher rate than sales.

$$\text{Assets.Grit} = a_0 + a_1 \text{sales.Grit} + \varepsilon_{it}$$

CEO-NAR: CEO narcissism

There are three criteria for measuring managerial narcissism:

Cash compensation index: narcissistic executive managers usually ask for higher cash compensations and stabilize their organizations. The cash compensation index of managers is achieved by dividing the approved cash compensation in the general assembly session into the firm's total payroll for the fiscal year.

CEO signature: it seems that those firms managed by CEOs with big signatures (a psychological index for narcissism) are less efficient than CEOs with small signatures. Recently, a research program focusing on leaders' signature size effort to judge a narcissistic leader's impacts on his organization ([Campbell et al. 2011](#)) measured 605 CEOs' signatures with 10 years of working experience from 400 firms (affiliated with 500 premium stocks in the New York market). All signatures were placed at the bottom of the annual financial reports. It is specified that bigger signatures, which indicate narcissistic personal characteristics, dominance on others, and self-confidence, are associated positively with the managers' mis-spend and lower return of the property. Compared with other active members in that industry, such managers are contradictorily more inclined to pay an increase.

It is worth mentioning that two cash compensation and signature criteria are used in this paper to measure narcissism, since the first index is not available due to the nondisclosure of managers' pictures by firms.

REM: real earnings management. Abnormal cash flow (EM_CFO), abnormal cost (EM_PROD), and abnormal discretionary costs (EM_DISX) are used for measuring firm sales control, production control, and discretionary cost control. Formula (2) is used for estimating abnormal cash flow of the firm (EM_CFO), Formula (3) for estimating abnormal production cost of the firm (EM_PROD), and Formula (4) for estimating the abnormal discretionary cost of the firm (EM_DISX). In this paper, Formula (4) is employed for estimating real earnings management.

$$\text{CFO}_{i,t} \text{ Ai,t-1} = \beta_{11} \text{ Ai,t-1} + \beta_{2\text{si,t}} \text{ Ai,t-1} + \beta_{3\Delta\text{si,t}} \text{ Ai,t-1} + \delta_{i,t} \quad (1)$$

$$\text{PRODi,t Ai,t-1} = \beta_{11} \text{ Ai,t-1} + \beta_{2\text{si,t}} \text{ Ai,t-1} + \beta_{3\Delta\text{si,t}} \text{ Ai,t-1} + \beta_{4\Delta\text{si,t-1}} \text{ Ai,t-1} + \delta_{i,t} \quad (2)$$

$$\text{DISXi,t Ai,t-1} = \beta_{11} \text{ Ai,t-1} + \beta_{2\text{si,t-1}} \text{ Ai,t-1} + \delta_{i,t} \quad (3)$$

$S_{i,t}$ in Formula (2) is the sales income of the firm i in the year t . $Prodi,t$ in Formula (3) is the total cost of the firm i of product in the year t , which equals the total product cost and inventory change.

$DISX_{i,t}$ in Formula (4) is the total office costs and sales costs of the firm i in the year t . For a similar industry and year, given the Formulas (2)–(4), EM_COF (abnormal cash flow of the firm), EM_PROD (abnormal production cost), and EM_DISX (abnormal discretionary costs) are assigned to the regression residuals. Since the firm may select a combination of these three methods, we used [Cohen and Zarowin \(2010\)](#) and [Zang \(2012\)](#) to create a total index of real earnings management:

$$EM\ PROXY = EM\ PROD - EM\ CFO - EM\ DISX$$

AEM: accrual-based earnings management, the calculation of which uses the adjusted Jone's model. The coefficients are estimated through Equation (2):

$$TA_{i,t} \text{ Assets}_{i,t-1} = \alpha_1 \text{ Assets}_{i,t-1} + \alpha_2 \Delta \text{Sales}_{i,t} \text{ Assets}_{i,t-1} + \alpha_3 PPE_{i,t} \text{ Assets}_{i,t-1} + \varepsilon_{i,t} \quad (4)$$

After estimating the coefficients, nondiscretionary accruals are calculated after coefficient estimation:

$$NDA_{i,t} \text{ Assets}_{i,t-1} = \alpha_1 \text{ Assets}_{i,t-1} + \alpha_2 \Delta \text{Sales}_{i,t} \Delta AR_{i,t} \text{ Assets}_{i,t-1} + \alpha_3 PPE_{i,t} \text{ Assets}_{i,t-1} \quad (5)$$

Finally, for the calculation of the discretionary accruals, we have:

$$DA_{i,t} \text{ Assets}_{i,t-1} = TA_{i,t} \text{ Assets}_{i,t-1} - NDA_{i,t} \text{ Assets}_{i,t-1} \quad (6)$$

In the above equation, TA is accruals, $Assets$ is total assets, $Sales$ is income, AR is accounts receivable, PPE is gross properties, machinery, and instrument, and NDA is nondiscretionary accruals.

