Predicting Auditors' Opinions Using Financial Ratios and Non-Financial Metrics: Evidence from Iran

Hamid Zarei*

M.A. of Accounting, University of Sistan and Baluchistan, The Auditor of Supreme Audit Court of Fars Province, Iran
Corresponding author: Hamid Zarei
Hamidzarei@pgs.usb.ac.ir

Hassan Yazdifar

Professor of Accounting, Executive Business Centre EB505, Bournemouth University, 89 Holdenhurst Road, Bournemouth, BH8 8EB, UK.
hyazdifar@bournemouth.ac.uk

Mohsen Dahmarde Ghaleno
Faculty member of Higher Educational Complex of Saravan, Saravan, Iran
dahmarde.mohsen@yahoo.com

Ramin Azhmaneh
M.A. of Accounting, University of Sistan and Baluchistan, Zahedan, Iran
ramin.azhmaneh@gmail.com

Predicting Auditors' Opinions Using Financial Ratios and Non-Financial Metrics: Evidence from Iran

Abstract

Purpose- The purpose of the paper is to investigate the extent to which a model based on financial and non-financial variables predicts auditors' decisions to issue qualified audit reports in the case of companies listed on the Tehran Stock Exchange (TSE).

Design/methodology/approach- The authors utilized data from the financial statements of 96 Iranian firms as the sample over a period of five years (2012-2016). A total of 480 observations were analysed using a probit model through 11 primary financial ratios accompanying non-financial variables, including the type of audit firm, auditor turnover and corporate performance, which affect the issuance of audit reports.

Findings- The results demonstrated high explanatory power of financial ratios and type of audit firm (the national audit organization vs. other local audit firms) in explaining qualifications through audit reports. The predictive accuracy of the estimated model is evaluated using a regression model for the probabilities of qualified and clean opinions. The model is reliable, with 72.9 percent accuracy in classifying the total sample correctly to explain changes in the auditor's opinion.

Practical implications- The paper has practical implications and can assist auditors in identifying factors motivating audit report qualifications, mainly in emerging economies.

Originality/value- The paper contributes to auditing research, since very little is known about the determinants of audit opinion in emerging markets including Iran; it also constitutes an addition to previous knowledge about audit opinion in the context of TSE. The paper is one of the rare studies predicting auditor opinions using both financial variables and non-financial metrics.

Paper type- Research paper

Keywords: Audit reports, Financial and non-financial variables, Predictive model, Qualified and clean opinions.

1. Introduction

Studies about auditors' opinions have become increasingly frequent over the last few years. Statement of Auditing Standards (SAS) No. 59 requires the auditor to convey in the audit report when "substantial doubt" exists concerning the continuing viability of the client firm over the next year. Such communication by the auditor provides additional information to the market about the auditor's professional assessment of the risk that the firm may not continue in the foreseeable future (Blay *et al*., 2011; Kausar *et al*., 2017). The global financial crisis has resulted in a significant increase in firm failures and has generated renewed interest in auditor reporting on financially troubled clients. Issues of immediate concern relate to the exceptional risks faced by firms at the height of the liquidity and credit problems during 2007 and 2008 and the role that auditors had to play in warning about such problems. These issues have sparked a series of high-level inquiries into the role and effectiveness of independent auditing in the U.S. and internationally (e.g., PCAOB 2011; European Commission 2010; House of Lords, 2011), with particular interest directed to auditors' assessment and reporting on a firm's ability to continue as a going concern (Carson *et al*., 2012). Continued high rates of going-concern opinions could arise from higher levels of risk of client failure, or alternatively, from an increase in regulatory scrutiny of directors regarding disclosure of going-concern issues arising from corporate failures, with auditors responding to any increase in director concerns as well as managing risk arising from anticipated scrutiny from audit firm inspections (Carson *et al*., 2017). Therefore, the probability of firm failure is crucially important information to shareholders, creditors, and management, and thus a firm status's as a "going concern" is important to the internal and external constituencies as well. In practice, professional groups of both auditors and security analysts serve as an effective market mechanism for monitoring firms' financial health (Senteney *et al*., 2011).

Given that we know little about audit opinion in emerging markets (Moalla, 2017), our motivation in this study is twofold. First, we explore the potential for differences in auditors' opinions, which are influenced by financial ratios in the TSE. For instance, the current ratio typically indicates the ability to repay the firm's short-term liabilities from its current assets. As this liquidity determinant becomes larger, the firm has more and sufficient assets to repay its short-term debt. Therefore, the inadequacy of the abovementioned criteria threatens the continuity of corporate activity. In this manner, by increasing this ratio, the likelihood of issuing a qualified audit opinion is reduced. Furthermore, a high debt ratio indicates over-reliance on borrowings needed by the firm, which raises the firm's financial risk. In other words, the firm will have to allocate part of its profits in the coming years to repay the borrowed funds. Thus, high debt ratio reduces the firm's profitability. If the firm is unable to repay its debts, the continuity of its activity may be jeopardized. Hence, increasing this ratio leads the firm to face increased financial risk, so the probability of issuing a qualified audit opinion increases. Sustainable profit is one of the criteria for measuring management efficiency, and high profitability sufficiently indicates optimal management and operational efficiency of resources. Firms with high profitability are more likely to continue their operations. However, such firms possess the resources to fulfil their obligations. Thus, the likelihood of issuing a qualified audit

report related to the continuity of activity is reduced (Baqerpour *et al*., 2013; Martens *et al*., 2008).

The following research questions contributes to the literature generally by providing evidence on how auditing standards and institutional factors may interact in financial statements, which impact the auditor's going-concern opinion. Second, to expand our main results, we also conduct analysis using non-financial metrics that affect the type of auditor's opinion. To improve the model adopted in the paper, applying the type of audit firm (the national audit organization vs. other local audit firms) as a concerning issue in explaining qualifications through audit reports extends the literature of non-financial metrics affecting audit opinions. Various studies suggest that financial and non-financial factors are effective for fraud detection, and thereby, these indicators impact auditors' opinions (see, for instance, Haron *et al*., 2009; Tsalavoutas and Evans, 2010; Ghale Rudkhani *et al*., 2014; Zainudin and Hashim, 2016, Moalla, 2017) in both developed and developing nations; the present academic paper merely focuses on the key issues affecting auditors' opinions in Iran as an Islamic emerging economy and attempts to highlight the apparent factors and foster discussion within two categories: financial and non-financial. Hence, the current study adequately establishes the following two critical questions:

1. Are financial ratios associated with the likelihood of an auditor qualification in Iran-TSE as an Islamic emerging economy?
2. Do non-financial metrics (audit firm, auditor turnover and corporate performance) affect auditor's opinions in Iran-TSE as an Islamic emerging economy or not?

Thus, the paper seeks to provide empirical evidence to inform discussions surrounding auditors' opinions with financial ratios and non-financial metrics in an emerging economy: Iran. The aim of the current paper, then, is to develop a model in which we can identify the effective financial ratios for predicting audit opinions using the logit technique. The statistical model developed in the current paper is mainly for the benefit of auditors in the prediction of the audit opinion types issued by other auditors in similar circumstances, when evaluating potential clients, in determining the scope of an audit for existing clients, to control quality within firms, and as a defence in lawsuits (Dopuch *et al*., 1987; Yaşar *et al*., 2015). It is notable that more prior studies acknowledge that auditing risks are higher in emerging economies, and thus considering firm failures and audit opinions is particularly vital in developing countries.

Thereby, a significant body of academic literature has typically emerged on financial failure and audit opinion in markets (Gande *et al.*, 2008; Moalla and Baili, 2019; Karabag, 2019). For instance, Francis et al. (2002) present evidence that there is a more significant probability of financial failure in emerging markets.

The paper is one of the rare studies to develop a model for predicting audit opinions within the Iranian context with regard to the critical burden of the government in driving the national economy according to Islamic origins. Hence we may expect strong auditors' beliefs and responsibility within the Islamic environment of Iran, which is similar to Islamic emerging economies but politically different from the emerging economies and developed countries. This unique environment among emerging economies encourages us to implement the current research in the setting of Iran as an Islamic and emerging economy.

