



Earnings management of follower companies in response to the reporting of leading industry companies fraudulently

Ahmad Yaghoobnezhad

Associate Prof., Department of Accounting, Faculty of Economic and Accounting, Central Tehran Branch, Islamic Azad University, Tehran, Iran.
yaghoobacc@gmail.com

Elham Tajiknia

PhD Student in Accounting, Department of Accounting, Faculty of Economic and Accounting, Central Tehran Branch, Islamic Azad University, Tehran, Iran.
tajiknia@yahoo.com

Submit: 16/09/2021 Accept: 23/11/2021

ABSTRACT

The aim of this study was to investigate the effect of fraud with earnings management and fraudulent financial reporting of a leading company in the industry on other companies in its group. In this regard, two hypotheses have been developed to answer the research questions. To test these hypotheses, the statistical population of the study consisting of companies listed on the Tehran Stock Exchange between 2010 and 2019 in a period of ten years (320 companies per year and 3200 companies - year) have been studied. To test the research hypotheses, first identify fraudulent companies based on expert consensus and use logistics regression model based on data panel and also calculate F-SCORE as an indicator of earnings management in companies and independent t-test to test the F-SCORE difference was used Before and after the fraud of each class of industry.

The results of the hypothesis test show that the follower companies, in response to the fraudulent financial reporting of the leading company, manage Earnings to show better performance and maintain the favorable opinion of capital market analysts regarding their performance compared to the performance of the leading company in their group. Also, RSSTⁱ accruals Changes in accounts receivable and commodity accounts, all of which are integral components of earnings management, are significantly associated with financial reporting fraud.

Keywords:

Financial Reporting Fraud, Earnings Management, Industry Leading Companies, Industry Follower Companies.

1. Introduction

Company financial information is a plausible reference for making appropriate economic decisions. This information is utilized by investors and other shareholders to evaluate the company's performance. The board of directors of companies has the ability to influence the information of the annual financial reports. In this study, the behavior of the follower companies in the industryⁱⁱ is examined in a situation where the industry-leading companyⁱⁱⁱ has inflated its profit with fraudulent tests. Besides, the public is not aware of the action due to the fraudulent financial reporting and conditions are created in which the managers of the follower companies in similar industries face pressure to take earnings management tests.

Chief executive officers' (CEOs) are motivated to portray the company in the best possible way because the information in these reports can increase the benefits of managers and their ability to raise funds. However, overstatement of performance can have devastating effects on investors and shareholders. Wood^{iv} (2017) stated that the undiscovered fraud of an industry-leading company is remarkable because of the potential for indirect impact on the three items, these three items can be enough to motivate the chief management of the follower companies: 1- Stock Price Follower Companies 2- Managers' Career Perspectives 3- Personal Benefits of Managers (Wood, 2017). The role of analysts in this regard is not without effect. Analysts are unable to distinguish between actual fraud and unrealistic fraud. Therefore, Cotter and Young (2010) argued that analysts' expectations change with industry leaders' fraudulent financial reports from across the industry. As analysts help to spread the message of leaders' fraudulent reporting extensively, there will be increasing effects on motivating follower companies to respond to leaders' fraudulent actions (Akhigbe et al., 2006).

Fraudulent financial reporting in industry-leading companies encourages managers in affiliates to manage Earnings. This increased incentive to take action to manage Earnings is facilitated through two main channels: First, the unrealistic financial statements of the industry-leading company which makes analysts overly optimistic about the outlook for other companies in the industry. It will provide more challenges for managers to realize the income of the follower companies. Because management is without

using earnings management, it will be impossible for them to achieve this amount of profit increase. Second, the benefits or rewards of the company's board of directors which are determined by their performance may be due to the performance of a leading company in that industry, follower companies are found to be not performing well and predicting the appropriation of benefits or lower rewards will affect chief management. Therefore, they have a double incentive to do earnings management. This enhancement of motivation for earnings management will continue as long as the earnings and fraud management in the industry-leading company are going. (Wood, 2017).

2. Theoretical foundations and review of literature

2.1. Theoretical

Fraud and earnings management in financial statements have probably existed since the beginning of a business. In the study of Smith (1778) stated that the weaknesses of companies in conditions such as the devaluation of shareholders due to losses caused by fraud (Ramirez et al., 2017)^v.

There are many definitions of fraud in its general sense by the profession and the international community and individuals working in the profession, each of which refers in some way to the characteristics of fraud. Fraud encompasses all man-made tools, and one uses it to gain an advantage over another through false advice or concealment of the truth and includes all sudden events, tricks, concealments, and the other unfair ways to deceive others. (Rezaei and Riley, 2009). Similarly, in Auditing Standard 240, entitled auditor responsibility concerning fraud, fraud is defined as an intentional distortion of financial statements (Babaei, 2016).

According to the official association^{vi} of fraud investigators in 2012, the misuse of assets has been known as the most common type of fraud in recent years. Although, the amount of fraud in financial statements is less than the misuse of assets and corruption, the damage caused by this type of fraud is more than the other two types. This type of financial scandal misleads users, especially investors and creditors, while the main purpose of financial statements is to provide useful information to a wide range of users, especially investors and creditors, in order to make economic decisions. As a result, more

attention to the issue of fraud, especially fraud in financial statements as the most harmful type of fraud in organizations and companies is of great importance. Also, despite strict rules; fraud in financial statements is growing (Sepasi and Etemadian, 2019).

Fraud in financial statements (referred to as fraudulent financial reporting) occurs when managers use non-conforming accounting (GAAP) methods to mislead a group of shareholders about the underlying operations and the company's infrastructure or influence on the results of the company's contractual activities, evident in the accounting figures, try to manipulate the financial statements (Prolz & Luji, 2011). Although the definition of fraud varies from country to country, fraud is referred to as infrastructure regulations or laws. (Jones, 2011).

However, the earnings management is limited to reporting methods that are done within the scope of GAAP, it is not the same for fraud^{vi}. For this reason, there is a boundary between the two concepts, fraud such as forgery and alteration of accounting records or documents or cases in financial reporting that are inconsistent with GAAP is clearly defined^{viii}. Alicia Ramirez et al., (2017) stated that earnings management can also be defined as taking conscious steps within the accepted accounting principles to bring reported earnings to the desired level (Pourzamani, 2012).

Earnings management occurs when managers use their personal judgments in financial reporting and manipulate the transaction structure to change financial reporting (Haley and Wallen, 1998). This goal is either intended to mislead some profit owners about the company's economic performance or to affect the results of contracts whose conclusion is subject to the achievement of a certain profit (Asadi, 2011). Earnings management has also been defined as a specific example of organizational immoral behavior Hejazi (2020). Earnings manipulation is defined by management to achieve some of the expected earnings forecasts (such as analysts' forecasts, previous management estimates, or reduced earnings scatter and earnings smoothing efforts) (Beaver et al.). Considering the theory of conflict of interest between managers and owners, it can be argued that business unit managers can have the necessary motivation to manipulate earnings to maximize their interests. Marai et al., ^{ix} (2013) in their research on the difference between fraud and earnings management stated that

decisions made in the field of accounting regulations are often considered as earnings management and legal practices. Besides, manipulations that are done outside the law and standards mean fraud; while activities that are covered by earnings management, such as (smoothing earnings, removing major items), are a form of "creative accounting^x" which normally operates within the scope of the law.

According to agency theory, managers as agents try to maximize their utility. They seek the level of their benefits and benefits that reduce the net present value of the company. Most of these managerial rents can inflict significant losses on shareholders (Bebchuck and Fried 2003, Lopez-de-Silanes, and Shleifer, 1994; Yermack, 1997; and Bertrand and Mullainathan, 2004).

Follower companies understand the set of situations of leading companies concerning the expected performance of that industry. Thus, the desire and motivation of the follower companies for financial reporting is affected by the positive or negative market reaction (promising or disappointing behaviors) resulting from the announcement of the profit of the leading companies (Moghaddam 2013).