In this paper, the following formula is used for calculating accruals, which is referred to as profit and loss:

$$\text{Accruals} = \text{Operational cash flow} - \text{profit before unpredicted items}$$

Most previous studies have used discretionary accruals (DA) to measure earnings and audit quality. This paper uses DA as a proxy for audit quality because it presents a degree of negotiations related to audit setting decisions. Abnormal accruals of performance setting estimate the size of DA .

BEF: board effort equal to the number of sessions held by the board during the year.

Control variables

LEV: financial leverage, which is equal to total debts divided by total assets;

Age: firm age, which is equal to the time interval between firm establishment date until the year under study;

Size: firm size, the natural logarithm of firm assets;

ROA: return on assets, which is equal to net profit divided by total assets;

GRW: sales growth that is equal to the sales of this year minus that of the previous year divided by sales of the previous year;

OWN: major shareholder, a shareholder with more than 5% ownership, 1; otherwise, 0;

linve: institutional shareholder, the number of stocks available to investors, public institutions, banks, insurance, and state-owned institutions;

Intang: intangible assets to total assets of the firm;

Seg: the number of commercial sections of the firm in the year under study;

Current: a current ratio that is equal to total current assets divided by current debts;

Rest: financial restatement, if the firm has restated the financial statements of the current year, 1; otherwise, 0;
 Loss: firm loss, should the firm be losing in the year under study, 1; otherwise, 0;
 Busy: if the end of the fiscal year is set on January 20, one will be assigned; otherwise, 0;
 Mtb: market value to book value of equity;
 Year: dummy variable for the year.
 Industry: dummy variable for industry.

4. Results

This paper uses three models to assess the relationship between management characteristics (real/accrual-based earnings management, management entrenchment, managers' overconfidence, managers' narcissism, and board effort) and the audit report readability. The present study (Table 2) has inserted the panel data method in its database, including 150 Iranian firms from 2012 to 2018. The variables of real/accrual-based earnings management, management entrenchment, managers' overconfidence, managers' narcissism, board effort, auditor's readability report, and a series of control variables have been used for estimating the models.

Table 2. Descriptive statistics.

Variable	OBS	Mean	Std.dev	Min	Max
Fog	1004	21.748	0.234	20.196	23.801
Textindex	1004	7.155	0.304	6.421	8.268
Flashindex	1004	99.816	18.432	54.921	177.105
Me	1004	17.016	6.449	0.111	28.229
Over con	1004	0.5	0.5	0	1
Ceonar	1004	0.011	0.022	0	0.364
Rem	1004	−2.54	0.178	−0.837	0.691
Aem	1004	0.066	0.055	0	0.378
Bef	1004	14.743	5.592	1	60
Age	1004	38.896	13.123	10	67
Roa	1004	0.104	0.161	−0.789	0.9
Lev	1004	0.623	0.259	0.105	2.626
Grw	1004	0.231	0.45	−0.739	3.579
Size	1004	14.235	1.447	10.532	19.773
Own	1004	0.51	0.209	0.021	0.994
Iinv	1004	0.594	0.323	0	0.994
Intang	1004	0.005	0.007	0	0.057
Seg	1004	14.235	3.414	7	32
Busy	1004	0.726	0.445	0	1
Current	1004	1.399	0.726	0.164	7.405
Rest	1004	0.73	0.443	0	1
Loss	1004	0.139	0.346	0	1
mtb	1004	4.405	7.514	−59.594	53.464

4.1. Linearity Test

According to Tables 3 and 4, by analyzing the linearity of variables, no linearity is evident among variables, and they are independent of each other.

Table 3. The collinearity model.

