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## In the Name of God

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*Structure of second page until the end of manuscript is as follow:*

- *Introduction* Some paragraphs contain explaining the problem, literature review, object (purpose), importance and necessity of it.
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I am pleased to announce that the Ferdowsi University of Mashhad is publishing Iranian Journal of Accounting, Auditing & Finance (IJAAF). On behalf of the board of the IJAAF and my co-editors, I am glad to present the Volume 1, Issue 1 of the journal in December 2017; the journal will publish four issues in a year. The board includes experts in the fields of accounting, finance and auditing, all of whom have proven track records of achievement in their respective disciplines. Covering various fields of accounting, *IJAAF* publishes research papers, review papers and practitioner oriented articles that address significant issues as well as those that focus on Asia in particular. Coverage includes but is not limited to:

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Yours faithfully,

Mahdi Moradi

Editor in Chief

# *Content*

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**Review Article**

# A Moderate Viewpoint to Efficient-Market Hypothesis and Behavioral Finance: the Efficiency of the Behavior of Participants in Transactions

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## Abstract

After behavioral finance was introduced, disagreements arose between advocates of behavioral finance and the efficient-market hypothesis. The two financial areas were regarded as contradictory by experts in the profession. In contrast to the prevailing view, it seems that the two approaches are not at odds. Therefore, this paper aims to address these two financial areas through a moderate approach. The present study examined works existing in finance using the analytical-critical method and finally extracted the concept of "market behavior efficiency" through deductive reasoning. Accordingly, the present research's prevailing view states that "at any point in time, the degrees of concepts presented in the efficient-market hypothesis and behavioral finance prevail in the stock market," influencing the prices. This paper concludes that the market price of any financial asset is composed of three components: producers' cost (primary cost or value); the effect of investors' proper reaction to the right and bad news about the firm issuing the financial asset; and the effect of investors' improper responses to the available information (i.e., the effect of investors' errors when making decisions). An analysis of the prevailing conditions in a market and factors influential on forming its available assets provides a vital insight into how related officials, domestic and international investors act. So, it brings about outcomes for determining investment strategies and academic literature.

**Keywords:** Efficient-Market Hypothesis, Behavioral Finance, Market Behavior Efficiency

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## 1. Introduction

In the economy, markets play a beneficial role in the optimized allocation of rare economic resources, contributing to economic development and improvement of social welfare. A market comprises a set of buyers and sellers, mostly investors and economic units, to the extent that the latter provide a considerable amount of their resources through the former. On the other hand, investors share the benefits of transferring their excess financial resources to economic units from the former's activities. Therefore, this kind of interaction helps financial resources be spent in generative units, leading to economic growth and boom.

Financial markets, including stock market and bond, are instances of markets addressed by many researchers. Financial markets consist of a set of investors and firms. Considering their expectations and using available information, the investors purchase the firms' stock or other financial assets based on market prices. Accordingly, what factors influence the price of these assets is of utmost prominence. Regarding financial assets, the extent to which the price of securities reflects available information and the factors affecting the prices have been dealt with by a large number of studies in the field of finance. According to Fama (1970), if at any point in time, the price of securities in a market fully reflects all the available information, the market is efficient. Later, several other researchers outlined the impact of other factors, namely, participants' behavior in a transaction, on the price of securities, calling this field of study behavioral finance. As advocates of the efficient-market hypothesis, a number of researchers have recently attempted to balance out findings of behavioral finance studies, which unfavorably influence the efficient-market hypothesis. On the other hand, behavioral finance proponents try to present evidence contradicting the efficient-market hypothesis in their studies. The way advocates of efficient-market hypothesis and behavioral finance behave towards each other has made others see the two approaches as contradictory. They address them in their books and studies with such an inconsistent attitude.

Adopting a moderate attitude, the present study was conducted to clarify the efficient-market hypothesis and behavioral finance. Contrary to the prevailing view, the study argues that the two approaches are not opposed. Accordingly, assuming that efficient-market hypothesis and behavioral finance are two ends of a spectrum, it asserts that "in the best case possible, the market fully follows efficient-market hypothesis and in the most undesirable case it complies with behavioral finance." Therefore, given that in the real work seldom does such a thing happen, that is, the market being in its best or most undesirable status, it is argued that "at any point in time, degrees of concepts introduced in efficient-market hypothesis behavioral finance prevail the market." This attitude is adopted in the present study because the market is regarded as a set of participants in transactions (i.e., buyers and sellers) who gather together and do business during specific periods in a specified place, whether physical or virtual. Accordingly, it was evident that such a situation (market) is directly influenced by how participants in transactions behave. Thus, it seems that the effect of participants' reactions in transactions is systematically and fairly reflected in the assets price. Therefore, it is safe to say that the prevalence of efficient-market hypothesis and behavioral finance in the market depends on the deficiencies in the behavior of those involved in transactions, determining the distance of this prevalence from ideal conditions. The presence of participants only conceptualizes the market, and the price of assets is specified in the supply and demand process of the same participants. Consequently, it is entirely natural that buyers' characteristics and preferences and producers' costs are reflected in the price of goods and products supplied in the market. Likewise, the present study states that the level of "market behavior efficiency" should be determined to decide the asset price's precision level.

A factor that seems to impact market behavior efficiency is how participants react

towards economic, political, and environmental conditions. Under such conditions, participants in transactions are regarded as a mediator between asset price and these conditions. It is argued that the more such conditions influence them, the more prices are systematically and fairly affected. It should be noted that their reactions to the conditions can be both rational and irrational. So, individuals' reasonable and unreasonable reactions to events they face the level of market behavior efficiency.

In the next section of the article, theoretical concepts and issues presented in standard economics and standard finance (modern) and theories and viewpoints introduced in behavioral economics and behavioral finance are explained. Subsequently, evidence on the way humans make decisions and mistakes they make are provided. Also, here market behavior efficiency and its related concepts are presented. In the end, the issues addressed through the paper are discussed, and conclusions are drawn.

## 2. Review of the Literature and Theoretical Foundations

### 2.1. Standard Economics and Standard Finance

The concepts presented in standard Economics and standard finance are almost similar. So, it seems that simultaneously addressing the two fields is advantageous to the present study's objectives.

#### 2.1.1. Standard Economics

In standard Economics, there is a fundamental idea called rationality, which provides the basis for economic theories, predictions, and recommendations. That is, it is assumed that all people are rational. The assumption states that people appreciate the value of their everyday life options and select the best possible way to act (Ariely, 2008). Accordingly, in standard Economics, it is assumed that individuals systematically and purposefully opt for the best way of achieving their goals based on available opportunities.

Studying individuals' decision-making process can shed some light on some of the puzzling economic phenomena. Here, there is a classic question: why is water so inexpensive, whereas diamond is so expensive? Humans need water to survive while diamond is unnecessary for survival. Nonetheless, people tend to pay enormous amounts of money for a diamond than what is spent on the water. People's willingness to pay for a good is based on the marginal benefit yielded from an extra unit of the good. Although water is vital, the marginal use of an additional glass of water is small as it is plentiful. Contrarily, diamond is not necessary for one's survival, but as it is so rare, people tend to attach a sizeable marginal benefit to an additional diamond (Mankiw, 2010). The way people behave in such matters reveals their rational behavior. However, as presented in subsequent parts, evidence indicates that people do not always behave rationally in all areas.

In 1776, the economist Adam Smith, in his book entitled "*An Inquiry into the Nature and Causes of the Wealth of Nations*," stated that the market price of any particular commodity (goods or service) is regulated by the proportion between the amount brought in the market and demand of those who are willing to pay the natural price of the commodity (effectual demand). When the amount of the commodity transferred into the market is lower than the market's effectual demand, some people tend to spend more money on it. As a result, competition arises between them, causing the market price to soar beyond the natural price, such that the degrees of competitors' deficiency, wealth, and wanton luxury either stimulate or lessen their eagerness to compete. Among competitors of equal wealth and luxury, the same deficiency will generally occasion a more or less eager competition, to the extent that the commodity's acquisition happens to be of more or less importance to them.

When the amount of products brought to the market is larger than the effectual

demands, all of them can not be sold to the customers willing to pay their natural price. Consequently, the excess amount should be sold to those who tend to purchase them at a lower price. As a result, the price decrease will influence all the commodities transferred to the market, causing market prices to fall far less than the natural price. Moreover, when the amount of commodities brought to the market is simply sufficient to supply the effectual demand, the market price will naturally near the natural price or precisely will reach it.

Given what is mentioned above, all market product suppliers wish that the amount of products was never larger than the effectual demand. In comparison, others want to that the amount of available commodity was not smaller than the effectual demand. Accordingly, these two groups' measures cause the amounts of goods brought to the market to rapidly approach effectual demand or equal it, leading the market price to move towards the natural price.

Smith asserts that households and firms interact in markets as if they are guided by an "invisible hand" that leads them to desirable market outcomes. Adam Smith's idea is that prices are an instrument that directs economic activity through that invisible hand. In any market, buyers take account of the primary price when determining the demand levels. Sellers consider the primary price when deciding the degree of supply. Therefore, the outcome of the decisions adopted by buyers and sellers leads to the formation of the market's final price. So, in an open economy, the consumers' taste and the producers' costs are reflected in the prices.

Smith's idea is based on the assumption of peoples' being rational. He holds that participants in the economy are motivated by self-interest and that the "invisible hand" directs this self-interest towards promoting general economic well-being. In such a way, participants in transactions purposefully follow the best path to achieve personal interest. Thanks to the invisible hand, this act by participants results in improvements in the general welfare. It is evident that unless people act rationally, the invisible hand will lose its power. That is to say, if a large number of individuals behave irrationally in their transactions, general welfare will decrease.

Like Smith, Mankiw (2010) believes that the price of goods and services is formed during participants' supply and demand in transactions. Accordingly, to determine how any event or policy influences market behavior efficiency (i.e., the efficiency of participants' behavior in transactions), it is necessary first to decide how they affect participants' supply and demand process in transactions. In other words, to determine the degree of the effect of an event on market behavior efficiency, its effect on buyers' and sellers' behavior should be first decided.

### 2.1.2. Standard Finance

The assumption that participants in transactions are rational is among the fundamental concepts in standard finance as well. It is presupposed that ordinary peoples' decisions are unbiased and adopted to maximize their interests. Thus, they desire a higher expected output in return for their higher levels of risk-taking. Likewise, standard finance presupposes that if participants in a transaction commit an error in their decision-making, it indicates their lack of solidarity. They cannot influence prices (Baker & Nofsinger, 2010).

#### *Efficient-Market Hypothesis (EMH)*

One of the fundamental concepts in standard finance is an efficient-market hypothesis. According to Fama (1970), an efficient market refers to how securities prices fully reflect all the available information. Moreover, he had previously defined an efficient market as a market where actual prices are reasonable estimates of intrinsic values at any point in

time (Fama, 1965). Three levels of efficiency presented in Fama's study 1970 include (1) weak-form efficiency, in which the set of presented information is only historical prices, (2) semi-strong-form efficiency, in which the collection of information is effective on forming prices that are available to the public (e.g., declaring annual earnings, stock splits), (3) strong-form efficiency, in which all information, public and private, influences prices formation. That is, there must be no one who has monopolistic access to any kind of information regarding the formation of prices (Fig.1. shows market and various levels of its efficiency).

Furthermore, according to Fama, future securities prices occur completely independent of past changes in the same prices. In other words, price changes follow the Random Walk Model. Hence, no one can predict future changes and earn excess returns based on past price changes. Fama (1970) has introduced conditions for the efficiency of investment markets that can efficiently adjust prices according to the information. He contends that in an efficient market: (1) there is no transaction expense for doing business using securities, (2) all the available information is accessible to the participants in a transaction at no cost, (3) there is a unanimous agreement regarding the implications of current information for the current price and future distribution of any securities. Moreover, Fama holds that though these conditions are sufficient for market efficiency, they are not, however, necessary. For instance, as regards the second condition, a market can be efficient if an adequate number of investors have easy access to the available information.

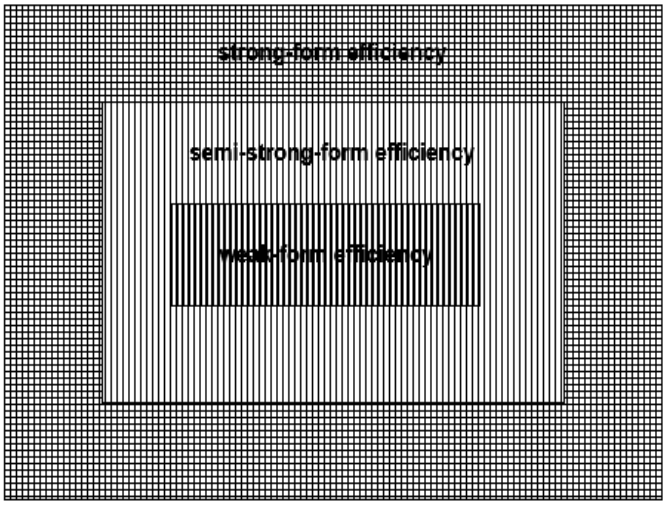


**Figure 1.** Various Levels of Efficiency

The efficient-market hypothesis suggests that the smartest people cannot outperform the least intelligent ones in investment performance. Their superior understanding has been previously reflected in stock prices (Shiller, 2015). The fundamental assumption of the efficient-markets hypothesis, such that advocates of behavioral finance have strived to reject this hypothesis thus far.

Considering that the efficient-market hypothesis is based on investors' rational behavior, it is safe to conclude that the hypothesis assumes only the information that determines supply and demand levels. In other words, investors' access to new information is regarded as a motivation to determine their demand level. Likewise, the information decides the level of supply as well. Since it is assumed that participants in a market act rationally, their supply and demand are determined through rational analysis. As a result, assets price nears or equals its actual price. Nonetheless, the critical point taken into account in the efficient-market hypothesis is that participants in transactions

might act irrationally, hence the distance between asset price and actual price and the reduction of market behavior efficiency.

### 2.2. Behavioral Economics and Behavioral Finance

A fundamental observation of human society reveals that individuals who are in contact with each other regularly tend to think similarly. Knowledge of the origin of this similar thinking is of utmost significance as it can help us judge the rationality of some theories. Consequently, if this assumption is correct, and many transactions possess irrational thinking, it can lead to market booms and busts (Shiller, 2015).

Economic theories of Herd Behavior and Information Cascades (i.e., sequentially transferred information) suggest that even entirely rational individuals can engage in herd behavior as they base their decisions on others' judgment. This herd-based behavior is caused by information cascades (Shiller, 2015). It is because people tend to resort to secondhand information than to their personal experiences more widely.



Though the above-mentioned economic theories are not conceived of as a stock market reaction theory, they can provide the grounds for analyzing how rational investors are misled. So, as the level of market prices is influenced by how all investors behave, the odds are that assets are not properly priced even if all the investors are rational. What is mentioned above implies that the assumption of people being rational, which is the basis for standard Economics and standard finance, does not prove to be true at all times and under various conditions, hence the introduction of behavioral economics and behavioral finance.

#### 2.2.1. Behavioral Economics

The revolution of behavioral economics, which incorporated psychology and other social sciences into economics, initially occurred in the 1980s, even though it was not publicly known until the 1990s (Shiller, 2015). Contrary to the assumption of standard Economics, people's rationality states that people are usually irrational.

Some of the behavioral economics concepts introduced by Mankiw (2013) include: (1) people are not always rational. Peoples' systematic mistakes identified in human decision-making studies reveal that they are overconfident, give too much weight to a small number of vivid observations, are reluctant to change their minds, (2) people care about fairness, and (3) people are inconsistent over time.

#### 2.2.2. Behavioral Finance

Modern finance was seriously addressed when Prospect Theory presented by Kahneman and Tversky (1979) and Tversky and Kahneman (1981) was included in asset pricing studies. Prospect Theory is developed based on a variety of experimental-psychological researches regarding human choice-making in risky conditions. Therefore, the theory analyzes human behavior when decisions making and choices under risk-laden conditions. Previously, Tversky and Kahneman (1974) had explained biases that occur during decision-making under uncertainty. Likewise, it seems that behavioral finance issues rose to prominence when findings obtained by several studies (Banz, 1981; Reinganum, 1981; DeBondt and Thaler, 1985, on investors' overreaction towards news; Shefrin and Statman, 1985, on disposition effect; Lamoureux and Sanger, 1989; Saunders, 1993, about the effect of weather in New York on stock price; and Benos and Jochec, 2013, on the impact of patriotism on stock prices) indicated a variety of effects efficient-market hypothesis and Capital Asset Pricing Model (CAPM was developed by Sharpe, 1964, Lintner, 1965, and Black, 1972), as the main bases for modern finance, could not explain. In other words, the capital asset pricing model could not explicate these effects, showing that the information is not properly reflected in the prices, hence being

contradictory to the efficient-market hypothesis. Other effects such as the end of the month, end of the year, January, weekend, Yom Kippur, and Value Line effects posed new challenges to modern finance theories, hence introducing behavioral finance to solve these issues. It should be noted that some of the effects are called "anomalies," defined as a tolerable aberration from a dominant belief system (Frankfurter & McGoun, 2002).

Combining behavioral and cognitive psychological theory with standard Economics and finance, behavioral finance seeks to shed light on how people make decisions. The increased number of behavioral finance studies has been due to the inability of traditionally expected utility maximization by rational investors in explaining most of the experimental patterns in the efficient market framework. Accordingly, behavioral finance attempts to resolve these incompatibilities by providing explanations based on human groups and individual behaviors. In other words, behavioral finance addresses the effect of the irrational reaction of participants in transactions on their decision-making as well as the reflection of such a reaction in stock exchange prices. The effect influences the prices through an improper stock sale and purchase lines, based on second-hand information obtained from other investors' way of decision-making (for more information, refer to Fig.2).

So, one of the underlying assumptions of behavioral finance is that the information structure and characteristics of participants in transactions systematically influence peoples' investment-related decisions as well as market outcomes (Baker & Nofsinger, 2010).

Frankfurter and McGoun (2002) contend that advocates of modern finance are trying to assimilate behavioral finance with modern finance, hence using "anomalies literature" instead of "behavioral finance."

Instances include Ball (1996) and Fama's (1998) opposition to behavioral finance trying to marginalize and discredit it.

Another study suggests that people are assumed to be rational in standard finance, whereas in behavioral finance, the assumption is that they are normal. Moreover, according to the same study, the battle of market efficiency continues, and the believers will succeed unless nonbelievers do not lose (Statman, 1999).


**Figure 2.** Behavioral Finance: Irrational behavior of participants in transactions

## 3. The Truth about Human and Market Behavior Efficiency

According to what has been presented thus far, the asset market price is directly affected by participants' behavior in transactions. Therefore, if their behavior is rational, assets price is most likely appropriately constructed; that is, commodities market price

nears or equals their actual price. Nonetheless, evidence shows that people do not always act rationally. Accordingly, it becomes clear that people make mistakes in the subsequent sections during decision-making, hence the likely distance between goods price and their actual price.

### 3.1. The Truth about Human

#### 3.1.1. Human Decision-Making

In the book entitled "*How We Decide*" in 2009, Jonah Lehrer stated that dopamine neurons help humans predict events and phenomena that are predictable. Furthermore, he says though these cells are highly helpful, they can lead people astray, particularly when confronted with random events. Regardless of the randomness of events, brain cells seek lucrative patterns. Thus, humans seek to identify significant trends through an imagined system rather than considering random events. As a result, since stock price volatility occurs randomly, the odds are that people make mistakes when predicting stock prices, leading to improper choices. Therefore, it is safe to conclude that over time a dopamine system can occasion dangerous stock-market bubbles.

To explain how dopamine neurons function, suppose an investor invests 10 percent of all his/her assets in the stock market. After a short period, he/she observes that the market is dramatically booming. It is at this very point in time that the fictive-error learning signal appears. While he/she is enjoying the profits, his/her ungrateful dopamine neurons are fixated on the profits he/she has missed, wishing to have invested all of his/her assets instead of 10 percent. As such, cells compute the difference between the best possible return and actual return.

Consequently, when there is a massive difference between what has happened and what could have happened, which is an unfortunate experience, it is more likely that an individual takes completely different measures the next time. Therefore, it is safe to argue that these computational signals are the leading cause of many financial bubbles. It seems that when the market is going up, individuals are led towards larger investments in the boom. Accordingly, their greedy brains are convinced that they have discovered the stock market solution, such that they do not think about the possibility of losses. But, the very time investors are convinced that there is no bubble, the bubble bursts. The opposite can exist when the market experiences a downward trend.

#### 3.1.2. Human Errors

One of the concepts of human errors is called the Bad apple Theory, which states that human errors cause two-thirds of accidents. Furthermore, the theory suggests that a system's safety problems are occasioned by a few bad apples playing the system's roles. The bad apples do not always follow the rules as well as do not always watch out carefully (Dekker, 2014). Also, Lee and Harrison (2000) hold that human frailties are identified as causing many accidents. Even though most of them are predicted in safety rules, prescriptive procedures, and management treatises, people will not properly perform what they should have done.

As a result, human errors can be the cause of many market problems. The errors might result from features of peoples' tools, tasks, and operating environment. Since the way people act influences the group; a holistic view, it is safe to conclude that even the errors or irrational behavior of some of the participants in transactions can considerably divert assets prices from their actual price, hence affecting the level of market behavior efficiency.

### 3.2. Market Behavior Efficiency

Our view towards the efficient-market hypothesis and behavioral finance is a moderate one. We tend to address entirely impartially, believing that they are contradictory in no way. From our point of view, the market is a set of participants in transactions. Moreover,

as previously mentioned, we hold that the available assets price is influenced by how the participants decide about their supply and demand levels. As it was implied that people tend to commit errors when making decisions and their actions are usually error-laden, the odds are that assets price is distant from their actual price at any point in time. The distance is caused by mistakes in participants' decisions and choices.

According to what has been presented thus far, we believe that the market price of any financial asset in any period is composed of three components: (1) producers' cost (primary cost or value), (2) good and bad news about the firm issuing financial asset, which is reflected in prices through the effect of investors' proper reaction to the news, (3) the effect of investors' improper reaction to the available news, which can reduce to zero. Therefore, a market enjoys high behavioral efficiency levels when a considerable number of its transaction participants behave rationally and do not commit errors when making decisions. Accordingly, the price of available assets in such a market nears or equals its actual price. It seems that as the number of irrational participants, who make wrong decisions, is larger, the lower the levels of behavioral efficiency of that market will be. Different markets have varying degrees of behavioral efficiency, whose high and low levels depend on participants' rational and irrational behaviors.

Evidence reveals that peoples' reactions to various information and conditions differ; that is, an individual may react rationally to some information and conditions while he/she shows an irrational behavior towards some other information and conditions. Thus, it is likely that the market enjoys different behavioral efficiency levels in various economic and political conditions. Moreover, it seems that participants in a transaction act as a mediator between asset price and the conditions. The conditions affect participants' behavior, and their reaction to these conditions influences asset price, hence the change in the levels of market behavior efficiency (Fig.3). It depicts how levels of behavioral efficiency change. It also helps us understand the relationship between the three fields: efficient-market hypothesis, behavioral finance, and market behavior efficiency).

For example, Arshada et al. (2016) ranked stock market efficiency levels in 11 countries during various economic boom periods and busted in different business cycles in 14 years from 1998 to 2012. Their findings revealed that the rank of various countries' stock market efficiency was affected by different turns in business cycles. That is to say. The results indicated that the prevailing conditions in countries and the world significantly affect stock market efficiency. Accordingly, we argue that given participants' rational and irrational reaction to these conditions, countries' level of market efficiency has changed in various periods.

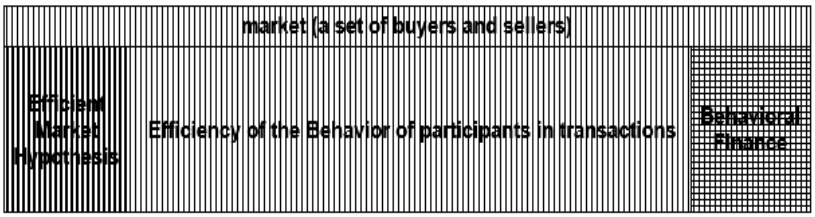


**Fig.3.** Market Behavior Efficiency

Ariely (2008) contends that peoples' irrational behaviors are not random and senseless. Instead, they are systematic, and as their frequency is high, they can be predicted. Accordingly, it seems that predicting participants' irrational behaviors and errors and determining the effect of these behaviors on assets price will determine the deviation of the market price from actual price. Therefore, as mentioned previously, market assets price comprises three components: producers' cost and participants' behavior and predictable errors. However, the remaining component, information (news), is

unpredictable and is randomly reflected in the prices. Thus, at any point in time, market assets price can be partly estimated, and the lower the level of market efficiency, the easier this price estimation will be and vice versa.

## 4. Concluding Remarks

Markets play a valuable role in allocating rare economic resources, mostly through market assets price based on transactions. Accordingly, an analysis of the prevailing conditions in a market and factors effective on forming its available assets provides a vital insight into how related officials, domestic and international investors act. So, it brings about outcomes for determining investment strategies and academic literature.

In studies concerning the stock market, two financial areas, namely, efficient-market hypothesis and behavioral finance, have caught the attention of their advocates as well as other related members. The prevailing view on these two fields implies an intense contradiction between them, such that proponents of each approach attempt to provide evidence supporting their area and/or rejecting and discrediting the other perspective.

The present study adopted a moderate viewpoint in these two areas. Accordingly, the current research's prevailing view states that “at any point in time, the degrees of concepts presented in the efficient-market hypothesis and behavioral finance prevail in stock market,” influencing the prices. It regards the market as a group of buyers and sellers. It is safe to argue that prices are directly affected by participants' behavior in transactions as asset prices are formed in the same participants' supply and demand process. Thus, it is likely that deficiencies are affected by prices through participants’ irrational behaviors. Hence, the introduction of the concept of market behavior efficiency, which is directly influenced by participants' behavior in transactions.

Besides, participants in transactions are conceived as a mediator between economic-political conditions and assets price. It should be noted that the effect of their reaction to each other is transferred into prices. Consequently, the velocity and type of effectiveness of securities price under these conditions are dependent on the velocity and type of reaction participants have to these conditions. Moreover, evidence indicates that people react differently to information and conditions. In other words, the odds are that an individual can behave rationally to some information and under some conditions. At the same time, he/she shows irrational behavior towards other information and conditions, hence a market’s likely varying efficiency levels under various political and economic conditions.

According to what has been presented thus far, it is safe to conclude that a market will not enjoy high market behavior efficiency levels unless it contains a considerable number of its members showing rational and error-free behavior. So, the asset price available in such a market is nearing or equals to its actual price.

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**Research Article**

# A Study of Risk-Based Auditing Obstacles

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## Abstract

In this study, we investigate the problems and obstacles to implementing risk-based auditing in Iran. We set four hypotheses and used a questionnaire containing 45 questions to collect the required data. The questionnaires were distributed between Iranian certified public accountants who were partners or directors of audit firms and audit organizations member of Iranian certified public accountant institute.