One of the reasons that motivate followers to take reactive action to show higher profit margins is the role of analysts in creating overall expectations of the industry. Other companies, like the leading company, have a favorable financial situation. According to the "Capital Market Expectation Hypothesis^{xi}", it is predicted that managers will be motivated to manage earnings to achieve or exceed analysts' forecasts (Farkandost, 2014).

Cotter and Young (2007) found that analysts are unable to analyze and detect fraudulent corporate financial reporting, so by publishing fraudulent financial reporting with their desired performance, they send false-positive signals at the market level. In addition, Jensen (2005) argued that analysts exert an undeniable influence on managers' decisions by pressing management for higher growth and increasing equity. Capital market research argues that analysts' advice reflects the overall expectation of the industry. By managing earnings, with strategic accruals, companies can remove financial constraints by marking the market and helping to finance valuable projects (Talebnia and Porzamani 2017). Kumar and Lenberg (2010) also stated that the Fraudulent reporting of industry leaders directly affect the

follower companies and their level of competition in the market. According to this model, rational expectations^{xii} and consequences mutually influence each other. The capital market rational expectations model actually refers to the rational choice theory^{xiii}, and this model also studies individual decisions based on game theory and contract theory. In this regard, we can refer to the positive accounting theory^{xiv}. The nature of positive accounting theory is such that by focusing on agency relationships, it provides a coherent framework for predicting managerial behavior in the selection of accounting policies. This theory introduces the manager as a representative who only seeks to maximize his economic interests and desirability. As long as the interests of the manager are not in line with the interests of the owners; Owners will suffer. In fact, in the shadow of Positive accounting theory, based on the two contracts theory^{xv} and representation in economics, it is possible to model the conflict of interests between different groups (Nicomram and Banimahd). In fact, the choice of fraud by both leaders and followers of earnings management requires the confirmation of the conflict of interest. According to agency theory, the first problem with an agency is the conflict of interest between the shareholder and the manager. It is to gain access to their own interests and the losses of investors are fraud and earnings management.

2.2. Research background

Alireza Adel (2020) in a study entitled, investigating the effect of the dimensions of the rhombus model of fraud on the occurrence of fraud in the financial statements of companies listed on the Tehran Stock Exchange investigated the impact of this issue. Findings show that there is a negative and significant relationship between financial stability, financial goals and opportunities with the occurrence of fraud in financial statements and between the occurrence of fraud in financial statements with rational justification and ability.

In another study by Huber, Dennis; Digabriele, James A. (2021) entitled, "Financial Statement Fraud and the Failure of Corporate Financial Statement Fraud Prediction". Theories related to the prediction of fraud and fraud in financial statements was examined. This paper examines those theories and models and explains

why those theories and models fail to predict the occurrence of corporate financial statement fraud.

Zang, Zeting.(2020) also examined in a study "A Machine Learning Analysis of Earnings Management Practices in Four East Asian Economies. This research mainly focuses on explaining the profit management behavior of companies using study variables in parametric models, but these are limited in their predictive performance.

This study applies a machine learning model to predict earnings management across firms in four East Asian economies. The machine learning model performs well in prediction in terms of the model's goodness of fit and low prediction errors.

Pasandidefard , Vadizadeh , Sepasi (2020) in their research entitled Identifying the effective factors on fraudulent and incorrect financial reporting using the meta-combined method examined the factors affecting fraudulent financial reporting. For this purpose, with a qualitative research approach and meta-synthesis tools, which consists of seven steps, 311 of the findings of previous research were systematically evaluated and analyzed using the opinions of experts and professors. Determined the factors that have the greatest impact on the "\'fraudulent and inaccurate financial statements\'".

Moghaddam and Sarkani (2013) in the study entitled "Investigating the existence of a subordinate relationship" Leader-follower " in the field of earnings management and dividend Policy " examine the status of earnings management dividend policies in two groups of companies, leader and follower to identify and explain the relationships between the behavior of these companies. Also, the results showed that there is a significant positive correlation between earnings management of leading and follower companies

Alikhani; Izadnia and Kiani .(2021) in their research entitled The role of earnings management in identifying fraud in companies listed on the Tehran Stock Exchange in 2021 examined the relationship between earnings management and fraudulent financial statements in companies listed on the Tehran Stock Exchange. The results of their research show that among the research models, the decision tree model and among the accrual models, the adjusted accrual model of Jones 1 with the book value ratio has the most relationship with fraudulent financial statements. Lucia Svabova et al.(2020) They did the research under the following title: Detecting earnings

manipulation and fraudulent financial reporting in Slovakia. The purpose of the study is to create a discriminant model of the detection of earnings manipulators in the conditions of the Slovak economy

In this research, M-score is used to show profit management and Banish model is used to identify fraudulent companies. The results showed that most of the companies that were found to be fraudulent also managed profits.

Babaei and Sefati (2017) investigated the relationship between earnings and fraud in the financial statements of listed companies and OTC members. Inflation accounts receivable growth and gross profit margin growth, sales growth, return on assets, capital productivity; Total assets, debt to equity There is a significant relationship with the possibility of fraud in financial statements. Bakhshipour (2015) in a study entitled "Managers' Capability and Real Earnings Management" has examined the manager's capability and real earnings management action. He states that if management is capable, it can improve the company's future performance by using real earnings management. Moghadam (2017) in a study entitled "Study of the relationship between self-obsession management and earnings management" has examined the extent of managers' self-obsession based on the Ruskin and Terry questionnaire (NIP-40) and real earnings management and accrued earnings management. The results show the direct and significant relationship between narcissism (CEO and CFO) with real earnings management and accrued earnings management.

Ghadim (2017) in a study entitled "Study of the effect of accuracy, sensitivity and temporal agreement of earnings on the remuneration of managers in companies listed on the Tehran Stock Exchange" provides a model of variables affecting the remuneration of the board, based on the obtained results to the achievement of the profit threshold and the predicted profit threshold, the remuneration of the board of directors increases and decreases for the achievement of zero profit. In general, the remuneration of the board of directors in Iran: based on profit accuracy, is more in line with the manipulation of real activities and conditional conservatism and is not in line with other research indicators (Carrar, 2017). In a study entitled "Study of Ethical Factors of Earnings Management" examining personal benefits and managing earnings, the result

showed that there was a significant relationship between personal interest and earnings management in the companies under study.

Also, concerning earnings and fraud management, "Shamsai" (2013) examined the challenges and differences between fraud and earnings management and how the auditor deals with these two issues. His research findings indicated that "one of the reasons for the emergence of earnings management and fraud in financial reporting is the presence of weak corporate governance in business units." Forghan Dost, Hashemi, and Dehkordi (2014) examined the relationship between earnings management and the possibility of fraud in the financial statements of companies listed on the Tehran Stock Exchange. In their study, they stated that there is a positive and significant relationship between the history of earnings management and the likelihood of committing fraud in financial statements. Furthermore, there is a direct relationship between the existence of incentives for profiteering and the likelihood of committing fraud in financial statements. Also, there is a significant relationship between the existence of motivational factors concerning companies that do not have a history of earnings management and committing fraud. In another study, Pouladi (2016) examined fraud motives and opportunity factors affecting earnings management to examine the relationship between (dependent variable) earnings management and (independent variable) leverage, dividend quality, audit quality and cash flow free from multivariate regression analysis. It has been used by the combined data method. The results showed that there is a significant positive relationship between the independent variables of dividends, audit quality, and earnings management. They indicated that there is also a negative and significant relationship between financial leverage and free cash flow with earnings management. However, no research has been done on the consequences of not using earnings management internally.

Findings from Gleason et al., (2008) provide empirical support for the hypothesis that fraud in an industry-leading company increases the motivation that executives of affiliate companies face managing earnings. Their results also showed that accounting restatements in large companies reduce shareholder wealth; The company's accounting restatements also causes a rapid decline in the company's stock price among other follower companies without accounting

restatements. This price reduction has nothing to do with modifications in analysts' revenue forecasts and is negatively related to the overall level of industry-adjusted accruals in the follower companies. The authors argue that the decline in stock prices on a renewal basis is due to investors' concerns about the lack of quality accounting assumptions. Another group of studies states that companies use earnings management to achieve their predetermined profitability goals. In a study entitled "Discontinuity and Earnings Management", Donelson et al., (2013) examine the direct evidence of discontinuities in earnings management compared to the distribution of renewed and presented profits. In this study Gilliam et al., (2013) and Graham et al., (2005) it is stated that in a similar study, managers are concerned about not having access to the level of profits or increasing the profits of other companies of their counterparts because this lack of access reduces stock prices and increases management turnover in the company.