Model (1)		
Variable	VIF	1/VIF
Roa	2.25	0.445
Lev	2.23	0.447
Current	1.81	0.551
Loss	1.63	0.615
linv	1.59	0.629
Own	1.38	0.723
Size	1.38	0.725
Seg	1.33	0.751
Bef	1.22	0.820
Age	1.12	0.896
Busy	1.11	0.901
Aem	1.09	0.918
Intang	1.07	0.930
Rest	1.07	0.931
Grw	1.07	0.935
Ceonar	1.06	0.940
Overcon	1.06	0.946
Mtb	1.05	0.950
Me	1.05	0.951
rem	1.03	0.974
Mean VIF	1.33	

As shown in the table, since the obtained VIF statistic for all variables is less than 10, there is no linearity among model variables.

4.2. Sensitivity Analysis

Table 4 shows the results of sensitivity analysis model.

We should first analyze whether the data are pooled or panel, using the F test to estimate the model. This test's null hypothesis expresses that data are pooled, and hypothesis 1 declares that data are panel. After performing the F test, H_0 is rejected. The question is based on which models of fixed effects or random effects that the model is analyzable, which is determined by the Hausman test. Regarding the pooled test results reported in Table 6, the null hypothesis concerning the pooled data is rejected for the first models at 99%. Hence, a model with panel data should be used to estimate the model's coefficients.

Moreover, according to Table 6, the Hausman test statistic based on the first model's estimation equals 33.54. The probability level of 0.0294 is smaller than the table, so the null hypothesis is rejected. Hence, a model with a fixed effect is more appropriate for the research model.

Table 6 shows a negative and significant relationship between managerial entrenchment and real/accrual-based earnings management and auditor's report readability based on the FOG index. Their p -values are 0.000, 0.000, and 0.048 lower than the 0.05 significance level. Their coefficients are 0.016, 0.096, and 0.217, showing a negative relationship between these variables and the auditor's report readability. Moreover, according to the hypotheses' results, there is a positive and significant relationship between managers' overconfidence, managers' narcissism, and board effort and auditor's report readability based on the FOG index. Because their p -values are 0.042, 0.000, and 0.043 lower than the 0.05 significance level, their coefficients are 0.114, 0.042, and 0.003, there is a positive and significant relationship between these variables and audit report readability based on the FOG index. Since the p -value of the model is 0.0082, the model enjoys sufficient significance.

Table 4. Sensitivity analysis model.

	Fog	Textindex	Flashindex	Me	Overcon	Ceonar	Rem	Aem	Bef	Age	Roa	Lev	Grw	Size	Own	Iinv	Intang	Seg	Busy	Current	Rest	Loss	Mtb
Fog	1.000																						
Textindex	0.022	1.000																					
Flashindex	−0.051	0.067	1.000																				
me	−0.032	0.060	0.049	1.000																			
Overcon	0.036	−0.054	−0.083	−0.009	1.000																		
Ceonar	−0.003	0.017	0.017	−0.065	0.086	1.000																	
Rem	0.026	0.003	−0.004	−0.038	−0.070	−0.054	1.000																
Aem	0.068	0.001	0.012	0.051	−0.054	−0.009	−0.006	1.000															
Bef	−0.005	0.090	−0.014	0.099	−0.011	−0.032	−0.013	−0.026	1.000														
Age	−0.060	0.004	−0.027	−0.074	0.034	−0.090	0.007	0.056	−0.013	1.000													
Roa	−0.010	−0.073	−0.032	0.050	0.003	0.089	−0.023	0.054	0.049	−0.103	1.000												
Lev	0.065	0.085	−0.070	−0.020	0.065	−0.056	0.062	−0.031	−0.046	0.048	−0.620	1.000											
Grw	0.021	0.017	0.038	−0.045	−0.024	0.003	0.000	0.019	0.019	0.011	0.208	−0.092	1.000										
Size	−0.007	0.189	−0.013	0.026	−0.079	0.065	0.014	−0.089	0.371	0.035	0.038	0.071	0.003	1.000									
Own	0.089	−0.087	−0.004	−0.041	0.084	0.030	−0.006	−0.068	−0.107	−0.138	0.016	0.089	−0.034	−0.080	1.000								
Iinv	−0.007	−0.015	−0.048	0.051	0.025	0.122	−0.024	−0.105	0.077	−0.195	0.037	0.148	−0.011	0.189	0.455	1.000							
Intang	−0.000	0.005	−0.049	0.004	−0.064	−0.018	−0.022	−0.097	−0.054	−0.126	0.000	−0.029	−0.007	−0.056	0.124	0.116	1.000						
Seg	−0.005	0.282	0.006	0.055	−0.032	−0.041	0.013	0.082	0.149	0.068	−0.266	0.246	−0.073	0.247	−0.190	−0.076	−0.127	1.000					
Busy	−0.120	0.016	0.090	0.009	−0.053	−0.017	−0.015	0.075	−0.065	0.035	−0.000	−0.029	0.020	−0.035	0.142	0.233	0.031	−0.067	1.000				
Current	−0.069	−0.042	0.102	0.051	−0.044	0.009	−0.009	0.158	−0.032	0.084	0.492	−0.594	0.104	−0.132	−0.121	−0.215	−0.051	−0.128	0.016	1.000			
Rest	0.007	0.035	0.044	0.036	−0.044	0.046	−0.002	0.043	0.065	0.036	−0.090	0.058	−0.043	0.001	−0.086	0.025	−0.063	0.178	0.013	−0.055	1.000		
Loss	0.021	0.056	0.012	−0.061	0.010	−0.042	−0.051	0.051	0.022	0.078	−0.559	0.463	−0.146	0.001	−0.033	0.017	0.009	0.309	−0.023	−0.262	0.087	1000	
Mtb	0.043	0.001	−0.037	0.007	0.013	−0.035	−0.008	0.024	−0.032	0.021	0.068	−0.067	0.101	0.097-	0.015	−0.020	0.068	0.004	0.037	0.019	−0.107	−0.055	1.000