A limited number of questionnaires were distributed between a small sample of respondents to determine the research questionnaire, and their views are taken into account. Cronbach's alpha test is used to measure the reliability of the questionnaire.

The results of this study indicated that lack of the theoretical foundations and regulations of risk-based auditing in Iran, structure and function of auditors and audit firms, and factors related to the clients are the obstacles and limitations on the implementation of risk-based auditing in Iran

Then the most critical factors prioritized using fuzzy hierarchy analysis. For this reason, a questionnaire was developed with 16 factors from approved hypotheses. Results revealed that related factors with the auditors and unfamiliarity of auditors with IT, and lack of educational resources were the most significant obstacles and limitations to implementing the risk-based auditing in Iran.

**Keywords:** limitations on the implementation of risk-based auditing, auditors, employers, rules and regulations

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## 1. Introduction

The subject of risk-based auditing was followed up for the first time in statement No.47 of the financial auditing standard board of IACPA called audit risk and its importance in international audit (statement number 25, auditing risk) and IACPA (standard No. 55, checking the structure of internal controls of financial statements).

The main reason that most of the big audit firms are currently looking to implementation risk-based auditing is the close relationship between risk methodology and statistical sampling techniques. In other words, they want to make sure about the adequacy of the extracted samples due to their low percentage in comparison to classic statistical methods. So the auditors should prepare enough evidence for a professional opinion so that their audit reports become reliable. Audit researchers made audit models for providing reliability until the auditing process becomes reliable.

When a new model is introduced during the audit time, it will be replaced with the previous model if it is efficient and effective.

The system-based audit model was introduced in 1940, and the auditors use it until now. After the universal economic growth in the nineties and after auditing has changed rapidly and fundamentally, quantitative growth and complexity of activities related to the business, increased defensive ability of audit reports, increasing public trust about audit reports and client challenges, competition and alternations (generally decrease time and costs) are the significant reasons of changing in the audit process and use of technology in audit risk management.

Today we can see that the auditors have gone beyond their initial aims (verifying the financial statements). New auditing continues to develop by presenting the business risk in its audit approach. The new approach is based on this view that understanding a wide spectrum of clients' trade risks puts the auditors in a better auditing process. Followers of this view believe that lots of uncontrolled risks affect financial statements. Hence, with a comprehensive understanding of the entity's risks, the auditors have a better situation for identifying these risks' size and importance with the auditing profession. (Lee et al., 2008).

Due to the organization risks observation, the effective risk-based auditing program overcomes all the limitations mentioned above and allows the auditor to make the audit more targeted and efficient. This audit program will make risk reduction plans more accurate, faster, and more transparent ( Risk Management Magazine, 2015).

Many fraud detection factors are coordinate with the auditing methods used by the auditors. Using an efficient and effective audit method such as risk-based auditing could be a big step in detecting fraud in an independent audit (Naderian and Safar, 2001). Ghorbani 2014) states that auditors in Iran experimentally and with a realistic view have been aware of the importance of recognizing and classifying audit risks. Practically, they have considered audit risks in their planning.

Currently, due to the expansion of economic activities and the complexity of the business environments, the development of ownership of shares of corporate entities among the public, the importance of users' rights to the financial statements, and also lawsuit against auditors, auditing has found more scientific and technical approaches.

However, the implementation of risk-based auditing in Iran has been with difficulties.

In this regard, by setting principles of risk-based auditing through committees of professional people in the auditing field and testing the implementation of risk-based auditing in several auditing environments, we can do something about it. This can leads to a greater understanding of the model and provides the means of implementing it.

Therefore, this research seeks to answer the question of what are the obstacles or limitations for implementation of risk-based auditing in Iran, and why auditors have not paid implementation of risk-based auditing in Iran attention, and this method of auditing

in Iran has not fully exercised

## 2. Literature Review

Amahalu et al. (2017) recommend that internal audits based on risk-based audits be approved by adopting a better risk assessment to improve Nigerian commercial banks' internal control quality.

Naimarb et al. (2015) explore the effect of a risk-based auditing approach on implementing internal control systems. This study showed that this system's implementation should be taken into account by both internal auditors and shareholders as the companies' owners. Accordingly, internal auditors should implement risk-based auditing and financially backed by shareholders, mutually the shareholders' expectations about receiving reports from the portfolio's risk-taking sections made by internal auditors.



Messier jr et al. (2014) showed that the role of training in implementing risk-based audits is very influential.

Ayagre (2014)examined the implementation of risk-based audits in Ghana and identified factors influencing the adoption or non-acceptance of internal risk-based audits in Ghana companies. The results showed that at the 5% error rate, internal risk-based auditing was accepted in the country, and its main reason was to help these companies identify high internal risks.

Salehi (2011) shows the individual competency and ability firstly in using statistical methods; secondly, the professional and legislation references effort in selecting risk-based auditing standards; thirdly, the timely financial information prepared by accountants; and finally, the auditors training via risk-based auditing are the main barriers to the members of Iranian Certified Public Accountants to implementing risk-based auditing in Iran.

Amiri et al. (2018) state a significant relationship between the audit committee's size and the type of audit firm and internal control quality. Also, the number of audit committee members (general weakness) has a significant relationship with internal control quality. Finally, the audit firm's type adjusts the relationship between the audit committee (the number of audit committee members) and the quality of internal control (weakness at the general level and weakness at the level of income). According to the results obtained from the hypothesis test, it can be concluded that the size of the audit committee and the type of audit firm is significant on the quality of internal control, but considering the number of audit committee members of this work on the internal control criteria and its useful indicators has not been.

Akrami Moghadam (2016) explains in his research that risk-based auditing stabilizes the value-adding role in auditing for a customer's product and makes audit work more profitable. Absence of sufficient evidence and limitations in audit activity, lack of planning in the audit process, lack of internal control system in companies, size of the company, and its type of operation, limitation in implementing substantive tests with audit risk affect factors the risk-based audit. Since auditors are confronted with limitations in their operations, they can not achieve an ideal outcome and cannot provide reliable reports.

Shokry et al. (2014) argue that companies that follow the risk management process are less risky in auditing, and their review is likely to be less costly. Auditors should monitor the whole organization and its environment to understand the nature of the audit challenges they will face. An internal audit is a necessary mechanism to prevent fraud and errors, ensure compliance with policies and procedures, and increase efficiency and effectiveness. Also, IT requires specific considerations in auditing, especially risk-based audits. Acquiring an understanding in the full sense of IT's role for financial purposes gives the auditor an opportunity to an adequate understanding of how information

technology influences inherent risk and control.

Ghorbani et al. (2014) state that a risk-based audit model has more efficiency and effectiveness than a system-based audit model. Based on these, the audit managers can provide more reliable audit reports.

Molainejad et al. (2014) identify and prioritize the barriers and limitations of implementing a risk-based audit project using the fuzzy hierarchy method. This study indicates that most of the obstacles to implementing audits based on Risks are in the early stages, and this suggests that the life of the risk-based audit in Iran is not long. Its completion and implementation require more time and training.

Pourali et al. (2012) state that risk-based auditing is a realistic example of the conditions for mutual benefit from both the auditor and the client. Also, public opinion and financial statements users believe that this audit methodology is more in the auditors' interests because it only reduces audit costs, creates accountability for auditors, and does not increase the ability to detect diversions.

Bagherpour et al. (2012) stated that their main objective was to provide a comprehensive and practical model for implementing risk-based auditing in Iranian companies and organizations. The model is based on the theoretical foundations presented in the scientific sources and related research and the authors' professional experience and considering Iranian companies' specific circumstances and conditions. The model has been implemented in Iran's influential organizations, which adds to its value and implementation ability.

Hajiha (2010) conducted a study to differentiate between senior auditors' perceptions of public and private sectors from auditing risk assessment in Iran's auditing environment. His research results indicated a significant difference between public and private senior auditors' perceptions of the influencing factors in assessing control risk and detection risk. Also, there was no significant difference between these two groups to understand the factors influencing audit risk and inherent risk.

Hajiha (2010) showed that there is no significant relationship between inherent risk and control. A separate assessment of risks is preferable to an integrated assessment in Iran's auditing environment.

## 3. Research hypotheses

1. Non-comprehensiveness guidelines and theoretical basis of risk-based auditing are obstacles to the implementation of risk-based audits.

2. The inadequacy of the rules and regulations is one of the obstacles to implementing risk-based auditing.

3. The structure and performance of auditors and audit firms are obstacles to the implementation of risk-based auditing.

4. Factors related to the clients are obstacles to the implementation of risk-based auditing.

5. The prospects and future conditions represent the implementation of future risk-based auditing.

### 3.1. Population and sampling selection

The statistical population of this research is the certified public accountants working in audit firms and auditing organizations. The number of members of the community at the time of the research is 1,527 persons. The sampling method is a simple random method. Accordingly, 227 persons are selected using Cochran's method. Four hundred fifty questionnaires were distributed among the firms. Finally, 236 questionnaires were used as a sample of the statistical population.

$$n = \frac{Nz^2pq}{Nd^2 + z^2pq}$$

N: Population size

Z: 1.96

p=q=0.5

d: The allowable value of the errors between 5% and 10%, which is considered 6% in this research.

### 3.2. Validity and reliability of the questionnaire

This questionnaire's questions consist of a 5-scaled Likert type, which 1 corresponds to disagree, 2 corresponds to disagree, 3 corresponds to indifferent, 4 corresponds to agree, and 5 corresponds to agree. The questionnaire was designed after studying related texts and articles and interview the professional persons related to the risk-based auditing. Then, to determine the validity of the research questionnaire, few questionnaires were distributed to the experts' small sample, and their comments were taken into account in amending the questionnaire questions. Cronbach's alpha test was conducted to measure the reliability of the questionnaire. The high value of 91% of Cronbach's alpha indicates the questionnaire's high reliability.



Table 1 shows the result as follows:

**Table 1-** The results of Cronbach's alpha test

| Number of the distributed questionnaire | Number of questions in the questionnaire | Cronbach's alpha |
|---|---|---|
| 236 | 45 | 0.913 |

#### 3.2.1. Data analysis

To test the research hypotheses consists of two distinct sections; in the first part, the research data expressed in descriptive statistics. In the second section, using inferential statistics methods, we analyze the data. In the second part, we use the method of the single sample t-test, which compares the **mean** of the sample to a given number of 5, which the mean of the 5-scaled Likert type questions (1+2+3+4+5 / 5 = 5).

#### 3.2.2. Descriptive statistics

Information about independent auditors reflected in terms of field of study, work experience, and educational degrees in Tables 2 and 3.

**Table 2-** Descriptive statistics

| Description | Description | Frequency | Frequency (%) | Cumulative Frequency (%) |
|---|---|---|---|---|
| Degree | Bachelor | 65 | 27% | 27% |
| | Master | 152 | 64% | 91% |
| | P.H.D | 19 | 9% | 100% |

**Table 3-** Descriptive statistics

| Description | Description | Frequency | Frequency (%) | Cumulative Frequency (%) |
|---|---|---|---|---|
| work experience | Between 6 to 10 Years | 48 | 20% | 20% |
| | Between 11 and 15 Years | 42 | 18% | 38% |
| | Over 15 years | 146 | 62% | 100% |

### 3.2.3 Inferential statistics

The statistical method of comparing the means of a population is used to the research hypotheses, which are as follows.

**Table 4** - The results of the first hypothesis test

| Description | Comparison test of the mean of the two communities | | | | | t-statistic | Degree of freedom | Significance |
|---|---|---|---|---|---|---|---|---|
| | Mean | Standard deviation | Deviation error from criterion | 95% confidence interval in mean difference | | | | |
| | | | | low limit | High limit | | | |
| hypothesis 1 | 3.5339 | 0.63699 | 0.04146 | 0.4522 | 6.6156 | 12.876 | 235 | 0.00 |
| hypothesis 2 | 3.4004 | 0.61452 | 0.04000 | 0.3216 | 0.4792 | 10.010 | 235 | 0.00 |
| hypothesis 3 | 3.4665 | 0.53220 | 0.03464 | 0.3983 | 0.5348 | 13.467 | 235 | 0.00 |
| hypothesis 4 | 3.5869 | 0.56745 | 0.3694 | 0.5141 | 0.6596 | 15.888 | 235 | 0.00 |
| hypothesis 5 | 3.6025 | 0.53839 | 0.03505 | 0.5335 | 0.6716 | 17.193 | 235 | 0.00 |

**Testing hypothesis 1**

In hypothesis1 of this study, the non-comprehensiveness of guidelines and theoretical fundamentals in the risk-based audits are studied, including four questions. The lack of an audit standard for risk-based audits, the lack of sufficient training resources, lack of experience of auditors, lack of teaching risk-based auditing in universities, and lack of integrity of guidelines, which the results of testing this hypothesis are as follows:

In the table, since the significance level is less than 0.05, then hypothesis 1 is verified. This means that the incompleteness of the guidelines and the theoretical basis of risk-based audits, and the relevant rules and regulations are obstacles to implementing risk-based audits.

**Testing hypothesis 2**

In hypothesis 2, the inadequacy of relevant rules and regulations is tested by 6 questions in the questionnaire: The lack of supervision and lack of support from the Association of certified public accountants, shortages of supervisor and senior supervisor familiar with risk-based audits due to the rules are the upgrading problems, and the results of testing this hypothesis are as follows

According to the above table, since the significance level is less than 0.05, hypothesis 1 is verified. This means that the risk-based audit's incompleteness based on the guidelines and the relevant rules and regulations is a complete obstacle to implementing risk-based audits.

**Testing Hypothesis 3**

In the third hypothesis, auditors and audit firms are tested by 20 questions in the questionnaire:

Auditors did not attempt to identify the internal control structure, lack of training transfer to lower grades by auditors. The absence or lack of using risk-based audit

software, the cost of early-stage risk-based audits, the smallness of the client's environment, the lack of expertise of auditors on software systems, the inappropriateness of audit firms with international firms, lack of expertise of auditors in identifying areas of client activity, The continuity of the relationship between the auditor and the client is tested, the results of which are as follows:

According to Table 4, since the significance level is less than 0.05, then the second hypothesis is also confirmed. This means that auditors and audit firms are effective factors in not implementing risk-based audits.

**Testing hypothesis 4**



In hypothesis 4 of this research, the factors related to the client investigated by 10 questions in the questionnaire: These factors include: the high risk inherent to the clients due to the undeveloped and immature economic environment, the lack of mechanisms for corporate governance in companies, the lack of audit committees and internal audit unit effectively in the company, lack of a risk management committee in the client environment, the inability to rely on the internal controls of most of the clients, the absence of a board member with financial expertise with sufficient corporate incentive in companies, the indifference of financial reporting stakeholders regarding the use of risk-based auditing or auditing with common approaches, excessive variety information systems (including hardware and software) on the client's environment. the results of which are as follows:

According to the above table, since the significance level is less than 0.05, the third hypothesis is also confirmed. This means that the agents related to the client are entirely obstacles in implementing risk-based audits.

**Testing hypothesis 5**

In hypothesis 5, the risk-based audit's future perspective is investigated by 5 questions in the questionnaire. These include implementing a Risk-Based Audit System in the future affordably and necessarily. Using risk-based auditing systems will increase efficiency and effectiveness in the future, as auditors seek financial resources and necessary knowledge to implement risk-based audits. The statistical results of this hypothesis test are as follows:

According to Table 4, since the significance level is greater than 0.05, the fourth hypothesis is also confirmed. This means that auditors believe in the full implementation of risk-based audits in the future.

## 4. Prioritization

The prioritization of implementing obstacles is complex and uncertain because the business organizations' major decision-makers regard the assessment of implementation obstacles as somewhat simpler and more practical. There is usually a kind of ambiguity and uncertainty in such assessments. In these cases, due to the subject's complexity and the lack of accurate information, it is necessary to consider individuals' judgment. The theory of fuzzy is a powerful tool that can display results appropriately and naturally. In the fuzzy hierarchical method, uncertainty associated with individual judgment in making a decision does not play a role, but combining fuzzy theories with fuzzy hierarchy makes it possible to compensate for these fuzzy hierarchical limitations—the first time Tysus and Kahraman in 2006 used from the fuzzy hierarchy for evaluation.

For the advantages of the method, as mentioned earlier and its hierarchical structure, the fuzzy hierarchy approach prioritizes the obstacles to implementing risk-based auditing. A questionnaire is used to collect expert opinions in this regard.

### 4.1. The statistical population of the research and sampling method in the priority section:

The statistical population of this research is the certified public accountants working in the audit firms. The number of members of the community at the time of the study is about 1,527. The sampling method is simple random sampling. Accordingly, a total of 190 people were selected by the Cochran Method as a sample, and 360 questionnaires were distributed among the community members. Finally, 190 questionnaires were examined as a sample of the statistical population.

### 4.2. Reliability of the questionnaire

To determine the questionnaire's reliability using the SPSS, Cronbach's alpha was calculated, which is a numerical value of 0.94 that is, in practice, an acceptable result. After designing the questions, several professors and experienced experts in accounting and financial management were discussed in accessing the questionnaire's validity, and after that, desired options were chosen. The information is as follows:

**Table 5 -** The results of Cronbach's alpha test

| Number of distributed questionnaires | Number of questions in the questionnaire | Cronbach's alpha |
|---|---|---|
| 190 | 123 | 0.942 |

### 4.3. Framework proposed

This study based on distributed questionnaires to the experts and analyzing their opinions and use of previous studies. The following are considered as obstacles to implementing risk-based auditing in Iran:

## 5. Fuzzy Hierarchy Analysis

Prioritizing performance barriers is complex and uncertain since the business units' primary decision-makers consider the assessment of implementation barriers in simpler and more practical terms. There is usually a kind of ambiguity and uncertainty in such an assessment. In such cases, due to the subject's complexity and the absence of accurate information, it is necessary to consider individuals' judgments and ideas. Fuzzy theory systems are a powerful tool that can represent knowledge naturally and adequately. In the AHP method, uncertainty related to an individual decision does not play a role in choosing and decision-making. Still, the combination of fuzzy theories with the AHP can compensate for this AHP shortcoming. The first time in 2006, Tysus and Kahraman used Fuzzy AHP to evaluate.

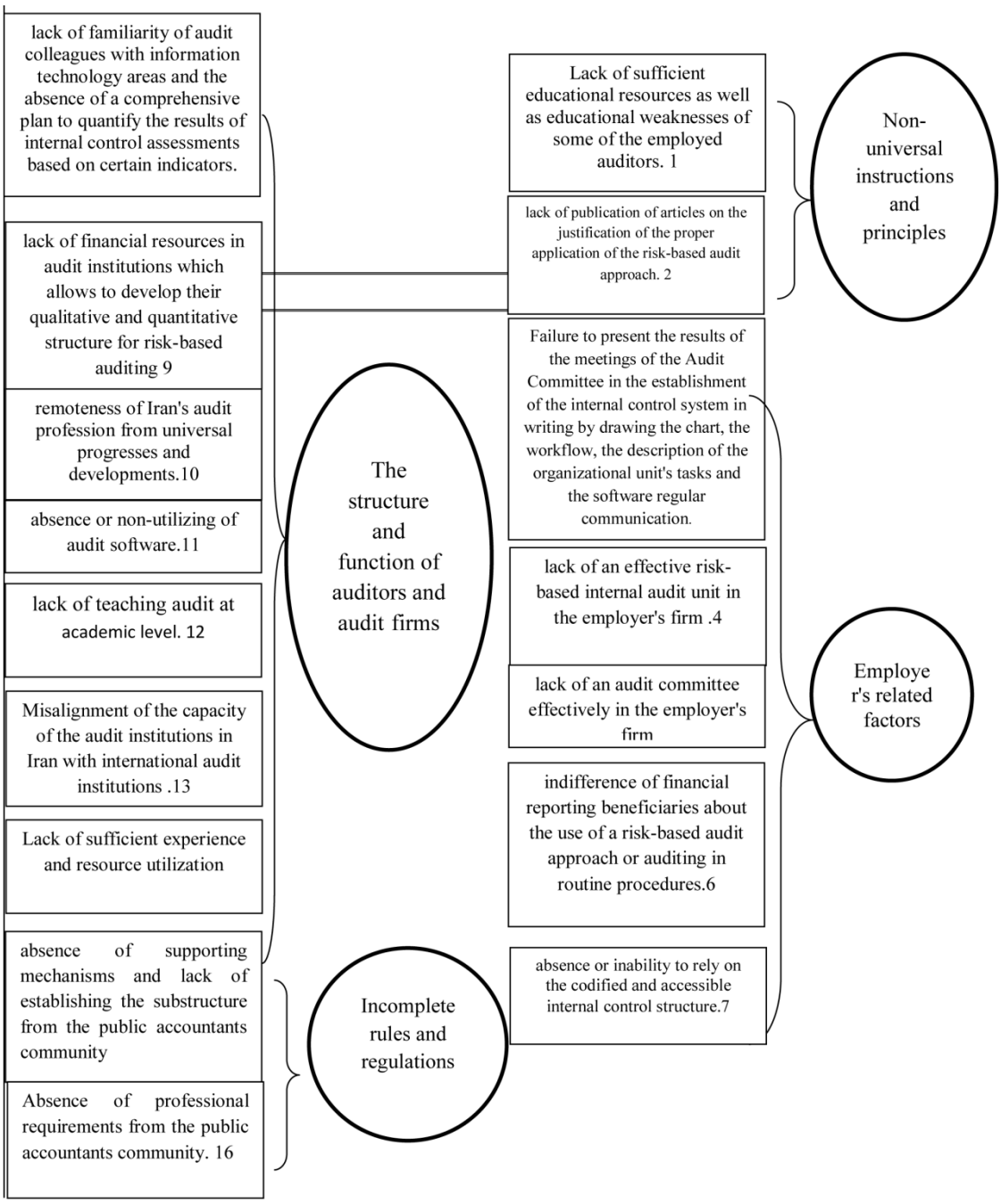


**Figure 1:** Barriers to the implementation of risk-based audits

Because of the advantages of this mentioned method on the one hand and the hierarchical structure of the introduced framework in this paper, Fuzzy AHP has been used in this research to prioritize the implementation barriers of management accounting. Therefore To collect expert opinions, the questionnaire has been used. The questionnaire was distributed among the directors and financial managers of the companies which were accepted in the Tehran Stock Exchange, and at last, by examining the compatibility rate of the experts' replies, 18 people refused to response to the questions, and the responses of 190 managers were accepted to prioritize the management accounting obstacles.

**Table 6 –** The characteristics of crucial factors

| The first level factor | Weights First Level Factors | Sub-factor number of the second level | Weights of subfactors of the second level | Final weight factors |
|---|---|---|---|---|
| Non-universal instructions and principles | 3.5339 | 1 | 0.078138526 | 0.2761337 |
| | | 2 | 0.07565949 | 0.2673731 |
| Related factors with the employer | 3.5869 | 3 | 0.063855389 | 0.2290429 |
| | | 4 | 0.059528342 | 0.2135222 |
| | | 5 | 0.055893924 | 0.2004859 |
| | | 6 | 0.055436393 | 0.1988448 |
| | | 7 | 0.050386091 | 0.1807299 |
| The structure and function of auditors and audit firms | 3.4665 | 8 | 0.091888667 | 0.3185321 |
| | | 9 | 0.065441456 | 0.2268528 |
| | | 10 | 0.057506394 | 0.1993459 |
| | | 11 | 0.055892903 | 0.1937527 |
| | | 12 | 0.054896898 | 0.1903001 |
| | | 13 | 0.054162811 | 0.1877554 |
| | | 14 | 0.049871132 | 0.1728783 |
| Incomplete rules and regulations | 3.4004 | 15 | 0.073570322 | 0.2501685 |
| | | 16 | 0.057871262 | 0.1967854 |

As outlined in the table above, the most crucial factor is the lack of familiarity with audit colleagues with information technology. The subsequent factors are mainly due to the lack of training and the lack of educational resources on risk-based audits. Based on the results, the proposed model for risk-based audit is described in Figure 1 in Iran.

**Table 7-** The proposed model for conducting risk-based audits is fully implemented in Iran

| Row | Description | The proposed model of this research |
|---|---|---|
| 1 | The lack of familiarity with audit colleagues with information technology areas and the lack of a comprehensive plan to quantify internal controls assessment based on specific indicators. | 1-1) Conducting training classes by mandatory audit firms for all members of the public accountants' community from the L_ICDL level of information technology fields<br>1-2)Establishing a committee by the community of accountants responsible for implementing quality audits to address the 150 risk publication shortcomings and providing a domestic control questionnaire with percentages for each internal control concerning their importance coefficients. |
| 2 | Lack of sufficient educational resources as well as academic weaknesses of some of the employed auditors | Providing a complete guide to the implementation of the audit risk process, including checklists, forms, along with numerical examples based on the latest audit standards, by the reference authority for the compilation of mandatory annual curricula and compulsory education curricula for all levels of audit, following relevant audit standards |

| | | |
|---|---|---|
| 3 | The absence of supportive mechanisms and lack of infrastructure from the public accountants' community | Creating a supportive mechanism including significant scoring in quality control review of the work of the audit, the designation of sample audit firms in the implementation of auditing management, the support of the publication of related books and related articles, and the provision of software for users, and conducting ongoing professional seminars concerning audit-risk based also raised the quality control privileges for cases involving risk-based audits. |
| 4 | The lack of publication of articles on the justification of the proper application of the risk-based audit approach | Provide topics for risk-based audits from the community of formal accountants for undergraduate and postgraduate students leading to the presentation of applied papers in this regard. |
| 5 | The lack of financial resources in audit firms that allow them to develop a qualitative and quantitative structure for risk-based auditing | It is integrating institutions to reduce fixed costs that provide funding for risk-based audits. |
| 6 | Not presenting the results of meetings of the Audit Committee in the establishment of the internal control system in writing by plotting the chart, workflow, describing organizational tasks and systematic communication of software | The serious attention of the board of directors and audit committees regarding the implementation of components of internal controls including the discretionary control environment, control activities, information and communications, and monitoring in three levels of financial reporting, compliance with the law, regulations, and cooperation between the internal audit company and independent auditors to control the control system Internal |
| 7 | Absence of professional requirements from the public accountants' community | The serious attention of the public accountants' community to the implementation of risk-based auditing when reviewing the quality control of the audit work of the audit firms and the rating of the audit firms if they do not use a scrutiny audit |
| 8 | The remoteness of Iran's audit profession from global audit developments | Translation of handbooks, articles, foreign professional and academic theses, inviting foreign researchers and institutions for professional training within and their companies at internal seminars and visiting foreign professional information sites. |
| 9 | The lack of an effective risk-based internal audit unit in the company's owner | -Risk-Based Internal Audit Implementation Based on the guidance issued by official authorities such as the Stock Exchange and the Iranian Internal Audit Society. |

| | | |
|---|---|---|
| 10 | Absence of an audit committee effectively in the company of the owner | The supervision of institutions such as the Stock Exchange regarding the control of internal risk-based auditing by internal audit committees |
| 11 | Absence or non-use of risk-based audit software | Insert and audit software based on education, and make them available by official authorities such as the Iranian Public Accountants Association |
| 12 | The indifference of financial reporting stakeholders is to apply a risk-based audit approach or audit with common methods. | Training and informing financial reporting stakeholders based on audit risk management will greatly reduce the time and cost of auditing and increase work quality. |
| 13 | Lack of teaching risk-based accreditation at the university level | An increase of 2 or 3 units in a higher education system with the prerequisites for auditing 1 and 2 for teaching a risk-based audit and teaching this lesson by experienced risk-based auditors. |
| 14 | Inability to rely on the built-in and accessible internal control structure | Demonstrate weaknesses in the client's internal control by auditors and professional bodies and users, including the securities and tax organization, and the tax authorities, companies that lack an internal control system. |
| 15 | The disproportionate size of audit institutions in Iranian compare to international audit institutions | The merger of audit firms to increase institutions and training capability and the possibility of investing in a risk-based audit |
| 16 | Lack of required experience and lack of training resources | Increasing applied training to raise the level of senior management experience, including supervisors and senior managers |

## Conclusions

Based on the results obtained in this study, as well as considering the proposed factors, the most critical factors in the first hypothesis are considered as follow: lack of comprehensiveness of the guidelines and theoretical basis of risk-based auditing, lack of adequate educational resources, as well as the educational weakness of some of the employed auditors. Therefore, it is suggested that there is a need to increase educational resources and auditors' continued and specialized training. These findings are similar to the results of Williams Mozilla's (2014).