Beatty et al., (2013) in a study entitled "The Spillover Effect of Fraudulent Financial Reporting on Peer Firms" examined how accounting fraud of the leading company increased the amount of investment in the follower companies due to optimistic analysis has increased their profits. They found in their research that follower companies are facing increased investment in the fraudulent reporting period and are reacting to the leading firm's fraudulent reporting. Moreover, this growing investment effect is created by capital market analysts of the performance of the leading company. These findings suggest that information analysts play an important role in conveying misleading performance expectations from follower companies in cases where they are unaware of the fact that the industry-leading company is distorting profits. They also concluded that analysts' optimistic expectations would lead to the transmission of fraud signals across the affected industry.

2.3. Research hypotheses

How the effect of a company's accounting information on other companies in its group is an important question. However, there is little evidence of how leading corporate financial statements affect the behavior of other companies in the group. In this research, we focus on the adverse effects of cheating by industry leaders and the reaction of their followers to this action. In this study, the effects of fraudulent

reporting of leading companies on the behavior of follower companies in relation to the choice of earnings management option are investigated. Increasing the motivation to take earnings management, which is created for the followers by the beginning of fraudulent actions by the leading company in the industry, leads to different reactions from the managers of the follower companies, and this reaction depends on the management performance (Beatty, 2013^{xvi}). When the company management is faced with making this decision, logic dictates that it choose the option with the least opportunity cost. In other words, management will choose the earnings management option when it expects the benefits of earnings management to be greater than the personal benefits expected of issuing a report in which it lacks earnings management. (Wood, 2017). The study found that increasing the expectations of market analysts increases the motivation of managers of affiliated companies to take action to manage profits; where profit expectations for affiliate companies are created by fraudulent reporting of the industry-leading company which certainly does not reflect the reality achieved through honest effort and careful financial reporting (Jensen, 2005).

The most important role of financial reports is to communicate effectively the transfer of financial information to external promptly and with high credibility (FASB, 1984).

A key component of these annual reports is the amount of profit that is used by people outside the organization to make decisions; Managers have both the ability and the motivation to manage earnings in order to increase or decrease profits in the current period than they intended. It is an important issue for accounting research to examine which management allows earnings management and to what extent this can turn into a fraud. Although many efforts have been made regarding the terms of the framework to differentiate the management behavior of financial reporting fraud, there is still no general agreement on this. Most of these frameworks state that management intentions and compliance with accounting regulations can provide a clear distinction between earnings management and financial reporting fraud. Regarding the differentiation aspects of earnings management, it has been stated that there are some ways of earnings management that overlap with fraud, even if they meet the standards. (Marai and Pavlovich, 2013^{xvii}). The

relationship between earnings management and accrual fraud both earnings management and fraudulent reporting both engage with accruals (Taylor and Dugan, 2007).

RSST accruals are used to test the first hypothesis. These accruals are commonly used by researchers for related tests to measure earnings quality. RSST measure is from Richardson, Sloan, Soliman, and Tuna (2006) that we term RSST accruals. This measure extends the definition of WC accruals to include changes in long-term operating assets and long-term operating liabilities. This measure is equal to the change in non-cash net operating assets. We also look at two accrual components. The first is change in receivables. Misstatement of this account improves sales growth, a metric closely followed by investors. The second is change in inventory. Misstatement of this account improves gross margin, another metric closely followed by investors.

Also employ several 'discretionary accrual' models commonly used in the accounting literature. Our comprehensive sample of misstatements provides a unique opportunity to investigate whether these models enhance the ability to detect earnings misstatements. First, we employ the cross sectional version of the *Modified Jones model discretionary accruals* (see Dechow, Sloan, and Sweeney 1996 for modified Jones model, and Defond and Jiambalvo (1994) for the cross . We also investigate the effect of adjusting discretionary accruals for financial performance as suggested in Kothari, Leone, and Wasley (2005). We term this Performance matched discretionary accruals. Finally, we employ two variations of the accrual quality measure described in Dechow and Dichev (2002).

The following hypothesis has been developed to investigate the relationship between fraudulent financial reporting and earnings management.

Hypothesis 1: There is a significant relationship between fraudulent financial reporting and the quality of RSST accruals in companies listed on the Tehran Stock Exchange.

According to the "capital market expectations" hypothesis, managers are predicted to manipulate financial statements to achieve or even exceed analysts' forecasts. (Bergsteller & owimse, 2006) argued that when an industry-leading company performs fraud well, it expects other follower

companies to perform well (Gilliam et al., 2014). In this regard, the second hypothesis has been developed.

Hypothesis 2: Follower companies manage earnings in response to fraudulent reporting by the leading company.

3. Methodology

The methodology of this research is post-event. Also, the present research is in the field of positive accounting research and based on real information in companies' financial statements; On the other hand, based on how the data are collected, the present study is a descriptive (non-experimental) research. The present study will be correlational. The statistical model used in this study is the regression model. Due to this, after aggregating the data in Excel software, statistical analysis was performed using Eviews and SPSS software. The research area is the companies listed on the Tehran Stock Exchange that was listed on the Tehran Stock Exchange before 2010 and their names have not been removed from the list of listed companies until the end of 2019.

3.1. Research Statistical Population and Collecting data

The time domain of this research is a ten-year period between 2010 and 2019. Also, according to the need for data of the previous and next year, the information of 2009 and 2008 has been used. The statistical population of this research includes all companies listed on the Tehran Stock Exchange and by adjusting this population using a series of restrictions that are mentioned below, the statistical sample is determined.

- 1) The company has been listed on the Tehran Stock Exchange after 2009.
- 2) Companies are not financial intermediation companies.
- 3) Do not change the fiscal year during the research period and time period.
- 4) Do not have a trading interruption of more than three months during the investigation period.
- 5) The information required by these companies is available within the scope of research in databases.

The statistical sample is selected by Systematic removal method. Applying the above conditions, 320

companies (equivalent to 3200 years - companies) have been selected to test the hypotheses.

In this research, library and field methods have been used to collect data, information, and questionnaires have been completed by experts. The source of data collection required for this study was a questionnaire for experts, financial statements, independent auditor reports and statutory auditors of companies. The research questionnaire has been provided to experts, and specialists. The statistical population includes auditing professionals, university professors, financial managers, and internal audit managers. In this regard, 20 experts have participated in the research process. Five experts from each group of experts (university professors; independent auditors, financial managers, internal audit managers) have been selected. Table 1 presents the characteristics of the experts interviewed.

Table 1 - Demographic information of the participants

Variable	Variable levels	Abundance	percentage
Gender	female	8	40%
	male	12	60%
	Total	20	100%
Age	30-40 year	4	20%
	40-50 year	6	30%
	Over 50 years	10	50%
	Total	20	100%
Level of Education	MA	10	50%
	P.H.D	10	50%
	Total	20	100%
Work experience	15-10 year	3	15%
	20-15 year	6	30%
	25-20 year	6	30%
	Over 25 years	5	25%
	Total	20	100%

The financial data required for this research have been collected through Rahavard Novin computer database and referring to the comprehensive information system of publishers <http://www.codal.ir> and <http://www.rdis.ir>. The collected data was entered into the computer using Excel software after the necessary classification based on the studied variables. The final analysis was performed using Eviews version 9 and SPSS software.