4.3. Research Models Estimation

Based on the FOG index (Table 5).

Table 5. FOG model estimation.

Variable (FOG)	coef	Std. Err.	z	Prob.
ME	−0.016	0.004	−4.18	0.000
Overcon	0.114	0.056	2.04	0.042
Ceo_nar	0.042	0.009	4.38	0.000
REM	−0.096	0.148	−3.72	0.000
AEM	−0.217	0.109	−1.98	0.048
BEF	0.003	0.002	2.02	0.043
Age	0.038	0.017	2.18	0.029
ROA	0.093	0.029	3.20	0.002
LEV	−0.008	0.004	−1.77	0.076
GRW	0.073	0.044	1.66	0.098
Size	0.005	0.008	0.71	0.481
OWN	−0.014	0.005	−2.80	0.005
IINVE	−0.049	0.021	−2.35	0.019
Intange	0.095	0.049	1.92	0.056
SEG	−0.003	0.003	−1.00	0.316
Busy	−0.070	0.026	−2.64	0.008
current	−0.038	0.019	−1.90	0.0057
REST	0.144	0.055	2.61	0.010
Loss	0.098	0.032	3.06	0.002
MTB	0.001	0.001	1.65	0.099
_Con	21.819	0.119	182.07	0.000
R-SQ		0.8568		
R-SQ ²		0.3107		
F-Limer		F(149,834) = 2.81 Prob. > F = 0.000		
Hausman		Chi2(20) = 33.54 Prob. > chi2 = 0.0294		
Prob. Model		Wald chi2(20) = 38.28 Prob. > chi2 = 0.0082		

Based on a text index.

We should first analyze whether the data are pooled or panel using the F test to estimate the model. This test's null hypothesis expresses that data are pooled, and hypothesis 1 declares that data are panel. After performing the F test, H0 is rejected. The question is based on which models of fixed effects or random effects that the model is analyzable, which is determined by the Hausman test. Regarding the pooled test results reported in Table 6, the null hypothesis concerning the pooled data is ejected for the first models at 99%. Hence, a model with panel data should be used to estimate the model's coefficients. Moreover, according to Table 6, the Hausman test statistic based on the first model's estimation equals 21.76, larger than in the table, so the null hypothesis is not rejected. Hence, a model with a random effect is more appropriate for the research model.