According to Salehi (2011), which shows the individual competency and ability in using statistical methods; secondly, the professional and legislation references effort in selecting risk-based auditing standards; thirdly, the timely financial information prepared by accountants; and finally, the auditors training via risk-based auditing are the main barriers to the members of Iranian Certified Public Accountants to implementing risk-based auditing in Iran.

The most critical factor in the third hypothesis (the structure and performance of auditors and audit firms), the lack of familiarity of auditor colleagues with information technology, and the lack of a comprehensive plan to quantify the assessment of internal controls based on certain indexes. That shows the auditors do not have enough familiarity with the audit software. Ghaviandam (2014) results show that the complex calculations

used to calculate different audit risk levels do not lead to a risk-based audit process performed by audit firms and other auditors. Typically, most audit firms only do the first part of this process related to the audit planning and refuse to continue the instructions' supplementary elements because of saving time. Therefore, it is natural that if the appropriate software is provided to auditors, they fully perform and store the required calculations. It will significantly increase the speed and accuracy of determining the different levels of auditor's risk (Ghaviandam; 2014). Accordingly, Beattie et al. (2005) divided the factors influencing audit risk into two main categories the risk of "auditor" and the risk of

"audited firm."

By "auditor," they mean the inability to detect significant distortions, and also include such factors as professional knowledge of the auditor, professional judgment of the auditor, the willingness of the auditor to the risk, the auditor's understanding of the audited firm, the auditor's relationship with the audited firm, etc., which may lead to the wrong opinion of the auditors.



"Audited firm" includes the impact of the incorrect audit report that is given to the users of the financial statements by auditors, also the size of the audited firm, the level of importance, the degree of reliance of financial statements users.

Indeed, the quantitative growth and complexity of business activities, increasing the ability to defend the auditing reports in the case of lawsuits, raising public confidence in auditing reports and the presence of customer challenges, competition, and change (mainly reducing the time and cost of doing work) are the main reasons for changing audit technology and the use of audit risk management technology. Today, we can see that the auditors have exceeded their primary purpose, that is, the approval of financial statements.

The new auditing continues to develop with the presentation of the client's business risk approach. The new approach is based on the idea that a wide range of business risks of their clients' are related to auditors. Proponents of this approach believe that there are too many uncontrolled business risk effects on financial statements. Therefore, with a comprehensive understanding of the range of risks in the client's unit, auditors will be in a better position to identify the size and significance of these risks to the audit profession (Lee et al., 2008)

The fourth hypothesis (factors related to the client) is the absence of an audit committee that has been required by the client company. Since auditors are not continuously present at the audited firms, an effective audit committee can smoothly implement risk-based auditing.

Accordingly, Asadi et al. (2014) state that auditors should make and develop written guidelines on the use of risk assessment tools and review these guidelines with the audit committee and the board of directors, the reliability and formalize the guidelines for the firms individually depending on the size, complexity, activities area, geographic diversity, and different technologies used. The firm can rely on industry-standard or its experiences in risk rating. Auditors should use guidelines for a rating or assessing the main areas of risk and specifying the scope of privileges or evaluations (Asadi et al., 2014).

Accordingly, the results of various research studies show that in general. However, audit committees have seen in some companies' structure that this committee's organizational structure and responsibilities appear to have effective results in strengthening the internal control system by promoting the internal audit unit's status. And will significantly reduce the problems and obstacles in implementing adequate internal controls, and will make effective internal control of the priority of entities that more exposed to the risk and help effectively to business processes in adherence with the rules governing financial reporting and the operational activities of the business unit as

well as the performance of independent auditors.

Given the importance and position of the audit committees and the role of the internal control system and risk management in business entities, if these mechanisms are dim, the implementation of risk-based audits is naturally tricky, and the auditor will have to use a different approach. (Shalile, 2009).

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**Research Article**

# CEO Turnover and Internal Control Material Weaknesses

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## Abstract

The practical aim of the paper is to examine whether CEO turnover occurs under account-level and company-level internal control material weaknesses (ICMWs) in Tehran Stock Exchange (TSE) or not. The authors utilized data from 99 Iranian firms' financial statements as the sample over 5 years (2013-2018). A total of 594 observations were analyzed using a logit regression model. Empirical findings revealed there is no significant relationship between account-level and company-level ICMWs with CEO turnover. Therefore, establishing appropriate internal control is not merely dependent on the CEOs but may require committed staff withholding strong moral values. This paper develops the literature and generates empirical evidence of the relation between CEO turnover and ICMWs in Iran's specific context as a developing country.

**Keywords:** Internal Control Material Weaknesses (ICMWs), Account-level Internal Control, Company-level Internal Control, CEO turnover, TSE.

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## 1. Introduction

In today's competitive world, CEOs support a critical task in managing their economic entities and success. Therefore, the critical role of the CEO in efficiently managing economic activities is undeniable (Yeh et al., 2019; Lobo et al., 2018; Yaqoubi et al., 2015). Furthermore, the quality of the CEO fulfills a significant role in the rising trend of companies. One of the specific criteria for adequately measuring the superior quality of the CEO is invariably the CEO's possible turnover (Yin et al., 2020; Abbo, 2018; Ting, 2011). The company managing with one person over the years has led to greater recognition of the company's business and ultimately leads to an increase in the CEO's quality. The results of previous research show that the moderate level of CEO turnover will increase the CEO cognition and expertise in the relevant employer industry and will increase the quality of the CEO (Ma et al., 2018; Hejazi et al., 2016; Li et al., 2019). Hence, the decision-making to change the CEO of a company is one of the most critical decisions adopted by the board of directors because it retains the long-term case for investment, operating, and financing decisions of the companies (Lai et al., 2020; Uemura, 2018; Chen et al., 2019; Deng et al., 2019).

Currently, enterprise CEOs reward much attention to internal control systems because they know that accomplishing the primary mission is incredibly difficult to maintain profitability and minimize unexpected events in the absence of an effective internal control system. Internal control makes them more confident in accounting statistics and generates information based on their decisions. It also assures them that proper financial and administrative systems and procedures within their enterprise are completely implemented (Chen et al., 2019; Aghaei et al., 2015; Rezaei et al., 2011; Lisic et al., 2019). Therefore, the prime necessity of implementing correctly supervisory mechanisms and appropriate procedures for the financial management of intellectual activities made by the enterprise CEOs has typically provided a suitable context for internal controls to realistically achieve the predetermined purposes (Rostami and Kohansal, 2015). For example, more ICMWs of the companies receive significant consequences, including weakening trust (Beneish et al., 2008; Uemura, 2018).

Moreover, internal controls are among business units' various mechanisms to control agency problems (Iatridis, 2011). Companies maintain an economic incentive to report on internal control. Previous studies have shown that internal control reduces agency costs and investor risk, and increases conservatism and CEOs' supervision, reducing capital costs (Li, 2013). Hence, changes in the quality of internal control mechanisms are expected to improve CEOs' supervision and should be accompanied by an increase in the likelihood of the CEO turnover of ailing companies so that their successors provide better shareholder benefits.

In most Iranian companies, CEO turnover of the company leads to critical changes in company policies and operational procedures. The company's CEO leads to major changes in the active policies tentatively adopted by the pleasant company's managers and typically affects shareholders' interests.

The following research questions generally contribute to the literature by providing evidence on factors affecting the CEO turnover in Iran because the relevant studies in this field are limited. The disclosure of internal control information equally establishes a primary channel for investors to obtain company accounting information and reduce information asymmetry in the capital market (Fakhari and Kabiri, 2018; Uemura, 2018; Chang et al., 2019). Since the ICMWs of the companies naturally determine whether active companies have investment value or not? Since then, on the economic basis of this novel concept, measuring ICMWs of capital market companies and sufficiently examining its consequences seems necessary, particularly in Iran as a developing country. This investigation can be a concerning issue in explaining essential attention to the

literature of ICMWs in Iran, which is another contribution of the paper. The present academic paper merely focuses on the key issues related to ICMWs affecting CEO turnover in Iran as an emerging Islamic economy and attempts to highlight the apparent factors and foster discussion within two categories of ICMWs: account-level and company-level. Hence, the current study adequately establishes the following critical questions:

*whether ICMWs allow an effect on the CEO turnover of listed companies in the Tehran Stock Exchange or not*?

By this introduction, it can be stated that the present study does not merely develop the previous background in the field of internal control of the companies but additionally provides significant results of whether CEO turnover represents a vital sign of ICMWs or not.



The organized remainder of the academic paper naturally obtains structured as follows. Specific section 2 outlines theoretical foundations and hypothesis development. Section 3 presents the empirical approach and typically describes the critical data, parameter measurements, and testing models. Section 4 intelligently discusses model estimation and hypothesis testing, desired results addressing collinearity test of research parameters. The possible impact of ICMWs on the CEO turnover is typically analyzed controlling for loss reports. Section 5 reasonably concludes the academic paper.

## 2. Theoretical foundations and literature review

### 2.1. Definition of Internal Control

According to section 315 of Iran's Audit Standard, internal control comprises a process that signifies designed and implemented by the CEO and other staff to achieve reasonable assurance from the purposes of a unit dealing with the reliability of financial reporting, the efficiency of operations, and compliance with relevant laws and regulations. Therefore, internal controls are typically designed and reliably identified to instantly recognize those business risks that allegedly threaten each of these practical purposes. Internal controls include an enterprise plan and all the procedures adopted by an enterprise to preserve the assets, address the accounting data's correctness and reliability, improve operational efficiency, and encourage compliance with management procedures. Internal controls enhance the performance of enterprises and even improves financial reporting (Ghorbani, 2007).

#### 2.1.1. ICMWs categories

- Internal control at the account-level: It is typically the control that directly maintains a practical effect on relying on accounting documents and financial statements.
- Internal control at the company-level: It is typically the control that has little impact on financial statements and is properly designed to increase the operational efficiency of sales, production, or other non-financial operations (Mohammadi, 2012; Bauer, 2016). Today, unlike in the historical past, appropriate standards do not distinguish between internal control at the account and company levels. Auditors only focus on that group of internal controls designed to prevent or accurately detect civil cases of misrepresentation in financial statements.

### 2.2. Relevant literature

Feng et al. (2009) examine the relationship between internal control quality and management guidance accuracy. Consistent with managers in firms with ineffective internal controls relying on erroneous internal management reports when forming guidance, they document less accurate guidance among firms reporting inadequate

internal controls. This relationship extends to change analysis. The impact of ineffective internal controls on forecast accuracy is three times larger when the weakness relates to revenues or cost of goods sold-inputs, particularly relevant to forecasting earnings. They conclude that internal quality control has an economically significant effect on internal management reports and, thus, decisions based on these figures. To improve the context of corporate governance, Johnstone and Rupley (2011) stated that the revelation of material adverse events about a firm, including issues like fraud, restatements, or ICMW, may destabilize the firm's corporate governance equilibrium as it works to remediate the event or effects thereof. As prior research investigates the association between the revelation of fraud and restatements and both board and management turnover, they extend that research, proposing and testing a conceptual model of the process that firms use to remediate negative events in general and ICMW precisely, with a focus on the role of governance structure changes. They finally reveal a positive association between disclosure of ICMWs and subsequent turnover of board members, audit committees, and top management. Their paper illustrates a positive association between the remediation of ICMWs and improvements in the characteristics of boards of directors, audit committees, and top management.

Moreover, Hoitash et al. (2012) revealed that non-financial criteria, like internal control weaknesses, effectively determine managers' rewards. They have proven the disclosure of internal control weaknesses indicates a weakness in management performance, and firms with strong managerial experience will, after disclosure of weaknesses, see further reductions in rewards. Furthermore, Lisic et al. (2016) posit that CEO power reduces or even eliminates the improvements in audit committee effectiveness resulting from independent and financially expert committee members. Thus, CEO power may result in an audit committee that appears effective in form but is not in substance. They construct a composite index for CEO power by combining ten CEO characteristics and employing internal control weaknesses as a proxy for audit committee monitoring quality. Since all the firms in their sample have completely independent audit committees, they contribute financial expertise to examine the impact of CEO power on audit committee effectiveness. When CEO power is low, they find that audit committee financial expertise is negatively associated with internal control weaknesses. As a close paper, Uemura (2018) stated that several accounting scandals have occurred in Japan in recent years (e.g., Olympus). However, the government, regulators, and auditing standard setters have struggled to identify alternative directions for corporate governance in listed companies, such as standard setting to address fraud risks in an audit or the adoption of new corporate governance codes. He stated that the validity and effectiveness of monitoring by outside directors had received criticism within such a context.

Nevertheless, in 2015 accounting fraud at Toshiba was discovered, which surprisingly involved upper management; the independent directors had failed to detect and prevent this fraud. Once more, the Japanese board of directors and outside directors' monitoring function was regarded with suspicion. Therefore, he examines Japanese corporations that disclose significant deficiencies in internal controls over financial reporting and determines whether replacing the CEO and enhancing board members' independence and financial expertise are followed by significant deficiencies remediation. He indicated that Japanese companies that disclose significant internal controls over financial reporting are more likely to replace their CEOs and enhance board independence. In addition, he discovered that although these actions do not affect significant deficiencies remediation, upgrading the board's accounting expertise does correlate positively with significant deficiencies remediation. Indeed, Zarei et al. (2020) emphasize that since there is a shortage of academic literature about studies on the weaknesses of internal control in Iran,

it is valuable to make more investigation in this field.

As Chalmers et al. (2019) stated, in 2001, the US moved to regulate internal control reporting by management and auditors. While some jurisdictions have followed the lead of the US, many others have not. An important question, therefore, is the relevance of internal control to stakeholders. The more specific issue of the benefits of US-style regulation of internal control reporting is also topical. They review studies on the determinants of internal control quality and its economic consequences for stakeholders, including investors, creditors, managers, auditors, and financial analysts. They extend previous reviews by focusing on US studies published since 2013 and all non-US studies investigating IC quality, including countries regulating IC disclosure and unregulated settings and both developed and developing economies. Three primary insights arise from our analysis. First, evidence on the economic consequences of internal control quality suggests that the quality of internal control can significantly affect decision-making by users of financial information. Second, research on the observed association between ownership structure, specific board characteristics, and internal control quality is generally mixed. Empirical evidence concerning the association between audit committee characteristics and internal control quality supports a positive and significant association typically. Finally, while studies in non-US jurisdictions are increasing, opportunities remain to explore the determinants and consequences of internal control in other jurisdictions.



### 2.3. Linking ICMWs and CEOs turnover

Since CEOs are responsible for the accuracy, documenting, and presenting financial statements (Zarei et al., 2020; Khlif and Samaha, 2019), they must adequately carry out their role in the defensive front to monitor the internal controls of financial reporting to ensure from internal reporting quality. Therefore, after the misrepresentation of accounting items, the company's board of directors, to rebuild the internal control system, may accomplish their cooperation with the CEO in the first step, as they sufficiently consider ICMWs as an evident sign of apparent weaknesses in the CEO of the company (Wang and Huang, 2013; Uemura, 2018; Adhikari et al., 2020). Experimental results also show that reducing internal controls' quality is invariably accompanied by a higher CEO turnover and vice versa. Jagannathan (1996) adequately assessed the direct relationship between internal control mechanisms and mandatory CEO change; founding CEOs with weak performance in internal control mechanisms would be replaced more quickly in companies with a higher percentage of non-executive members of the board of directors, as well as a higher percentage of the board of directors share than the CEO. The same person does not play the official position of CEO and chairman of the board.

A significant ICMWs report can provide information to aware users about the weaknesses and practices of CEO performance. In Iran, as a developing country, there is currently no report on the ICMWs. Still, after the adoption of Article 35 of the TSE Law, the CEO is required to prepare a report on internal control and the design and implementation of internal control reporting (Hajiha and Hosseinnejad, 2015). Like an essential part of enterprise responsibilities, senior management members maintain an ordinarily critical role by monitoring and executing internal controls in enterprises to implement and maintain these controls (Johnstone et al., 2011).

Promptly given the potential risks, much attention has been paid to the possible relationship between CEO supervision, the presence, and internal controls' power. In accounting, various studies have shown ICMWs can effectively change the finance department head and independent auditor workflow (Rice and Weber, 2012; Wang and Huang, 2013).

In recent decades, after the scandals of 2002 and the Sarbanes-Oxley Act's adoption,

internal control is very much considered. This Act adequately addresses internal controls and CEO tasks to create and maintain an effective internal control system (Javaheri, 2006). Section 302 of the Sarbanes-Oxley Act requires the senior executive manager and senior financial manager to evaluate internal control effectiveness and disclose any defect in internal control (Gao and Zhang, 2019). Section 404 of this Act also requires that the company record CEO assessment from the modern design of the operational efficiency of the internal control system, and besides, requires the independent auditor to knowingly provide a separate commentary on CEO assessment and internal control assessment (Mohammadpour et al., 2013; Dahmardeghaleno *et al.,* 2019). Therefore, it can be stated that the responsibility for effective internal control remains the responsibility of CEOs. CEO integrates with purposes, inserts control activities and mechanisms in its place, monitors, and evaluates controls. Therefore internal control represents a tool for the CEO and directly related to enterprise purposes. Although the CEO is naturally the main internal control element, all enterprise executive staff fulfills an essential role in creating and implementing it (Abbaszadeh et al., 2011). The results of many studies have shown that most of the auditor's workflow and CEO turnover occurs when the ICMWs is more apparent. The results of these studies have also shown enterprises seeking to strengthen their internal controls often replace some of their CEOs (Rice and Weber, 2012; Calderon et al., 2012; Xi & Sun, 2014; Uemura, 2018).

Furthermore, large companies can rapidly replace these changes to improve their internal controls and access resources progressively. Along with this remarkable fact, other published studies like Yu-jie et al. (2011) have sufficiently shown that CEO turnover can undoubtedly affect enterprise accounting and leading company financial reporting choices. From the viewpoint of agency problems, it is as sumped that ICMWs are due to the agent's choice to perform a series of tasks to achieve the best of the landlords' purposes against agency principles' observance. It would be reasonable to argue that in most cases, agents, including the CEO, financial manager, and the independent auditor, were considered as factors that could affect the ICMWs.

In general, considering the theoretical foundations and research background, there are reasons to believe the existence of further ICMWs increases the likelihood of a change in CEO. Furthermore, the present study is properly divided into two categories at the account and company levels for enriching the background of internal control according to the considerable importance of the companies' internal control details and based on the Bauer research (2016).

Taken as one, based on theoretical arguments and literature review, a single critical hypothesis and three sub-hypotheses are presented in the alternative form as following:

*Hypothesis 1: There is a significant and direct relation between ICMWs and CEO turnover.*

*Hypothesis 1-1: There is a significant and direct relation between account-level ICMWs and CEO turnover.*

*Hypothesis 1-2: There is a significant and direct relation between company-level ICMWs and CEO turnover.*

## 3. Empirical approach

Regarding that, the paper's data is typically related to real companies' financial information, and the practical results can be used wisely to better decisions of capital market participants. The paper's ultimate aim is functional and in terms of the method is descriptive type through correlation with post-event approach (semi-experimental). The statistical population of the paper is listed companies in TSE. The apparent reason for choosing TSE to examine is adequately monitoring relevant organizations like the ministry of finance and the Central Bank over TSE. In notable addition, since financial

statements of listed companies in TSE are subject to be approved by trusted auditors, thereby more reliability is expected. Besides, since listed companies in TSE are traditionally required to submit their financial statements uniformly, there will be more comparability. Therefore, TSE is the best place to extract companies' financial information in Iran and contribute the paper to reliable results.

The present study intends to describe the relationship between the two parameters by collecting relevant data. Indeed, to collect theoretical foundations and literature reviews, library sources are used. The content analysis approach of the board of directors' activities report and the independent auditor's report will analyze the data using the direct observation method. Financial data are carefully extracted from comprehensive databases such as Rahavard Novin, which support Iranian companies' financial data listed in TSE. Then collected data are classified through Microsoft Excel. It is performed utilizing econometric software, Eviews 9.



To investigate the relationship between ICMWs and CEO turnover, the explanatory and dependent parameters in research models have been tested using panel data. The Logistic Regression (LR) method, or binary logit-maximum likelihood estimate method, is used in the paper because the research's dependent parameter (CEO turnover) is a dummy parameter. Indeed, to determine the significance of the entire regression model, the likelihood ratio test and the McFadden's R squared statistic are used (Sur et al., 2017; Shirin and Khonsari, 2009; Allison, 2014).

### 3.1. Sample

The statistical population included all listed companies on TSE during 2013-2018. It is considered longitudinal in terms of time horizon. In the study, sampling is carried out through a systematic elimination method, and the sample volume equal to those companies that satisfy the following conditions:

1. Listed before 2013 in TSE and have been active ending fiscal year of 2018.
2. In practical terms of increasing comparability, their fiscal year should be ending in March and remain unchanged during the 2013-2018 fiscal year.
3. Listed companies, including banks and financial institutions, investment companies, financial intermediaries, holding companies, which ordinarily have separate reporting structures, are removed from selected samples.
4. The required financial and management information (in particular, board reports and explanatory notes of financial statements) and information related to their CEOs (contained in the board reports)should be available for six years.
5. During 2013-2018, except for the regular period of holding general assembly, the trading stock is not stopped.

After introducing the above restrictions, selected samples were reduced to 99 companies during 2013-2018; therefore, there would be 594 observations.

### 3.2. Parameters and measurement method

*Responding parameter:* To measure CEO turnover of the company as a dependent parameter, a dummy parameter is utilized. Its information is derived from the annual public meetings report or the board of director activities report. Therefore, if the company's CEO has changed since last year, the number 1 and otherwise 0 would be considered (Khosh et al., 2017; Ghasemi and Gharkas, 2014; Wang and Huang; 2013; Uemura, 2018). From now on, this parameter will be represented by the symbol (TURN).

*Explanatory parameter:* In the current paper, the ICMWs as an independent parameter following the researches of Blasam et al. (2014), Javid et al. (2015), and Hajiha and Hosseinnejad (2015) significant ICMWs are utilized which comes from independent auditors report. Given that in the audit report, only the company's significant ICMWs is

presented as a clause of the condition and avoids providing all the weaknesses that the auditor has already addressed in the CEO letter. The present study addresses all the clauses of the condition related to the ICMWs are considered significant ICMWs. Therefore, if the company has at least one ICMW, it equals 1 and otherwise 0. Therefore, in the paper, the significant weaknesses are the auditor's weaknesses in his/her report and usually remediate during the financial year and/or not. These include weaknesses in account receivable, inventories, assets, taxes, or items related to the board of directors' decisions, and these weaknesses exist at the account and company levels. From now on, this parameter will be represented by the symbol (ICMWs). Table 1 presents the classification of ICMWs derived from Bauer's research (2016).



**Table 1:** ICMWs Categories

| ICMWs | Codes | Definition |
|---|---|---|
| Company-level ICMWs | A1a | Lack of key personnel |
| | A1b | Management override or integrity issues |
| | A2a | Financial statement close process issues |
| | A3a | Fraud or red flags for fraud |
| | A3b | Insufficient documentation and policies |
| | A3c | Inadequate lines of communication |
| | A3d | Insufficient risk assessment policies |
| Account-level ICMWs | B1a | Lack of timely reporting/filing |
| | B1b | Lack of quality corporate governance |
| | B1c | Lack of training & staffing/resources |
| | B1d | Internal audit/monitoring issues |
| | B2a | Lack of timely review |
| | B2b | Incomplete account analysis |
| | B2c | Untimely account reconciliations |
| | B2d | Issues with nonroutine transactions |
| | B2e | Lack of discipline in reporting |
| | B3a | Issues with IT controls |

*Control parameters:* To measure the relationship between ICMWs and CEO turnover more accurately, it is necessary to handle a set of relevant studies' potential parameters. In the present study, 7 control parameters are utilized, including company size (Fama and French, 2001; Mirza and Afza, 2010; Balsam et al., 2014; Dang et al., 2018), company sales growth rates (Abdolrahimi et al., 2018; Hoitash et al., 2012; Uemura, 2018), loss report (Hoitash et al., 2012; Ghasemi and Gharkas, 2014), current ratio/rate, and the natural logarithm of total sales (Dang et al., 2018; Khosh et al., 2017), return on assets (Khosh et al., 2017; Hoitash et al., 2012; Bauer, 2016; Uemura, 2018) and earnings ratio/rate (Khosh et al., 2017).

Finally, following Hoitash et al. (2012), Wang and Huang (2013), Balsam et al. (2014), Bauer (2016), Uemura (2018), the intended models for each of the hypotheses are as follows; the primary hypothesis is stated by the model (1):

$$TURN_{i,t-1} = \beta 0 + b1ICMW_{i,t} + b2SIZE_{i,t} + b3GROWTH_{i,t} + b4LOSS_{i,t} + b5CurRate_{i,t} + b6LnTotalSales_{i,t} + b7ROA_{i,t} + b8Earnings_{i,t} + \sum_t YEAR + \sum_j IND + \varepsilon_{i,t}$$

*The hypothesis 1-1 is stated by model (2):*

$$TURN_{i,t-1} = \beta 0 + b1ICMW\text{-}ACCT_{i,t} + b2SIZE_{i,t} + b3GROWTH_{i,t} + b4LOSS_{i,t} + b5CurRate_{i,t} + b6LnTotalSales_{i,t} + b7ROA_{i,t} + b8Earnings_{i,t} + \sum_t YEAR + \sum_j IND + \varepsilon_{i,t}$$

*The hypothesis 1-2 is stated by model (3):*

$$TURN_{i,t-1} = \beta 0 + b1ICMW\text{-}COMP_{i,t} + b2SIZE_{i,t} + b3GROWTH_{i,t} + b4LOSS_{i,t} + b5CurRate_{i,t} + b6LnTotalSales_{i,t} + b7ROA_{i,t} + b8Earnings_{i,t} + \sum_t YEAR + \sum_j IND + \varepsilon_{i,t}$$

Where:

$TURN_{i,t-1}$: A dummy parameter equals 1 if the CEO has been replaced from the previous year, otherwise equal to 0.