Another critical contribution of the paper is that it acknowledges the leading role of the national audit organization as a primary governmental organization which sustains a vital influence on auditing in Iran compared to other local auditing firms. Historically, from the

perspective of auditing in Iran, following the 1979 Islamic Revolution in Iran, numerous firms came under the direct supervision of the government. In 1983, a specific act was unanimously ratified by the parliament to merge three public audit firms to establish a single National Audit Organization. The National Audit Organization's by-laws were approved by Parliament in 1987. The national audit organization was established as an official and financially independent entity affiliated with the Ministry of Economic Affairs and Finance to properly supervise audit firms' functions and to typically pursue the economic activities legislated in the organization's by-laws; the National Audit Organization's by-laws were modified and approved by the Council of Ministers in 2003 to comply with the Third Economic, Social and Cultural Development Plan, and the organization's legal status was adjusted to that of a state-owned limited firm (Pourheydari and Abousaiedi, 2011). According to the law on the establishment of the National Audit Organization in 1983 and the respective Articles of Association in 1987, the challenging task of compiling and generalizing the critical principles and rules of accounting and auditing in Iran has been delegated to the National Audit Organization. In this regard, since the late 1990s, the NAO properly regulates a body of professional principles and standards, including accounting standards, auditing standards, professional conduct and related guidelines, while other auditing firms in Iran utilize these professional principles.

Employing six financial ratios and three non-financial parameters in the empirical analysis, the possible consequence of their potential impact on audit opinion exhibits that amongst financial ratios, debt ratio, gross profit ratio, current ratio, total asset turnover ratio, and fixed asset turnover ratio hold the most significant relationships with audit opinion, respectively. Admittedly, regarding non-financial parameters, the type of audit firm maintains the most significant relationship with audit opinion. Finally, findings suggest that there will be high explanatory power of non-financial ratios and type of audit firm (the National Audit Organization vs. other local audit firms) in explaining qualifications through audit reports.

The remainder of the paper is organized as follows. The next section sets out the study's theoretical underpinnings and provides a literature review. The research methodology is discussed in section 3. Empirical results are presented in section 4. Conclusions and suggestions are then presented in section 5 and the limitation is discussed in the final section of the paper.

3. Theoretical Underpinnings and Literature Review

2.1. Empirical Background of Study

Researchers have noted the use of financial ratios and some non-financial variables for estimations such as audit risk, initial risk measurement of business unit information, the possibility of error and fraud, risk assessment, risk control and auditors' reports.

Arnold *et al.* (2001) investigated the socio-political constraints encompassing auditors' decisions as to whether to issue an audit opinion that contains a going-concern exception. They examined the impact of client size on auditor decision-making at the offices of the Big Five accounting firms. They observe that Big Five auditors do not attend to large clients in their practice offices more favourably than smaller clients. Moreover, Big Five auditors report more conservatively for large clients, suggesting that protecting one's reputation ensures auditor compliance (Reynolds and Francis, 2001).

Craswell *et al*. (2002) showed that there is a significant relationship between the size of the entity under audit and qualified audit opinion. Small firms are confronted with problems concerning the continuation of activities and this makes auditors moderate their reports. On the other hand, costs related to potential lawsuits for large corporations make auditors provide conservative auditor opinions and moderate their reports. Spathis (2003) tested the combinations of financial and non-financial variables to predict the ability to discriminate between the choices of a qualified or unqualified audit report by using logistic and ordinary least squares regression models on a sample of Greek companies. Results showed that the qualification decision is associated with financial information (such as financial distress), and with non-financial information (such as firm litigation), with an accurate classification rate of 78 percent. In another study, Spathis *et al*. (2003), using data from financial statements, tried to evaluate the pre-decisive factors for qualified audit opinion. Using previous studies investigating legal claims against the client and other information during the years 1997-1999, they examined a set of financial and non-financial variables and came to the conclusion that financial statement items have stronger ability to predict qualified opinion.

Susanto (2018) declared that displeasure via the auditors' decision-making can affect the pressure on management in Indonesia. There is evidence that in cases where the audit firm fails to satisfy the manager's desire to issue an unqualified opinion, managers tend to substitute the auditor. Khasanah and Nahumury (2013) discovered that audit judgment may not influence auditor turnover. Furthermore, investors' trust is reduced if the firm substitutes the Big Four registered public accountants with a non-Big Four firm to receive an unqualified opinion (Sari *et al*. 2018). Accordingly, a qualified opinion may cause a certain impact on auditor turnover because the management is looking for an unqualified opinion (Krishnan *et al*., 1996).

Butler *et al*. (2004) examined the relationship between unexpected income profit and audit opinion. To test their hypothesis, they used unexpected earnings, the logarithm of market capitalization, book value to market value, capital assets, return on assets ratio, debt ratio, current ratio, total assets and audit firm. In the study, researchers used the statistical technique of logistic regression to predict the type of comment. According to the study, only the debt ratio and unexpected earnings were in the final model, and were at a 95 percent confidence level.

Gaganis *et al*. (2007), using a probabilistic neural network, set out to evaluate the characteristics of the types of business entity regarding their relationship with auditors' opinions. They examined 27 widely used variables in their research. They concluded that gross profit, size, profitability, current ratio, productivity, asset turnover, industry and audit firm were important factors in determining the type of auditor's report in which the effect of profitability with 24 percent had the highest degree of importance.

Pasiouras *et al*. (2007) investigated the potential for developing multicriteria decision aid models to reproduce auditors' opinions on the financial statements of firms based on a sample of firms in the UK. The results revealed that the two multicriteria decision aid techniques achieved almost equal classification accuracies and were both more efficient than discriminant and logit analyses.

Using data from 46 firms in a comparative way during 2002 and 2004, Farinha and Viana (2009) examined the relationship between the properties of the board of directors and independent auditors' reports of listed firms on the Stock Exchange of Portugal (except for investment firms and football clubs). They showed that from among the various specifications

of the board, only the ratio of non-executive board members, the rate of return on assets, equity ratio, the natural logarithm of assets at the end of the year and operating profit in the current year had significant and positive relationships with the auditor's unqualified opinion. Also, the increase in the ratio of market value to book equity and use of one of the Big Four audit organizations (and others) has a negative and significant relationship with the type of unqualified reports of the independent auditors.

Tsipouridou and Spathis (2014) examined the relationship between audit opinions and earnings management, as measured via discretionary accruals, for firms listed on the Athens Stock Exchange (ASE). The results indicate that audit opinions are not related to earnings management. Client financial characteristics, such as profitability and size, are determinants of the going-concern audit opinion decision. They revealed that the decision of auditors to issue qualified opinions for other reasons is explained by the type of audit opinion issued in the previous year. By using discriminant, logit and C5.0 decision tree methods based on twelve financial ratios, Yaşar *et al*. (2015) predicted qualified audit opinions in the Istanbul Stock Exchange during 2010-2013. They found that the C5.0 decision tree algorithm has the greatest classification accuracy rate for explaining unqualified and qualified opinions of the firms, compared to discriminant and logit models.

Moalla (2017) investigated the influence of financial variables and especially profitability, loss in current year, loss in previous year, leverage, and liquidity in predicting audit report qualifications (qualified audit opinion) and audit report modifications (qualified opinion or unqualified but with an explanatory paragraph) in Tunisia. The results of panel logistic regression indicated a positive relationship between liquidity, loss in the current year, loss in the previous year and a qualified audit report. A positive relationship was found between leverage and audit report modification. Also, the findings revealed that the Tunisian revolution did not affect the qualification or the modification of the audit report, but that qualifications decreased significantly during the period of the financial crisis.

Brazel *et al*. (2018) investigated whether certain auditors are able to lower fraud risk by constraining inconsistencies between financial and related nonfinancial measures (NFMs). For a sample of companies across a variety of industries, they found that auditors with greater industry expertise and tenure are less likely to be associated with companies that exhibit large inconsistencies between their reported revenue growth and related NFMs.

2.2. Prior Relevant Research in the Iranian Context

According to the auditing standard (section 70) in Iran, auditors' judgment in cases such as limits on the scope of the examination, ambiguity, and disagreement with the entity's management affect the validity of financial statements and may result in a qualified opinion.