Table 6 shows a negative and significant relationship between managerial entrenchment, managers' overconfidence, real/accrual-based earnings management, and auditor's report readability based on the text length index, because their p-values are 0.007, 0.024, 0.049, and 0.001 lower than the 0.05 significance level. Their coefficients are 0.019, 0.046, 0.086, and 0.042, showing a negative relationship between these variables and the auditor's report readability. Moreover, according to the hypotheses' results, there is a positive and significant relationship between managers' overconfidence, board effort, and auditor's report readability based on the text length index. Their p-values are 0.000 and 0.006 lower than the 0.05 significance level. Their coefficients are 0.106 and 0.023, showing a positive and significant relationship between these variables and audit report readability based on

the text length index. Since the p -value of the model is 0.0014, the model enjoys sufficient significance based on the Flesch index

We should first analyze whether the data are pooled or panel using the F test to estimate the model. This test's null hypothesis expresses that data are pooled, and hypothesis 1 declares that data are panel. After performing the F test, H_0 is rejected. The question is based on which models of fixed effects or random effects that the model is analyzable, which is determined by the Hausman test. Regarding the pooled test results reported in Table 7, the null hypothesis concerning the pooled data is rejected for the first models at 99%. Hence, a model with panel data should be used to estimate the model's coefficients. Moreover, the Hausman test statistic based on the first model's estimation equals 21.76, which is larger than the table, so the null hypothesis is not rejected. Hence, a model with a random effect is more appropriate for the research model.

Table 6. Index model estimation.

Variable (Indext)	coef	Std. Err.	z	Prob.
ME	−0.019	0.007	−2.70	0.007
Overcon	−0.046	0.021	−2.25	0.024
Ceo_nar	0.106	0.028	3.76	0.000
REM	−0.086	0.044	−1.97	0.049
AEM	−0.042	0.012	−3.36	0.001
BEF	0.023	0.008	2.74	0.006
Age	0.058	0.023	2.49	0.013
ROA	−0.003	0.013	−1.92	0.054
LEV	0.042	0.009	4.38	0.000
GRW	0.059	0.033	1.75	0.080
Size	0.031	0.013	2.36	0.018
OWN	−0.092	0.069	−1.35	0.178
IINVE	0.093	0.029	3.20	0.002
Intange	−0.035	0.015	−2.31	0.021
SEG	0.018	0.004	4.20	0.000
Busy	0.034	0.034	0.99	0.321
Current	−0.001	0.001	−1.79	0.074
REST	−0.024	0.019	−1.20	0.230
Loss	−0.013	0.008	−1.65	0.098
MTB	−0.014	0.005	−2.81	0.005
_Con	6.452	0.230	28.04	0.000
R-SQ			0.8105	
R-SQ ²			0.3359	
F-Limer			F(149,834) = 5.66	
			Prob. > F = 0.000	
Hausman			Chi2(20) = 21.76	
			Prob. > chi2 = 0.3537	
Prob. Model			Wald chi2(20) = 44.32	
			Prob. > chi2 = 0.0014	

Table 7 shows a negative and significant relationship between managerial entrenchment, managers' overconfidence, real/accrual-based earnings management, and auditor's report readability based on the Flesch index p -values, which are 0.000, 0.016, 0.030, and 0.000 lower than the 0.05 significance level. Their coefficients are 0.028, 0.019, 0.074, and 0.028, showing a negative relationship between these variables and the auditor's report readability. Moreover, according to the hypotheses' results, there is a positive and significant relationship between board efforts and auditor's report readability based on the Flesch index, because its p -value is 0.004 lower than the 0.05 significance level. Its coefficient is 0.024, showing a positive and significant relationship between these variables and audit report readability based on the Flesch index. Since the p -value of the relationship between managers' narcissism and auditor's report readability, based on the Flesch index, is 0.051,

there is no significant relationship between these two variables at a 95% confidence level. Still, there is a positive and significant relationship at a 90% level, because the coefficient of that is 0.094, showing that, if managers' narcissism goes up, the readability of the audit report increases. Since the *p*-value of the model is 0.000, the model enjoys sufficient significance.

Table 7. Flesch model estimation.