*$ICMW_{i,t}$:* A dummy parameter equals 1 if the company holds at least one weakness in the internal control system, otherwise equal to 0.

*$SIZE_{i,t}$:* Company size, which is calculated by the log of the market value of equity on the fiscal year's balance sheet.

*$GROWTH_{i,t}$:* Equal to company sales growth rate, which is the difference between the total sales of the current year and the previous year divided by the previous year's sales.

*$LOSS_{i,t}$:* Equals 1 if the company reports losses, otherwise equal to 0, which will be determined by the statement of profits/losses of the companies.



*$CurRate_{i,t}$:* This index compares a firm's current assets to its current liabilities and is expressed as follows: The current ratio indicates a firm's liquidity.

*$LnTotalSales_{i,t}$:* Represent the total net sales of the company. In the current paper, to eliminate the effects of size, the company's total net sales' natural logarithm is considered net sales.

*$ROA_{i,t}$:* Income before extraordinary items divided by lagged total assets in the fiscal year.

*$Earnings_{i,t}$:* Represent the company's earnings ratio, equal to net profit after tax deduction divided on the total income annually.

$\sum_t$ *YEAR:* Time parameters with a value of 1 or 0. A vector of indicator parameters by year. This parameter is selected to control the effect of variations overtime on the responding parameter.

$\sum_j$ *IND:* Firm's parameters with a value of 1 or 0. A vector of indicator parameters by the company. This parameter is selected to control the effect of corporate changes on the responding parameter.

*$ICMW\text{-}ACCT_{i,t}$:* This is the Indicator for the presence of an account-level ICMW, which is equal to 1 if a firm has an ICMW and only an account-level ICMW during the year, 0 otherwise.

*$ICMW\text{-}COMP_{i,t}$:* This is the Indicator for the presence of a COMP-level ICMW, which is equal to 1 if a firm has an ICMW and only a company-level ICMW during the year, 0 otherwise.

## 4. Model Estimation and Hypothesis Testing

To provide an overview of the key features among parameters, the concepts of descriptive statistics of such parameters, including the number of observations, mean, median, standard deviation, skewness coefficient, and Kurtosis coefficient, are presented in Table (2). Table 2 shows that company size (SIZE) and the loss report (LOSS) own the highest and lowest average values. Moreover, the current ratio (CurRate) and the return on assets (ROA) include the highest and lowest standard deviations, respectively. Indeed, considering the mean and standard deviation of significance, which are equal to 0.51 and 0.50, respectively, sufficiently indicate our sample companies are subject to ICMWs at a relatively modest level. Furthermore, the distribution of sample companies based on the classification of significant ICMWs shows these companies are not reluctant to reveal the significant ICMW at the company level and focused more on significant ICMW, indicating that these companies are not reluctant to reveal the significant ICMW at the account-level. Companies with at least one significant weakness contain 300 observations, and control companies contain 294 observations. Besides, companies with significant weaknesses than control companies have more CEO turnover, sales growth, and losses. Companies with significant weaknesses than control companies are larger and

have more net sales. On average, the current ratio, return on assets, and earnings ratios of the companies with significant weaknesses are less than control companies.

**Table 2.** Descriptive statistics of research parameters

| Parameters | Observation | mean | median | standard deviations | skewness | kurtosis |
|---|---|---|---|---|---|---|
| TURN | 594 | 0.28 | 0 | 0.45 | 0.96 | 1.91 |
| ICW | 594 | 0.51 | 1 | 0.50 | -0.02 | 1.00 |
| ICW_ACCT | 594 | 0.49 | 0 | 0.50 | 0.05 | 1.00 |
| ICW_COMP | 594 | 0.22 | 0 | 0.41 | 1.38 | 2.92 |
| SIZE | 594 | 14.62 | 14.13 | 1.70 | 0.75 | 2.94 |
| GROWTH | 594 | 0.21 | 0.17 | 0.41 | 3.20 | 29.62 |
| LOSS | 594 | 0.09 | 0 | 0.29 | 2.78 | 8.71 |
| CurRate | 594 | 1.67 | 1.24 | 2.72 | 10.34 | 133.83 |
| LnTotalSales | 594 | 14.37 | 13.87 | 1.76 | 0.77 | 3.40 |
| ROA | 594 | 0.13 | 0.11 | 0.15 | -0.51 | 9.50 |
| Earnings | 594 | 0.16 | 0.14 | 0.32 | -5.25 | 78.49 |

Source: Research findings based on Eviews output

### 4.1. Collinearity of Parameters

The correlation matrix is of the methods to evaluate the collinearity of parameters. In this matrix, the correlation coefficient between each pair from the independent parameters is calculated. As a rule, the correlation coefficients of less than 50 percent can be considered acceptable between each pair of independent parameters, and there is no concern for the existence of collinearity (Aflatoni, 2017). In the current paper, since all estimated coefficients are significant and separable, the collinearity between the parameters is not acute. The amount of collinearity oscillations between the model's independent parameters has been investigated and indicates that each pair of independent parameters does not have acute collinearity. Due to the limitations on the paper's pages, the correlation matrix tables have also been removed.

### 4.2. The hypothesis testing

In this section, using statistical modeling, we are about to analyze research regression models carefully and adequately consider significant parameters coefficients analysis to confirm or reject the hypotheses. A significant level of 5percent intended. The econometric technique with the panel data approach has been used wisely for properly estimating empirical models during 2013-2018. In the paper, the LR method, or binary logit-maximum likelihood estimate method, has been used to estimate the models according to data nature. The dependent parameter of the paper is a dummy parameter. The results of estimating the logistic model for the paper's primary hypothesis and sub-hypotheses are presented in Tables (3) and (4).

Graciously according to Table (3), the significant ICMWs parameter of the companies, as an independent parameter with a significance level of more than 10% of the Z statistic, supports no significant relationship with the CEO turnover parameter the company (TURN) at 90% confidence level. As a result, the primary hypothesis is rejected.

**Table 3:** Estimating the Logistic Model for the Primary Hypothesis

| Explanatory parameter | Responding parameter: CEO turnover (TURN) | | | |
|---|---|---|---|---|
| | **Coefficient** | **standard error** | **Z-statistic** | **Prob.** |
| ICMWs | 0.2723 | 0.1982 | 1.3735 | 0.1696 |
| SIZE | 0.1323 | 0.1814 | 0.7293 | 0.4658 |
| GROWTH | 0.3454 | 0.2840 | -1.2163 | 0.2239 |
| LOSS | 0.8755 | 0.3623 | 2.4168 | 0.0157** |
| CurRate | 0.2420 | 0.1354 | -1.7880 | 0.0738* |
| LnTotalSales | 0.2157 | 0.1766 | -1.2213 | 0.2220 |
| ROA | 0.9222 | 1.2532 | 0.7359 | 0.4618 |
| Earnings | 0.2804 | 0.5335 | 0.5256 | 0.5992 |
| C | 0.3461 | 0.8919 | 0.3880 | 0.6980 |
| LR Statistic | 27.8555 | H-L statistic | 1.5731 | McFadden's R Square |
| LR Statistic Prob. | 0.0005 | H-L statistic Prob. | 0.9914 | 0.0392 |
| Year Effects | | | Controlled | |
| Industry Effects | | | Controlled | |

Source: Research findings based on Eviews output

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

**Table 4:** Estimating the Logistic Model for the Sub-hypotheses

| Explanatory parameter | Responding parameter: CEO turnover (TURN) | | | |
|---|---|---|---|---|
| | **The hypothesis 1-1** | | **The hypothesis 1-2** | |
| | **Coefficient** | **Prob.** | **Coefficient** | **Prob.** |
| ICMW-ACCT | 0.2550 | 0.1990 | ----- | |
| ICMW-COMP | ----- | | -0.0010 | 0.9968 |
| SIZE | 0.1305 | 0.4728 | 0.1635 | 0.3676 |
| GROWTH | -0.3468 | 0.2227 | -0.3083 | 0.2775 |
| LOSS | 0.8738 | 0.0159** | -0.8901 | 0.0140** |
| CurRate | -0.2424 | 0.0738* | 0.2310 | 0.0835* |
| LnTotalSales | -0.2113 | 0.2317 | -0.2281 | 0.1958 |
| ROA | 0.9205 | 0.4641 | 0.5854 | 0.6353 |
| Earnings | -0.2819 | 0.5981 | -0.1961 | 0.7145 |
| C | 0.3253 | 0.7149 | 0.2144 | 0.8111 |
| McFadden's R Square | | 0.0389 | McFadden's R Square | 0.0365 |
| LR Statistic | | 27.6151 | LR Statistic | 25.9624 |
| LR Statistic Prob. | | 0.0005 | LR Statistic Prob. | 0.0010 |
| H-L statistic | | 3.5884 | H-L statistic | 4.3697 |
| H-L statistic Prob. | | 0.8922 | H-L statistic Prob. | 0.8223 |
| Year Effects | | | Controlled | |
| Industry Effects | | | Controlled | |

Source: Research findings based on Eviews output

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

Indeed, according to Table (4), the parameter of significant ICMWs at the account-level (ICMW-ACCT) and the parameter of significant ICMWs at the company-level (ICMW-COMP) as independent parameters, have a significance level of more than 10%, which indicates no effect on the CEO turnover at the 90% confidence level. Hence, the first and second sub-hypotheses are also rejected.

Moreover, the results evidenced that among the control parameters, the loss report

parameter concerning the significance level of less than 10% in the primary hypothesis and sub-hypotheses holds a significant relationship with the CEO turnover at 90% confidence level which according to the positive value of the estimated coefficient, this relationship is direct. This result shows that in the historical event of a loss in the company, the company CEO changes with a probability of 90%. The current ratio (CurRate) has an inverse relationship at 90% confidence with CEO turnover in both the primary and sub-hypotheses. This result emphasizes that the reduction in the current ratio increases the possibility of CEO turnover.

According to the table (3) and (4), the probability of LR statistics for the primary hypothesis and sub-hypotheses is less than the error level of 5%, which points that these models are significant at the 95% confidence level and are highly valued. Also, the Mc Faden's R Squared value for the primary model and the estimated LR sub-models is 0.0392, 0.0389, and 0.0365, respectively, and show the explanatory parameters explain the low percentages of the changes of the dependent parameter.

Furthermore, to investigate the fitting's goodness, the LR model, the Hosmer-Lemeshow test, is applied. Considering the probability of the Hosmer-Lemeshow statistic for the primary model and the LR model, sub-models are equal to 0.99914, 0.8922, and 0.8223, which are more than 0.05; therefore, it can be declared that the estimated models provide a suitable fit.

## 5. Conclusions and suggestions

The purpose of the paper is to investigate the effect of ICMWs on CEO turnover in TSE. The results determine that ICMWs produce no effect on the CEO turnover at the account-level and company-level. This means that the existence or absence of such ICMWs does not lead to CEO turnover.

The rejection of the hypotheses remains following the results of Huson et al. (2001) and contradicts the results of Wang and Huang (2013) and Uemura (2018).

Regarding the possible reason for the lack of a relationship between ICMWs, and CEO turnover, it can be stated that although the responsibility of healthy internal control signifies part of CEO responsibility, the CEO only integrates purposes, and all staff of the enterprise fulfill a critical role in advancing and promptly executing it. The staff comprises human who executes internal controls. Therefore, it can be mentioned that the internal control system can be effective when that behavior and technical competence of the staff are granted in its establishment. Thus, achieving the appropriate internal control implies that it remains not merely dependent on the CEO, but requires the presence of committed, honest staff withholding strong moral values.

The present paper progressively expands the academic literature on CEO turnover and provides evidence of the consequences of the ICMWs over CEO turnover. ICMWs establish many new research fields related to internal controls at the account-level and company levels for academic researchers. Since internal controls represent a fundamental aspect of the quality of financial statements, these new research opportunities are likely to be of interest to a comprehensive range of academics and legislators.

### 5.1. Limitation of the study

- The central limitation of this paper comprises the leaning in identifying ICMWs. During the review period, no codified law or regulation is justified to report on ICMWs; despite the attempt to minimize the bias, the results may be affected. As mentioned earlier, the auditing institute's size and the different degrees of risk appetite can be mentioned among the field's influential constituents. This means that larger auditing institutes generally take more risk. Therefore, ICMWs that are considered significant from a smaller auditing institute's point of view may be simply not

identified to be significant by a larger auditing institute, and it is not inserted in the independent auditor's report. Although in the present paper, the confounding effect of the audit institute size parameter on the relationship between ICMWs and the CEO turnover is controlled, but due to the difference in the measurement of the mentioned parameter compared to previous research, one can not rely effectively on it.

- Similar researches in developed countries set the huge sample (e.g., over 1,000 companies), including more years. However, we cannot follow such a trend due to data limitations. There is no organized database in developing countries like Iran, and we are supposed to consume considerable time to collect data. For instance, in some companies, CEO turnover and ICMWs are not confined in detail, which naturally reduces sample size.



### 5.2. Further to the study

- Researches on internal controls are considered to be ongoing in Iran as a developing country. Graciously according to the practical importance of internal controls, the contributing constituents typically affect ICMWs feature and quality examined as the new investigation.
- The comprehensive re-testing of the existing examination independently for each of the active industries accompanies more empirical observations.

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**Research Article**

# Introducing an ERM-Based Optimal Banking Performance Development Model

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## Abstract

Services are an essential central element of the economy in today's societies, and banks, as one of the essential service organizations, direct and support many of the community's economic activities. This study aimed to develop an optimal model for East Azarbaijan banks' performance based on organization risk management using the standardized questionnaire of Kosovo 2017. To achieve this purpose, the director or assistant director, head or deputy head, bank managers, and experts of banks were selected for statistical sampling. The structural equation modeling approach was used to estimate the model and tests. Organizational risk management factors, including "written job descriptions and resources to describe personnel duties, fraud risk assessment concerning how management and other employees participate," was assessed as factors affecting bank performance. Therefore, the banking system's structural problems should be resolved to function and develop in the future. Consequently, to resolve the banking system crisis, it is necessary to reform the banking system.

**Keyword:** Banking Performance, Enterprise Risk Management (ERM)

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# 1.Introduction

Nowadays, the Iranian banking system faces many challenges and problems as though it is in a critical state while the global and even regional banking industry is growing increasingly. Therefore, the Iranian banking system's actions concerning the challenges are of great importance (Mousavi et al., 2020). The recent international banking crises showed that even banks classified as efficient banks, including Citigroup and Merrill Lynch, faced severe problems. It means that the concept of bank performance evaluation should be reconsidered. One common feature of performance appraisal approaches in the past was that these approaches were all limited to one perspective, examining performance from only one stakeholder perspective and ignoring other stakeholders' understandings or views in the financial institutions. All bank stakeholders should be involved in the evaluation process of the bank's performance; in other words, an efficient bank should meet all stakeholder groups' expectations. To put it plainly, it is necessary to assess all its stakeholders' satisfaction to measure a bank's performance. An efficient bank is a bank that achieves a certain level of overall satisfaction for all its individuals and stakeholders (Najaj et al., 2019).

The emergence of future society changes indicates that organizations will be significantly different from today (Chumpy & Venitin, 2009). Investigating and analyzing the banking system's near and far environment indicates that the environment is full of chaos and ambiguities, and complexities. It will face a series of challenges and concerns shortly. Since future development paths are highly uncertain, they cannot be predicted sufficiently by purely quantitative trend analysis methods. For example, considering recent years' analysis, it is evident that the use of e-banking is steadily increasing. If the trend is assumed to continue, it is expected that its use will be doubled in a decade (Aborden, 2007). Considering the problems of the country's banking system's performance, this study investigates how to understand banking performance concerning organizational risk management. Furthermore, according to the studies conducted in Iran on developing the organizational risk management performance model, this study has examined components that have not been considered in the previous research. Therefore, this study tries to answer the question of what kind of model is appropriate for the optimal development of bank performance in East Azerbaijan based on organizational risk management. To answer this question, predicting causal relationships of performance based on organizational risk management factors were studied. This study introduces a new concept of banking performance. Consequently, this study's results are expected to help managers, financial analysts, investors, and other stakeholders understand banks' performance in terms of organizational risk management factors and help them make sound financial and investment decisions. This study proceeds by outlining the theoretical foundations and backgrounds of related research as well as explaining the research method and hypotheses derived from the problem and theoretical foundations of the research and then explaining the hypotheses test results; finally, conclusions and suggestions will be mentioned.

# 2. Literature and Theoretical Foundations of the Study:

## 2.1. Performance of Banks

Performance appraisal is one of the essential tasks for managers in planning and goal setting. Appraisal not only helps managers choose a strategy and financial structure, but it also shows how financial strategies and structures affect banks' performance. Hence, measuring banks' performance and evaluating the overall financial position and operations results is necessary to make rational decisions; therefore, customers, investors, and shareholders need criteria to properly manage bank performance. (Abolfatti, 2018). Objective performance indicators are indices that are measured in real terms based on

objective data. They include profitability indices such as return on equity, return on investment, and earnings per share. Subjective indicators include most of the indices formed based on the organization's stakeholders' judgment. These indicators include customer satisfaction, employee satisfaction, and success in delivering new products (Doaei, 2011). The scale used in this study is of the second type and subjective because subjective criteria were used to prevent disclosure problems of respondents' information. This study used comprehensive quality management and organizational risk management factors to evaluate banks' performance.

### 2.2. Enterprise Risk Management (ERM)



In what ways can an enterprise risk management framework be a useful tool for risk management and professionals? And who wants to build or enhance risk management processes and capabilities? The framework's risk management framework provides structure, modes of operation, and a conceptual picture of what risk management can entail. For an organization risk management startup, a framework can provide a useful pathway to help guide them in formulating their plans and related processes (Ghanbarian, 2014). In general, ERM is an integrated and continuous process for managing risks across all organization dimensions - including strategic, financial, operational, adaptive, and credit risks, to minimize unexpected performance changes and maximize its intrinsic value. This process enables the board and management to make their own risk-return decisions by laying out the basic needs associated with the organization's governance and policies (including risk appetite), risk data and analysis, risk management, and performance monitoring and reporting with more awareness and information (Lam, 2017).

#### 2.2.1. The Coso Framework (COSO)

In 1992, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) introduced and implemented internal control in the framework of an integrated framework.

This committee which is a privately owned entity run by five professional bodies including the American Accounting Association (AAA), American Society of Chartered Accountants (AICPA), International Finance Managers Association (FEI), Management Accountants Association (MAA), Internal Auditors Association (IIA) has been established to develop comprehensive frameworks and guidelines for internal control, commercial risk management, and fraud prevention to improve monitoring and reducing fraud in organizations (Kasiri, 2014). The internal control framework has led to the development of financial and non-financial reporting processes and internal reporting. This framework's results have included changes in operating and business units and losses to them over the past decades. These goals include:

- Strategic goals: High-level, supportive, and mission-oriented goals
- Operation goals: Efficient and effective use of its resources
- Reporting goals: Reliability of reporting
- Compliance goals: Compliance with relevant laws and regulations

Comprehensive Risk Management Components

Comprehensive risk management consists of eight interrelated areas from the organization's management style and is integrated with the management process. These components include:

**Internal environment**: the internal environment encompasses the organization's environment and provides a basis for how business unit employees are exposed to risk. These bases include the philosophy of risk management, risk appetite, honesty, ethical

values, and their operating environment (Morshedzadeh, 2016).

**Targeting**

Goals must be set before management can identify potential events that affect them. Comprehensive risk management ensures that management has established the process needed to formulate goals. The selected goals are consistent with the business unit's mission and its risk appetite. (Kasiri, 2013).

**Event Identification**

In-company and out-of-company events affecting the business unit's objectives should be identified by separating opportunities and risks. Opportunities are redirected to processes of strategy formulation or management goals (Morshedzadeh, 2016).



**Risk Assessment**

To determine how risks are managed, their occurrence likelihood and degree of impact are analyzed as a basis. Risks are evaluated based on inherent and residual bases (Morshedzadeh, 2016)

**Risk Responses**

Management chooses the type of risk response (including avoidance, acceptance, mitigation by risk-sharing). It executes a series of measures to align the risk with the organization's degree of resilience and risk appetite (Morshadzadeh, 2016).

**Control activities**

The policies and procedures necessary to ensure an effective response to risk are formulated and implemented (Morshadzadeh, 2016).

**Information and communication**

Relevant information is identified, collected, and reported within a specific time frame so staff can perform their duties. Besides, an effective relationship is formed in a comprehensive shape with upstream, thorough, and downstream flows in the business unit (Morshedzadeh, 2016).

**Supervision**

The comprehensive risk management process is fully monitored, and adjustments are made as necessary. Supervision is performed by continuous management activities, separate evaluations, or both (Kasiri, 2013).

### 2.3. Organization Risk Management and Banking Performance

Risk management is one of the management policy tools in any organization developed and used by reviewing and evaluating the risks in the system to prevent adverse conditions or mitigate the effects of risk factors, in other words, to reduce risks. Strategic risk management can be useful and a powerful tool for identifying early performance weaknesses if it started early so that management can organize operational plans to manage risks (Curtis et al., 2004).

In today's vibrant global environment, risk management is an urgent concern for business (Gordon et al., 2009). Researchers have estimated that enterprise risk management (ERM) is one of the effective tools used by companies to reduce potential risks (Kioulep, 2002). Generally, risk management's primary purpose is to monitor the day-to-day operations, build recovery plans, and recognize the risky activities that sometimes provide indirect income to the organization. (Anderson, 2008; Gordon et al., 2009; Meshan et al., 2011). Risk management practice has made significant progress in three important dimensions: integration, technology, and people. The future of "success" of risk performance depends on balanced investment in all three areas to generally do its job.

Over the past decades, risk management has taken on a wide range of risk measures as well as multiple risks (Noko & Stoles, 2006). Nowadays, companies' top priority and

major concern are understanding the different types of risks (Liu, 2012). If faced with a dilemma, risks may arise (Abou et al., 2005). Today, businesses are less concerned about dealing with different risks individually. As a result, conditions such as integrated risk management, organization risk management, and risk management have emerged across a wide range of banks (Kalita, 2004). ERM is capable of maintaining some risks against others and enhances the share prices through complex risk management. In most companies, the only major risk is to handle all kinds of risks, but in fact, risk communication and structure must be developed at all levels of the bank (Muller, 2007). Although developed countries have already adopted ERM measures, developing economies are still struggling to implement the ERM framework in their capital markets. For example, Soltanizadeh et al. (2014) have found that ERM implementation differs across Malaysian industries. Hotels and infrastructure are more likely to implement an ERM plan. Bertin T et al. (2013) have used dummy variables to measure ERM in European banks.

## 3. Research Background

Fluoro (2017), in a study "Enterprise Risk Management and Performance of Italian companies," concluded that implementing an advanced level ERM leads to improvement and promotion of quality performance as well as a better market evaluation. Lundquwit (2018) stated that ERM is a framework for the emergence of advanced and coherent governance in the banking performance management system due to the prevention and identification of internal control system risks, information risk, agency risk, and liquidity, finally, default risk reduction based on ratings. Dioy Han et al. (2019) in a study showed that firms' performance in risk identification and management plays a significant role in the business's operational performance. Mousavi et al. (2020) concluded that evaluating internal controls, planning, and testing risks had a significant impact on banks' performance and efficiency.

Tari Verdi (2012), regarding the relationship between risk management and corporate performance, shows that two variables of risk management factors, namely, industry competitiveness and firm size, positively correlate with firm financial and non-financial performance. In contrast, the other two variables of risk management factors, namely environmental uncertainty and board supervision, are not related to corporate performance.

Bataglia (2017) showed that financial institutions using top risk management in ERM implementation perform ERM implementation with greater effectiveness, leading to mitigation and reduction of financial and non-financial performance risk and overall risk reduction in the organization. Ahmadi's study (2019) findings indicate that developed countries have adopted ERM strategies in their capital markets, but under developing countries such as Nepal, India, Bangladesh, and Pakistan still follow the developed countries in adopting ERM practices.

## 4. Research Question and Conceptual Model

Research Question: What is the priority of factors related to performance-based organizational risk management of state banks of East Azerbaijan province?

Concerning the formulated question and the theoretical foundations in ERM-based performance modeling, the conceptual model of the study is formulated as follows:

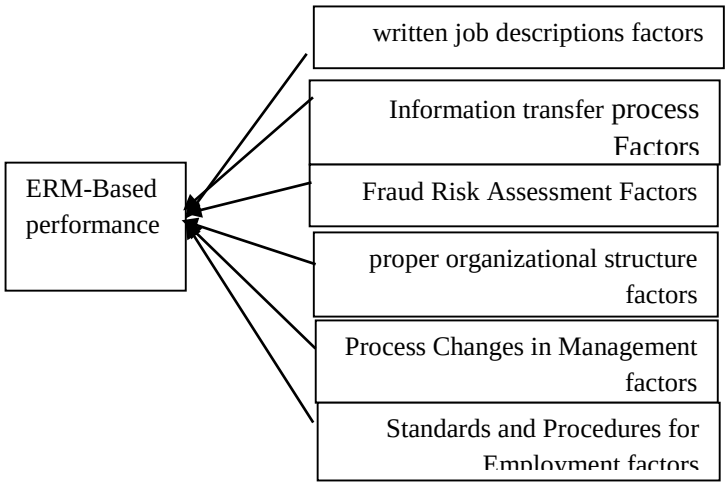


**Figure 1:** Theoretical Research Framework

## 5. Research methodology

This study is an applied one in terms of purposes, and it is a descriptive-analytic survey in terms of data collection methods based on a structural modeling approach. An online questionnaire (Porsline.com) was employed, and partial least squares in the data collection stage and the structural equation modeling approach were used in the inference stage. The questionnaires were distributed among the director or assistant director, head or deputy head, and experts of state banks of East Azarbaijan province, which included 223 persons. The Cochran formula was used to calculate the sample size. Accordingly, the statistical sample size was 152 persons.

According to Chen et al. (2003), the sample size should be estimated at 10 cases per parameter to have valid and generalizable results concerning the adequacy of the sample size in the structural equation modeling method. Awad (2017) has also suggested 5 items per parameter.

In this study, the data collection instrument for organizational risk management was a questionnaire based on the COSO 2017 questionnaire consisting of 50 questions on a five-choice scale. In addition, to develop and localize the research instrument and confirm its validity, university professors' and capital market experts' views were exploited.

## 6. Research Findings

**Table 1.** Respondents' Demographic Information

| Variable | Group | Frequency | Percent |
|---|---|---|---|
| Gender | Male | 147 | 96.7 |
| | Female | 5 | 3.3 |
| Age (year) | Younger than 30 | 22 | 14.45 |
| | 31 to 40 | 71 | 46.74 |
| | 41 to 50 | 34 | 22.39 |
| | 51 to 60 | 25 | 16.42 |
| Educational Level | Undergraduate and lower | 88 | 57.81 |
| | Graduate and higher | 64 | 42.19 |

**Model analysis and hypothesis testing**

Structural Equation Modeling using LISREL was employed to test the hypotheses. In the research model, the variables were modeled as higher-level reflective structures. The steps and methods are as shown in Table 2.