Using multilayer perceptron (MLP) under an artificial neural network and logistic regression (LR), during 2000-2007 in TSE, Pourheidari and Azami (2010) tentatively proposed an established network with sufficient accuracy of 75.87% in the specific prediction of the audit opinion in the Iranian context.

Setayesh et al. (2012) utilized a data mining approach to accurately predict auditor opinion. They examined 842 observations during 2001-2010 in an empirical investigation and manifested a model with sufficient accuracy of 76% in TSE, which remains a suitable method to reasonably predict the opinion of independent auditors in Iran. Admittedly, in a similar study, Khajavai et al. (2016) promptly confirmed a model with high accuracy of 94% in TSE.

Employing a data mining approach during 2003-2009 in TSE, Bagherpour et al. (2013) suggested a specific model with an average of 88.64% predictability in Iran. Furthermore, they declared that the type of audit report for the previous year, the ratio of net profit to net income, and debt to assets ratio represent the most significant variables to predict the type of audit opinion.

Valipour at al. (2013) examined the factors that affect audit reports and the possibility of predicting audit reports using meta-heuristic methods on a sample of firms listed in the TSE during 2005-2011. Findings revealed that net profit to sales ratio, current ratio, quick ratio, inventory turnover, collection period, and debt coverage ratio variables had the greatest effect on audit opinions.

Utilizing heuristic algorithms and logistic regression, including 980 observations during 2009-2015, Abbaszadeh et al. (2017) predicted the independent auditor's opinion. They ultimately discovered that a neural network optimized with 94.98% prediction accuracy supports the most efficient execution in predicting the type of independent auditor's opinion. The results further revealed that independent auditor's rotation, the type of audit report from the previous year, return on equity, current ratio, debt ratio, company loss, and profit ratio had the most impact in predicting the type of independent auditor's opinion.

Most of the empirical studies in Iran typically suggest an empirical model highlighting quantitative variables in Iran, but the authors did not sufficiently focus on non-financial parameters, such as the type of audit firm (National Audit Organization vs. other local audit firms), to predict audit opinion. In this regard, it is assumed that auditors specialize in supplying the various levels of audit quality and audit firm size is an effective surrogate for audit quality (Aghaei Chadegani et al., 2011). Because the status of auditing firms is different, experienced researchers exercise alternatives to distinguish between high-quality and low-quality audit firms. The size, age, and reputation of the audit firm represent instances of the distinctive criteria of audit firm quality. Accordingly, it is supposed that a higher quality audit firm can be effective in typically providing a qualified opinion, because the type of auditing firm is reasonably linked to its performance, and the quality of the audit firm's performance depends critically on the auditor's opinion (DeAngelo, 1981; Kordlor and Seidi, 2009). For this reason, the present study examines the possible impact of an audit firm that is larger and more prominent than other audit firms on the type of independent auditor's opinion. Indeed, firms replace their auditors to ensure the desired quality of audit service. The decision to switch auditors by the client firm is rationally due to the principal-agent problem in the separation of ownership and control of a firm. Furthermore, the separation of risk-bearing, decision-making, and control function in firms are considered (Aghaei Chadegani et al., 2011; Krishnan et al., 1996; Chow and Rice, 1982; Fama and Jensen, 1983; Jensen and Meckling, 1979). Therefore, regarding the potential impact of auditor turnover on audit opinion, this academic subject becomes a relevant argument that in spite of the growing concerns of this issue, few studies have been conducted in Iran to investigate the impact of auditor turnover on qualified audit opinion. Hence, we will consider the possible impact of this independent non-financial variable among companies listed on the TSE.

The present study investigates whether or not the combination of both financial and non-financial variables in a specific model based on logistic regression results in an appropriate accuracy in TSE.

2.3. Analytical Methods

Auditors are required to use analytical procedures in planning and reviewing engagements (AICPA, 1988, SAS. No. 56). Auditors use analytical procedures while planning assurance engagements to identify conditions that increase the risk of material misstatement in accounts, and acquire knowledge essential for designing an effective program of auditing tests (Wright and Ashton, 1989; PCAOB, 2010; Knechel, 2007). For the purposes of the ISAs, the term "analytical procedures" means evaluations of financial information through analysis of plausible relationships among both financial and non-financial data (ISA, 520). Analytical methods in practice consist of the following three stages: reasonableness test, trends analysis and ratio analysis. Ratio analysis is a form of financial statement analysis that is widely used to obtain a quick indication of a firm's financial performance in several key areas. The ratios are categorized as short-term solvency ratios, debt management ratios, asset management ratios, profitability ratios, and market value ratios. Ratio analysis as a tool possesses several important features. The data, which are provided by financial statements, are readily available. The computation of ratios facilitates the comparison of firms which differ in size. Ratios can be used to compare a firm's financial performance with industry averages. In addition, ratios can be used in a form of trend analysis to identify areas where performance has improved or deteriorated over time (Zenwealth, 2017). As set out by Akbari and Alimadad (2000), the accuracy of conclusions and the advantage of this technique in terms of comparing the costs and time taken to perform each of the analytical methods in Iran are provided in Table 1 (see also: Azhmannah, 2015; Omar *et al*., 2014).

Table 1: The Accuracy and Cost-Effectiveness of Analytical Methods

Account Type	Account Balance	Trends Analysis	Ratio Analysis
Balance sheet	Limited benefit	Limited benefit	Useful
Profit and Loss	Very useful	Useful	Very useful

2.2. Financial Ratios

As ratio analysis is widely utilized in analytical methods, financial ratios are very diverse. In the current paper, financial ratios are classified and utilized on five levels, namely liquidity ratios, asset management ratios, debt management ratios, profitability ratios and ratios of the market value (Altman, 1968; Cornett *et al*., 2008; Kanapickienė and Grundienė, 2015).

2.4. Hypotheses development

External auditing improves an external governance mechanism that decreases conflict among principal and active agents. The aforementioned increases reliability and assurance in financial statements, and thus contains an essential mechanism guaranteeing stockholders that managers do not follow their personal benefit. Definitely, the external auditor should be independent of key managers, because the external auditor is supposed to contain an actual link with firms' directors to gather data allowing them to express an independent opinion (Moalla, 2017).

In the Iranian context, financial statements of publicly traded firms in the TSE should be available for the various stakeholders and private investors that demand reliable information and may hold other affairs or interests. Official standards and applicable laws typically represent administrative mechanisms that properly establish specific rules supporting credible assurance and trust. The TSE introduced more stringent reporting and disclosure requirements for listed firms and enforcement measures for non-compliance. Financial statements undoubtedly have to be mandatorily audited prior to publishing, because they are a reliable source of information for

investors. The regulations of the professional conduct of certified public accountants in Iran fulfil a significant role in ensuring auditor independence. Therefore, it is critical to promptly investigate factors explaining a principal purpose and an independent audit opinion in the Iranian context (Iran Investment Monthly, 2011). Previous models explaining audit report qualifications have illustrated that financial and non-financial variables influence audit opinion (Carmanis and Spathis, 2006). Most investigations have been involved in the association between audit decisions and going-concern assessment. The specific quality of financial parameters in typically describing the issuance of qualified audit reports has been considered by previous studies (e.g. Caramanis and Spathis, 2006; Laitinen and Laitinen, 1998). Financial parameters have been widely investigated to justify going concern modifications for distressed firms or to predict bankruptcy (e.g. Chen and Church, 1992; Mutchler, 1985). These parameters are further relevant in defining all types of audit qualifications (Garcia-Blandon and Argiles, 2015). Laitinen and Laitinen (1998) examined the link within audit qualification decisions and sixteen financial ratios. In the current study, we will investigate the association between the following financial and non-financial parameters and the type of audit opinion: current ratio, debt ratio, ratio of gross profit, type of audit firm, auditor turnover and corporate performance.

Based on the theoretical arguments and literature review presented above, three main hypotheses and six sub-hypothesis were developed, which are shown in Table (2).