3.2. Identify a fraudulent company

In order to identify the fraudulent company from the consensus of experts, the questionnaire was completed in three rounds according to the Delphi method. For this purpose, a checklist has been prepared using the theoretical foundations of recognizing fraudulent financial reporting by considering the following two criteria:

- Use of audit paragraphs as a representative of fraud in financial statements
- Use other financial information to identify fraudulent companies

Use of audit paragraphs as a representative of fraud in financial statements

Using the research literature on financial statement fraud, and assuming the possibility of fraud in companies with unacceptable audit reports, all sections of companies whose reports were qualified, adverse and unqualified opinions were divided using content analysis. All the paragraphs resulting from the distortion with the importance, limitation and ambiguity have been identified and divided into the following categories and have been the basis for preparing the first-round questionnaire of the Delphi method:

A) Paragraphs of the auditor's report regarding the identification and incorrect measurement of incomes including (1. Identification and incorrect measurement of revenues - Contrary to the relevant accounting conditional sales standard 2. Identification and incorrect measurement of revenues - incorrect use of time difference, identification revenues of future periods in the current period 3. Identifying and incorrectly measuring incomes - Fake sales to fictitious persons 4. Identifying and incorrectly measuring incomes - Identification of annual adjustments related to revenues in case of profit and loss for the current period 5. Identification and incorrect measurement of income - other cases)

B) Paragraphs of the auditor's report regarding the overstatement of assets include: 1. Overstatements in assets - Overstatements of inventory at the end of the period which results in an understatement in the cost of goods sold. 2. Overstatements in assets - Reluctance to delete assets whose value has been lost due to damage or change in technology 3. Overstatements of

assets - Capitalization of expenses that should be included in the cost account 4. Overstatements of assets - Failure to record depreciation expense tangible or intangible assets 5. Overstatements of assets – understatements of inventories at the end of the period resulting in a decrease in the cost of goods sold 6. Excess of assets - showing more value for assets over time of education or merger 7. Overstatements of assets - other cases).

C) Paragraphs of the auditor's report regarding the elimination or reduction of debts and expenses include (1. Elimination of expenses – failure to record expenses through concealment of transactions 2. Elimination of expenses - Lack of a codified system for the cost of goods sold. Elimination of Expenses - Decrease in the purchase of goods during the period or the inventory of the first commodity of the period, which results in a decrease in the cost of goods sold during the period. Debt elimination - Debt manipulation return of reserves provided in the financial statements 6. D Debt and expense elimination - Failure to identify and record possible costs and debts of the legal dispute during the company 7. Elimination of debts and expenses - Lack of purpose reserves to reduce the value of assets 8. Elimination of liabilities and expenses - insufficiency to provision for staff termination benefits 10. Elimination of debts and expenses - Identification of annual adjustments in case of profit and loss concerning debts and expenses of the previous year. 11. Elimination of debts and expenses - Failure to exchange foreign exchange transactions in accordance with the relevant accounting standard 12. Elimination of debts and expenses - Failure to provide sufficient reserves for performance tax and contract insurance.)

D) Paragraphs of the auditor's report regarding other matters including (1. Lack of sufficient disclosure concerning significant items in the financial statements. 2. Failure to provide proper reporting for stagnant items. 3. Failure to observe the correct classification of accounts. 4. Lack of preparation of financial statements assuming the cessation of operations in companies whose assumption of continuing operations has been substantially questioned and reflected in the audit report.)

Use other financial information to identify companies with fraudulent financial reporting

Other items that are not related to the paragraphs of the independent auditor's report but can be effective in identifying fraudulent companies were identified.

1. Management's failure to timely correct the internal control system, repetition of paragraphs related to the weakness of the internal control system in the management letter 2. Existence of major or unusual transactions in the current activity of the company. 3. Transactions with related parties that have not been carried out in the normal course of operations. 4. Rapid growth or abnormal profitability compared to competitors in the industry. 5. Existence of cash flow from negative operations despite profit reporting in the financial period. 6. Low-profit quality (companies that have tried to smooth profits).

The questionnaire was prepared with the questions of the above subject and presented to the experts in three rounds (The questionnaire is listed in Annex 1.). In each round, a case that did not take into account the desired consensus was removed. Until the final three rounds of consensus were reached between the items as the characteristics of the fraudulent company.

A study entitled, the effect of the weakness of internal controls on the quality of profits by Vahidarpour, (2019) emphasized the effect of the weakness of internal controls on reducing the quality of profits.

3.3. Research Model and Variables

3.2.1. Fraud logistics regression

$$AAER_{i,t} = \alpha + \beta_1 RSST \text{ accruals}_{i,t} + \beta_2 \text{Change in receivables}_{i,t} + \beta_3 \text{Change in Inventory}_{i,t} + \beta_4 \% \text{Soft assets}_{i,t} + \beta_5 \text{Change in Cash sales}_{i,t} + \beta_6 \text{Change in return on assets}_{i,t} + \beta_7 \text{Actual issuance}_{i,t} + \varepsilon_{i,t}$$

The dependent variable:

$AAER_{i,t}$

Dependent variable: An dummy variable represents fraud. If in the information stage obtained from the questionnaire, the company had the characteristics of a fraudulent company, we assign it to the number one, and otherwise to that number zero.

The independent variables:

Variables related to measuring the quality of accruals:

*RSST Accruals*_{i,t}

WC =

[*Current Assets*

– *Cash and Short term investments*]

– [*Current Liabilities*

– *Debt in Current liabilities*]

NCO = [*Total Assets – Current Assets*

– *Investment and Advances*]

– [*Total Liabilities*

– *Current Liabilities*

– *Long term Debt*]

FIN = [*Short term Investments*

+ *Long term investments*]

– [*Long term Debt*

+ *Debt in Current Liabilities*

+ *Preferred Stock*]

• **Changes in accounts receivable:**

Change in receivables_{i,t}

$$= \left[\frac{\Delta \text{Accounts Receivables}}{\text{Average total assets}} \right]$$

• **Changes in the inventory account:**

Change in *inventory*_{i,t}

$$= \left[\frac{\Delta \text{Inventory}}{\text{Average total assets}} \right]$$

• **Percentage of soft assets including:**

Percentage of assets in the balance sheet except liquidity, real estate, machinery and equipment are referred to as flexible assets.

% *Soft assets*_{i,t}

$$= \frac{\left[\begin{array}{l} \text{Total Assets} \\ - \text{Cash} - \text{Property} - \\ \text{Plant and Equipment} \end{array} \right]}{\text{Average total assets}}$$

• **Changes in cash sales:**

Change in Cash sales_{i,t}

$$= \frac{\left[\begin{array}{l} \text{Sales}_t - \Delta A R_t \\ - \\ \text{Sales}_{t-1} - \Delta A R_{t-1} \end{array} \right]}{\left[\text{Sales}_{t-1} - \Delta A R_{t-1} \right]}$$

• **Changes in ROA asset returns:**

$$ROA_{i,t} = \frac{\text{Earning}_{i,t}}{\text{Average total assets}_{i,t}}$$

Change in Return on assets_{i,t} = *ROA*_t – *ROA*_{t-1}

receivable.

f. *Change in return on assets*: The difference in ROA between years *t* and *t-1*, where ROA is defined as earnings scaled by average total assets.

g. *Actual issuance*: An indicator variable coded 1 if the firm issued securities during year *t*, zero otherwise.

• **Actual issuance_{i,t}**

A dummy variable that is assigned the number one if the company has issued shares in the year under review and otherwise zero.

3.2.3. F-score model

To calculate the F-score, we first perform the above regression, to obtain the coefficients of each variable, and then using the actual information of the variables of each company - we form the equation year. The result is called the predicted value.

For example, we compile this regression for Isfahan Oil Refining Company with the data of 2015 as follows. Isfahan Oil Refining in 2015

$$\begin{aligned} \text{Predicted Value} &= -6.789 + 0.817 \times (r\text{ssr} - \text{acc}) \\ &+ 3.230 \times (ch - \text{rec}) \\ &+ 0.2436 \times (ch - \text{inv}) \\ &+ 0.122 \times (ch - \text{cs}) \\ &+ (-0.992) \times (ch - \text{earn}) \\ &+ 0.972 \times (\text{issue}) \end{aligned}$$

And then we enter the variables with the coefficients into the equation to calculate the prediction value.

$$\begin{aligned} \text{Predicted Value} &= -6.789 + 0.817 \times (0.01659) \\ &+ 3.230 \times (0.17641) \\ &+ 2.436 \times (0.00718) \\ &+ 0.122 \times (1.3333) \\ &+ -0.992 \times (-0.01285) \\ &+ 0.972 \times 1 \\ \text{Predicted Value} &= -5.041 \end{aligned}$$

2- From the coefficients estimated from the above model, we calculate the predicted value for each year of the industry.