**Table 2.** Initial reliability of the questionnaire

| Number of questions | alpha |
|---|---|
| 50 | 0.934 |

**Table 3.** Sampling adequacy

| | |
|---|---|
| KMO Indices | 0.860 |
| Bartlett test | 1494.209 |
| Degree of freedom | 1225 |
| Significance level | 0.000 |



Since the value of the KMO index is 0.860 (appropriate index is greater than 0.6), the statistical sample size is sufficient for factor analysis. Furthermore, Bartlett's test's significance level is less than 0.05%, which indicates that factor analysis is appropriate for model identification. Pebble test was used to select the number of factors for rotation, so 6 factors were selected for rotation.

As shown in the table, items 1 are based on theoretical basics of research, job descriptions, and resources to describe personnel tasks; items 2 are named after the theoretical foundations of the study ,factors associated with timely information transfer processes with external entities, items 3 are named according to the theoretical foundations of the study, fraud risk assessment factors according to how management and other employees participate in inappropriate practices items 4 are based on theoretical foundations of the study, organizational structure factors relevant to appropriate size, operational activities, and the location of the company, items 5 are based on theoretical foundations of the study, changes process in management and other related views and the philosophy of internal control and other relevant internal controls and items 6 are based on the theoretical foundations of the study ,available standards and procedures for recruitment, training, assessment and promotion, transfer and termination of service of staff.

**Research Question:** What is the optimal performance model based on state-owned banks' organizational risk management in East Azarbaijan province?

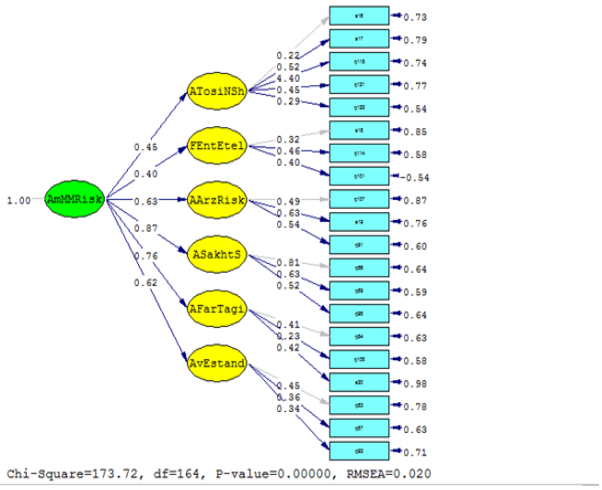


**Figure 2:** Confirmatory factor analysis of the second-order performance variable based on organizational risk management in terms of factor load

**Table 4.** Rotated matrix of operating loads of scale questions related to performance-based on organizational risk management

| Items | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| The written description of jobs and resources for describing staff duties | 0.619 | | | | | |
| Organization Information System | 0.608 | | | | | |
| Training employees to understand the nature and scope of their work, their duties, and responsibilities | 0.563 | | | | | |
| (Informing failures to qualified persons responsible for corrections, senior management, and board of directors) | 0.502 | | | | | |
| Controlling access to information systems | 0.470 | | | | | |
| Timely and relevant information transfer processes to external parties | | 0.539 | | | | |
| Following the financial reporting duties and responsibilities | | 0.415 | | | | |
| Following up on existing policies and procedures | | 0.326 | | | | |
| Fraud risk assessment according to how management and other employees are involved in inappropriate practices | | | 0.478 | | | |
| Evaluation of the results of continuous and separate evaluations | | | 0.464 | | | |
| Coordinating the goals of the organization with the standards and regulations of the organization | | | 0.358 | | | |
| Suitable organizational structure with size, operational activities, and company location | | | | 0.503 | | |
| Examining the independence of the board of directors | | | | 0.415 | | |
| Compliance with the objectives of the external reporting with the financial reporting framework | | | | 0.392 | | |
| changes process in management and other related views and the philosophy of internal control | | | | | 0.548 | |
| Senior Management's Commitment to Ethical Values and Financial Reporting | | | | | 0.373 | |
| Periodic separate evaluations to provide impartial feedback | | | | | 0.330 | |
| Availability of standards and procedures for recruitment, training, and evaluation, promotion, transfer, and termination of employees' service | | | | | | 0.591 |
| Examining the expertise of the Board of Directors regularly | | | | | | 0.439 |
| Creating a statement of ethical concept evaluation | | | | | | 0.351 |

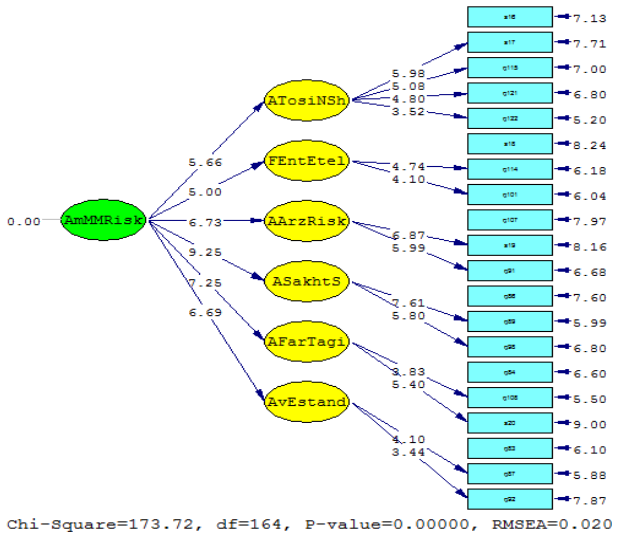


**Figure 3:** Confirmatory factor analysis of second-order performance variable based on organizational risk management in terms of coefficient of significance

**Table 5.** The effect of endogenous latent variables on the observed variables Y (yλ, LAMBDA-Y)

| Item Parameters and Factors | Parameter b Estimation | Criterion error | Standardized Parameter | t |
|---|---|---|---|---|
| Written job description factors and resources to describe staff duties | | | | |
| Priority for staff to access job skills in formulating training programs | 0.21 | 0.73 | 0.22 | - |
| Using an effective organizational structure and management system | 0.51 | 0.79 | 0.52 | 5.98 |
| Controlling Access to Information Systems | 0.39 | 0.74 | 0.4 | 5.08 |
| Organization Information System | 0.44 | 0.77 | 0.45 | 4.8 |
| Training employees to understand the nature and scope of their work, their duties, and responsibilities | 0.28 | 0.54 | 0.29 | 3.52 |
| Factors associated with timely information transfer processes with external parties | | | | |
| High-level staff empowerment in decision making compared to other organizations | 0.31 | 0.85 | 0.32 | - |
| Following up on existing policies and procedures | 0.45 | 0.58 | 0.46 | 4.74 |
| Coordinating the goals of the organization with the external standards and regulations | 0.39 | 0.54 | 0.40 | 4.10 |
| Fraud Risk Assessment Factors Considering how management and other staff are involved in inappropriate practices | | | | |
| Identifying risks related to financial reporting objectives | 0.48 | 0.87 | 0.49 | - |
| Staff training in their work | 0.62 | 0.76 | 0.63 | 6.87 |

| | | | | |
|---|---|---|---|---|
| Description of financial reporting duties and responsibilities | 0.53 | 0.60 | 0.54 | 5.59 |
| Factors of organizational structure appropriate to size, operational activities, and corporate location | | | | |
| Staffs' sufficient knowledge of professional development programs | 0.80 | 0.64 | 0.81 | - |
| Encouraging the organization to provide staff experiences and ideas | 0.62 | 0.59 | 0.63 | 7.61 |
| Receiving customer feedback and using them | 0.51 | 0.64 | 0.52 | 5.80 |
| Process changes factors in management and other related views and philosophy of internal controls | | | | |
| Examining and controlling staff activities before providing services | 0.40 | 0.63 | 0.41 | - |
| Fraud Risk Assessment | 0.22 | 0.58 | 0.23 | 3.83 |
| Developing competitive strategies for the organization in the valuation of customers | 0.41 | 0.98 | 0.42 | 5.4 |
| Factors in the availability of standards and procedures for recruitment, training, and evaluation, and promotion, transfer, and termination of staff services | | | | |
| Considering customer goals in formulating the organization's goals | 0.44 | 0.78 | 0.45 | - |
| Behavior support and appreciation (thinking out of the box) | 0.35 | 0.63 | 0.36 | 4.1 |
| Staff and client complaints as a threat | 0.33 | 0.71 | 0.34 | 3.44 |

The above factor analysis shows that all paths are 95% significant.

Items 16, 18, 102, 58, 54, 52 are considered as fixed scale variables in this evaluation, and their t-values have not been reported. According to the information in Table 5, the estimated coefficients of all paths are significant. The standardized parameter values for each of the observed variables (markers) represent the factor loadings on the factor (latent variable), and t values greater than 1.96 represent the significance of this contribution.

Table 5 shows the effects of exogenous latent variables (organizational risk management-based performance), endogenous variables (written job description and resources to describe personnel tasks, factors related to timely information transfer processes to external parties. Evaluation factors of fraud risk according to how management and other employees are involved in inappropriate practices, factors of organizational structure appropriate to size, operational activities and location of the company, process changes factors in management and other related views and philosophy of internal controls and philosophy of internal controls, factors of standards and procedures for recruitment, training and evaluation and promotion, transfer and termination of service of employees).

The t value indicates organizational risk management performance, written job description factors and resources to describe staff duties, factors associated with timely information transfer processes with external parties, fraud risk assessment factors considering how management and other staff are involved in inappropriate practices, factors of organizational structure appropriate to size, operational activities and corporate

location, process changes factors. In management and other related views and philosophy of internal controls, process factors of change in management and other relevant views and philosophy of internal controls, and factors in the availability of standards and procedures for recruitment, training, and evaluation, and promotion, transfer, and termination of staff services are significant at a 95% probability.



**Table 6.** Total exogenous latent variables (ξ, KSI) on endogenous latent variables (η, ETA).

| Route direction | Parameter estimation | Standardized B parameter | t |
|---|---|---|---|
| performance structures based on Organizational risk management | | | |
| Written job description factors and resources to describe staff duties | 0.44 | 0.45 | 5.66 |
| Factors associated with timely information transfer processes with external parties | 0.39 | 0.40 | 5 |
| Fraud Risk Assessment Factors Considering how management and other staff are involved in inappropriate practices | 0.62 | 6.63 | 6.73 |
| Factors of organizational structure appropriate to size, operational activities, and corporate location | 0.86 | 0.87 | 9.25 |
| Process changes factors in management and other related views and philosophy of internal controls | 0.75 | 0.76 | 7.25 |
| Factors in the availability of standards and procedures for recruitment, training, and evaluation, and promotion, transfer, and termination of staff services | 0.61 | 3.62 | 6.69 |

Table 7 shows the model's goodness of fit index obtained from the confirmatory factor analysis, which indicates that the model fits well with the observed data. In other words, the definition of performance-based on organizational risk management corresponds to the six components in this study.

**Table 7.** Goodness-of-fit indices of the model of organizational risk management performance

| Chi-square | Degree of freedom | Significance level | The root mean square error of approximation | The goodness of fit index | Adjusted goodness of fit index |
|---|---|---|---|---|---|
| 173.72 | 164 | 0.000 | 0.020 | 0.92 | 0.93 |

The most crucial fitting statistic is chi-square. This statistic measures the amount of observed and estimated matrix difference. The non-significance of this statistic shows the model's fitness with the data. Still, the disadvantage of this statistic is its sensitivity to sample size. That is, in large samples, the probability of its non-significance is reduced. Values less than 0.05 for the root mean square error of approximation and values greater than 0.9 for goodness-of-fit index and adjusted goodness-of-fit index are considered as criteria for model fitness with observed data. Consequently, this model of performance-based on organizational risk management with six categories of factors is confirmed.

## 7. Discussion and Conclusion

Optimizing state-owned banks' performance in East Azerbaijan province is one of the topics concerned with bank clients. ERM factors in this research include written job descriptions and resources to describe personnel tasks, timely information transfer processes to external parties, fraud risk assessment of how management and other

employees are involved in inappropriate practices, organizational structure appropriate with size, operational activities, the process of changes in management and other related views and philosophy of internal control, standards and procedures for recruitment, training, evaluation, and promotion, transfer and termination of staff services. After collecting information and using a hierarchical analysis approach, we found out the above factors had the heaviest weight in influencing banks' performance in East Azarbaijan, Iran. The effect of each of these six factors influencing organizational risk management performance was significantly different. In other words, fraud risk assessment factors considering how management and other employees are involved in inappropriate practices, and written job descriptions and resources to describe personnel tasks have the least relationship with organizational risk management performance in state-owned banks in East Azerbaijan. The results of the studies by Remdios et al. (2018), Lundcuit (2018), and Dioy Han Gran et al. (2019), Tarry Verdi Yadollah (2012) are also in line with the results of this study. Thus, in general, by extracting this model, one can firstly formulate a specific mechanism for evaluating, formulating, and enhancing the credit quality of the banking system, and secondly by measuring the extracted model, monitoring comparisons as well as monitoring and evaluating the performance of each bank will be available.

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**Research Article**

# The Relationship between Executive Cash Compensation and Corporate Governance, Income Smoothing, Discretionary Accruals, and Firm Value

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## Abstract

The disclosure of executive compensation arrangements in annual reports would allow investors and other interested parties to make informed judgments about manager motivation and commitment to maximize shareholder wealth. This study examines the relationship between Executive cash compensation, corporate governance, Income smoothing, Discretionary accruals, and firm value in companies listed on the Tehran Stock Exchange. The statistical population of this study is Iran-Tehran Stock Exchange during 2013-2017. The results showed that Corporate Governance has a Negative and Significant Impact on Executive cash compensation. Executive cash compensation does not significantly negatively affect income smoothing, and Executive cash compensation does not have a positive and significant effect on Discretionary accruals. And, Executive cash compensation has a significant impact on decreasing Firm value.

**Keywords:** executive cash compensation; corporate governance; income smoothing; discretionary accruals

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## 1.Introduction

Continuous innovation is key to survival for the firms in a competitive business environment. Cultivating an innovative culture demands critical investments in the research and development projects, with a long-sighted futuristic opinion. In association with the principal shareholders, the CEO and board of directors can significantly yield efficient innovation output. The relationship between the CEO, the board of directors, principal shareholders, and innovation is very complex. It cannot be explained with the help of a single theory because a single theory lacks the broader scope and often takes the support of different assumptions. The agency theory's optimal contracting theory perspective predicts that the principal shareholders' independent surveillance can incorporate an efficient, goal-oriented, and motivating environment. It can help organizations get a sustainable competitive advantage. Secondly, according to the resource-based view, organizations with valuable, rare, perfect, and non-substitutable resources will nourish a continually innovative and competitive environment. Zulfiqar et al. (2019)

The corporate boards involve an arm's length transaction with the CEO and design such compensation plans that provide the CEO with efficient incentives to maximize the shareholder value (Jensen & Meckling,1976). This predicts a positive link between CEO compensation and firm performance. However, Bebchuk and Fried (2003) challenge the assumption of arm's length transactions between CEO and the board over compensation arrangements and state that CEOs, being in power, set their pay excessively, which is less likely to correlate with firm performance. Therefore, the CEO compensation contract is an agency problem rather than a tool to reduce agency problems. The statistical population of this study is Iran-Tehran Stock Exchange during 2013-2017.

## 2.Literature Review

Attempts at improving CG practices in SA companies began with the publication of the first King Report in 1994 (King I) (Armstrong et al., 2006). In particular, King I emphasized the importance of properly functioning corporate board of directors, as well as adopting many of the standards and principles that were contained in a plethora of national and international CG codes, especially those of the UK's 1992 Cadbury Report (Rossouw et al., 2002). However, while King I suggested that executives' remuneration should be recommended by a remuneration committee (RCOM), it failed to address the composition and independence of the committee, as well as the structure and possible involvement of shareholders in the determination of executive pay (Rossouw et al., 2002)

During the late 1990s, the country experienced several high-profile corporate failures, such as the collapse of the Macmed, Leisurenet, and Nedbank companies, attributed mainly to poor CG practices, including increased executive compensation (Okeahalam, 2004). These domestic problems, in combination with increased international attention on CG (Rossouw et al., 2002; Mangena and Chamisa, 2008), resulted in a review of King I and the subsequent publication of a second King Report (King II) in 2002.

Good compensation schemes motivate managers to make expenditure decisions that maximize shareholders' wealth. A manager whose compensation consists entirely of a fixed salary would have no incentive to increase shareholder wealth because he does not share any of the resulting gains (Murphy, 1998). This incentive problem can be reduced by making part of an executive's compensation, depending on its financial performance. Lambert and Larcker (1985) concluded that compensation schemes do matter in the sense that executives respond predictably to the incentives built into their compensation contracts. Furthermore, they noted that changes in compensation plans affect executive decision making in ways consistent with agency theory. Ozkan (2007) found a positive and significant link between CEO cash compensation and firm performance. He also

noted a positive but not significant relationship between total compensation and firm performance.

Iatridis(2018) examined the association between executive compensation and corporate governance, income smoothing, discretionary accruals, and firm value. This study showed that executive cash compensation is negatively associated with corporate governance.

Safa Lazzem and Faouzi (2017) showed that firms' financial leverage positively affects French firms' interest management. Gombola et al. (2016) suggested that high-performing firms are more likely to perform interest management activities when debt increases.

Kim and Shin (2013) provided evidence that there is a positive relationship between CEO motivation and audit costs. Researchers concluded that the relationship between CEO motivation and audit costs in firms at higher risk faces petition would increase.

Kannan et al. (2014) realized that CEO and financial incentives positively correlated with audit costs. Still, the same researchers also concluded that CEO change over the past year and financial manager with audit costs do not have any relationships.

## 3.Research methodology

### 3.1 Data

This research's statistical population included all institutions listed on the Tehran Stock Exchange that have been active in the stock exchange from the beginning of 2013 to the end of 2017. In this regard, the statistical sample of this research included all companies that had the following conditions:

1) During the years 2013 to the end of the financial year 2017 in stock.

2) The Institute is not one of the banks, institutes of investment, mediation, insurance, and monetary and financial institutions because the nature of these institutes' operation is different from other institutions.

3) The financial year of them ended in March each year, and during the above period, their financial year did not change.

4) In all the studied years, the end of the financial year information and data required were available.

### 3.2. Research Hypotheses

1) Corporate governance has a significant and negative impact on executive cash compensation.
2) Executive cash compensation has a significant negative effect on interest smoothing.
3) Executive cash compensation has a positive and significant effect on Discretionary accruals.
4) Executive cash compensation has a significant effect on Firm value Decrease

**Research Model**

The first hypothesis test model:

$$\begin{aligned}\text{incomp}_{it} = {} & \alpha_0 + \beta_1 CG_{it} + \beta_2 r_{it} + \beta_3 br_{it} + \beta_4 \Delta oi_{it} + \beta_5 \text{negoi}_{it} + \beta_6 \Delta cf_{it} \\ & + \beta_7 \text{negcf}_{it} + \beta_8 l1cf_{it} + \beta_9 11negcf_{it} + \beta_{10} \text{lnMV}_{it} + \beta_{11} \text{Debt}_{it} \\ & + \beta_{12} \text{growth}_{it} + \beta_{13} \text{Age}_{it} + \beta_{14} E_{it} + \beta_{15} \text{l1eps}_{it} + \beta_{16} \text{Eps}_{it} \\ & + \beta_{17} \text{eps3}_{it} + \beta_{18} \text{r3}_{it} + \beta_{19} \text{Beta}_{it} + \beta_{20} \text{BM}_{it} + \beta_{21} \text{Loss}_{it} + \beta_{22} Dac_{it} \\ & + \beta_{23} Ppe_{it} + \beta_{24} mva_{it} + \beta_{25} S\&A_{it} + \beta_{26} Opa_{it} + \beta_{27} lnsales_{it} + \varepsilon_{it}\end{aligned}$$

The second hypothesis test model:

$$\begin{aligned}\text{insm}_{it} = \alpha_0 &+ \beta_1 \text{incomp}_{it} + \beta_2 r_{it} + \beta_3 br_{it} + \beta_4 \Delta oi_{it} + \beta_5 \text{negoi}_{it} + \beta_6 \Delta cf_{it} \\ &+ \beta_7 \text{negcf}_{it} + \beta_8 l1cf_{it} + \beta_9 11negcf_{it} + \beta_{10} \text{lnMV}_{it} + \beta_{11} \text{Debt}_{it} \\ &+ \beta_{12} \text{growth}_{it} + \beta_{13} \text{Age}_{it} + \beta_{14} E_{it} + \beta_{15} \text{l1eps}_{it} + \beta_{16} \text{Eps}_{it} \\ &+ \beta_{17} \text{eps3}_{it} + \beta_{18} \text{r3}_{it} + \beta_{19} \text{Beta}_{it} + \beta_{20} \text{BM}_{it} + \beta_{21} \text{Loss}_{it} + \beta_{22} Dac_{it} \\ &+ \beta_{23} Ppe_{it} + \beta_{24} mva_{it} + \beta_{25} S\&A_{it} + \beta_{26} Opa_{it} + \beta_{27} lnsales_{it} + \varepsilon_{it}\end{aligned}$$

The third hypothesis test model:

$$\begin{aligned}\text{Dac}_{it} = \alpha_0 &+ \beta_1 \text{incomp}_{it} + \beta_2 r_{it} + \beta_3 br_{it} + \beta_4 \Delta oi_{it} + \beta_5 \text{negoi}_{it} + \beta_6 \Delta cf_{it} \\ &+ \beta_7 \text{negcf}_{it} + \beta_8 l1cf_{it} + \beta_9 11negcf_{it} + \beta_{10} \text{lnMV}_{it} + \beta_{11} \text{Debt}_{it} \\ &+ \beta_{12} \text{growth}_{it} + \beta_{13} \text{Age}_{it} + \beta_{14} E_{it} + \beta_{15} \text{l1eps}_{it} + \beta_{16} \text{Eps}_{it} \\ &+ \beta_{17} \text{eps3}_{it} + \beta_{18} \text{r3}_{it} + \beta_{19} \text{Beta}_{it} + \beta_{20} \text{BM}_{it} + \beta_{21} \text{Loss}_{it} + \beta_{22} Dac_{it} \\ &+ \beta_{23} Ppe_{it} + \beta_{24} mva_{it} + \beta_{25} S\&A_{it} + \beta_{26} Opa_{it} + \beta_{27} lnsales_{it} + \varepsilon_{it}\end{aligned}$$

The fourth hypothesis test model:

$$\begin{aligned}R - Rp_{it} = \alpha_0 &+ \beta_1 incomp_{it} + \beta_2 r_{it} + \beta_3 br_{it} + \beta_4 \Delta oi_{it} + \beta_5 negoi_{it} + \beta_6 \Delta cf_{it} \\ &+ \beta_7 negcf_{it} + \beta_8 l1cf_{it} + \beta_9 11negcf_{it} + \beta_{10} lnMV_{it} + \beta_{11} Debt_{it} \\ &+ \beta_{12} growth_{it} + \beta_{13} Age_{it} + \beta_{14} E_{it} + \beta_{15} l1eps_{it} + \beta_{16} Eps_{it} \\ &+ \beta_{17} eps3_{it} + \beta_{18} r3_{it} + \beta_{19} Beta_{it} + \beta_{20} BM_{it} + \beta_{21} Loss_{it} + \beta_{22} Dac_{it} \\ &+ \beta_{23} Ppe_{it} + \beta_{24} mva_{it} + \beta_{25} S\&A_{it} + \beta_{26} Opa_{it} + \beta_{27} lnsales_{it} + \varepsilon_{it}\end{aligned}$$

As you can see, the details of the research variables are described in Table 1.



**Table 1**. Research Variables

| Brief variable name (According to model) | Full variable name | Variable measurement method |
|---|---|---|
| Incomp | executive cash compensation | does the natural logarithm of total turnover scale executive cash compensation |
| R-Rp | Return -returns of the portfolio | R is the stock return; Rp is returns of the portfolio matched with each sample firm based on size and book to market value as in Fama and French (1993); |
| *Dac* | discretionary accruals | The study uses the following model residuals as discretionary accruals. $TA_{i,t}/A_{i,t-1} = \alpha_0 (1/A_{i,t-1}) + \alpha_1(\Delta REV_{i,t}/A_{i,t-1}) + \alpha_2(PPE_{i,t}/A_{i,t-1}) + \alpha_3(ROA_{i,t-1}) + u_{i,t} + \varepsilon_{i,t}$ |
| Insm | income smoothing | The measure of income smoothing, insm, is obtained as follows. First, the discretionary accruals, dac, are estimated using the modified Jones model . The study uses the residuals of the following model a discretionary accruals. |
| CG | Corporation Government | The hybrid corporate governance variable contains a set of corporate governance items: Employers' independence Employer duality Change agency management Number of Board Members Major contributors |
| Ind | independent directors | is the percentage of independent directors on the board |
| Dual | Duality CEO | is a dummy variable that takes 1 if the CEO and chairman is not the same person and 0 otherwise |

| | | |
|---|---|---|
| Mgtchange | CEO change | are a dummy variable that takes 1 if the CEO has changed and 0 otherwise |
| Board | Board | is the number of directors on the board |
| Block | Shareholders | is the percentage of outstanding shares owned by shareholders that hold more than 5% of the share capital |
| Bigau | big auditor | is a dummy variable that takes 1 for firms that are audited by a Big 1 auditor and 0 otherwise |
| R | Return | R is the stock return |
| Br | Negative Return | is a dummy variable that takes 1 if r is negative and 0 otherwise |
| $\Delta oi$ | Change Operation income | do total assets scale the change in operating income |
| Negoi | Negative Change Operation income | is a dummy variable that takes 1 if $\Delta oi$ is negative and 0 otherwise |
| $\Delta cf$ | change in net cash flows | is the change in net cash flows from operating activities scaled by total assets |
| Negcf | The negative change in net cash flows | is a dummy variable that takes 1 if $\Delta cf$ is negative and 0 otherwise |
| *l1c* | Lagged change in net cash flows | is 1 year lagged $\Delta cf$ |
| *11negcf* | Negative Lagged change in net cash flows | is a dummy variable that takes 1 if l1cf is negative and 0 otherwise |
| lnMV | Ln Market Value | is the natural logarithm of the market value of equity |
| Debt | Debt | is total debt scaled by total assets |
| Growth | Growth | is market to book value |
| Age | Age | is the natural logarithm of the number of years since the firm foundation |
| E | Error | is the error term |
| l1eps | Lagged Earnings per share | is 1 year lagged earnings per share scaled by the stock price at the beginning of the year |
| Eps | Earnings per share | does the stock price scale the earnings per share at the beginning of the year |
| eps3 | Earnings per share 3 years future | is the sum of earnings per share in years t + 1, t + 2, and t + 3 scaled by the stock price at the beginning of year t |
| r3 | Return future three years later | is the annually compounded stock return for years t + 1, t + 2, and t + 3 |
| Beta | Beta | is the beta coefficient as obtained from DataStream |
| BM | book to the market value of equity | is the book to the market value of equity |
| Loss | Loss | is a dummy variable that takes 1 for loss-making firms and 0 otherwise |
| *Dac* | discretionary accruals | (see also Kothari et al. 2004) |
| *Ppe* | net property plant and equipment | is property, plant, and equipment |
| *Mva* | market value | is the market value of assets scaled by total assets |
| *S&A* | selling, general and administrative expenses | is selling, general and administrative expenses scaled by sales |

| | | |
|---|---|---|
| *Opa* | Operating profit to assets | is operating profit scaled by lagged total assets |
| *Lnsales* | logarithm of sales | is the natural logarithm of sales |

## 4.The results of the research hypothesis

The first hypothesis test

Corporate governance has a significant and negative impact on executive cash compensation.