Table 2: Research Hypotheses

Row	Hypothesis	Description
1	Main Hypothesis 1	There is a significant relationship between financial ratios and the type of audit opinion.
2	Sub-Hypothesis 1-1	There is a significant relationship between current ratio and the type of audit opinion.
3	Sub-Hypothesis 1-2	There is a significant relationship between debt ratio and the type of audit opinion.
4	Sub-Hypothesis 1-3	There is a significant relationship between the ratio of gross profit to sales and the type of audit opinion.
5	Main Hypothesis 2	There is a significant relationship between non-financial variables and the type of audit opinion.
6	Sub-Hypothesis 2-1	There is a significant relationship between the audit firm and the type of audit opinion.
7	Sub-Hypothesis 2-2	There is a significant relationship between auditor turnover and the type of audit opinion.
8	Sub-Hypothesis 2-3	There is a significant relationship between corporate performance and the type of audit opinion.
9	Main Hypothesis 3	A model can be promoted to predict the type of audit opinion by using financial ratios and non-financial variables.

3. Methodology

3.1. Sample

The statistical population included all firms listed on the TSE during 2012-2016. In this study, sampling is carried out through a systematic elimination method and the sample volume is equal to those firms that meet the following conditions:

1. Listed before 2012 in the TSE and have been active until the end of the fiscal year of 2016.
2. In terms of increased comparability, the fiscal year should end in March, and remain unchanged in the period of the 2012 to 2016 fiscal years.

3. Some listed firms, including banks and financial institutions, investment firms, financial intermediaries, and holding firms, which have separate reporting structures, are removed from the study.
4. Independent auditors' reports must be available for the year t-1 and t. Also financial and income statements of all the corporations should be available for the year t. In this regard, Table 3 explain how many firms are part of the TSE, how many are excluded, and why.

Table 3: Selection of Research Sample Firms

Row		Description	Number of Firms
The statistical population on the date of data collection (the original stock market firms).			344
Restrictions	1	Not listed at TSE since the beginning of the 2012 fiscal year.	(14)
	2	The firms' fiscal year should end in March.	(109)
	3	Not listed as banks and financial institutions, investment firms, financial intermediaries and holding firms.	(59)
	4	Independent auditor's report must be available for the fiscal years 2011-2016.	(66)
Sample Firms			**96**

After introducing the abovementioned restrictions, the size of the sample is reduced to 96 firms, meaning that according to the study period, there are 480 observations. Table 4 lists the number of sample firms by industry.

Table 4: Sample Firms by Industry

Industry	Number of Firms	Percent	Industry	Number of Firms	Percent
Food except for sugar	7	0.072	Equipment and machinery	6	0.062
Oil products	3	0.031	Mineral extraction	1	0.010
Basic metals	11	0.114	Extraction of metal ores	5	0.052
Ceramic tile	1	0.010	Sugar	1	0.010
Automotive and vehicle parts	10	0.104	Extraction of gas and oil except exploration	1	0.010
Medicinal	11	0.114	Computer	1	0.010
Electronics	4	0.041	Rubber and plastic	2	0.020
Non-metallic minerals	4	0.041	Coal mining	1	0.010
Cement lime plaster	11	0.114	Wooden products	1	0.010
Chemical	10	0.104	Metal products	2	0.020
Paper products	2	0.020	Telecommunications	1	0.010
Total		**96 Firms**		**100 Percent**	

It is notable that required data was collected to evaluate the research hypotheses through direct reference to the independent audit reports and financial statements of corporations, which were available on the TSE website (www.tse.ir). The management and research website, development and Stock Exchange Organization (SEO) were also used (www.seo.ir).

3.3. Model

3.3.1. Logistic regression

Logistic regression and discriminant analysis are appropriate statistical techniques when the dependent variable is a categorical variable and the independent variables are metric or non-metric. Logistic regression is a special case of regression which is formulated to predict and explain a binary variable. Logistic regression is similar to linear regression, except that calculations of coefficients are not the same in this method, meaning that in linear regression analysis, to test the model's fitness and the significance of the effect of each variable in the model, the F and t statistics are used respectively, while in logistics, the chi-square and Wales statistics are used (Hosmer *et al*., 2013). The general form of the logistic model is as follows:

$$\text{Logit (Y)} = \text{natural log (odds)} = \text{Ln}\left(\frac{\pi}{\pi-1}\right) = \alpha + \beta1X1 + \beta2X2 + \dots \beta kXk$$

Where:

π: Probability of desired outcome or event under the independent variable X

α: Parameter of Y axis

β: Regression coefficient

X: Independent variable

3.4. Variables

3.4.1. Independent Variables

As stated in the hypotheses section, three financial ratios, namely current ratio, debt ratio and gross profit to sales ratio, as well as three non-financial metrics, namely type of audit firm (National Audit Organization vs. other local audit firms), auditor turnover and corporate performance were examined as independent variables. It should be noted that all non-financial variables in the study are two-dimensional variables (one/zero).

3.4.2. Dependent Variable

In the present study, due to the sample size being zero for failed audit reports and failure to comment, a two-dimensional variable is used to verify this variable, such that qualified opinion is used as dimension 1 (Group I) and unqualified opinion as dimension 2 (Group II).

3.4.3. Control Variable

To measure more precisely the relationship between financial and non-financial variables with the type of audit opinion, we control a set of potential variables employed in previous studies (e.g. Altman, 1968; Beaver, 1966; Dopuch *et al*., 1987; Bell and Tabor, 1991; Carson *et al*., 2012; Chen and Church; 1992; Spathis, 2003; Ghale Rudkhani and Jabbari, 2014; Moalla, 2017; Moalla and Baili, 2019; Maldonado *et al.* 2019). Therefore, we apply eight control variables, namely quick ratio, inventory turnover ratio, fixed assets turnover ratio, total asset turnover ratio,

return on total assets, return on equity, the ratio of net income to sales and the ratio of market value to book equity.

Table 5 provides the list of key variables and the practical manner in which these variables are accurately computed or collected.

Table 5: Research variables, measurement and resources

Variables	Variable type	Measurement	Software/Resources
Current ratio	Independent	Current assets / Current liabilities	*Rahavard Novin (Parsportfolio)*
Debt ratio	Independent	Total liabilities / Total assets	*Rahavard Novin (Parsportfolio)*
Gross Profit Ratio	Independent	Gross profits / Net sales	*Rahavard Novin (Parsportfolio)*
Audit firm	Independent	The national audit organization (1) vs Other local audit firms (0)	Independent auditor's report
Auditor turnover	Independent	Auditor switched (1) vs Otherwise (0)	Annual General meeting, firms' financial statements and notes.
Corporate performance	Independent	Profitable (1) vs Lost making (0)	Annual General meeting, firms' financial statements and notes.
Quick ratio	Control	Current assets- (Inventory goods + orders and advance payments) / Current liabilities	*Rahavard Novin (Parsportfolio)*
Inventory turnover ratio	Control	Cost of goods sold / Average inventory	*Rahavard Novin (Parsportfolio)*
Fixed-asset turnover ratio	Control	Net sales / (Fixed asset – Accumulated depreciation)	*Rahavard Novin (Parsportfolio)*
Total asset turnover ratio	Control	Net sales / Average total assets	*Rahavard Novin (Parsportfolio)*
ROA Ratio	Control	Net income / Average total assets	*Rahavard Novin (Parsportfolio)*
ROE Ratio	Control	Net income / Year-end total equity (Shareholder's equity)	*Rahavard Novin (Parsportfolio)*
Net Profit Ratio	Control	After-tax profits / Net sales	*Rahavard Novin (Parsportfolio)*
MV to book equity ratio	Control	Market value / Book equity	*Rahavard Novin (Parsportfolio)*
Audit opinion	Dependent	Qualified opinion (0) vs Unqualified opinion (1)	Independent auditor's report

4. Research Findings

4.1. Descriptive Statistics of Variables

To provide an overview of the key features of study variables, some of the concepts of descriptive statistics of these variables, including the number of observations, mean, median, standard deviation and range of variation, are illustrated in Table 6.

Table 7 presents the frequency distribution of qualitative variables by year. The overall results of Table 7 show that during the five-year period under investigation, 251 of the 480 audit reports (52.29%) were qualified. This rate of qualification is clearly higher than rates found in previous research; for instance, Moalla (2017) found a rate of 46.79 percent in Tunisia; Garcia-Blandon and Argiles (2015) found 16.6 percent in Spain; Farrugia and Baldacchino (2005) found 19.9 percent in Malta; Soltani (2000) found 6.43 percent in France; Chan and Walter (1996) found 9 percent in the case of firms listed on the Shanghai Stock Exchange; Laitinen and Laitinen (1998) found 7.2% in Finland; Wines (1994) found 22.8 percent in Australia and Keasy *et al.* (1988*)* found 21 percent in the case of UK small firms.