3- Calculated the probability of fraud prediction with the following formula.

$$Probability = \frac{e^{(Peredicted Value)}}{1 + e^{(Peredicted Value)}}$$

4- Another step for calculating the F-Score is to calculate the unconditional probability as follows:

$$Unconditionaln probability = \frac{Number\ of\ observed\ fraud}{Number\ of\ firm + Number\ of\ observed\ fraud}$$

$$Unconditional\ probability = \frac{(Number\ of\ fraudulent\ companies\ viewed)}{(Total\ number\ of\ companies) + (Number\ of\ fraudulent\ companies\ viewed)}$$

5. F-Score Each company for a given year by dividing the probability (calculated in step 3) by the unconditional probability (calculated in step 4) is calculated from the following formula:

$$F - Score = \frac{Probability}{Unconditionaln\ probability}$$

The above F-Score is obtained for each year of our sample companies. A higher F-score indicates more likely to do earnings management that year^{xviii}.

4. Results

4.1. Fraudulent Company

In the questionnaire distributed among the experts in the first round, 23 items of audit paragraphs were presented to the experts as examples of fraud to score points. The final agreement of the experts was reached

on 12 paragraphs. Concerning other financial information to identify the fraudulent company, after the investigations, the following items were presented to the experts in the first round questionnaire. 7 paragraphs were presented to the experts as examples of fraud to score points. The final consensus was reached on 4 paragraphs. Experts have obtained the identification characteristics of the fraudulent company. The results are presented in Table 2.

The statistical population of the study was over 3200 years of the company and 948 companies were identified as fraudsters which its frequency distribution during the years under review is as described in Table 3.

In 2018 with 105 fraudulent companies and in 2011 with 86 fraudulent companies have the highest and lowest frequency of a number of fraudulent companies, respectively.

Table 2) Statistical test of consensus of experts

	First round	second round	Third round
Number of questionnaires	20	20	20
Kendall's W^a	0.459	0.514	0.597
Chi-Square	284,468	174,648	202,943
Degrees of freedom df	31	17	17
Sig Significance level)	0.000	0.000	0.000

Table No. 3) Frequency distribution statistics of the number of fraudulent companies by years studied

year	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Fraudulent company	85	105	104	98	91	91	93	98	86	97
Total companies	320	320	320	320	320	320	320	320	320	320

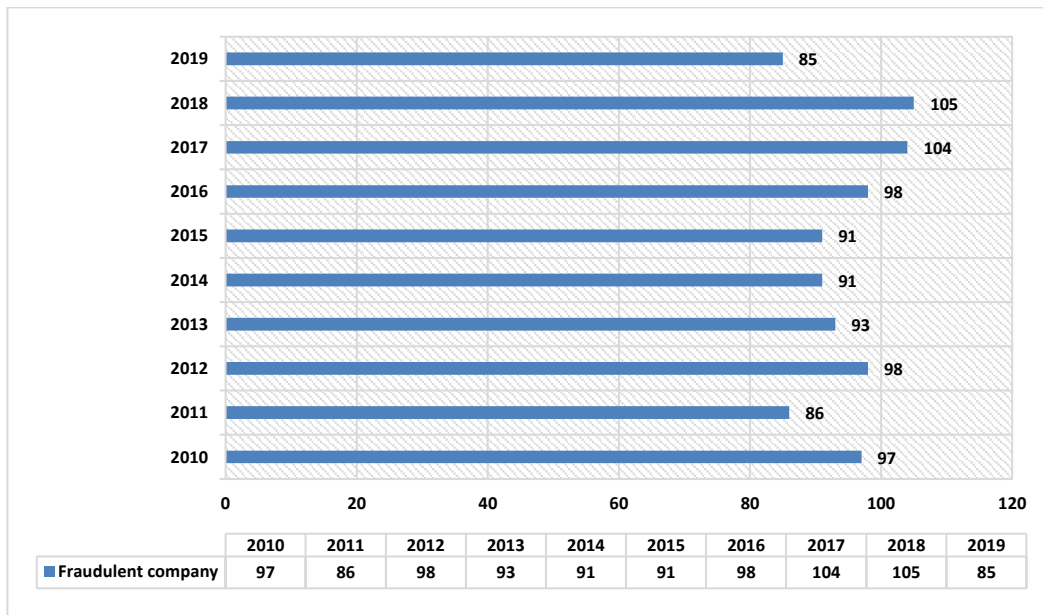


Figure 1) Frequency of fraud in the surveyed companies by year

4.2. Descriptive statistics

This data needs to be described to get better understanding of the nature of the study population

and become more familiar with the research variables, before analyzing statistical data. Table 4 presents the descriptive statistics of research variables.

Table No. 4) Descriptive statistics of regression of the first hypothesis

Variable name	mean	median	The minimum value	The maximum value	Standard deviation
Fraud	0.293	0	0	1	0.455
RSST accruals_t	0.332	0.378	-7.866	12.182	0.614
Change in receivable	0.040	0.001	-14.115	13.861	0.499
Change in Inventory	0.030	0.008	155.303-	167.045	4.084
Soft assets	0.761	0.782	-2.365	9.572	0.335
Change in Cash sales	-0.902		-749.471	950.405	27.746
Actual issuance	0.201	0	1	0	0.400
Change in return on assets	-0.030		-303.308	84.076	8.486

4.3. Statistical tests

Reliability test (static variables)

The reliability of research variables was tested by using Levin, Lin and Chui (2002) tests in this study. If the research variables are not reliable; It will cause a problem of false regression. The test results show that all variables are stable. The results of this test are illustrated in Table 5.

Table 5) Variability reliability test

Variables	Levin, Lin and Chui tests	Sig
RSST accruals_t	-17.759	0.000
Change in receivable	24.585-	0.000
Change in Inventory	23.819-	0.000
Soft assets	24.008-	0.000
Change in Cash sales	3.635-	0.000
Actual issuance	6.006-	0.000
Change in return on assets	47.691-	0.000
Fraud	8.335-	0.000

Regression model selection test

One of the most important issues in econometrics is the issue of variance inequality. Heterogeneity variance means that estimating the regression model of error sentence values has unequal variances. For this purpose, in this research, the (Breusch–Pagan *test*) has been used. Breusch–Pagan *test* and the significance level of 0.000 reject the null hypothesis that there is variance homogeneity. According to the results of Table Six and the existence of variance heterogeneity, the conventional OLS least squares method will no longer work and the GLS generalized least squares method is used to solve the problem. Before fitting the patterns, it is necessary to perform the F-Limer test in order to evaluate the use of the panel data method (panel) with fixed effects against the combined data method for research patterns. The value of the F test statistic is high (8.254514) and is more than the critical quantity and also the value of probability value is less than 5%, so the panel data method should be used for estimate

Table 6) Regression model selection test to test the first hypothesis

test	Statistics	value	Significance	Result
chow	F-Limer test	8.254	0.000	panel data
Haussmann	Kai-Do	12.443	0.000	Fixed effects
Breusch–Pagan test	Lagrange	4.584	0.000	Generalized least squares variance heterogeneity

After performing the F-Limer test, we use the Haussmann test to determine the method of estimating the model from the two methods of fixed effects or random effects. The Haussmann test is one of the main tests in panel studies.

The main assumption in the fixed effects model is that the error component is correlated with the explanatory variables. However, in the random-effects model, it is assumed that there is no correlation between the error component and the explanatory variables. The Haussmann test uses the Kai-Do criterion. If the probability of the test statistic is more than 5%, at a significance level of 95%, we can prefer random effects to fixed effects. According to Table 7, the probability level of the null hypothesis that there are random effects is also rejected at the 5% error level,

and the model should be estimated based on the fixed effects.