$H_0$: Corporate Governance does not have a significant and negative impact on executive cash compensation.

$H_0$: $\beta i = 0$

$H_1$: Corporate Governance has a significant and negative impact on executive cash compensation.



$H_1$: $\beta i \neq 0$

Whether it is possible to determine whether the use of a panel data approach would effectively estimate the Fixed Effects Tests determine the model and the Hausman test is used to detect fixed or random effects.

According to the Fixed Effects test results and P-value (0.0000), the $H_0$ hypothesis test at the confidence level is 95% rejected, and the panel Data approach can be used. Also, according to the Hausman results from est and P-value (0.0003) is less than (0.0 so the $H_0$ hypothesis test at the level of confidence 95% was rejected, and the $H_1$ hypothesis was accepted. Therefore, the fixed effects approach was used. The results of these tests are presented in Table 2 and Table 3.

**Table 2.** Redundant Fixed Effects Tests of Model 1

| Effects Test | Statistic | df. | Prob. |
|---|---|---|---|
| Cross-section F | 4.311774 | (160,461) | 0.0000 |

**Table 3.** Correlated Random Effects - Hausman Test of Model 1

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 51.049435 | 21 | 0.0003 |

The amount of P-value related to the statistics Prob (F-statistic) that expresses the regression's meaningfulness is equal to 0.000 and indicates that the confidence model level is 99% meaningful. Also, the Durbin-Watson Test of 1.5 to 2. 5 is appropriate. The Surface significant variable (Corporate Governance), which is equal to (0. 0132), is less than 0. 05; therefore, the first research hypothesis is confirmed. And it can be said: Corporate Governance has a significant and negative impact on executive cash compensation. The results of these tests are presented in Table 4.

Executive cash compensation has a significant negative effect on interest smoothing.

$H_0$: Executive cash compensation does not have a significant negative effect on interest smoothing compensation.

$H_0$: $\beta i = 0$

$H_1$: Executive cash compensation has a significant negative effect on interest smoothing.

$H_1$: $\beta i \neq 0$

According to the Fixed Effects test results and P-value (0.000), the $H_0$ hypothesis test at the confidence level was 95% rejected, and the Panel Data approach can be used. According to the Hausman test results, P-value (0.9956) was more than (0.05), so the $H_0$ hypothesis test at the level of confidence 95% was accepted, and the $H_1$ hypothesis was

rejected. Given that no significant regression model has random effects, it is a meaningful model using a fixed-effects approach. The results of these tests are presented in Table 5 and Table 6.

**Table 4.** Model 1,Dependent Variable: INCOMP,Method: Panel EGLS (Cross-section weights)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| CG | -0.001674 | 0.000673 | -2.487942 | 0.0132 |
| BR | 0.021813 | 0.009988 | 2.183937 | 0.0295 |
| CHANGE_OI | -1.37E-09 | 7.14E-10 | -1.919638 | 0.0555 |
| NEGOI | -0.024892 | 0.006893 | -3.611159 | 0.0003 |
| CF | 2.29E-11 | 1.03E-09 | 0.022208 | 0.9823 |
| _11NEGCF | 0.022330 | 0.007922 | 2.818694 | 0.0050 |
| CF_1 | 5.80E-12 | 9.06E-10 | 0.006395 | 0.9949 |
| CHANGE_CF | -0.015459 | 0.007185 | -2.151641 | 0.0319 |
| LNMV | -0.000691 | 0.003964 | -0.174247 | 0.8617 |
| DEBT | -0.022485 | 0.019577 | -1.148562 | 0.2513 |
| GROWTH | -0.000169 | 4.64E-05 | -3.641614 | 0.0003 |
| EPS | 7.13E-06 | 1.00E-05 | 0.711081 | 0.4774 |
| EPS_1 | -5.52E-06 | 8.82E-06 | -0.626151 | 0.5315 |
| EPS_2 | 2.29E-05 | 8.62E-06 | 2.655671 | 0.0082 |
| R3 | -0.004596 | 0.004862 | -0.945269 | 0.3450 |
| LOSS | 0.084626 | 0.037193 | 2.275326 | 0.0233 |
| PPE | 2.30E-10 | 6.76E-10 | 0.339729 | 0.7342 |
| MVA | 0.011869 | 0.006218 | 1.908754 | 0.0569 |
| SALE_ADMIN | -1.76E-09 | 2.45E-09 | -0.717839 | 0.4732 |
| OPA | 0.000512 | 0.001121 | 0.456822 | 0.6480 |
| INSALES | -0.021729 | 0.011073 | -1.962322 | 0.0503 |
| C | 3.845857 | 0.197402 | 19.48237 | 0.0000 |
| AR(1) | 0.383638 | 0.031768 | 12.07627 | 0.0000 |
| | Effects Specification | | | |
| Cross-section fixed (dummy variables) | | | | |
| | Weighted Statistics | | | |
| R-squared | 0.999404 | Mean dependent | | 14.98465 |
| Adjusted R-squared | 0.999168 | S.D. dependent | | 25.74074 |
| S.E. of regression | 0.795129 | Sum squared resid | | 291.4581 |
| F-statistic | 4244.152 | Durbin-Watson | | 2.189913 |
| Prob(F-statistic) | 0.000000 | | | |
| | Unweighted Statistics | | | |
| R-squared | 0.934678 | Mean dependent | | 3.487191 |
| Sum squared resid | 538.0347 | Durbin-Watson | | 2.352934 |
| Inverted AR Roots | .38 | | | |

The second hypothesis test

**Table 5.** Redundant Fixed Effects Tests of Model 2

| Effects Test | Statistic | d.f. | Prob. |
|---|---|---|---|
| Cross-section F | 2.271951 | (160,623) | 0.0000 |

**Table 6.** Correlated Random Effects - Hausman Test ofModel 2

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 7.887064 | 21 | 0.9956 |

The amount of P-value related to the statistics Prob (F-statistic) that expresses the regression's meaningfulness is equal to 0.000. It indicates that the model is meaningful at the confidence level of 99%. Also, the Durbin-Watson Test of 1.5 to 2. 5 is appropriate. The Surface significant variable (Executive cash compensation), equal to (0. 3973), is

more than 0. 05, it can be said: Executive cash compensation does not have a significant negative effect on interest smoothing. The results of these tests are presented in Table 7.

**Table 7.**Model 2,Dependent Variable: INSM,Method: Panel EGLS (Cross-section weights)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| INCOMP | -0.002942 | 0.003474 | -0.847045 | 0.3973 |
| BR | 0.015938 | 0.008687 | 1.834744 | 0.0670 |
| CHANGE_OI | 2.41E-09 | 2.42E-09 | 0.995134 | 0.3201 |
| NEGOI | -0.000716 | 0.007602 | -0.094241 | 0.9249 |
| CF | -3.02E-09 | 1.94E-09 | -1.557057 | 0.1200 |
| _11NEGCF | 0.002774 | 0.007579 | 0.366004 | 0.7145 |
| CF_1 | 8.48E-10 | 1.55E-09 | 0.545669 | 0.5855 |
| CHANGE_CF | -0.018592 | 0.007606 | -2.444384 | 0.0148 |
| LNMV | 0.000848 | 0.003473 | 0.244023 | 0.8073 |
| DEBT | 0.007774 | 0.010206 | 0.761677 | 0.4465 |
| GROWTH | 5.89E-05 | 7.73E-06 | 7.618950 | 0.0000 |
| EPS | -1.83E-05 | 4.62E-06 | -3.963419 | 0.0001 |
| EPS_1 | -1.38E-05 | 4.74E-06 | -2.910708 | 0.0037 |
| EPS_2 | -1.14E-06 | 4.00E-06 | -0.284985 | 0.7758 |
| R3 | -0.003479 | 0.004266 | -0.815544 | 0.4151 |
| LOSS | 0.026657 | 0.016229 | 1.642550 | 0.1010 |
| PPE | -1.32E-09 | 1.32E-09 | -0.997695 | 0.3188 |
| MVA | -0.010506 | 0.005306 | -1.980079 | 0.0481 |
| SALE_ADMIN | 4.07E-09 | 9.32E-09 | 0.436946 | 0.6623 |
| OPA | -0.004041 | 0.002407 | -1.678811 | 0.0937 |
| INSALES | 0.006038 | 0.004079 | 1.480176 | 0.1393 |
| C | 0.069238 | 0.087081 | 0.795097 | 0.4269 |
| | Effects Specification | | | |
| Cross-section fixed (dummy variables) | | | | |
| | Weighted Statistics | | | |
| R-squared | 0.438638 | Mean dependent | | 0.036259 |
| Adjusted R-squared | 0.275546 | S.D. dependent | | 0.260447 |
| S.E. of regression | 0.217636 | Sum squared | | 29.50869 |
| F-statistic | 2.689506 | Durbin-Watson | | 2.428694 |
| Prob(F-statistic) | 0.000000 | | | |
| | Unweighted Statistics | | | |
| R-squared | 0.256831 | Mean dependent | | -0.000545 |
| Sum squared resid | 31.23832 | Durbin-Watson | | 2.234796 |

The third hypothesis test

Executive cash compensation has a positive and significant effect on Discretionary accruals.

$H_0$: Executive cash compensation does not have a positive and significant effect on Discretionary accruals.

$H_0$: $\beta i = 0$

$H_1$: Executive cash compensation has a positive and significant effect on Discretionary accruals.

$H_1$: $\beta i \neq 0$

According to the Fixed Effects test results and P-value (0.0000), the $H_0$ hypothesis test at the confidence level was 95% rejected and expressed that the Panel Data approach can be used. According to the Hausman test results and P-value (0.4775), which is more than (0.05), the $H_0$ hypothesis test at the level of confidence 95% was accepted, and the $H_1$ hypothesis was rejected. Given that no significant regression model has random effects, it is a meaningful model using a fixed-effects approach. The results of these tests are

presented in Table 8 and Table 9.

**Table 8.** Redundant Fixed Effects Tests of Model 3

| Effects Test | Statistic | d.f. | Prob. |
|---|---|---|---|
| Cross-section F | 2.665804 | (160,623) | 0.0000 |

**Table 9.**Correlated Random Effects - Hausman Test of Model 3

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 20.697600 | 21 | 0.4775 |

The amount of P-value related to the statistics Prob (F-statistic) that expresses the regression's meaningfulness is equal to 0.000000 and indicates that the confidence model level is 99% meaningful. Also, the Durbin-Watson Test of 1.5 to 2. 5 is appropriate. Due to the Surface significant variable (Executive cash compensation), which is equal to (0. 0005) that less than 0. 05; But the T- statistics and Executive cash compensation has been negative. It can be said: Executive cash compensation does not have a positive and significant effect on Discretionary accruals. The results of these tests are presented in Table 10.

**Table 10.**Model 3,Dependent Variable: DAC,Method: Panel EGLS (Cross-section weights)

Model 3

| Dependent Variable: DAC | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| INCOMP | -0.016083 | 0.004606 | -3.491489 | 0.0005 |
| BR | 0.016047 | 0.010097 | 1.589219 | 0.1125 |
| CHANGE_OI | -6.00E-09 | 4.38E-09 | -1.368789 | 0.1716 |
| NEGOI | 0.002717 | 0.008618 | 0.315318 | 0.7526 |
| CF | -3.58E-09 | 4.38E-09 | -0.817523 | 0.4139 |
| _11NEGCF | 0.011832 | 0.008828 | 1.340333 | 0.1806 |
| CF_1 | 3.55E-09 | 3.12E-09 | 1.139067 | 0.2551 |
| CHANGE_CF | -0.012497 | 0.008815 | -1.417614 | 0.1568 |
| LNMV | -0.000721 | 0.004353 | -0.165732 | 0.8684 |
| DEBT | -0.020044 | 0.023749 | -0.843999 | 0.3990 |
| GROWTH | -1.02E-05 | 1.20E-05 | -0.849923 | 0.3957 |
| EPS | 2.90E-06 | 6.25E-06 | 0.463912 | 0.6429 |
| EPS_1 | 1.06E-05 | 7.01E-06 | 1.515790 | 0.1301 |
| EPS_2 | -3.05E-06 | 6.86E-06 | -0.444159 | 0.6571 |
| R3 | -0.006828 | 0.005791 | -1.179018 | 0.2388 |
| LOSS | 0.111664 | 0.025873 | 4.315816 | 0.0000 |
| PPE | 8.03E-10 | 1.81E-09 | 0.444586 | 0.6568 |
| MVA | -0.004573 | 0.006571 | -0.695861 | 0.4868 |
| SALE_ADMIN | -6.66E-09 | 1.41E-08 | -0.472272 | 0.6369 |
| OPA | -0.018592 | 0.002552 | -7.285017 | 0.0000 |
| INSALES | 0.004542 | 0.008806 | 0.515829 | 0.6062 |
| C | 0.052471 | 0.119304 | 0.439812 | 0.6602 |
| | Effects Specification | | | |
| Cross-section fixed (dummy variables) | | | | |
| | Weighted Statistics | | | |
| R-squared | 0.466123 | Mean dependent var | | 0.012201 |
| Adjusted R-squared | 0.311016 | S.D. dependent var | | 0.811626 |
| S.E. of regression | 0.672099 | Sum squared resid | | 281.4195 |
| F-statistic | 3.005169 | Durbin-Watson stat | | 2.310293 |
| Prob(F-statistic) | 0.000000 | | | |
| | Unweighted Statistics | | | |
| R-squared | 0.207147 | Mean dependent var | | -0.000564 |
| Sum squared resid | 344.2552 | Durbin-Watson stat | | 2.779688 |

The fourth hypothesis test

Executive cash compensation has a significant effect on Firm value Decrease.

$H_0$: Executive cash compensation does not have a significant effect on Firm value Decrease.

$H_0$: $\beta i = 0$

$H_1$: Executive cash compensation has a significant effect on Firm value Decrease.

$H_1$: $\beta i \neq 0$

According to the Fixed Effects test and P-value (0.0000), the $H_0$ hypothesis test at the confidence level was 95% rejected, and the Panel Data approach can be used. According to the Hausman test results and P-value (0.6586), which is more than (0.05), the $H_0$ hypothesis test at the level of confidence 95% was accepted, and the $H_1$ hypothesis was rejected. Given that no significant regression model has random effects, it is a meaningful model using a fixed-effects approach. The results of these tests are presented in Table 11 and Table 12.



**Table 11.**Redundant Fixed Effects Tests of Model 4

| Effects Test | Statistic | d.f. | Prob. |
|---|---|---|---|
| Cross-section F | 2.016134 | (160,623) | 0.0000 |

**Table 12.**Correlated Random Effects - Hausman Test of model 4

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 17.847476 | 21 | 0.6586 |

The amount of P-value related to the statistics Prob (F-statistic) that expresses the regression's meaningfulness is equal to 0.0000. It indicates that the model is meaningful at the confidence level of 99%. Also, the Durbin-Watson Test of 1.5 to 2. 5 is appropriate. The Surface significant variable (Executive cash compensation), equal to (0. 0217), is less than 0. 05. And it can be said: Executive cash compensation has a significant effect on Firm value Decrease. The results of these tests are presented in Table 13.

## 4.Conclusion

The results of the research hypothesis test at the Companies of sample research are as follow:

- Corporate governance has a significant and negative impact on executive cash compensation.

As observed, the amount of P-value related to the statistics Prob (F-statistic) expresses the meaningfulness of the regression, which is equal to 0.000, and indicates that the model is meaningful at the confidence level of 99%. Also, the Durbin-Watson Test of 1.5 to 2. 5 is appropriate. The Surface significant variable (Corporate Governance), which is equal to (0. 0132), is less than 0. 05; therefore, the first research hypothesis is confirmed. And it can be said: Corporate Governance has a significant and negative impact on executive cash compensation.

Executive cash compensation has a significant negative effect on interest smoothing.

As observed, the amount of P-value related to the statistics Prob (F-statistic) that expresses the meaningfulness of the regression is equal to 0.000. It indicates that the model is meaningful at the confidence level of 99%. Also, the Durbin-Watson Test of 1.5 to 2. 5 is appropriate. The Surface significant variable (Executive cash compensation), equal to (0. 3973), is more than 0. 05; therefore, it can be said: Executive cash compensation does not have a significant negative effect on interest smoothing.

**Table 13.** Model 4, Dependent Variable: R_RP,Method: Panel EGLS (Cross-section weights)

| | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| INCOMP | -0.071529 | 0.031073 | -2.301945 | 0.0217 |
| BR | 0.092685 | 0.087634 | 1.057629 | 0.2906 |
| CHANGE_OI | -1.72E-09 | 1.95E-08 | -0.088113 | 0.9298 |
| NEGOI | -0.020082 | 0.077708 | -0.258433 | 0.7962 |
| CF | -2.80E-09 | 2.05E-08 | -0.136385 | 0.8916 |
| _11NEGCF | 0.167098 | 0.078987 | 2.115508 | 0.0348 |
| CF_1 | 3.21E-08 | 1.79E-08 | 1.795343 | 0.0731 |
| CHANGE_CF | -0.167353 | 0.078260 | -2.138406 | 0.0329 |
| LNMV | 0.000223 | 0.024380 | 0.009152 | 0.9927 |
| DEBT | -0.044911 | 0.074650 | -0.601624 | 0.5476 |
| GROWTH | -8.19E-05 | 0.000159 | -0.516423 | 0.6057 |
| EPS | -4.06E-05 | 6.99E-05 | -0.580832 | 0.5616 |
| EPS_1 | 4.40E-05 | 7.80E-05 | 0.564314 | 0.5727 |
| EPS_2 | 0.000146 | 7.08E-05 | 2.055752 | 0.0402 |
| R3 | -0.027428 | 0.035466 | -0.773361 | 0.4396 |
| LOSS | -0.515306 | 0.152240 | -3.384828 | 0.0008 |
| PPE | 1.09E-08 | 9.01E-09 | 1.214823 | 0.2249 |
| MVA | 0.158184 | 0.033665 | 4.698774 | 0.0000 |
| SALE_ADMIN | -1.80E-07 | 6.03E-08 | -2.977875 | 0.0030 |
| OPA | -0.053251 | 0.011920 | -4.467269 | 0.0000 |
| INSALES | -0.075349 | 0.066673 | -1.130114 | 0.2589 |
| C | 2.573006 | 0.991385 | 2.595364 | 0.0097 |
| | Effects Specification | | | |
| Cross-section fixed (dummy variables) | | | | |
| | Weighted Statistics | | | |
| R-squared | 0.398111 | Mean dependent var | | 4.692130 |
| Adjusted R-squared | 0.223245 | S.D. dependent var | | 3.331475 |
| S.E. of regression | 1.406899 | Sum squared resid | | 1233.144 |
| F-statistic | 2.276658 | Durbin-Watson stat | | 2.056456 |
| Prob(F-statistic) | 0.000000 | | | |
| | Unweighted Statistics | | | |
| R-squared | 0.236269 | Mean dependent var | | 3.367993 |
| Sum squared resid | 1264.057 | Durbin-Watson stat | | 2.077284 |

- Executive cash compensation has a positive and significant effect on Discretionary accruals.

As observed, the amount of P-value related to the statistics Prob (F-statistic) that expresses the meaningfulness of the regression is equal to 0.000. It indicates that the model is meaningful at the confidence level of 99%. Also, the Durbin-Watson Test of 1.5 to 2. 5 is appropriate. Due to the Surface significant variable (Executive cash compensation), which is equal to (0. 0005), that is less than 0. 05; But the T- statistics and Executive cash compensation has been negative. And it can be said: executive cash compensation does not have a positive and significant effect on Discretionary accruals.

- Executive cash compensation has a significant effect on Firm value Decrease.

As observed, the amount of P-value related to the statistics Prob (F-statistic) expresses the meaningfulness of the regression, which is equal to 0.000, and indicates that the model is meaningful at the confidence level of 99%. Also, the Durbin-Watson Test of 1.5 to 2. 5 is appropriate. The Surface significant variable (executive cash compensation), equal to (0. 0217), is less than 0. 05. And it can be said: Executive cash compensation has a

significant effect on Firm value Decrease.

The results of the first and fourth hypotheses of this study are consistent with the study of Iatridis (2018) but do not match with Lazzem and Faouzi (2017), Gombola et al. (2016), Kim and Shin (2013), Kannan et al. (2014).

**Suggestions**

**Suggestions Based on Research Results**

1) Therefore, investors and others are advised to pay more attention to Corporate governance in General Assembly Report and reporting on Board activities. Due to economic sanctions, more attention should be paid to the employees' currency reward and members of the board of directors.

2) Analysts and researchers can re-test interest management through real items. The Stock Exchange also knows that the issue of Executive cash compensation in environmental conditions in financial reports in the coming years is required.

3) The Stock Exchange investors and other stakeholders should pay more attention to the institute's value criteria.

**Further to the Study**

1) Researching this issue in the field of institutions accepted in OTC.

2) Review of research by considering the variables like political communication and the institute's life cycle.

3) Review of the research by considering the variables like inflation Uncertainty, exchange rate fluctuations.

4) Review the research on the classification to keep cash from the institutes (The national unit, foreign countries) on domestic and foreign banks.

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Research Article

# The Impact of CEOs' Ethnic Characteristics on Audit Report Lags and Audit Fees in Iran

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## Abstract

Timeliness in financial reporting is so crucial that it is mentioned in the conceptual accounting framework as qualitative characteristics of accounting information. This research tries to consider a new attitude in accounting research in audit report lag and audit fees.

The study used the data from listed companies on the Tehran Stock exchange during 2009 -2015.

The findings show a significant relationship between audit report lag and variables including type of audit firm, number of Basis for Modification Paragraphs, audit opinion, and ROA. Also, there is a significant relationship between audit fees and variables, including audit firm change during the fiscal year, type of audit firm, number of the basis for modification paragraphs, CEO's educational degree, and company size.

The current study results may give more information about the fluctuation of audit fees in developing nations.

**Keywords:** CEO's ethnicity, audit report lag, audit fees.

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## 1. Introduction

Audit report lag as an indicator of financial reporting timeliness (Ettredge, Scholz, & Li, 2007; Masli, Peters, Richardson, & Sanchez, 2010) and also audit fee as an indicator of audit efficiency (Masli et al., 2010; Raghunandan & Rama, 2006) have been used in many studies. Therefore, determining these two variables and factors affecting them are so important in both auditors' and clients' perspectives. On the other hand, users of financial statements are seeking accounting information on a timely basis (FASB, 2008), and by reducing audit report lag, they can have a more relevant information.

Many studies investigate different factors having a relationship with audit report lag and audit fees. Still, most of these factors are related to companies like company size, total liabilities, company product, and industry (Corbella, Florio, Gotti, & Mastrolia, 2015; Pourali, Jozi, Rostami, Taherpour, & Niazi, 2013). Or are related to auditors like audit firm size and expertise, audit firm changes and type of audit firm (Lowensohn, Johnson, Elder, & Davies, 2007; LUO, 2012) or are related to corporate governance like audit committee size and expertise, new rules and regulations and having internal audit (Apadore & Noor, 2013; Griffin, Lont, & Sun, 2008). A few studies investigate the impact of auditors', CEOs' and users' Psychological characteristics or ethnicities on audit report lag and audit fees.

The inheritance has a significant role in making a person's characteristics (Akrami, Bastani, Modarresi, Reyhani, & Karimi Rad, 2012; Balaban, Benjamin, Ebstein, & Belmaker, 2002). So people might inherit their ethnic personality. Some Iranian ethnics are famous for their generosity, bravery, pride, and other moral and behavioral characteristics. Therefore, ethnicity might broadcast some people's characteristics.

As CEOs' race, gender, and being Black or white impact their risk aversion, precision, monitoring, and decisions (Harjoto, Laksmana, & Lee, 2015), the CEOs' ethnicity also has the potential to affect the factors mentioned above. Some studies show that racial minority CEOs for acquiring and maintaining their position need higher educations than others (Hillman, Cannella, & Harris, 2002). Furthermore, they are more precise and do the work more cautiously because of fear of blame (Park & Westphal, 2013). On the other hand, ethnic minorities are more concerned about their jobs and try harder to succeed and keep their positions (E. S. Ng & Sears, 2010). Therefore, these factors can affect financial reporting timeliness and audit report lag.

CEOs have the power to influence the board decisions (Scott, 2012) so that their personality traits like stinginess, generousness, precision, and risk aversion can affect board decisions about audit fees. On the other hand, in some studies, audit fees are considered as a proxy of audit quality (Abbott, Parker, Peters, & Raghunandan, 2003; Carcello, Hermanson, Neal, & Riley, 2002; Moazam Khan & ul Haq, 2015) and CEOs are motivated to more audit quality according to some regulations like Section 302 and 404 of the Sarbanes-Oxley Act (Harjoto et al., 2015). So low audit quality and poor financial reporting cause managers to receive penalties (Desai, Hogan, & Wilkins, 2006). CEOs, to avoid these penalties, might offer higher audit fees.

Since no study has investigated ethnicity's impact on audit report lag and audit fees in Iran, and our findings can create new knowledge, this study's necessity becomes clear. Furthermore, the results might help auditors form their audit teams to reduce the audit report lag.

The remainder of this paper is organized as follows. The section "literature review" presents some information about Iranian ethnics, the study's background, and developing hypotheses. The section "research methodology" reports the experimental methods used to test the research hypotheses. The results of the study are presented in the next section. The last section discusses the conclusion and limitations of the study.

## 2. Theoretical issues, related literature, and hypotheses development

Iran is a country with different ethnics that most of them are Persians, Azeris, Kurds, Lurs, Turkmens, Talishis, Mazanis, Gilaks, Arabs, and Baluchs (Diba Vajari, Shafia Abadi, Esmaeeli, & Karami, 2012; Nassaj, 2009; Pishgahi Fard & Omidi Avaj, 2009). Among these different ethnics, Persians with 61%, Azeris with 16%, Kurds with 6%, Arabs with 2%, Baluchs with 2%, Turkmens with 2%, Talishis with 2%, and others with 1% are the total population of Iran (CIA-WorldFactbook, 2012). Persians with the most population live in the central region, Azeris live in the northwestern, Kurds live in the western, Lurs live in western and southwestern, Baluchs live in the eastern and southeastern Arabs live in the southern area of Iran country (Nassaj, 2009). In the population aspect of different ethnicities in Iran, Persians, Azeris, Kurds, Lurs, Arabs, and Baluchs are the most important Iranian ethnics (Azad Armaki & Momtaz Jahromi, 2014; Omidi & Rezaei, 2010).