Considerable variability in the qualified opinion is indeed justified by financial and non-financial aspects. These issues propose that the type of auditor, poor financial performance, the time lag between the fiscal year-end and the date of the audit report issue, audit opinion type received in the previous year and prior year losses result in a higher probability of receiving qualified opinion for materially misstated financial statements. The results further show that lower net income, greater experience in the TSE, audit opinion type received in the previous year and prior year losses result in a higher probability of receiving a qualified opinion for the inability to obtain sufficient appropriate audit evidence in Iran (Omid, 2015).

Table 6: Descriptive statistics of research variables

Variables	No. of Observations	Mean	Median	SD	variation range
Current Ratio	480	1.345	1.194	0.882	10.631
Quick Ratio	480	0.728	0.634	0.565	8.106
Turnover ratio of inventory	480	3.755	2.736	3.237	22.429
Turnover ratio of fixed assets	480	4.744	3.262	5.867	64.169
Turnover ratio of total assets	480	1.01	0.88	0.664	6.357
Debt ratio	480	0.616	0.640	0.171	1.206
Return on total assets	480	0.124	0.107	0.125	0.941
Return on equity	480	0.259	0.296	0.839	20.454
The ratio of net profit to sales	480	0.264	0.250	0.276	4.582
The ratio of gross profit to sales	480	0.177	0.118	0.152	1.080
The ratio of market value to book equity	480	9.563	7.956	11.528	98.127

Table 7: The frequency distribution of qualitative variables based on year

Year	Qualified Opinion	Clean Opinion	Auditor turnover	Corporate performance		Audit Firm	
				Profit	Loss	NAO	Other
2012	62	34	6	88	8	25	71
2013	48	48	23	95	1	24	72
2014	47	49	14	90	6	23	73
2015	48	48	42	88	8	21	75
2016	46	50	26	90	6	21	75

Before estimating logistic regression models, one should ensure that there is no correlation between independent variables. Customarily, coefficients of less than 50 percent between each of the independent variables are considered acceptable. Linear regression between independent variables is provided via the parametric method (Pearson correlation analysis) in Table 8. In the current paper, since most of the estimated coefficients are significant, the linearity between independent variables is not intensive.

Table 8: The Pearson Covariance Analysis

Variables	AO	CR	DR	GPR	AF	AT	CP	QR	IT	FAT	TAT	ROA	ROE	MPR	MTB
AUDIT_OPINION	1/000														
-	----														
CURRENT_RATIO	0/022**	1/000													
-	0/356	----													
DEBT_RATIO	-0/116	-0/548	1/000												
-	0/000***	0/000***	----												
GROSS_PROFIT_RATIO	0/107	0/370	-0/453	1/000											
-	0/000***	0/000***	0/000***	---											
AUDIT_FIRM	-0/003	-0/072	0/124	0/027	1/000										
-	0/883	0/002**	0/000***	0/249	----										
AUDITOR_TURNOVER	-0/030	-0/017	-0/007	-0/026	-0/263	1/000									
-	0/1980	0/466	0/760	0/274	0/000***	----									
CORPORATE_PERFORMANCE	0/159	0/167	-0/392	0/369	-0/026	-0/014	1/000								
-	0/000***	0/000***	0/000***	0/000***	0/279	0/556	----								
QUICK_RATIO	-0/060	0/873	-0/455	0/390	-0/006	-0/037	0/134	1/000							
-	0/012**	0/000***	0/000***	0/000***	0/785	0/121	0/000***	----							
INVENTORY_TURNOVER	-0/040	-0/036	0/021	-0/092	-0/016	-0/003	0/024	0/010	1/000						
-	0/093*	0/127	0/372	0/000***	0/496	0/884	0/307	0/660	----						
FIXED_ASSET_TURNOVER	-0/009	0/116	0/044	0/033	0/097	-0/022	0/098	0/137	-0/005	1/000					
-	0/682	0/000***	0/062*	0/164	0/000***	0/339	0/000***	0/000***	0/834	----					
TOTAL_ASSET_TURNOVER	0/144	-0/087	0/088	-0/294	0/024	0/012	0/096	-0/129	0/070	0/292	1/000				
-	0/000***	0/000***	0/000***	0/000***	0/306	0/606	0/000***	0/000***	0/003**	0/000***	----				
ROA	0/193	0/389	-0/633	0/610	0/011	-0/012	0/543	0/354	-0/031	0/105	0/098	1/000			
-	0/000***	0/000***	0/000***	0/000***	0/634	0/617	0/000***	0/000***	0/183	0/000***	0/000***	----			
ROE	0/052	0/029	-0/032	0/073	-0/032	-0/005	0/101	0/023	-0/002	0/031	0/031	0/120	1/000		
-	0/027**	0/218	0/172	0/002**	0/172	0/815	0/000***	0/319	0/910	0/189	0/186	0/000***	----		
NET_PROFIT_RATIO	0/018	0/192	-0/252	0/229	0/040	-0/003	0/195	0/208	-0/010	0/001	-0/085	0/244	0/026	1/000	
-	0/433	0/000***	0/000***	0/000***	0/089*	0/879	0/000***	0/000***	0/677	0/953	0/000***	0/000***	0/273	----	
MTB	-0/007	0/022	-0/064	0/035	0/041	0/012	0/029	0/020	0/014	0/013	0/013	0/061	-0/504	0/012	**1/000**
-	0/764	0/354	0/007**	0/140	0/087*	0/603	0/212	0/399	0/543	0/573	0/584	0/010**	0/000***	0/594	**----**

* Significance at 90% confidence level ** Significance at 95% confidence level and *** Significance at 99% confidence level.

4.2. Model Estimation and Hypothesis Testing

Using logistic regression, the research hypotheses are examined and the results are provided in Table 9. In this test, the significance level is 5 percent, and hypotheses are rejected or accepted on the basis of this level.

Table 9: The results of the estimation of model

$$NL\left(\frac{y}{y-1}\right)=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+\beta_8X_8+\beta_9X_9+\beta_{10}X_{10}+\beta_{11}X_{11}+\beta_{12}X_{12}+\beta_{13}X_{13}+\beta_{14}X_{14}$$

Sub-hypotheses	symbol	Factors of regression equation	Coefficients	Standard error	Wald statistic	Degree of freedom	Significance level	Standardized coefficients
		C number	-0.981	1.077	0.831	1	0.360	0.374
HP1.1	X1	Current ratio	-1.018	0.291	12.160	1	0.000	2.766
HP1.2	X2	Debt ratio	4.221	1.001	17.718	1	0.000	68.037
HP1.3	X3	Gross Profit Ratio	-3.264	0.988	10.695	1	0.003	0.038
HP2.1	X4	Audit firm	-0.792	0.261	9.301	1	0.001	0.452
HP2.2	X5	Auditor turnover	-0.437	0.252	2.914	1	0.088	0.646
HP2.3	X6	Corporate performance	-0.412	0.583	0.499	1	0.481	0.665
-	X7	Quick ratio	-0.314	0.368	0.732	1	0.391	0.73
-	X8	Inventory turnover ratio	-0.016	0.042	0.144	1	0.702	0.982
-	X9	Fixed-asset turnover ratio	-0.127	0.035	16.306	1	0.000	0.89
-	X10	Total asset turnover ratio	-0.629	0.294	4.493	1	0.033	0.534
-	X11	ROA	-0.852	1.477	0.333	1	0.565	2.341
-	X12	ROE	-0.007	0.231	0.001	1	0.970	1.008
-	X13	Net Profit Ratio	-0.141	0.586	0.058	1	0.812	0.868
-	X14	MV to book equity ratio	-5.644	1.262	12.421	1	0.846	0.911

4.3. Testing the first main hypothesis

According to Table 9, there is a negative and significant relationship between the current ratio as an independent variable and the type of audit opinion. This means that a reduction in the current ratio increases a firm's failure to pay debts on time, and the firm does not have the necessary liquidity to pay its debts in the short term, so there is the possibility of receiving qualified audit reports. This finding is consistent with research results reported by Gaganis *et al*. (2007) and Pasyrvs *et al*. (2007), while Butler *et al*. (2004) and Yaşar *et al*. (2015) found no relationship between current ratio and auditor's opinion.