4.4. Testing hypotheses

4.4.1. The relationship between fraud and earnings management

Hypothesis 1: There is a significant relationship between fraudulent financial reporting and the quality of RSST accruals in companies listed on the Tehran Stock Exchange.

Table 7 shows the results of estimating the model parameters of the effect of variables on the prediction of distortion and fraud. Durbin-Watson Statistics is 1.672, and therefore the statistic correlation statistic of the disorder is rejected. The probability value for the F-statistic for specification is 0.000, and therefore the null hypothesis based on the model specification error is rejected. As a result, at a 99% confidence level, the significance of the model is accepted. To test the first hypothesis; In this model, the coefficient of the variable RSST Accruals (at the significant level of 0.0035 and coefficient -0.046) indicates the effect of this variable on the forecast of the fraudulent company; In other words, the RSST variable can be used to predict fraud. Also, the coefficient of the variable, the change in accounts receivable (at a significant level of 0.041 and the coefficient of 0.030) indicates the effect of this variable on the forecast of the fraudulent company; In other words, accounts receivable changes that can be used as ways to manage earnings to predict fraud. Also, the coefficient of the variable, the change in inventories (at a significant level of 0.013 and the coefficient of -0.003) indicates the effect of this variable on the forecast of fraudulent financial reporting.

Table 7) Results of the statistical test of the first hypothesis

$$AAER_{i,t} = \alpha + \beta_1 RSST \text{ accruals}_{i,t} + \beta_2 \text{Change in receivables}_{i,t} + \beta_3 \text{Change in Inventory}_{i,t} + \beta_4 \% \text{Soft assets}_{i,t} + \beta_5 \text{Change in Cash sales}_{i,t} + \beta_6 \text{Change in return on assets}_{i,t} + \beta_7 \text{Actual issuance}_{i,t} + \varepsilon_{i,t}$$

variable name	Coefficient	T statistic	Significance level
c	0.324	14.833	0.000
RSST accruals_t	-0.046	-2.921	0.0035
Change in receivable	0.030	2.037	0.041
Change in Inventory	-0.003	-2.475	0.013
Soft assets	-0.022	-0.792	0.428
Change in Cash sales	0.000	-0.446	0.655
Actual issuance	0.025	1.480	0.138
Change in return on assets	0.000	1.020	0.3077
F_ Statistics: 8.21		Durbin-Watson Statistics: 1.67	
Prob (F-statistics) : 0.000		Adjusted R_ Squared : 0.494	

4.4.2. Follower reaction to leading fraud

4.2.2.1. Identification of a leading company

In this study, to distinguish leading and following companies, the main difference between leading companies and follower companies is the higher efficiency of that company in its industry groups; is. In addition, the two financial ratios (sales return and return on assets) have been used as an indicator of the superiority of leading companies. Moghaddam, (2013) stated that Companies operating in each industry that have the most favorable double financial ratios were selected as leading companies, and other companies in each industry were selected as following companies.

4.2.2.2. Implementation of F-score

Identify a company with and without earnings management

To test the second hypothesis, we first calculate the F-score each year - Company Dechow (2011) stated that the F-score is used as a warning sign or signal of earnings management probability. The output of this model is a reasonable scale probability in relation to earnings management where larger values indicate action for earnings management. To test the second

hypothesis, we first calculate the F-Score of all companies in the statistical community and then identify the leading companies in each industry class in which the leading companies have fraudulent financial reporting. After identifying the leading fraudulent company, we calculate the average F-Scores of similar companies before and after the fraud. To examine the relationship between F-Score and fraud in companies, we have divided the F-Score according to the quarter and examined the frequency of companies known as a fraud in each of these four quarters, the result of which contains this issue. The higher the F-Score, the higher the frequency of fraudulent companies. The result is presented in Table 8. According to the second hypothesis of the research, we expect the average F-Scores of the following companies to increase significantly after the leading-company fraudulent financial reporting. In order to obtain the relationship between F-Scores before and after the fraud of the following companies, we use the independent t-test, which aims to obtain the relationship between two continuous variables in different groups. Table 8) F-Score classification based on the first to fourth quarters.

F-Score Interpretation table				
F-Score classification		Percentage of fraudulent companies fall into this category		Risk level
first quartile	$0 < F - \text{Score} < 1.863$	169	18%	Normal or low risk
Second quartile	$1.863 < F - \text{Score} < 1.966$	135	14%	Above Normal Risk
Third quartile	$1.966 < F - \text{Score} < 2.059$	378	39%	Substantial
Fourth quartile	$2.059 < F - \text{Score} < 3.018$	265	29%	High Risk
		947	100%	

4.2.2.3. The result of the reaction

Hypothesis 2: Follower companies manage profits in response to fraudulent reporting by the leading company.

Of the 24 industries surveyed, only 10 had a leading - fraudulent company that met our hypothesis test. Before the relevant statistical test, we check the normality of the statistical population, which is a prerequisite for the test. The results of the statistical test of data normality are illustrated in Table 9.

According to sig statistic, a significant level of 0.2 in all three categories can be stated that the data have a normal distribution. To test the second hypothesis, we use the independent t-test of two independent groups for F-scores before and after cheating. The result is illustrated in Table 9

According to the statistics of the variance equality test, considering that sig is equal to 0.458, it indicates the equality of the variances between the two groups of F-Score after and before the fraud. And in the t-test section, since the sig2-tailed statistic is 0.000, our first hypothesis about the existence of a significant difference between the two F-Score groups is accepted. To examine the test result of the second hypothesis more clearly, the F-Score table of each F-Score industry of the eligible classes has been gathered together and presented as Table Eleven.

As shown in Table 11, the average F-Score of most industries in the post-fraud period is higher than in the fraud period. The statistical test of this hypothesis is also an important emphasis on this.

Table No. 9) Kolmogorov-Smirnov Normality Test

	Before fraud	Fraud	After fraud
Number (N)	25	25	25
Mean	1.916530	1.935127	2.009040
Std. Deviation	0.07485	0.08210	0.06717
. Sig.	0.2	0.2	0.2

Table Ten) Perform independent t-test before and after F-Score

	Levene's test for Equality of Variances		T-test for equality of means				
	F	Sig	T	Df	Sig.(2-tailed)	Mean difference	Standard error difference
Equal Variances Assumed	0.560	0.458	-4.500	47	0.000	-0.9242	0.0205

Table 11) Collection of F-Score averages before and after fraud in eligible industries

industry	N	Before fraud	fraud	After fraud
Transport	4	1.964	1.951	1.941
Housing	13	1.893	1.866	1.992
Oil	10	1.835	2.015	2.016
sugar	15	2.028	1.885	2.031
Ceramic Tile	10	1.939	1.976	2.023
Industrial multidisciplinary	4	1.739	1.875	1.944
Food Industries	9	1.831	1.977	2.001
Extraction of metal ores	4	1.893	1.875	2.015
Rubber & Plastics	8	1.985	1.986	2.086
basic metals	8	2.007	1.993	2.045