Variable (Flesch)	coef	Std. Err.	z	Prob.
ME	−0.028	0.004	−6.97	0.000
Overcon	−0.019	0.008	−2.43	0.016
Ceo_nar	0.094	0.048	1.95	0.051
REM	−0.074	0.034	−2.18	0.030
AEM	−0.028	0.004	−6.96	0.000
BEF	0.024	0.008	2.89	0.004
Age	0.026	0.009	2.88	0.004
ROA	1.560	0.909	1.72	0.086
LEV	−0.099	0.036	−2.75	0.006
GRW	−0.233	0.061	−3.82	0.000
Size	0.107	0.015	6.93	0.000
OWN	0.013	0.006	2.28	0.023
IINVE	−2.634	1.923	−1.37	0.171
Intange	111.877	44.854	2.49	0.013
SEG	0.183	0.095	1.92	0.055
Busy	3.689	2.245	1.64	0.100
current	−0.372	0.197	−1.89	0.059
REST	0.165	0.033	5.04	0.000
Loss	0.107	0.015	6.93	0.000
MTB	0.038	0.035	1.07	0.283
_Con	93.537	8.914	10.49	0.000
R-SQ		0.8543		
R-SQ ²		0.3779		
F-Limer		F(149,834) = 53.26		
		Prob. > F = 0.000		
Hausman		Chi2(19) = 6.24		
		Prob. > chi2 = 0.9973		
Prob. Model		Wald chi2(20) = 66.21		
		Prob. > chi2 = 0.0000		

Robustness testing.

The FOG index.

In this paper, to obtain better results and confirm them, research hypotheses were also tested by using other additional methods, the results of which are as follows:

To confirm model (1), the relationship between management characteristics and auditor's report readability is examined based on the FOG index using the FE, GMM, and *t* + 1 methods. According to the results in Table 8 and based on the FOG index, there is a negative and significant relationship between management entrenchment and real/accrual-based earnings management and audit report readability, and the relationship between managers' overconfidence, managers' narcissism, and board effort and auditor's report readability is positive and significant. The findings follow the results of the primary method and confirm that. Since the results of the additional methods are in total conformity with the study's main method, we can confidently claim that a significant relationship between management characteristics and auditor's report readability is examined based on the FOG index. It is worth mentioning that the relationship between board effort and managers' narcissism and auditor's report readability based on the FOG index is confirmed via fixed effects and *t* + 1 methods at a 90% level.

Table 8. FOG model estimation.

Variable	FE		GMM		t + 1	
	coef	Prob.	coef	Prob.	coef	Prob.
FOG	-	-	−0.005	0.041	-	-
ME	−0.046	0.024	0.057	0.028	−0.034	0.001
Overcon	0.128	0.001	0.058	0.013	0.046	0.024
Ceo_nar	0.044	0.054	−0.042	0.001	0.037	0.052
REM	−0.012	0.015	−0.086	0.049	−0.003	0.054
AEM	−0.037	0.024	0.093	0.002	−0.214	0.036
BEF	0.110	0.002	0.004	0.000	0.037	0.088
Age	0.016	0.050	0.060	0.098	0.001	0.068
ROA	0.018	0.000	0.028	0.546	0.002	0.071
LEV	−0.075	0.217	0.020	0.057	−0.046	0.386
GRW	0.069	0.008	0.069	0.008	0.013	0.057
Size	0.013	0.057	0.079	0.138	0.003	0.000
OWN	−0.219	0.040	−0.073	0.018	−0.064	0.000
IINVE	0.078	0.357	0.148	0.022	−0.104	0.088
Intange	0.114	0.042	−0.067	0.027	1.068	0.374
SEG	−0.005	0.090	−0.039	0.057	−0.012	0.000
Busy	−0.021	0.029	−0.019	0.147	−0.033	0.000
current	−0.061	0.002	0.163	0.003	−0.014	0.385
REST	0.004	0.069	−0.001	0.087	0.016	0.017
Loss	0.002	0.014	0.001	0.178	0.039	0.000
MTB	0.001	0.225	0.344	0.000	0.003	0.000
_CON	21.850	0.000	14.251	0.000	0.025	0.837
R-SQ	0.8325				0.7664	
R-SQ ²	0.3572				0.7396	
Prob.	F(20,834) = 1.51				F(20,833) = 17.75	
Model	Prob. > F = 0.0704				Prob. > F = 0.0000	

Based on a text index.

To confirm model (2), the relationship between management characteristics and auditor's report readability is examined based on the text index using the ABB, FE, and t + 1 methods. According to the results in Table 9 and based on the text index, there is a negative and significant relationship between management entrenchment, managers' overconfidence, and real earnings management and auditor's report readability, and the relationship between managers' narcissism and auditor's report readability is positive and significant. The relationship between accrual-based earnings management and auditor's report readability was negative and significant based on the same index. Simultaneously, the board effort has a positive and significant relationship with the so-called variable at a 90% level. All these relations were not evident at the 95% level. Since the random effects method results conform with the study's main method, we can confidently claim that a significant relationship between management characteristics and independent auditor's report readability is examined based on the text index.