A positive and significant relationship is also found between debt ratio as an independent variable and the auditor's report. The debt ratio calculates the financial health of firms. A debt ratio of greater than one indicates that the repayment of debt is now at risk. Thus, the interpretation of these findings is as follows: if the firm's debt ratio increases, the possibility of issuing a qualified audit report increases, because the interests and rights of creditors and banks which lend to the firm will be compromised and it will face bankruptcy. This finding is consistent with those reported by Bell and Tabor (1991), Chen and Church (1992) and Butler *et al*. (2004); however, Tsipouridou and Spathis (2014) found no meaningful association in this respect.

According to Table 9, gross profit as an independent variable has a significant negative relationship with the type of audit opinion. The possibility of issuing a qualified audit report increases with the reduction in gross profit. Since profit is one of the most important indicators for measuring the performance and activity of an economic entity, it can be concluded that audit

reports are influenced by the gross profit of a single economic entity. This finding is consistent with the results reported by Willenborg and McKeown (2000), Gaganis *et al.* (2007), Farinha and Viana (2009) and Yaşar *et al.* (2015).

The above results indicate that the ratios of fixed asset turnover ratio and total assets turnover as control variables have a significant and negative relationship with the auditor's opinion and are consistent with the results of Tsipouridou and Spathis (2014), Chen *et al.* (2010), Ryu and Roh (2007) and Gaganis *et al.* (2007). Moreover, the return on equity as the control variable exhibits no significant correlation with the type of audit opinion. This finding is inconsistent with Chen *et al.* (2000), since they observed a negative relationship in this regard, albeit in the Chinese stock market. Also, other ratios under investigation as control variables (quick ratio, the ratio of inventory turnover, return on total assets, net income ratio and Market value to book equity ratio) have no significant relationship with the auditor's opinion. However, the results of previous research on these ratios are as follows:

1. Yaşar *et al.* (2015) argued that the ratios of net income to total assets and net income to equity are related to audit opinions.
2. Tsipouridou and Spathis (2014), Chen *et al.* (2010), Farinha and Viana (2009) and Ryu and Roh (2007) argued that there is a relationship between the return on total assets and the audit report, as well as price book value. They expressed that a lower ROA indicates that decreasing profitability increases the probability of a going-concern qualification.
3. Willenborg and McKeown (2000) also indicated a relationship between inventory turnover and the audit report.

4.4. Testing the second main hypothesis

According to Table 9, there is a negative and significant relationship between the audit firm and the type of audit opinion. This means that the more audit firms turn to NAO for external auditing, the higher the likelihood of receiving qualified audit reports and vice versa. Since the quality of audit from large and small institutions are very different, the audit organization as a large auditing firm has a great reputation; so this organization will invest more in human resources needed to detect errors and fraud, and of course, in comparison with other audit institutions, is likely to provide a modified opinion. This finding is consistent with the results reported by DeAngelo (1981), Monroe and Teh (1993), Gaganis *et al.* (2007) and Francis *et al.* (2009).

Furthermore, auditor turnover is significant at a 90 percent confidence level and thus has a weak relationship with the type of audit opinion. This finding is consistent with the results of Abdel Nasser *et al.* (2009), who argue that there is a relationship between the auditor turnover and the type of audit opinion.

As can be seen in table 9, corporate performance does not have any relationship with the type of audit opinion. Statistically, the reason for this lack of relationship can be traced back to the low amounts of changes in this variable. As observed in the descriptive tables, for our sample during the period from 2012 to 2016, the financial performance of a few firms resulted in a loss. Therefore, there is little difference between firms' performance in specific terms of profit and loss.

4.5. Testing the third main hypothesis

According to Table 9, it can be concluded that financial ratios and non-financial variables are relevant to the type of audit opinion in this study. Furthermore, using logistic regression

techniques indicates that when making use of four variables, namely debt ratio, the ratio of gross profit to sales, current ratio and the type of audit firm (National Audit Organization vs. other local audit firms), a logit model is promoted to predict the type of audit opinion. Based on the results of hypotheses tests and according to the coefficients of independent variables in Table 9, a logit model to predict the type of audit report is developed as follows:

$$Ln\left(\frac{P}{P\text{-}1}\right) = 4.22\,x_1 - 3.264\,x_2 - 1.018x_3 - 0.792\,x_4$$

Where:

The possibility of predicting the type of audit opinion, the maximum value of which is 1 (unqualified opinion) and the minimum value is 0 (qualified opinion).

x_1: ratio of auditor's desired corporate debt.

x_2: ratio of gross profit to sales of auditor's desired firm.

x_3: current ratio of auditor's desired firm.

x_4: type of audit firm that is invited, coded at two levels: The National Audit Organization (1) and other local audit firms (0).

In Table 10, all logistic regression statistics for analysing goodness of fit for the intended model are as follows:

Table 10: The goodness of fit

Chi-square test	104.421	Significance level	0.000
Log likelihood	560.000	Correlation independent between variables	insignificant
Nagelkerke R Square	0.198	Significance of regression model	Yes
Cox & Snell R Square	0.271	The ability of the model to predict audit opinion	72.9 percent

According to Table 10, with an emphasis on the 2LL statistic and its comparison with the chi-square statistic at the 95 percent confidence level, and with 14 degrees of freedom, which is equal to 23.658, it can be concluded that the logistic regression equation is significant with the abovementioned coefficients in the model. In addition, regarding the coefficients of determination – Nagelkerke R square and Cox-Snell – the abovementioned model can respectively explain 19.5 percent and 26.1 percent of changes in the auditor's opinion. There is also no significant correlation between variables in the model, which is decisive proof to validate the model. It should be mentioned that the model's ability to estimate success according to tests conducted by the software is equal to 72.9 percent.

5. Conclusions and Suggestions

The external audit signifies the identity of the external governance mechanisms that guarantee the quality of financial information. Hence, the report of an auditor obtains a conceivable tool to validate the availability of financial information (Boolaky and Quick, 2016). An unqualified audit opinion may be an assurance for multiple stakeholders utilizing financial information, while a qualified audit opinion may be a piece of adverse information that can destroy their confidence (Moalla, 2017). In this paper, we examined audit opinions in TSE, where institutional factors are different from those in developed countries, in two primary questions that separate financial ratios and non-financial metrics in a logit model, which is rare in emerging market

studies. In details, considering three common financial ratios and three non-financial metrics in our analysis, the significance of their impact on audit opinion is revealed. As the prime research question typically refers to the possible links between financial variables and audit opinion in the introduction, the outcomes of the examination confirmed that among financial ratios, debt ratio, gross profit ratio and current ratio, total asset turnover ratio and fixed asset turnover ratio hold the most significant associations with audit opinions, respectively. Addressing the second research question, which concerns the associations between non-financial metrics and audit opinion in the introduction, among the non-financial metrics, the type of audit firm has the most significant relationship with the audit opinion, meaning that the national audit organization fulfils an essential role in TSE as an emerging market to validate financial statements. In addition, the results of logistic regression analysis evidenced that, using six variables – debt ratio, the ratio of gross profit to sales, current ratio, the type of audit firm (the National Audit Organization vs. other local audit firms), total asset turnover ratio and fixed asset turnover ratio – a model with a medium degree of significance for predicting the type of audit opinion is devised in TSE. Note that the ratio of corporate debt in the mentioned model has the highest coefficient among the independent variables which means it is the most influencing variable in the model.

The results of the study showed that the quality of auditing in various auditing firms are different. Therefore, it is suggested that audit committees take care in choosing their desired audit firm, as many papers have revealed the relation between audit quality and audit committee (Zgarni *et al.*, 2016). Also, since the report of independent auditors has an important and special place in investors' and creditors' decision-making, it is recommended to this community that in the absence of audit reports or if there is doubt, the estimated model can be used to check the status of the client's financial statements and ensure the quality of audit reports, particularly in emerging economies. Indeed, it is suggested that by using such models, firms that do not use the services of independent auditors can study and evaluate the status of their financial statements.