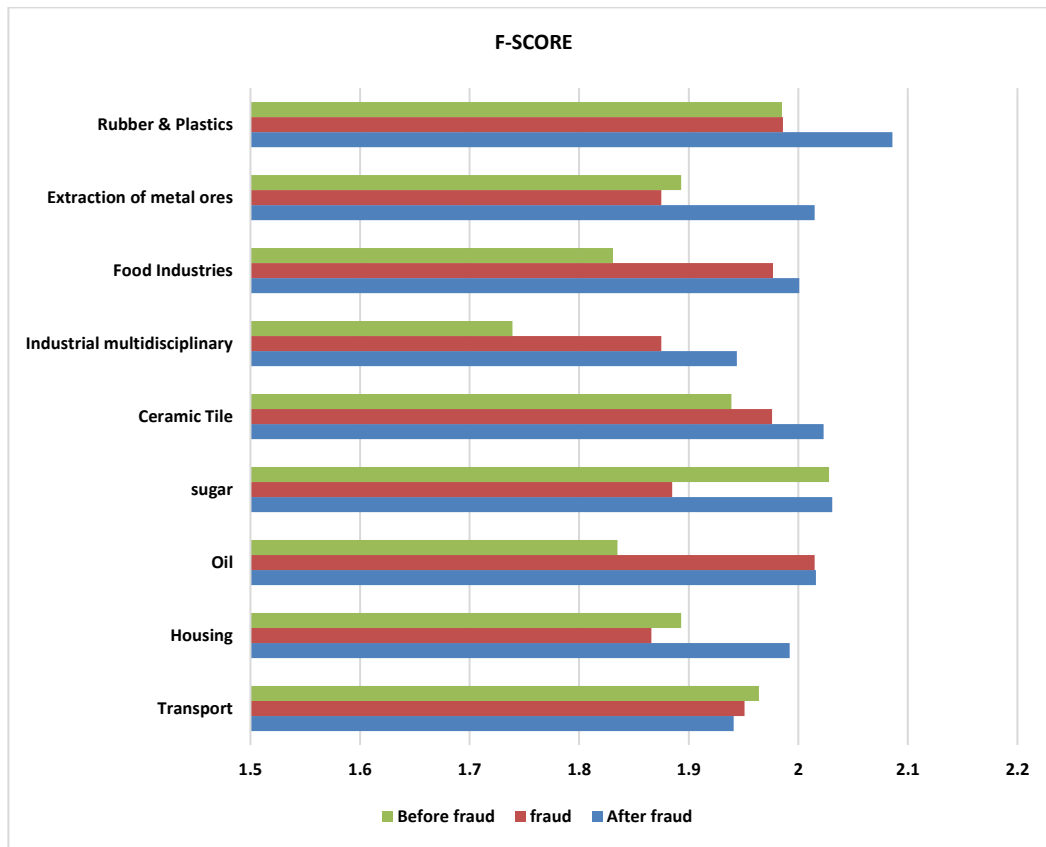


Chart number two) related to F-SCORE before and after fraud

5. Discussion and Conclusions

This study was an attempt to determine earnings management and fraudulent financial reporting in the companies. The consensus of experts has been used to identify companies with fraudulent financial reporting and the F-Score model has been used to identify companies with or without earnings management. Hypothesis 1 examines the relationship between the quality of RSST accruals and fraud. According to the findings of this study, fraudulent financial reporting has a significant relationship with the quality of accruals and changes in accounts receivable and inventory. Thus, there is a link between fraudulent financial reporting and earnings management. The findings of Dechow et al. (2011) and Prolz & Lujj (2011) confirm the results of the first hypothesis of this research. In a study by Lee et al. (1999) on the relationship between the probability of fraud and total accruals, there is a positive relationship between the

probability of fraud and total accruals. Earnings management and fraudulent financial reporting are both based on intentional actions taken to achieve the personal interests of chief management, and both have this potential which lead to losses of shareholders by providing incorrect information and relying on such incorrect information by shareholders (Marai et al. 2013). Earnings management tests are also a motivating factor as a trigger for fraud, which provides a strong incentive for financial reporting fraud. Because earnings management practices are done through accruals, which usually leads to financial reporting fraud. When companies inflate the reported profits of the firm by using increases in accruals, they are forced to resort to fraud to eliminate the adverse effect of those items (Haley 1985). Therefore, companies that increase accruals in the previous year must face the irreversible consequences of accruals or

commit fraud to compensate for this discrepancy (Dechow et al., 1996).

Thus, when dealing with reverse accruals and reducing earnings management flexibility, managers may engage in fraudulent activities to achieve the goals for which they previously managed earnings (Dechow et al., 1996). Also, according to the test of the second hypothesis, it was found that the following companies, in response to the fraudulent financial reporting of their leading industry company, manage their profits. Findings indicate that the financial reporting of other companies influences the chief management decision of other companies in the same group for the presentation of financial statements.

There is not much research in the country regarding the decision of chief management of companies to choose the option of earnings management when their group leaders engage in fraudulent reporting, but the findings of this study are based on theoretical assumptions in this regard, such as assuming capital market expectations and The theory of rational choice is also consistent (Wood 2017). In his research, he explains the reason for choosing the earnings management option by the managers of the following companies. A report of undetected fraud in an industry-leading company makes capital market analysts overly optimistic about the outlook for companies in that industry, which poses a further challenge to the profitability of executives for affiliate companies. Because managers will find it difficult to achieve this amount of profit increase without using earnings management, they choose the earnings management option.

Also, managers in companies that use annual profits to determine chief management benefits do not want to appear out of place due to the positive performance of the industry leader. So they have a double incentive to do earnings management. This enhancement of motivation of the earnings management will continue as long as fraud is ongoing. (Bizak et al., 2011; Faulkner and Young, 2010; Janter and Canaan, 2015; Gibbons and Murphy, 1990).

Garvey et al., (2006) found that managers are concerned about not having access to profit levels or increasing the profits of other counterparts because this lack of access reduces stock prices and increases management turnover in the company.

Gu (2015) in his research stated that the achievement or improvement in the profit criteria of

the leading companies affects their stock prices, and the senior managers of the following companies who do not meet the profit expectations are more likely to be fired. All of these are motivations for the group's followers to respond to fraudulent reporting. This is one of the reasons and motivations that the following companies choose the earnings management option in response to the fraudulent financial reporting of the leaders.

References

- 1) Asadi, Q., & Manjeq Tappeh, V. (2011). Investigating the effect of management change on earnings management. *Financial Management Outlook*, 1 (1).
- 2) Aqhdamimoqadam, S., & Sarkani, S. Y. (2012). A study of the "leader-subordinate" relationship in the field of earnings management and dividend Policy
- 3) Alicia Ramírez-Orellana, María J. Martínez-Romero,*, Teresa Mariño-Garrido. October 2017 .Measuring fraud and earnings management by a case of study: Evidence from an international family business. *EUROPEAN JOURNAL OF FAMILY BUSINESS*.
- 4) Al-Gabel El-Gharbi University , 2013. Earnings Managment VS FINANCIAL EPORTING FRAUD –KEY FEATURES FOR DISTINGUISHING. *Economics and Organization* Vol. 10, No 1, , pp. 39 – 47
- 5) Alireza Adel (2020) .investigating the effect of the dimensions of the rhombus model of fraud on the occurrence of fraud in the financial statements of companies listed on the Tehran Stock Exchange.MA. Thesis for master's degree. Zarand Higher Education Institute.
- 6) Alikhani; Izadinia and Kiani .(2021) The role of earnings management in identifying fraud in companies listed on the Tehran Stock Exchange. *Journal of Financial Management and Asset Management* Volume 8 Number 4.
- 7) Banimahd, B., & Nikomram, H. 1390. Book of accounting theories. (Introduction to descriptive theories). Date of first publication of Islamic Azad University
- 8) Babaei, Z., Seffati F., & Ghiasvand, A. (2016). Investigating the relationship between fraudulent earnings management in the financial statements of listed and over-the-counter member companies.