Ethnicity is a group of people that belong to the social group with a shared or common national, cultural, traditional, linguistic, or religious features (Burgess, 1986; Fearon, 2003). In other words, ethnics have a culture that makes their norms, values, and lifestyles and causes them to consider themselves a unique group and better than others (Yousofi & Asgharpoor Masole, 2010). So, ethnicity has the potential to form individuals' behavior (Zareh Shahabadi & Amini, 2010) but also can influence on life-experiences of each individual (Huang, Fowler, & Baskerville, 2016).

Ethnics have a unique culture, customs, and traditions that they are identified with them. As Hofstede (1983, 1984) showed, in different nations, there are different cultural values, and also, as Gray (1988) mentioned, different cultural values can impact accounting practices and information. However, there are some critiques to Hofstede's research, such as equating a nation with culture (Baskerville-Morley, 2005; Rachel F Baskerville, 2003). However, it is necessary to consider the culture and cultural values for standards-setting (Young, 2013). On the other hand, some researchers try to explore the relationship between ethnicity and accounting practices and education (Rachel F. Baskerville, Jacobs, Lautour, & Sissons, 2016).

Different first languages can indicate ethnicity (Rachel F Baskerville, Wynn-Williams, Evans, & Gillett, 2014). Iranian ethnics have a different first language and have special characteristics that separate them from the other ethnics. Some of them are famous for bravery, some of them for generosity, and the other positive or negative features. Furthermore, some behaviors cause ethnics to diverge from united Iran. For instance, Arab girls do not marry non-Arab boys, or Kurd people tend to Autonomy and have the same feelings as Kurds in other regions or countries. Extreme contrasts between Persian and Turkish languages are recognized as the other cultural and ethnic issues (Ahmadi & Jaafari, 2015). Another issue that ethnicity might impact on it is violence against women or so-called patriarchy. Zareh Shahabadi & Amini (2010) showed that violence against women among Azeri people is more than Persian or Kurd people. Taleb & Goudarzi (2004) also found that the number of Opponents of women's work among Baluch people is twice of non-Baluch people. Arab people, more than the other ethnics, believe the gender advantage, and they consider masculinity as a value instead of the feminine (Azad Armaki & Momtaz Jahromi, 2014). These cases show that sending a women team for corporate auditing that its CEO is a man can cause difficulties and issues that make the audit process longer than usual. The inverse here might be true, and sending a men team for auditing the corporate that its CEO is a woman may bring some difficulties.

Individuals feel more psychological intimacy about their ethnics and enjoy being with them (Gholipour & Pourezzat, 2009; Mitchell & Dell, 1992). They trust in others in their religious group (Ames, Seifert, & Rich, 2015). Additionally, ethnic identities are prominent among Iranian ethnics, and a sense of belonging to ethnicity and bias toward

it is so strong among them, too (Amirkafi & Hajiani, 2013; Hajiyani, 2009). But this sense is less strong among the Persians than the other ethnicities. The reason mentioned by Taghizadeh et al. (2014) is that Persians are ethnic majorities. Since Persians consider themselves the upper class of society (Azad Armaki & Momtaz Jahromi, 2014) and there is a bias among other ethnics groups, sending an audit team consists of individuals with the same ethnicity as the CEO can accelerate the audit process.

According to the above, the first hypothesis is constructed as follows:

**$H_1$**: Ceteris paribus, the CEO's ethnicity is associated with audit report lag.

Audit report lag, audit delay, financial reporting timeliness (different terms with the same proxies in different studies) are affected by many variables, and some are verified empirically. For instance, company size, the month of yearend, industry classification, type of audit firm, and type of audit opinion are variables that impact audit report lag (Ashton, Graul, & Newton, 1989; Ashton, Willingham, & Elliott, 1987; P. P. Ng & Tai, 1994). Some other studies mentioned capital structure, company's needs for financing, leverage, and profitability (ROA) as variables affecting audit delay (Al-Ajmi, 2008; Leventis & Caramanis, 2005). CEOs' characteristics can also impact financial reporting timeliness and audit report lag (Harjoto et al., 2015). Managerial skills, abilities, and reputation can enhance financial reporting quality (Habib & Hossain, 2013). There is a positive relationship between audit report lag and disclosure quality or financial reporting quality (Molla Imeny & Marfou, 2015). So deductively, managerial attributes can impact audit report lags.

From the psychological perspective, personality disorder symptomatology among Blacks is high; among Hispanics, it is moderate; whites are low, and Caucasians are very low (Selby & Joiner, 2008). In Iran, Jalali, Ghasemi Pir Palooti, and Tayebeh (2015) concluded that Extraversion and Locus of Control (it considers the ability of a person to control themselves and they're effective) are significantly different among Iranian ethnic groups. Furthermore, Kurds people desire freedom and independence more than other Iranian ethnics, but they also expect a lot from life compared to the others. On the other hand, Azeris and Lurs people tend to experience better subjective well-being, and they are more satisfied with their lives (Taghizadeh et al., 2014). Therefore, individual psychological characteristics can potentially impact the audit process, audit scope, the extent of audit procedures, and finally, the audit fee.

Some studies show that ethnic and racial minorities are more risk-averse than ethnic and racial majorities (Finucane, Slovic, Mertz, Flynn, & Satterfield, 2000; Flynn, Slovic, & Mertz, 1994). Additionally, ethnic minorities are more concerned about their job security, their compensations, and their positions (E. S. Ng & Sears, 2010). The existence of risk-averse managers concerned about their reputation and job security causes a careful focus on assurance and audit processes. They are willing to expense more and allocate additional time in order to avoid false reporting (Carcello et al., 2002).

According to the above, the second hypothesis is constructed as follows:

**$H_2$:** Ceteris paribus, CEO's ethnicity, is associated with audit fees.

The determinants of audit fees can be classified into three categories: company (client), audit firm, and engagement attributes (Hay, Knechel, & Wong, 2006). Studies focused on company-level characteristics consider corporate governance, including board and audit committee characteristics (Abbott et al., 2003; Carcello et al., 2002; Goodwin-Stewart & Kent, 2006; Rainsbury, Bradbury, & Cahan, 2009), corporate compensation policies (Wysocki, 2010), internal audit department characteristics (Ho & Hutchinson, 2010), etc. as variables might affect audit fees. On the aspect of the audit firm, we have studies investigating the association between audit fees and variables like audit firm changes, type of audit firm, audit opinion, etc. (Corbella et al., 2015; Griffin & Lont, 2011; Xie, Cai, & Ye, 2010). However, existing research has not given much attention to

factors like top executives, directors, and CEO characteristics that influence the level of audit services, audit quality, and audit fees (Harjoto et al., 2015).

There are many studies in the audit report lag and audit fees context that some recent researches are mentioned as follows:

Hassan (2016) investigated the factors that impact audit report lag for Palestinian listed companies. He considered company size, the number of company's board members, type of audit firm, business complexity, CEO duality, audit committee's existence, percentage of ordinary shares held by individual investors, and ownership concentration as main variables might have a relation with audit report lag. His findings showed a significant relationship between audit report lag and variables, including company size, number of company's board members, type of audit firm, business complexity, an audit committee's existence, and ownership concentration.

Bryan and Mason (2016) studied the effect of extreme CEO pay cuts on audit fees. They believe that extreme CEO pay cuts in companies may be a sign of risk growth. Because severe and sudden decreases in total CEO compensation provide an incentive for the CEO to manipulate the financial statements and reports, so, with this logic, they concluded that CEO pay cuts cause audit fees to be increased.

Beri (2015) has investigated the audit report lag variable for Nigerian listed companies. After an investigation of 266 firm-years data, he concluded that audit report lag is associated with variables including company size, profitability, and leverage. To maintain their investors' confidence, bigger firms would make their Financial Statements ready for audit earlier than smaller firms. Besides, since these firms also have better internal control, it is relatively easier for their auditors to complete the audit process. However, more leveraged and profitable firms were found to subject to longer audit work.

Harjoto et al. (2015) investigated the impact of CEOs and directors' demographic characteristics on audit fees and audit delay. By using CEOs' ethnic and gender as a proxy of demographic characters and investigating those variables for American listed companies from 2000 to 2010, they found that companies which CEOs' are from ethnic minorities or women have paid more than other companies to the auditors and have had more audit report lag too. In their research, some important variables, including company size, type of audit firm, company liquidity, leverage, ROA ratio, having profit or loss, reporting a restatement, audit firm change, audit opinion, and CEO changes during the fiscal year were investigated either.

Corbella et al. (2015) investigated the impact of firm audit rotation on audit fees and audit quality. By investigating 1,583 firm-year observations from 1998 to 2011 in Italian public companies, they found that there is not any significant relationship between audit payments of companies audited by non-Big 4 and audit firm rotation. However, there is a significant negative relationship between Big 4 audit fees and audit firm rotation. Also, there is a positive relationship between audit firm rotation and audit quality.

Pizzini, Lin, and Ziegenfuss (2014) investigated the impact of internal audit function quality on audit delay. They concluded that internal audit quality causes a reduction in audit delay. Furthermore, they found that by the cooperation of internal and external auditors, it can substantially reduce audit delay.

## 3. research methodology

### 3.1. Data and Sample

Companies listed on the Tehran Stock Exchange from 2009 to 2015 are considered the statistical population of this research. For sample selection, the following constraints imposed on the population:

**The fiscal yearend should be on March 19 or 20:** this date in Iran is the calendar year. Most companies in Iran have fiscal yearend on this date like December 31 for other

countries. We imposed this constraint to make our sample balanced. Since many companies report on a calendar year basis (March 19 or 20 in Iran and December 31 in other countries), the audit firms are busy on this date (Ashton et al., 1989). Therefore, the audit report lag for companies whose year ends is near the calendar year is normally more than the others.

**During the research period, the fiscal year did not change:** changing the fiscal year causes the financial statements not totally to include 12 months of the year. By imposing this constraint, all information belongs to a complete 12 months.

**Companies are not included in banking, leasing, and insurance industries:** these industries are special. They use special accounting methods and provide special financial statements. In order to have a comparable sample, these companies were omitted from the sample.



**Companies have disclosed audit fees in their financial statements:** in Iran, companies are not forced to disclose their audit fees, and actually, there is no resource to collect this information other than financial statements. So, we are compelled to consider those companies disclosing their audit fees in their financial statements.

According to the above constraints, 69 companies were found as a residual sample. So, there are 483 observations for every variable in order to test the research hypotheses.

The required information was totally collected from companies' financial statements, annual reports, minutes of the board of directors, and minutes of annual general meetings of shareholders, which they can be collected from Iran's Comprehensive Database of All Listed Companies (www.codal.ir) and also from Iran's official newspaper (www.rrk.ir).

### 3.2. Model and variables

According to the research background and literature, review, model (1) is considered to investigate the relationship between CEO's ethnicity and audit report lag, and model (2) is considered to investigate the relationship between CEO's ethnicity and audit fees.

$$\begin{aligned} LADELAY_{it} = {} & \beta_0 + \beta_1 CEOETHNIC_{it} + \beta_2 AUDITCHG_{it} + \beta_3 AUDITTYPE_{it} \\ & + \beta_4 NOARP_{it} + \beta_5 AUDITOPIN_{it} + \beta_6 CEOCHG_{it} \\ & + \beta_7 CEOEDU_{it} + \beta_8 SIZE_{it} + \beta_9 LIQ_{it} + \beta_{10} ROA_{it} \\ & + \beta_{11} DEBT_{it} + \beta_{12} LOSS_{it} + \beta_{13} PPA_{it} + \beta_{14} INDUST_{it} \end{aligned} \quad (1)$$

$$\begin{aligned} LAFEE_{it} = {} & \beta_0 + \beta_1 CEOETHNIC_{it} + \beta_2 AUDITCHG_{it} + \beta_3 AUDITTYPE_{it} \\ & + \beta_4 NOARP_{it} + \beta_5 AUDITOPIN_{it} + \beta_6 CEOCHG_{it} \\ & + \beta_7 CEOEDU_{it} + \beta_8 SIZE_{it} + \beta_9 LIQ_{it} + \beta_{10} ROA_{it} \\ & + \beta_{11} DEBT_{it} + \beta_{12} LOSS_{it} + \beta_{13} PPA_{it} + \beta_{14} INDUST_{it} \\ & + \beta_{15} LADELAY_{it} \end{aligned} \quad (2)$$

#### 3.2.1. Dependent Variables

*Audit report lag (LADELAY)*: this variable in many types of research is defined by the days between fiscal yearend and audit report date (Ashton et al., 1989; Carslaw & Kaplan, 1991; P. P. Ng & Tai, 1994) and in some researches, natural log of this period is used (Ettredge et al., 2007; Harjoto et al., 2015). Since in Iran, financial statements are ready to use after uploading by the company in Iran's Comprehensive Database of All Listed Companies (www.codal.ir), we defined the audit report lag as the natural log of days

between the Fiscal yearend and the issuance date of financial statements in CODAL website.

*Audit fees (LAFEE)*: this variable, as many other types of research, is defined by the natural log of fees paid to the auditor for auditing services (Duellman, Hurwitz, & Sun, 2015; Harjoto et al., 2015).

### 3.2.2. Independent Variable

*CEO's ethnicity (CEOETHNIC)*: to measure this variable, we used CEOs' national code. This code is specific for every person in Iran, and it is embedded in every Iranian national identity card. The first three numbers of this code indicate the region of birth for every person. Thus, it is extracted from the CEO's national code from Iran's Comprehensive Database of All Listed Companies or Iran's official newspaper for every company. After that, it is identified CEOs' region of birth according to the first three numbers of their national code. By examining the CEOs' region of birth from the map of ethnicity and religion in Iran (CIA-WorldFactbook, 2012), we determined the CEO's ethnicity for every company. Finally, we categorized the CEO's ethnicity for 3 populated ethnicities and 1 category for other ethnicities. So, this variable equals 1 as CEO has belonged to the Persian ethnic group, equals 2 as CEO has belonged to the Azeris ethnic group, equals 3 as the CEO is belonged to the Kurds ethnic group, and equals 4 for other ethnicities. Since ethnicity can influence the level of risk tolerance, overconfidence, diligence, and monitoring intensity of managers, it is expected to have a relationship with audit report lag and audit fees (Harjoto et al., 2015). As mentioned in the literature review, the ethnic bias in Iran is so strong (Amirkafi & Hajiani, 2013; Hajiyani, 2009), and it may cause audit problems and audit delay. On the other hand, ethnic minority CEOs are more likely to avoid audit delay because of financial reporting timeliness (Harjoto et al., 2015). Therefore, there is no expected sign of the relation between these two variables. Furthermore, As Harjoto et al. (2015) concluded, we expect ethnic minority CEOs are associated with higher audit fees.



### 3.2.3. Control Variables

*Audit firm changed (AUDITCHG)*: this is a dummy variable, and it gives 1 if the audit firm has been changed; otherwise, it gives 0. According to IAS 510, auditors in their initial audit engagement "shall obtain sufficient appropriate audit evidence about whether the opening balances contain misstatements that materially affect the current period's financial statements". So, auditors bear more risk in their initial audit engagement and must do more scrutiny and activities. We expect a positive sign in audit firm changes with audit report lag and audit fees.

*Type of audit firm (AUDITTYPE)*: big 4 audit firms do not work in Iran because of some political and social issues. Furthermore, the audit firms are not big enough to make a special category for big firms and non-big firms. A governmental institution called "Audit Organization" is budgeted by Iran's Ministry of Economic Affairs and Finance. The Audit Organization audits some Tehran stock exchange listed companies and are bigger in size, revenues, staff, and auditing managers than the others. Therefore, we defined a dummy variable that gives 1 if the audit firm is Audit Organization and 0 otherwise.

*Number of Basis for Modification Paragraphs (NOBMP)*: as PCAOB (2015) mentioned, the number of material or immaterial errors in financial reporting from fraud or other financial reporting misconduct was discovered by the audit firm can be a positive indicator of audit quality. So, we expect more basis for modification paragraphs showing more audit effort and consequently, more audit fees and more audit report lag.

*Type of audit opinion (AUDITOPIN)*: this is a dummy variable equals 1 if the audit opinion is other than unqualified and otherwise 0. During the audit process, problems occurred to increase the audit risk and, consequently, the audit work quantity and the audit cost (Simunic, 1980). The most common proxy to measure audit problems in many research types is a dummy variable indicating an audit opinion's issuance other than unqualified (Hay et al., 2006). So, if the audit opinion is other than unqualified, more audit delay and higher audit fees are expected.

*CEO changes during the fiscal year (CEOCHG)*: this is a dummy variable equals 1 if the CEO has been changed during the fiscal year and otherwise 0. As Yan and Wheatley (2010) mentioned, the presence of new CEO associates with audit fee premiums, but it does not mean that there is a greater audit effort.

*CEO's educational degree (CEOEDU)*: this variable gives 1 if the CEO does not have a university or college degree. It gives 2 if the CEO is a bachelor, it gives 3 if the CEO has an MSc degree, and it gives 4 if the CEO has a Ph.D. degree. We expect that CEOs with higher education better understand the necessity of the audit process. Therefore, they cooperate with auditors and cause audit reporting timeliness, and offer higher audit fees.

*Company size (SIZE)*: like many other types of research, its total assets' natural log is used to define the company size variable. Since agency costs are growing along with its growth, higher audit quality and more audit effort are needed (Vinten, Leventis, & Caramanis, 2005). Therefore, it is expected higher audit fees and more audit delay for bigger companies.

*Company liquidity (LIQ)*: this variable is defined by the ratio of current assets to current liabilities (Harjoto et al., 2015; Raghunandan & Rama, 2006). According to the meta-analysis of audit fees, the expected association between audit fees and company liquidity is negative (Hay et al., 2006). Additionally, most Iran audit firms do not publicly release their report before the company pays off its audit fees. So, if the company suffers from liquidity problems, the audit report lag is expected.

*Return on assets (ROA)*: this variable is defined by the net income ratio to total assets. This ratio measures management's overall effectiveness in generating profits with its available assets and indicates a company (Gitman & Zutter, 2012). It is expected that more profitable companies afford to pay more for audit quality and audit fees.

*Amount of the company's debts (DEBT)*: this variable is defined by the natural log of the company's total debts. The more debts a firm has, the greater its risk of being unable to meet its contractual debt payments (Gitman & Zutter, 2012). A company's risks and leverage both can affect audit fees (Hay et al., 2006). Companies with more debts demand a high-quality audit service to satisfy their creditors' needs and remove debt-holders' suspicions about wealth transfer (Vinten et al., 2005). Therefore, a positive relationship between the amount of the company's debts and audit fees and audit report lag is expected.

*Company reports loss (LOSS)*: this is a dummy variable equals 1 if the company reported the loss and otherwise 0. According to the signaling theory, companies having good news are willing to signal their news faster than the others (Godfrey, Hodgson, Tarca, Hamilton, & Holmes, 2010; Scott, 2012; Wolk, Dodd, & Rozycki, 2008). Furthermore, the company's profitability can be an indicator of risk (Simunic, 1980). So, if a company reports loss, its auditor encounters more risk, and consequently, more audit fees are expected (Hay et al., 2006).

*Prior period adjustments (PPA)*: it is calculated by the natural log of prior period adjustments reported by the company. As PCAOB (2006) mentioned: "Either the successor auditor or the predecessor auditor may audit the adjustments made to prior period financial statements so long as the auditor is independent and registered with the PCAOB". Therefore, audit works and responsibilities will be increased when the

company reports prior period adjustments, and more audit delays and higher audit fees are expected.

*Industry (INDUST)*: this variable is defined by 15 industry classification of the sample as follows: rubber products equal 1; industrial machinery equals 2; pulp, paper, and paperboard mills equal 3; transportation equals 4; automobile manufacturing equals 5; pharmaceuticals and medicines equal 6, agriculture, forestry, fishing, and hunting equals 7, cement and concrete products equal 8, chemicals and petrochemical equals 9, food and beverage equal 10, metal products equals 11, sugar and confectionery products equals 12, metallic and nonmetallic minerals equals 13, household appliances equals 14, and textile mills equals 15. Some industries structurally are complex, and it takes more time and effort to audit their financial affairs.



*Audit report lag (LADELAY)*: as mentioned earlier, this variable is defined by the natural log of days between the Fiscal yearend and the financial statements' issuance date on the CODAL website. A positive relationship between audit delay and audit fees is expected, like Chan, Ezzamel, and Gwilliam (1993) concluded.

All information about the variables is summarized in Table 1.

# 4. Empirical results

## 4.1. Descriptive Statistics

Tables 2 and 3 present the results of the descriptive statistics for research observations, respectively. The sample includes 483 observations that the mean and median of AUDITDELAY are approximately 78 and 80 days, respectively, representing an audit report lag of around a quarter in Iran. Also, the mean and median of AUDITFEE are approximately 803 and 524 million IRR, respectively, indicating that the mean of audit fee data is skewed to the right. In this sample, the audit firms have less changed for the next year, and most of the companies have not been audited by Audit Organization. On average, there are 1.273 paragraphs as the basis for modification to the auditor's opinion. CEOs have not been changed a lot during the fiscal year, and most of them have an MSc degree.

Table 3 provides the distribution of research samples across the CEO’s ethnicity and industries. It can be seen from Panel A that most of the CEOs are Persians, and Persians are the ethnic majorities in Iran. On average, Persians have the most audit delay with a LADELAY of 4.305. However, Azeris paid the most audit fees with a LAFEE of 6.418. On panel B of table 3, observations are classified into 15 related industries. Most of the sample observations belong to the automobile manufacturing industry in which 13 companies are included, and the least of them are included in transportation, agriculture, forestry, fishing, and hunting, sugar and confectionery products, and textile industries. The most audit delay was in the household appliances industry (LADELAY=4.655), and the last one was in the pharmaceuticals and medicines industry (LADELAY=3.993). Additionally, most audit fees are paid in the agriculture, forestry, fishing, and hunting industry (LAFEE=6.837), and the least one paid in the textile industry (LAFEE=5.788).

**Table 1.** Variable Definitions

| Variable | Expected Sign for LADELAY | Expected Sign for LAFEE | Definition |
|---|---|---|---|
| Dependent Variables: | | | |
| LADELAY | | + | Natural log of days between Fiscal yearend and the issuance date of financial statements on the CODAL website |
| LAFEE | | | Natural log of fees paid to the auditor for auditing services |
| Independent Variable: | | | |
| CEOETHNIC | ? | + | Equals 1 as CEO is belonged to the Persians ethnic group, equals 2 as CEO belongs to the Azeris ethnic group, equals 3 as CEO is belonged to the Kurds ethnic group, and equals 4 for other ethnicities |
| Control Variables: | | | |
| AUDITCHG | + | + | The dummy variable equals 1 if the audit firm has been changed and 0 otherwise |
| AUDITTYPE | ? | ? | The dummy variable equals 1 if the audit firm is Audit Organization and 0 otherwise |
| NOBMP | + | + | Number of Basis for Modification paragraphs |
| AUDITOPIN | + | + | Dummy variable equals 1 if the audit opinion is other than unqualified and otherwise 0 |
| CEOCHG | ? | + | Dummy variable equals 1 if the CEO has been changed during the fiscal year and otherwise, 0 |
| CEOEDU | - | + | Equals 1 if CEO does not have a degree from any university or college, it equals 2 if CEO is a bachelor, it equals 3 if CEO has an MSc degree, and it equals 4 if CEO has a Ph.D. degree |
| SIZE | + | + | Natural log of the company's total assets |
| LIQ | - | - | The ratio of current assets to current liabilities |
| ROA | ? | + | The ratio of net income to total assets |
| DEBT | + | + | Natural log of the company's total debts |
| LOSS | + | + | Dummy variable equals 1 if the company reported the loss and otherwise, 0 |
| PPA | + | + | Natural log of prior period adjustments reported by the company |
| INDUST | ? | ? | Rubber products equal 1; industrial machinery equals 2; pulp, paper, and paperboard mills equal 3; transportation equals 4. Automobile manufacturing equals 5, pharmaceuticals and medicines equal 6, agriculture, forestry, fishing, and hunting equals 7, cement and concrete products equals 8, chemicals and petrochemical equals 9, food and beverage equals 10, metal products equal 11, sugar and confectionery products equals 12, metallic and nonmetallic minerals equals 13, household appliances equal 14, and textile mills equal 15 |

**Table 2.** Sample statistics

| Variable | N | Mean | Median | Stdev. | Skewness | Kurtosis | Min | Max |
|---|---|---|---|---|---|---|---|---|
| AUDITDELAY (days) | 483 | 78.180 | 80.000 | 27.728 | -0.084 | 1.637 | 23.000 | 133.000 |
| AUDITFEE (IRR million) | 483 | 802.996 | 524.000 | 989.074 | 4.824 | 36.411 | 19.000 | 1,0967.000 |
| CEOETHNIC | 483 | 1.847 | 1.000 | 1.162 | 0.968 | 2.311 | 1.000 | 4.000 |
| AUDITCHG | 483 | 0.215 | 0.000 | 0.411 | 1.385 | 2.919 | 0.000 | 1.000 |
| AUDITTYPE | 483 | .0.255 | 0.000 | 0.436 | 1.126 | 2.268 | 0.000 | 1.000 |
| NOBMP | 483 | 1.273 | 0.000 | 1.931 | 2.115 | 8.150 | 0.000 | 11.000 |
| AUDITOPIN | 483 | 0.489 | 0.000 | 0.500 | 0.046 | 1.002 | 0.000 | 1.000 |
| CEOCHG | 483 | 0.259 | 0.000 | 0.438 | 1.101 | 2.213 | 0.000 | 1.000 |
| CEOEDU | 483 | 2.671 | 3.000 | 0.715 | 0.441 | 2.250 | 1.000 | 4.000 |
| SIZE (IRR million) | 483 | 1,975,343 | 575,056 | 7,517,436 | 7.533 | 63.425 | 22,725 | 73,705,891 |
| LIQ | 483 | 1.420 | 1.278 | 0.795 | 2.899 | 20.036 | 0.223 | 8.670 |
| ROA | 483 | 0.139 | 0.117 | 0.130 | 0.641 | 3.961 | -0.248 | 0.627 |
| DEBT (IRR million) | 483 | 1,395,452 | 302,193 | 5,919,798 | 8.141 | 75.967 | 111,05 | 63,268,140 |
| LOSS | 483 | 0.079 | 0.000 | 0.269 | 3.130 | 10.796 | 0.000 | 1.000 |
| PPA (IRR million) | 483 | 15,319 | 1,732 | 75,646 | 11.441 | 154.605 | 0.000 | 1,166,141 |
| INDUST | 483 | 8.150 | 8.000 | 3.588 | 0.082 | 2.023 | 1.000 | 15.000 |

AUDITDELAY is the number of calendar days from fiscal yearend to the date of financial statement issuance on the CODAL website. AUDIT FEE is the total dollar audit fee (IRR million). SIZE is the total asset (IRR million). DEBT is the total liabilities (IRR million). PPA is the absolute value of prior period adjustments (IRR million). The natural log of AUDITDELAY, AUDITFEE, SIZE, DEBT, and PPA is used in regression analysis. See Table 1 for other variable definitions.