Based on the Flesch index.

To confirm model (1), the relationship between management characteristics and audit reports' readability is examined using the t + 1 method. According to the results in Table 10 and based on the Flesch index, there is a negative and significant relationship between management entrenchment, managers' overconfidence, and real/accrual-based earnings management and auditor's report readability, and the relationship between managers' narcissism and board effort and auditor's report readability is positive and significant. Since the results of the additional methods are in total conformity with the study's main method, we can confidently claim that a significant relationship between management characteristics and auditor's report readability is examined based on the Flesch index (Table 11).

Table 9. Indext model estimation.

Variable	t + 1		Fixed Affect		Method ABB	
	coef	Prob.	coef	Prob.	coef	Prob.
Indext	-	-	-	-	0.698	0.000
ME	−0.003	0.001	−0.011	0.000	−0.016	0.000
Overcon	−0.003	0.054	−0.003	0.000	−0.003	0.004
Ceo_nar	0.046	0.024	0.042	0.029	0.036	0.042
REM	−0.007	0.004	−0.061	0.022	−0.097	0.043
AEM	−0.787	0.067	−0.043	0.054	−0.019	0.000
BEF	0.044	0.054	0.057	0.028	0.069	0.008
Age	0.029	0.001	0.016	0.012	0.015	0.104
ROA	−0.095	0.119	−0.034	0.001	−0.005	0.041
LEV	0.080	0.022	0.062	0.342	0.037	0.052
GRW	0.036	0.076	0.281	0.000	0.042	0.064
Size	−0.006	0.198	0.297	0.000	0.041	0.006
OWN	−0.029	0.360	−0.163	0.158	−0.202	0.134
IINVE	0.047	0.064	0.098	0.280	0.042	0.097
Intange	−0.026	0.047	−0.014	0.007	−0.005	0.041
SEG	0.006	0.008	0.015	0.000	0.018	0.000
Busy	−0.012	0.372	0.092	0.595	0.027	0.847
current	−0.003	0.000	−0.036	0.089	−0.051	0.068
REST	−0.001	0.084	−0.019	0.353	−0.002	0.941
Loss	−0.036	0.188	−0.053	0.097	−0.068	0.061
MTB	−0.001	0.044	−0.096	0.000	−0.033	0.002
_CON	0.191	0.012	6.189	0.000	1.759	0.050
R-SQ	0.8105		0.7943		-	
R-SQ2	0.3359		0.2133		-	
Prob. Model	Wald chi2(20) = 41.39 Prob. > chi2 = 0.0033		F(20,834) = 2.97 Prob. > F = 0.0000		Wald chi2(21) = 141.62 Prob. > chi2 = 0.0000	

Table 10. Flesch model estimation.

Variable	t + 1		GMM		FE	
	coef	Prob.	coef	Prob.	coef	Prob.
Flesch	-	-	−0.014	0.007	-	-
ME	−0.027	0.026	−0.028	0.000	−0.011	0.000
Overcon	−0.006	0.000	0.161	0.000	−0.019	0.000
Ceo_nar	0.164	0.000	−0.015	0.027	0.106	0.000
REM	−0.096	0.000	−0.002	0.004	−0.011	0.000
AEM	−0.003	0.004	0.002	0.012	−0.003	0.000
BEF	0.002	0.014	0.022	0.026	0.023	0.006
Age	0.069	0.008	0.001	0.040	0.002	0.000
ROA	−1.830	0.226	−1.735	0.225	0.009	0.000
LEV	−0.001	0.027	−0.001	0.040	−0.124	0.000
GRW	−0.001	0.000	0.013	0.001	−0.543	0.279
Size	0.078	0.021	1.387	0.365	0.712	0.091
OWN	1.031	0.224	−0.001	0.020	0.022	0.000
IINVE	−0.058	0.005	0.120	0.010	−1.657	0.507
Intange	0.004	0.000	0.033	0.000	126.956	0.004
SEG	0.056	0.355	−0.390	0.528	0.190	0.041
Busy	−0.701	0.025	−0.702	0.002	2.665	0.574
current	−0.001	0.000	0.007	0.023	−0.887	0.121
REST	0.057	0.028	0.012	0.097	0.009	0.000
Loss	0.218	0.000	0.043	0.249	0.002	0.071
MTB	0.056	0.158	0.927	0.000	0.039	0.191
_CON	−0.924	0.650	6.033	0.099	90.436	0.000
R-SQ	0.7727				0.7589	
R-SQ2	0.3858				0.2355	
Prob. Model	Wald chi2(20) = 30.01 Prob. > chi2 = 0.0698				F(20,834) = 1.47 Prob. > F = 0.0823	

Table 11. Summary of the results.