6. limitations

This study contains some limitations. First, it is likely that similar researches in developed countries set a large sample (e.g. over 1,000 firms) including more years, but we cannot follow such a trend due to data access restrictions. Second, banks and financial institutions, investment and holding firms are removed from the sample, because their financial structure is diverse. The third limitation of the study represents the different economic and cultural conditions of Iran compared to other countries. Future studies could focus on internal control material weaknesses or earnings management to predict audit opinion in emerging economies including Iran.

References

Abbaszadeh, M.R., Moftoonian, M., Babaee, K.M., & Fadaei, M. (2017). Examining the accuracy of Heuristic algorithms and logistic regression in predicting the type of independent auditor's opinion. *New Research in Accounting and Auditing,* 1(4), 39-73 (In Persian).

Aghaei Chadegani, A., Muhammaddun Mohamed, Z., & Jari, A. (2011). The determinant factors of auditor switch among companies listed on Tehran Stock Exchange. *International Research Journal of Finance and Economics ISSN*, 1450-2887.

Akbari, F., Alimadad, M. (2000). *Analytical review of the analysis in auditing (first edition).*

Tehran: Auditing Organization.

Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The journal of finance*, *23*(4), 589-609.

American Institute of Certified Public Accountants, (1988). *Analytical Procedures.* Statement on Auditing Standards No. 56. New York, NY: AICPA.

Arnold, V., Collier, P. A., Leech, S. A., & Sutton, S. G. (2001). The impact of political pressure on novice decision makers: are auditors qualified to make going concern judgements?. *Critical Perspectives on Accounting*, *12*(3), 323-338.

Azhmannah, R. (2015). *Providing a model for predicting the auditor's opinion through financial and non-financial variables.* Master's Thesis in Accounting. University of Sistan and Baluchistan, Iran.

Bagherpour valashani, M. A., Saei, M. J., Meshkani, A., & Bagheri, M. (2013). Predicting the Independent Auditor's Report in Iran: A Data Mining Approach. *Accounting and Auditing Research,* 19 (In Persian).

Baqerpour, V. M. A., Saee, M. J., Meshkani, & A., Bagheri, M. (2013). Predicting the report of independent auditor in Iran: Data mining approach. *Accounting and Auditing Research*, 19 (In Persian).

Beaver, W. H. (1966). Financial ratios as predictors of failure. *Journal of accounting research*, 71-111.

Bell, T. B., & Tabor, R. H. (1991). Empirical analysis of audit uncertainty qualifications. *Journal of Accounting Research*, 350-370.

Blay, A. D., Geiger, M. A., & North, D. S. (2011). The auditor's going-concern opinion as a communication of risk. *Auditing: A Journal of Practice & Theory,* 30(2), 77-102.

Boolaky, P. K., & Quick, R. (2016). Bank directors' perceptions of expanded auditor's reports. *International Journal of Auditing*, *20*(2), 158-174.

Brazel, J. F., & Schmidt, J. J. (2018). Do Auditors and Audit Committees Lower Fraud Risk by Constraining Inconsistencies between Financial and Nonfinancial Measures?. *Auditing: A Journal of Practice and Theory.*

Brigham, E. F., & Houston, J. F. (2012). *Fundamentals of financial* management. Cengage Learning.

Butler, M., Leone, A. J., & Willenborg, M. (2004). An empirical analysis of auditor reporting and its association with abnormal accruals. *Journal of Accounting and Economics,* 37(2), 139-165.

Caramanis, C., & Spathis, C. (2006). Auditee and audit firm characteristics as determinants of audit qualifications: evidence from the Athens stock exchange. *Managerial Auditing Journal*, *21*(9), 905-920.

Carson, E., Fargher, N. L., Geiger, M. A., Lennox, C. S., Raghunandan, K., & Willekens, M. (2012). Audit reporting for going-concern uncertainty: A research synthesis. *Auditing: A Journal of Practice & Theory,* 32(sp1), 353-384.

Carson, E., Fargher, N., & Zhang, Y. (2017). Explaining auditors' propensity to issue going-concern opinions in Australia after the global financial crisis. *Accounting & Finance.*

Chen, C. J., Su, X., & Zhao, R. (2000). An emerging market's reaction to initial modified audit opinions: Evidence from the Shanghai Stock Exchange. *Contemporary Accounting Research*, *17*(3), 429-455.

Chen, K. C., & Church, B. K. (1992). Default on debt obligations and the issuance of going-concern opinions. *Auditing,* 11(2), 30.

Chen, S., Sun, S. Y., & Wu, D. (2010). Client importance, institutional improvements, and audit quality in China: An office and individual auditor level analysis. *The Accounting Review*, *85*(1), 127-158.

Chow, C. W., & Rice, S. J. (1982). Qualified audit opinions and auditor switching. Accounting

Review, 326-335.

Cornett, M.M., Adair, T.A., & John, N. (2008). *Finance: Applications and Theory (first edition),* Mcgraw: Hill /Irwin.

Craswell, A., Stokes, D. J., & Laughton, J. (2002). Auditor independence and fee dependence. *Journal of Accounting and Economics, 33*(2), 253-275.

DeAngelo, L. E. (1981). Auditor size and audit quality. *Journal of accounting and economics, 3*(3), 183-199.

Debt management ratios, http://www.eiiff.com/debt/management/ratios.html (Accessed on 12/11/16).

Dopuch, N., Holthausen, R. W., & Leftwich, R. W. (1987). Predicting audit qualifications with financial and market variables. *Accounting Review,* 431-454.

European Commission. (2010). *Green Paper, Audit Policy: Lessons from the Crisis.* Brussels, Belgium: European Commission.

Fama, E. F., & Jensen, M. C. (1983). Agency problems and residual claims. *The journal of law and Economics*, *26*(2), 327-349.

Farinha, J., & Viana, L. F. (2009). Board structure and modified audit opinions: evidence from the Portuguese stock exchange. *International Journal of Auditing, 13*(3), 237-258.

Francis, B. B., Hasan, I., & Hunter, D. M. (2002). Emerging market liberalization and the impact on uncovered interest rate parity. *Journal of International Money and Finance,* 21(6), 931-956.

Francis, J. R., & Yu, M. D. (2009). Big 4 office size and audit quality. *The accounting review*, *84*(5), 1521-1552.

Gaganis, C., Pasiouras, F., & Doumpos, M. (2007). Probabilistic neural networks for the identification of qualified audit opinions. *Expert Systems with Applications, 32*(1), 114-124.

Gande, A., John, K., & Senbet, L. W. (2008). Bank incentives, economic specialization, and financial crises in emerging economies. *Journal of International Money and Finance*, *27*(5), 707-732.

Garcia-Blandon, J., & Argiles, J. M. (2015). Audit firm tenure and independence: A comprehensive investigation of audit qualifications in Spain. *Journal of International Accounting, Auditing and Taxation*, *24*, 82-93.

Ghale Rudkhani, T. M., & Jabbari, H. (2014). The effect of financial ratios on auditor opinion in the companies listed on TSE. *European Online Journal of Natural and Social Sciences: Proceedings,* 2(3 (s)), pp-1363.

Gombola, M. J., & Ketz, J. E. (1983). A note on cash flow and classification patterns of financial ratios. *Accounting Review,* 105-114.

Greene, W. H. (2012). *Econometric analysis,* Harlow. pp. 155–161.

Haron, H., Hartadi, B., Ansari, M., & Ismail, I. (2009). Factors influencing auditors going concern opinion. *Asian Academy of Management Journal,* 14(1), 1-19.

Hosmer Jr, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied logistic regression (Vol. 398).* John Wiley & Sons.

House of Lords. (2011). *Auditors: Market Concentration and Their Role. Select Committee on Economic Affairs, 2nd Report of Public Company Accounting Oversight Board (PCAOB).* Concept Release on Auditor Independence.

Iran Investment Monthly. (November 2011). Turquoise Partners (In Persian).

Jensen, M. C., & Meckling, W. H. (1979). Theory of the firm: Managerial behavior, agency costs, and ownership structure. In Economics social institutions (pp. 163-231). Springer, Dordrecht.

Kanapickienė, R., & Grundienė, Ž. (2015). The model of fraud detection in financial statements by means of financial ratios. *Procedia-Social and Behavioral Sciences,* 213, 321-327.