- International Conference on Management, Economics and Accounting.
- 9) Beatty, A., Liao, S., and Yu, J., 2013. The spillover effect of fraudulent financial reporting on peer firms' investments. *Journal of Accounting and Economics* .
 - 10) Bayley, Luke and Stephen Taylor. 2007. Identifying earnings overstatements: A practical test. Working paper. ABN Amro Sydney and University of New South Wales.
 - 11) Cathy A. Beaudoin. for the degree of Doctor of Philosophy May 2008. *Earnings Management: The Role of the Agency Problem and Corporate Social Responsibility*. A Thesis Submitted to the Faculty of Drexel University.
 - 12) Dechow. Patricia M. January 2009. *Predicting Material Accounting Misstatements*. The Haas School of Business University of California, Berkeley.
 - 13) Desai, H., Hogan, C.E. and Wilkins, M.S., 2006. The reputational penalty for aggressive accounting: Earnings restatements and management turnover. *The Accounting Review*, 81(1), pp.83-112
 - 14) Dechow, P.M., Richardson, S.A. and Tuna, I., 2003. Why are earnings kinky? An examination of the earnings management explanation. *Review of accounting studies*
 - 15) Dechow, P.M. and Skinner, D.J., 2000. *Earnings management: Reconciling the views of accounting academics, practitioners, and regulators*. *Accounting horizons*.
 - 16) Dechow, Patricia M, and Ilia Dichev. 2002. The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77
 - 17) Donelson, D.C., McInnis, J.M. and Mergenthaler, R.D., 2013. Discontinuities and earnings management: Evidence from restatements related to securities litigation. *Contemporary Accounting Research*, 30(1), pp.242-268.
 - 18) Forqandoost Haqiqi, K. Hashemi, S. A., & Foroughi Dehkordi, A. (2014). Study of the relationship between earnings management and the possibility of fraud in the financial statements of companies listed on the Tehran Stock Exchange. *Fourteenth year audit knowledge*.
 - 19) Gao, H., Luo, J. and Tang, T., 2015. Effects of managerial labor market on executive compensation: Evidence from job-hopping. *Journal of Accounting and Economics*, 59(2), pp.203-220.
 - 20) Garvey, G.T. and Milbourn, T.T., 2006. Asymmetric benchmarking in compensation: Executives are rewarded for good luck but not penalized for bad. *Journal of Financial Economics*, 82(1), pp.197-225.
 - 21) Gandom kar, N. (2016). *Investigating the Impact of Behavioral Financial Factors on Investing in Securities*. Thesis to receive a master's degree. School of Management - Department of Commerce, Azad University, Central Tehran Branch.
 - 22) Gao, H., Luo, J. and Tang, T., 2015. Effects of managerial labor market on executive compensation: Evidence from job-hopping. *Journal of Accounting and Economics*, 59(2), pp.203-220.
 - 23) Garvey, G.T. and Milbourn, T.T., 2006. Asymmetric benchmarking in compensation: Executives are rewarded for good luck but not penalized for bad. *Journal of Financial Economics*, 82(1), pp.197-225.
 - 24) Haidarpour, F., & Volikhani, M. (1398). The effect of severe weakness in internal controls on the quality of profits in companies listed on the Tehran Stock Exchange. *Accounting and auditing studies*, 30.
 - 25) Hejazi, R., & Jafari, M. (2020). Explaining ethical and immoral behaviors of earnings management using advanced structural models. *Accounting knowledge*. 11 (4). University of Management and Economics, Shahid Bahonar University of Kerman.
 - 26) Huber, Dennis; DiGabriele, James A. 2021 *Financial Statement Fraud and the Failure of Corporate Financial Statement Fraud Prediction Journal of Accounting and Finance; West Palm Beach Vol. 21, Iss. 4, (2021): 30-41.*
 - 27) Johan L. Perols, Barbara A. Lougee. 2011 *The relation between earnings management and financial statement fraud. Advances in Accounting, incorporating Advances in International Accounting* 27 (2011) 39-53
 - 28) Khorasani., A. (2018). *Investigating the Effects of Applying Auditing Standards on Information Disclosure in Fraudulent Financial Reporting*

- Thesis: Doctoral dissertation in accounting; (Presenting a Model for Fraud Risk Prediction).
- 29) Khosravi Moghadam., Z. (2017). Investigating the relationship between management narcissism and earnings management, Zohreh Khosravi Moghaddam. Master Thesis. Al-Zahra University.
- 30) Karamshahi, B. The effect of audit quality on the cost of agency, earnings management and conservatism in companies listed on the Tehran Stock Exchange, Faculty member of the Accounting Department, Baft Higher Education Complex,
- 31) Karpoff, J.M., Lee, D.S. and Martin, G.S., 2008a. The consequences to managers for financial misrepresentation. *Journal of Financial Economics*, 88(2), pp.193-215.
- 32) Mashayekhi; B., & Hosseinpur, A. H. (2016). Investigating the Relationship between Real Profit Management and Accrued Earnings Management in Companies Suspected of Tehran Stock Exchange Fraud. *Journal of Experimental Financial Accounting Studies*, 12 (49), PP. 29-52
- 33) Paul Wood, Justin . The cost of refraining from managing earnings when an industry-leading peer is reporting fraudulently.2017. . (Doctor of Philosophy) thesis, University of Iowa
- 34) Perols, J. L., & Lougee, B. A. (2011). "The relation between earnings management and financial statement fraud". *Advances in Accounting*, 27(1) 39 – 53.
- 35) Pourzamani, Z., Pooyan, R., & Zolfagari, M. (2012). The relationship between earnings management and corporate financial incapacity. *Journal of Financial Knowledge and Securities Analysis*, 16.
- 36) Pourzamani, Z., Talebnia, Q., & Zolfaghari, M. (2019). Opportunistic and efficient earnings management and its relationship with financial constraints: Debt hypothesis test of positive accounting theories. *Empirical accounting research*, 33.
- 37) Pasandidefard , Vadizadeh , Sepasi (2020). Identifying the effective factors on fraudulent and incorrect financial reporting using the meta-combined method. In the *Scientific Quarterly of Value and Behavioral Accounting*, Volume 5, Number 9, Pages 301- 334
- 38) Royaee, R. A., Rahnamay Roodpashti, F., & Abdoli, M. R. (2009). Investigating the relationship between culture and agency theory based on earnings management approach. *Journal of Cultural Management*.
- 39) Soltani, Kh. (2016). "The relationship between ethical risks and earnings management" *Journal of Accounting Knowledge*, seventh year.
- 40) Sepasi, S., Etemadi, H., Adel, A., & Tashdidi, E. (2019). Presenting a new approach; In predicting and detecting financial statements fraud using the bee algorithm. *Journal of Accounting Knowledge*.
- 41) Shamsai, V. (2013). Earnings and Fraud Management in Financial Reporting; Recognition of distinction by auditors. *Auditor Analytical Monthly*. (64).
- 42) Svabova. Lucia, Kramarova Katarina.2020." Detecting earnings manipulation and fraudulent financial reporting in Slovakia" *Oeconomica copernicana Volume 11 Issue 3 September 2020*
- 43) Stayesh, M. H., Ghayouri Moghaddam, A. (2017). Presenting the Representation Cost Model in the Manager-Owner Relationship Using a Systematic Perspective *Financial Accounting Quarterly / Tenth Year / Financial Accounting Quarterly*.
- 44) Zare Bahmanmiri, M. J. (2016). Presenting a Model for Predicting the Possibility of Fraud in Financial Reports; PhD Thesis in Accounting, Faculty of Economics and Administrative Sciences of Mazandaran Province.
- 45) Zang, Zeting. 2020 .A Machine Learning Analysis of Earnings Management Practices in Four East Asian Economies . University of Sydney. The University of Sydney Business School, Discipline of Accounting

Notes

ⁱ . RSST accruals are , a test of the broad definition of WC accruals that have been derived by considering several valid models for identifying accruals and optional accruals. This has been used in a study entitled " Predicting Material Accounting Misstatements " by (Dechow et al., 2009). And this method has been used by many researchers in many studies.

ⁱⁱ. Follower companies in the whole research has been used for companies that are active in similar industry groups according to the industry groups categorized by Tehran Stock Exchange and have weaker financial capacity than the leading company in their industry group.

ⁱⁱⁱ. Industry-leading company, in general, this research is used for companies that have a sales return index and higher asset returns in their industrial group than other companies in their

group, in other words, they are the top company in their industry group.

^{iv} Justin Paul Wood 2017

⁵ Alicia Ramírez-Orellana, María J. Martínez-Romero,*, Teresa Mariño-Garrido 2017

^{vi} Association of Certified Fraud Examiners 2012.

^{vii} (Dechow et al., 1995).

^{viii} (AICPA, 1988, 1997).

^{ix} Awidat Marai . Vladan Pavlović 2013

^x creative accounting

^{xi} Capital Market Expectation Hypothesis

^{xii} The model of rational expectations of the capital market

^{xiii} Rational choice theory

^{xiv} Positive accounting theory

^{xv} Contracts theory

^{xvi} Anne Beatty (2013)

^{xvii} Awidat Marai, Vladan Pavlović 2013

^{xviii} Dechow, (2011) said in his research that a high f-score could indicate earnings management for the company.