Hypothesis	Results	Details
H1: There is a significant relationship between real earnings management and audit report readability.	Confirm	There is a negative and significant relationship between real earnings management and audit report readability.
H2: There is a significant relationship between accrual-based earnings management and audit report readability.	Confirm	There is a negative and significant relationship between accrual-based earnings management and audit report readability.
H3: There is a significant relationship between board effort and audit report readability.	Confirm	The relationship between board effort and audit report readability is positive and significant.
H4: There is a significant relationship between management entrenchment and audit report readability.	Confirm	There is a negative and significant relationship between management entrenchment and audit report readability.
H5: There is a significant relationship between CEO narcissism and audit report readability.	Confirm	The relationship between managers' narcissism and audit report readability is positive and significant.
H6: There is a significant relationship between managers' overconfidence and audit report readability.	Confirm	The FOG index shows a positive and significant relationship between managers' overconfidence and audit report readability. The Flesch index shows a negative and significant relationship between managers' overconfidence and audit report readability.

5. Conclusions

The study results show a negative and significant relationship between management entrenchment, real/accrual-based earnings management, and audit report readability based on the FOG index. There is a positive and significant relationship between management narcissism, managers' overconfidence, board effort, and audit report readability. Moreover, the Flesch index shows a negative and significant relationship between management entrenchment, managers' overconfidence, real/accrual-based earnings management, and audit report readability. Further, there is a positive and significant relationship between management narcissism, board effort, and audit report readability. However, various studies conducted on the relationship between management characteristics and financial statement readability are used in this paper for comparison, because the audit report readability is, to a great extent, associated with the readability of financial statements. Hence, should financial statements enjoy good readability. The audit report will be more readable.

The primary findings demonstrate that entrenched managers are more likely to provide less readability of audit reports. Moreover, it can be reasoned that entrenched managers may cover their opportunistic behavior, such as earning managers under the unclear financial notes; the negative and significant relationship between real/accrual-based earnings management and audit report readability leads to such a conclusion. In contrast, the obtained results show a positive and significant relationship between CEO narcissism and board effort and overconfidence and audit report readability, which means that higher CEO narcissism and overconfidence, and board effort, lead to higher audit report readability. Thus, the present study results align with (Lo et al. 2017), Ajina et al. (2016), Bloomfield (2008). They declare that firms with accrual-based earnings management propose more complicated and lengthier reports. The results also contrast with that of Cheng et al. (2018). They posit that accrual-based earnings management is associated positively and significantly with financial statement readability. Since these units make the annual report more complicated and conceal their illegal actions, including earnings management and annual reports, unreadability is the best method for fulfilling such purposes. The more unreadable the financial statements and the quality of financial reporting, the more influence the auditor presented. To increase their social position, auditors make an effort to present

reports with an appropriate level of readability to enable the users to understand and better decide on their economic affairs. So, we recommend future studies to assess the effect of audit quality and its components, including financial independence and auditor's industry specialization, on audit report readability. The present study's findings show, first, the evidence relative to the advantages that audit report readability has for analysts, investors, and creditors. Second, it shows how managers' psychological features affect the audit report readability. The ability to foresee the effect of such attributes on firm statements is of great importance for audit report users who make their most important economic decisions based on such comparisons. Then, these findings can lead to the development of theoretical principles of the previous studies concerning audit reporting linguistics in emerging markets in Iran and developing countries. Furthermore, results show to what extent do the psychological features and to what extent does the management competency in real and accrual-based earnings management contribute to audit report readability of business firms, and this issue, as a scientific achievement, can provide useful information for investors, capital market legislation, accounting standard compilers, and other users of accounting information. Finally, the results of this study presented new ideas for conducting new studies in the field of personal characteristics of managers and audit report styles of business firms.

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