Karabag, S. F. (2019). Factors impacting firm failure and technological development: A study of three emerging-economy firms. *Journal of Business Research*, 98, 462-474.

Kausar, A., Taffler, R. J., & Tan, C. E. (2017). Legal regimes and investor response to the auditor's going-concern opinion. *Journal of Accounting, Auditing & Finance,* 32(1), 40-72.

Khajavi, SH., Kazemnejad, M., Dehghanisadi, A. A., & Momtazian, A. (2016). The investigation of the application of multiple techniques for deciding variables in predicting the type of auditors' opinion. *Empirical Accounting Research,* 7(3), 81-102 (In Persian).

Khasanah, I., & Nahumury, J. (2013). The Factor Affecting Auditor Switching In Manufacturing Companies Listed In Indonesia Stock Exchange (BEI). *The Indonesian Accounting Review,* 3(2), 203-212.

Knechel, W. R. 2007. The business risk audit: Origins, obstacles and opportunities. *Accounting, Organizations and Society,* 32 (4/5): 383–408.

Kordlor, A., Seidi, A. (2009). The Role of Independent Auditors in Reducing Optional Accruals. *Accounting and Auditing Reviews*, 16 (1), 3-16 (In Persian).

Krishnan, J., Jayanthi, K. & Stephens, R. G. (1996). The Simultaneous Relation Between Auditor Switching and Audit Opinion: An Empirical Analysis. *Journal Accounting and Business Research*, 26(3), 224-236.

Krishnan, J., Krishnan, J., & Stephens, R. G. (1996). The simultaneous relation between auditor switching and audit opinion: An empirical analysis. *Accounting and Business research*, 26(3), 224-236.

Laitinen, E. K., & Laitinen, T. (1998). Qualified audit reports in Finland: evidence from large companies. *European Accounting Review*, 7(4), 639-653.

Liquidity Ratios, http://www.investopedia.com/terms/l/liquidityratios.asp (Accessed on 11/11/16).

Maldonado, I., Pinho, C., & Lobo, C. A. (2019, June). Determinant factors of external audit opinion modification in Portuguese municipalities. In *2019 14th Iberian Conference on Information Systems and Technologies (CISTI)* (pp. 1-6). IEEE.

Martens, D., Bruynseels, L., Baesens, B., Willekens, M., & Vanthienen, J. (2008). Predicting going concern opinion with data mining. *Decision Support Systems,* 45(4), 765-777.

Moalla, H. (2017). Audit report qualification/modification: Impact of financial variables in Tunisia. *Journal of Accounting in Emerging Economies,* 7(4), 468-485.

Moalla, H., & Baili, R. (2019). Credit ratings and audit opinion: evidence from Tunisia. *Journal of Accounting in Emerging Economies*, 9(1), 103-125.

Moalla, H., & Baili, R. (2019). Credit ratings and audit opinion: evidence from Tunisia. *Journal of Accounting in Emerging Economies.*

Monroe, G. S., & Teh, S. T. (1993). Predicting uncertainty audit qualifications in Australia using publicly available information. *Accounting & Finance,* 33(2), 79-106.

Mutchler, J. F. (1985). A multivariate analysis of the auditor's Going-Concern Opinion. *Journal of Accounting Research*, 23(Autumn), 668-682.

Omar, N., Koya, R. K., Sanusi, Z. M., & Shafie, N. A. (2014). Financial statement fraud: A case examination using Beneish Model and ratio analysis. *International Journal of Trade, Economics and Finance,* 5(2), 184.

Omid, A. M. (2015). Qualified audit opinion, accounting earnings management and real earnings management: Evidence from Iran. *Asian Economic and Financial Review*, 5(1), 46-57.

Pasiouras, F., Gaganis, C., & Zopounidis, C. (2007). Multicriteria decision support methodologies for auditing decisions: the case of qualified audit reports in the UK. *European Journal of Operational Research,* 180(3), 1317-1330.

Pourheidari, O., & Azami, Z. (2010). Verifying Auditor's Opinion Types Employing Neural Networks. *Accounting Knowledge,* 1(3), 77-97 (In Persian).

Public Company Accounting Oversight Board (PCAOB). (2008). *Report on the PCAOB's 2004, 2005, 2006, and 2007 Inspections of Domestic Annually Inspected Firms.* Release No. 2008-008. Washington, D.C.: SEC.

Public Company Accounting Oversight Board (PCAOB). (2010). *Auditing Standards Related to the Auditor's Assessment of and Response to Risk. Release No. 2010-004.* Washington, D.C.: Securities and Exchange Commission.

Public Company Accounting Oversight Board (PCAOB). (2011). *Concept Release on Auditor Independence and Audit Firm Rotation.* Washington, DC: PCAOB.

Ratio Analysis, http://www.zenwealth.com/BusinessFinanceOnline/RA/RatioAnalysis.html (Accessed on 12/11/16).

Reynolds, J. K., & Francis, J. R. (2000). Does size matter? The influence of large clients on office-level auditor reporting decisions. *Journal of accounting and economics*, *30*(3), 375-400.

Ryu, T. G., & Roh, C. Y. (2007). The Auditor's Going-Concern Opinion Decision. *International Journal of Business & Economics*, *6*(2).

Sari, A. K., Deviyanti, D. R., & Kusumawardani, A. (2018). Faktor-faktor yang mempengaruhi voluntary auditor switching pada perusahaan yang terdaftar di bei periode 2010-2015. *AKUNTABEL*, *15*(1), 17-28.

Senteney, D. L., Chen, Y., & Gupta, A. (2011). Predicting impending bankruptcy from auditor qualified opinions and audit firm changes. *Journal of Applied Business Research (JABR),* 22(1).

Setayesh, M. H., Ebrahimi, F., Saif, S. M., & Sarikhani, M. (2012). Forecasting the type of audit opinions: A data mining approach. *Management Accounting,* 5(11), 69-82 (In Persian).

Spathis, C. T. (2003). Audit qualification, firm litigation, and financial information: an empirical analysis in Greece. *International Journal of Auditing,* 7(1), 71-85.

Spathis, C., Doumpos, M., & Zopounidis, C. (2003). Using client performance measures to identify pre-engagement factors associated with qualified audit reports in Greece. *The International Journal of Accounting,* 38(3), 267-284.

Susanto, Y. K. (2018). Auditor switching: management turnover, qualified opinion, audit delay, financial distress. *International Journal of Business, Economics and Law*, *15*(5), 125-132.

Tsalavoutas, I., & Evans, L. (2010). Transition to IFRS in Greece: financial statement effects and auditor size. *Managerial Auditing Journal,* 25(8), 814-842.

Tsipouridou, M., & Spathis, C. (2014, March). Audit opinion and earnings management: Evidence from Greece. *In Accounting Forum* (Vol. 38, No. 1, pp. 38-54). Elsevier.

Tsipouridou, M., & Spathis, C. (2014, March). Audit opinion and earnings management: Evidence from Greece. In *Accounting Forum* (Vol. 38, No. 1, pp. 38-54). Taylor & Francis.

Valipour, H., Salehi, F., and Bahrami, M. (2013). Predicting audit reports using Meta-Heuristic Algorithms. *Journal of Distribution Science,* 11(6), 13-19.

Willenborg, M., & McKeown, J. C. (2000). Going-concern initial public offerings. *Journal of Accounting and Economics,* 30(3), 279-313.

Wright, A., & Ashton, R. H. (1989). Identifying audit adjustments with attention-directing procedures. *Accounting Review,* 710-728.

Yaşar, A., Yakut, E., & Gutnu, M. M. (2015). Predicting qualified audit opinions using financial ratios: Evidence from the Istanbul Stock Exchange. *International Journal of Business and Social Science,* 6(8), 1.

Zainudin, E. F., & Hashim, H. A. (2016). Detecting fraudulent financial reporting using financial ratio. *Journal of Financial Reporting and Accounting,* 14(2), 266-278.

Zgarni, I., Hlioui, K., & Zehri, F. (2016). Effective audit committee, audit quality and earnings

management: Evidence from Tunisia. *Journal of Accounting in Emerging Economies,* 6(2), 138-155.