### 4.2. Correlation among Variables

Table 4 presents the correlation matrix among audit delay, audit fees, CEO's ethnicity, and other control variables. The correlation between audit fees and CEO's ethnicity is negative and significant. Despite our expectation, the correlation shows that ethnic majorities have paid more audit fees. Audit fees negatively correlate with the changing of an audit firm. There is a significant correlation between the type of audit firm and audit fees. It is mentioned that the Audit Organization, as a governmental auditing firm, has been paid more than the other firms. The correlation matrix shows a positive and significant correlation between audit opinion and audit report lag. However, the number of Basis for Modification Paragraphs is correlated by audit report lag significantly and clarifies that more audit findings take longer investigations and longer reporting process. As expected, CEOs with higher educational degrees cause to accelerate the auditing process. Therefore, the correlation between audit delay and CEO's education is significantly negative. Company liquidity and ROA both are correlated negatively with audit report lag, but only company liquidity has a significant and negative correlation with audit fees. Total liabilities as an indicator of the company's risk are positively correlated with audit fees. If the company reports loss, more audit delay is expected.

Finally, there is a significant correlation between prior period adjustments and industry variables and audit delay and audit fees variables.



**Table 3**. Sample distribution across CEO's ethnicity and industries

| | Freq. | % | LADELAY | LAFEE |
|---|---|---|---|---|
| **Panel A: CEO's Ethnicity** | | | | |
| Persians | 284 | 58.80 | 4.305 | 6.373 |
| Azeris | 73 | 15.11 | 4.289 | 6.418 |
| Kurds | 42 | 8.70 | 4.119 | 6.029 |
| Other ethnics | 84 | 17.39 | 4.304 | 6.202 |
| Panel B: Industries | | | | |
| Rubber products | 14 | 2.899 | 4.188 | 6.558 |
| Industrial machinery | 14 | 2.899 | 4.520 | 6.605 |
| Pulp, paper, and paperboard mills | 14 | 2.899 | 4.327 | 6.175 |
| Transportation | 7 | 1.450 | 4.569 | 6.388 |
| Automobile manufacturing | 91 | 18.840 | 4.455 | 6.661 |
| Pharmaceuticals and medicines | 63 | 13.042 | 3.993 | 6.083 |
| Agriculture, forestry, fishing, and hunting | 7 | 1.450 | 4.453 | 6.837 |
| Cement and concrete products | 77 | 15.942 | 4.029 | 6.578 |
| Chemicals and petrochemical | 28 | 5.796 | 4.195 | 5.986 |
| Food and beverage | 21 | 4.348 | 4.506 | 5.855 |
| Metal products | 35 | 7.245 | 4.204 | 6.047 |
| Sugar and confectionery products | 7 | 1.450 | 4.271 | 6.217 |
| Metallic and nonmetallic minerals | 84 | 17.391 | 4.422 | 6.120 |
| Household appliances | 14 | 2.899 | 4.655 | 6.182 |
| Textile mills | 7 | 1.450 | 4.525 | 5.788 |

LADELAY is the natural log of audit delay. LAFEE is the natural log of the audit fee.

### 4.3. Choosing Analysis Method

Panel data analysis is used to analyze research data. This statistical method supports the researcher to consider relations between variables over time. Panel data analysis can consider unobservable heterogeneity in units like individuals, firms, states, countries, etc. allowing for subject-specific variables (Gujarati, 2014). This statistical method by combining time series of cross-sectional observations can give "more informative data, more variability, less collinearity among variables, more degrees of freedom, and more efficiency" (Baltagi, 2008). There are two kinds of effects, fixed effects, and random effects that we use the Hausman test to recognize the best analyzing model (Gujarati, 2014). Furthermore, to choose between a fixed-effects model and ordinary least squares (OLS), an F test or Chow test is used (Agung, 2013; Baltagi, 2008). Table 5 presents the F test and the Hausman test to determine the best model for statistical analysis.

Since the P-value of the F-test for Models (1) and (2) is less than 1%, the fixed effects model is better than ordinary least squares. Additionally, since the P-value of the Hausman test for Model (1) is greater than 1%, the random-effects model is better than the fixed-effects model. On the other hand, since this value for Model (2) is less than 1%, the fixed effects model is better than the random-effects model.

**Table 4.** Correlation Coefficients

| Variables: | LADELAY | LAFEE | CEOETHNIC | AUDITCHG | AUDITTYPE | NOBMP | AUDITOPIN | CEOCHG | CEOEDU | SIZE | LIQ | ROA | DEBT | LOSS | PPA | INDUST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LADELAY | 1 | | | | | | | | | | | | | | | |
| LAFEE | 0.054 | 1 | | | | | | | | | | | | | | |
| CEOETHNIC | -0.042 | -0.105* | 1 | | | | | | | | | | | | | |
| AUDITCHG | -0.019 | -0.150* | 0.126* | 1 | | | | | | | | | | | | |
| AUDITTYPE | 0.079 | 0.496* | -0.189* | -0.225* | 1 | | | | | | | | | | | |
| NOBMP | 0.312* | 0.045 | -0.003 | 0.020 | -0.033 | 1 | | | | | | | | | | |
| AUDITOPIN | 0.274* | -0.075 | -0.020 | 0.082 | -0.058 | 0.675* | 1 | | | | | | | | | |
| CEOCHG | -0.056 | 0.042 | 0.005 | 0.081 | 0.002 | 0.061 | 0.028 | 1 | | | | | | | | |
| CEOEDU | -0.182* | -0.089 | 0.141* | 0.037 | -0.043 | 0.059 | 0.021 | 0.014 | 1 | | | | | | | |
| SIZE | 0.037 | 0.685 | 0.005 | -0.047 | 0.287* | 0.223* | 0.076 | 0.066 | 0.151* | 1 | | | | | | |
| LIQ | -0.093* | -0.104* | -0.052 | 0.012 | -0.154* | -0.124* | -0.087 | 0.003 | 0.048 | -0.172* | 1 | | | | | |
| ROA | -0.325* | 0.037 | 0.008 | -0.020 | 0.084 | -0.304* | -0.241* | -0.012 | -0.050 | -0.029 | 0.417* | 1 | | | | |
| DEBT | 0.076 | 0.643* | 0.022 | -0.039 | 0.284* | 0.255* | 0.113* | 0.061 | 0.146* | 0.966* | -0.373* | -0.184* | 1 | | | |
| LOSS | 0.119* | 0.015 | 0.012 | 0.034 | 0.023 | 0.337* | 0.176* | 0.091* | 0.070 | 0.043 | -0.180* | -0.470* | 0.104* | 1 | | |
| PPA | 0.235* | 0.189* | 0.045 | 0.036 | 0.014 | 0.178* | 0.107* | 0.072 | 0.035 | 0.196* | -0.174* | -0.263* | 0.240* | 0.173* | 1 | |
| INDUST | 0.097* | -0.184* | -0.044 | -0.020 | 0.004 | -0.026 | 0.083 | -0.070 | -0.227* | -0.193* | 0.048 | 0.082 | -0.193* | 0.031 | -0.118* | 1 |

* indicates significant at 5% or less.

**Table 5.** Process of choosing the best model

| Model No. | F test | | | Hausman test | | | Result |
|---|---|---|---|---|---|---|---|
| | F-statistic | d.f. | P-value | Chi-Sq. Statistic | d.f. | P-value | |
| (1) | 16.215 | 67, 401 | 0.000 | 22.025 | 13 | 0.032 | The random Effects Model is the best |
| (2) | 4.534 | 67, 401 | 0.000 | 85.262 | 14 | 0.000 | The Fixed Effects Model is the best |

## 4.4. Panel data analysis results

The results of panel data analysis are presented in Table 6.

**Table 6.** Results of panel data analysis for both (1) and (2) models

| Variables | Model (1) | | | | Model (2) | | | |
|---|---|---|---|---|---|---|---|---|
| | Expected Signs | Coefficient | t-Statistic | P-value | Expected Signs | Coefficient | t-Statistic | P-value |
| Intercept | | 3.696 | 12.806 | 0.000*** | | | | |
| CEOETHNIC | ? | 0.023 | 1.762 | 0.079+ | + | -0.015 | -0.527 | 0.598 |
| AUDITCHG | + | -0.003 | -0.110 | 0.913 | + | -0.082 | -1.694 | 0.091+ |
| AUDITTYPE | ? | 0.114 | 2.612 | 0.009** | ? | 0.292 | 2.904 | 0.004** |
| NOBMP | + | 0.021 | 1.991 | 0.047* | + | 0.040 | 1.685 | 0.093+ |
| AUDITOPIN | + | 0.058 | 1.817 | 0.070+ | + | -0.106 | -1.571 | 0.117 |
| CEOCHG | ? | 0.021 | 0.958 | 0.338 | + | 0.034 | 0.742 | 0.459 |
| CEOEDU | - | -0.015 | -0.680 | 0.497 | + | -0.148 | -3.010 | 0.003** |
| SIZE | + | 0.023 | 0.245 | 0.806 | + | 0.768 | 3.599 | 0.000*** |
| LIQ | - | 0.045 | 1.306 | 0.192 | - | 0.088 | 1.135 | 0.257 |
| ROA | ? | -0.509 | -3.334 | 0.001*** | + | -0.348 | -1.046 | 0.296 |
| DEBT | + | 0.005 | 0.056 | 0.955 | + | 0.006 | 0.028 | 0.978 |
| LOSS | + | -0.062 | -1.348 | 0.178 | + | -0.066 | -0.686 | 0.493 |
| PPA | + | 0.004 | 1.348 | 0.178 | + | 0.003 | 0.434 | 0.664 |
| INDUST | ? | 0.014 | 1.347 | 0.179 | ? | | | |
| LADELAY | | | | | + | -0.029 | -0.283 | 0.777 |
| F-statistic | | 3.569 | | | | 20.871 | | |
| P-value | | 0.000 | | | | 0.000 | | |
| Adjusted $R^2$ | | 0.093 | | | | 0.350 | | |

See Table 1 for variable definitions.
+ significant at 10%
* significant at 5%
** significant at 1%
*** significant at less than 1%
Intercept in the fixed effects model is omitted (Model (2)). INDUST variable is omitted automatically because of perfect multicollinearity in Model (2). LADELAY independent variable is related only to the Model (2).

In table 6, significant relationships have been illustrated. As we can see, there is a significant relationship between CEO's ethnicity and audit report lag (0.079). This shows that if the CEO's ethnicity changes from Persians (Ethnic majorities) to Azeris, Kurds, and other ethnic minorities, the audit report lag will increase. As mentioned before, ethnic bias causes audit problems and audit delay. We can say that Persians with the least ethnic bias among Iranian ethnics (Taghizadeh et al., 2014) can work more comfortably with the Persian auditors or auditors from the other ethnic groups. Therefore, there aren't any statistical pieces of evidence to reject the first research hypothesis. But there is not a significant relationship between CEO's ethnicity and audit fees (0.598). Unlike Harjoto et al. (2015) and our expectations, the CEO's ethnicity does not influence Iran's audit fees. Maybe the reason is that in Iran, Audit fees are determined by shareholders in general meetings. So the CEO has not enough power to influence it. As a result, the second research hypothesis is rejected

As we expected, the audit firm type significantly impacts both audit delay and audit fees (0.009, 0.004). The finding shows that the Audit Organization is paid more and has more delays in reporting. On the other hand, changing the auditor does not influence audit delay. It has a significant impact on audit fees (0.091), however.

As expected, the type of audit opinion has a significant relationship with audit report lag (0.070), and we can statistically say that opinion on clear reports causes lesser audit report lag. Furthermore, by increasing the Basis for Modification Paragraphs, the audit delay will be increased (0.047). Because finding more material misstatement needs more audit time and effort, the audit fees will be increased too (0.093).

The variables related to the CEO do not have a significant relationship with audit report lag and audit fees except CEO's educational degree (0.003). Contrary to our expectations, CEOs with higher education pay lower audit fees. As Kalelkar and Khan (2016) mentioned, CEOs' work experience in accounting and finance contexts affects audit risks, and by decreasing auditors' engagement risk, they pay low audit fees. We can conclude that CEOs with higher education reduce auditors' engagement risk and, consequently, the audit fees.

There is a significant relationship between company size and audit fees (0.000) and also between ROA and audit report lag (0.001) as expected. But contrary to our expectation, variables including the amount of the company's debts, company reports loss, prior period adjustments, and industry does not have significant relationships with audit report lag and audit fees variables.

### 4.5. Assessing the Goodness of Models

In order to have a good regression model and a valid interpretation of the regression estimates, some assumptions including are required. These assumptions are (Gujarati, 2014):

1. Zero mean value of disturbance residuals;
2. Normal distribution of residuals;
3. Homoscedasticity or equal variance of residuals;
4. No autocorrelation between the disturbances;
5. Zero covariance between residuals and independent variables;
6. There is no perfect multicollinearity.

Table 7 presents some tests for verifying the goodness of both Models (1) and (2):

**Table 7.** Assessing the goodness of both (1) and (2) models

| Tests | Reason for test | Model (1) | | | Model (2) | | |
|---|---|---|---|---|---|---|---|
| | | Statistics | P-value | Results | Statistics | P-value | Results |
| T-test | For assessing the zero mean distribution of residuals | 0.000 | 0.999 | Zero mean | 0.000 | 0.999 | Zero mean |
| Lilliefors normality test | For assessing the normal distribution of residuals | 0.046 | 0.015 | Distributed symmetrically | 0.068 | 0.009 | Distributed asymmetrically |
| Durbin-Watson test | For assessing the autocorrelation between variables | 1.56 | | No comments | 1.97 | | No autocorrelation |
| ACF plot | For assessing the autocorrelation between variables | | | No autocorrelation in second lag | | | No autocorrelation in first lag |
| Fisher test | For assessing the homoscedasticity of residuals | 309.98 | 0.000 | Homoscedastic | 229.51 | 0.000 | Homoscedastic |

According to table 7, we can consider both Models (1) and (2) good models to test research hypotheses, and their results can be acceptable and reliable.

## 5. Conclusion and Limitations

Ethnic bias is a variable that can affect most daily decisions. This variable affects the simple decisions and has the potential to influence the material decisions of managers. Therefore, in this research, we tried to test the relationship between the CEO's ethnicity and two variables of audit report lag and audit fees. The findings showed a significant relationship between CEO's ethnicity and audit report lag, which means that if CEO's ethnicity changes from Persians (ethnic majorities) to Azeris, Kurds, and the other ethnics (ethnic minorities), the audit report lag will be increased. But on the other hand, there is no significant relationship between CEO's ethnicity and audit fees. Furthermore, we concluded that there are significant relationships between audit report lag and variables, including the type of audit firm, number of Basis for Modification Paragraphs, type of audit opinion, and return on assets. Also, there significant relationships between audit fees and variables, including changes of audit firms, type of audit firm, number of Basis for Modification Paragraphs, CEO's educational degree, and company size.

This research has some limitations. Although the number of calendar days from fiscal yearend to the auditor's report is used as a proxy of audit report lag in most studies, we cannot consider it as the actual audit delay. The reason is that the audit process begins before the fiscal yearend by audit planning, and it continues after the issuance of the audit report. Another limitation faced in this study was the possibility of a CEO's birth in an unrelated region to his ethnicity. However, this possibility is not strong because most of the CEOs in Iran started from the Islamic Revolution in 1979, but most CEOs are older than 40.

According to the results showing a significant relationship between CEO's ethnicity and audit report lag, we recommend audit firms consider the CEO's ethnicity in their planning to accelerate their audit process and issue their reports timely. Furthermore, by selecting an audit team that their members' ethnicity is similar to CEOs', they can obtain CEOs' cooperation and willingness.

Additionally, since the incompatibility between CEO's real ethnicity and his birthplace (a research limitation) is possible, redoing this study with other research methodologies

and tools (e.g., using questionnaires to recognize CEO's ethnicity) is recommended.

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**Research Article**

# Audit Quality, Risk-Taking, and Value Creation: Iranian Evidence

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## Abstract

The present study aims to evaluate the relationship between audit quality, risk-taking, and value creation. The population under study is the listed companies on the Tehran Stock Exchange. The study covers 1764 company-year from 2005-2016. This study is based on the panel data and multivariate regression method. Fixed and random effects methods employed to estimate the regression. In this paper, five components of audit quality, including auditor specialization, tenure, audit firm size, ownership concentration, and the percentage of unbounded board members, were studied. The results indicate that only tenure and ownership concentration has a significant relationship with companies' value creation among these five components and the risk factor.

**Keywords:** audit quality, risk-taking, value creation.

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## 1. Introduction

One of the significant factors influencing the decisions on investment within a country is the range of risk-taking, in a way that most of the investment managers are presently concerned about the accuracy of risk estimation and, subsequently the risk management to reduce the risk to the minimum possible (Dalton et al., 2015). The present study explores the relationship between audit quality, risk-taking, and value creation of a business unit. Generally, risk and return are the most significant investment concepts, which always accompanied the investment decisions and considered the basis of decision-making. Risk-taking could be defined as "carrying out any activities, which have at least an ambiguous and uncertain result" (Su & Wu, 2016). On the other hand, risk-taking in this research is referred to as that uncertainty range, which is related to the expected results and the correlated cash flows occurred due to the new investments (Wang and Huang, 2009). Auditing through reducing information asymmetry and agency conflict between users and providers of financial statements will modify the management's harmful effects of separation of ownership. Hence, the audit quality is a tool to mitigate the information risk for users of financial statements. Such information risk reduction could bring about value creation for shareholders because it provides the users with reasonable assurance about any significant deviations and frauds (Furiady and Kurnia, 2015).

Understating the relationship between audit quality, risk-taking, and value creation within the business units of undeveloped countries, with traditional market structures and inefficient capital market, is of great importance and would lead to a more appropriate return. Value creation is roughly dependent on the value achieved by the end-user (buyer), which is concentrated on the value creation- whether it be an individual, an organization, or a community- and such an inclination will lead to currency exchange the obtained value. We could name two principal conditions, which are vital for the success of value creation activities. First, the exchanged currency's quantity must be higher than the producer (currency, time, effort, etc.). Second, the amount of money the purchaser paid for the service. These two conditions indicate a function that differentiates the newly created value from buyers' objectives. Overall, no buyer and no value creator would never seek the reoccurrence of such activities in the long term without such differences. Accordingly, concerning the increasing significance of a business unit's audit quality and risk-taking, this study evaluates the relationship between the so-called factors and value creation within a business unit.

## 2. Theoretical issues

Auditing for financial statements provides an added value because the results indicate the contents' relatedness and reliability. This is because by establishing a sensible trust in statements contains material misstatements and manipulation in the reported net profit, the company resources would be in line with the objectives of the organization and shareholders, and this will motivate the shareholders to invest in the company (Lin et al., 2011).

Audit quality was first defined by DeAngelo (1981) as the evaluation of an auditor's competency in detecting significant distortions and their related reports. The likelihood of uncovering distorted items is contingent on the auditor's competency, and the chance of reporting the distorted items relies on the auditor's independence (Hoag et al., 2017). Sulaiman et al. (2017) stated that auditing is an essential tool in decreasing the agency costs between managers and shareholders because auditors report incorrect financial statements. By conducting high-quality audits, auditors could prevent such a phenomenon. Audit quality is not directly observable. Thus, scholars replace a variable or some variables to measure the audit quality. These alternative variables concern a

particular factor. Some of them focus on financial statements, like distortions (Carcello and Nagy, 2004). Some others concentrate on discretionary accruals (Jensen, 2002; Reheul et al., 2013; Dibia et al., 2013). In addition to these studies, Ghosh and Moon (2005) used the earnings financial restatement for measuring the audit quality (Myres et al., 2003). Abbott et al. (2004), Salleh, and Stewart (2012 and Zhang (2017) argued that the more the audit quality and the amount of acquaintance of auditor of the type of activity of the client, the less is the possibility of financial restatement in upcoming years. In other words, there is a negative relationship between audit quality and financial restatement. In the present study, two different methods were used for measuring the audit quality, namely audit quality measurement using the earnings management (discretionary accruals) and financial restatement.



### 2.1. Auditor specialization

Increasing industry specialization level is among the strategies currently used in audit firms to enhance profitability. By auditor industry specialization, we mean to create innovative ideas (added value), to help the clients, and to provide novel approaches and strategies in some areas where some of the clients in the related industry are faced with (Kend, 2008). Cost reduction is due to the application of specialized auditors more than the amount of savings resulting from other auditors' use. Most of the time, an auditor who analyzes a considerable number of companies in a particular industry (a specialized auditor in that industry) produces more savings due to some reasons, including experience, than other auditors, so he asks for less pay than others. The other reason is that specialized auditors are better consultants for disclosing information and can rectify accounting process problems and financial reporting more appropriately. Furthermore, using a specialized auditor means that the company is intended to provide a better report and disclosure (even better than other companies) (Rusmin et al., 2017). Since the specialized auditor analyzes many companies in the same industry, they are more experienced than other auditors. Hence, their competency for detecting significant distortions and biases in clients' disclosed information is higher than that of the others. Moreover, they try to retain their popularity and market share, not take the mistakes or distortions for granted. Thus, gaining specialization in a certain industry, either by the auditor's demand or by the client, could practically lead to a higher quality of disclosure and financial reporting of the client (Astami et al., 2017).

Kim et al. (2006) indicated that the auditor's specialization in an industry, which is calculated according to the auditor’s share of the market in that industry, has had a significant effect on the client’s quality disclosure. The findings of Boon et al. (2010) substantiated the significant relationship between auditor’s specialization, audit quality, and client’s disclosure, especially for earnings. The results of Brown et al. (2016) indicated that in line with the increase of auditor’s specialization in an industry, the audit firm could better detect and report the significant errors and distortions of disclosed information and pursue the analysis process with higher quality. Thus, we predict that an auditor's specialization in a particular industry could elevate the audit quality. Although much attention is paid recently to auditor industry specialization, there is still no single measurement criterion (Neal and Riley, 2004). Two primary factors for the identification of a specialist auditor are:

Market share approach (Balsam et al., 2003; Dunn and Mayhew, 2004);

Portfolio share approach (Krishnan, 2003).

Moreover, Neal and Riley (2004) proposed a combined criterion, a function of market share and portfolio share.

The industry with more clients in its portfolio in terms of sale, total properties, etc., displays a market with specialist auditors. The third proposed criterion is a combination

of portfolio and market share approach (Neal and Riley, 2004).

Jimmy et al. (2014) found a positive relationship between auditing industry specialization and two risk-taking scales. Randal et al. (2015) concluded that employing specialist auditors' cycle of policies could indirectly improve audit quality. Yuan et al. (2016) showed that the negative relationship between industry specialization and the client's optional obligations is much closer when his/her business strategy is derived from regular industry strategies.

$H_1$: There is a significant relationship between auditor specialization and value creation.

$H_2$: Auditor specialization affects the relationship between corporate risk-taking and value creation.



**2.2. Auditor tenure**

The longer the tenure duration, the more the auditor is acquainted with clients, and the higher his/her expertise in the related industry and the higher the resulting audit quality (Myers et al., 2003). Su and Wu (2016) showed that the possibility of presenting an adjusted report is higher in companies with a changing auditor partner. Choi and Jeter (2016) showed a positive and significant relationship between auditor tenure and adjusted audit reports.

$H_3$: There is a significant relationship between audit tenure and value creation.

$H_4$: Auditor tenure affects the relationship between corporate risk-taking and value creation.

**2.3. Audit firm size**

By auditor size, we mean auditor reputation (brand). Accordingly, auditor reputation will increase the reliability of financial statement information and enhance audit quality (Chen et al., 2005).

In general, the bigger the audit firm size, the higher is the audit quality (DeAnjelo, 1981; Choi et al., 2008). By the firm size, we mean the fame of the auditor (brand). DeAngelo believes that bigger audit firms propose better audit services because they like to acquire a higher market reputation. Since there are many clients, they are concerned about losing their positions. Madhani (2016) declared the methods of disclosure and corporate governance of business units are under the influence of various local and foreign variables. A business unit's features, including the size, age, lever, etc., affect these methods. By analyzing the impacts of the corporate size on corporate governance and the methods of disclosure of a business unit, the researchers tested the empirical shreds of evidence of such a relationship.

$H_5$: There is a significant relationship between the audit firm size and value creation.

$H_6$: The size of an audit firm will affect the relationship between corporate risk-taking and value creation.

**2.4. The percentage of non-executive directors**

One of the other contributing factors to audit quality is the percentage of non-executive directors. These managers are more ambitious than other board members are in monitoring the performance of executive managers and the financial reporting process, so better surveillance will help the perseverance and enhancement of their job position. When more non-executive directors are affiliated, investors and shareholders find the financial reports more reliable. The possibility of earnings manipulation and distortion, tax evasion, and tax avoidance is few.

$H_7$: There is a significant relationship between non-executive directors and value creation.

$H_8$: The percentage of non-executive directors contributes to the relationship between corporate risk-taking and value creation.

### 2.5. Ownership concentration

Ownership concentration is another way of poignant corporate governance. It could supervise the management and other components of the company, lower the possibility of any fraud in the financial statements, and align the interests of management and shareholders (Kim et al., 2010). Thus, it seems that ownership concentration, which is in line with absolute control of major shareholders on corporate affairs, could affect the audit quality.



Boubakri et al. (2013) found an inverse relationship between state ownership and value creation, and the relationship between foreign ownership and value creation is significant.

Yizhe Dong et al. (2014) observed that the value creation in banks with a high range of state ownership is considerably lower than banks with institutional ownership.

Azadi and Mohammadi (2015) showed no relationship between institutional ownership and audit fees and substantiated the relationship between ownership concentration and audit fees as significant and positive.

Alsharkas (2015) noticed that there is a unique positive relationship between audit firm size and innovation.

$H_9$: There is a significant relationship between ownership concentration and value creation.

$H_{10}$: Ownership concentration could affect the relationship between corporate risk-taking and value creation.

### 2.6. Risk

Regarding agency theory, managers will consider their risk only when their decisions affect a business unit's risk-taking. On the other hand, they could not simply lessen their risk through diversification as shareholders do (Uddin, 2016). The financial records reveal that since shareholders are risk-takers, they prefer investment in positive net present value projects regardless of the risks (John et al., 2008; Paligorova, 2010; Manos et al., 2014; Furiady and Kurnia, 2015).

Concerning the high concentration of managers on human capital and control, they could mitigate its risk. Hence, managers would potentially avoid high-risk investment opportunities that reduce the corporate credit; such projects would cause financial bottlenecks and work dismissal (John et al., 2008; low et al., 2009). Moreover, developing a high-risk project design would incur additional personal costs for managers (Chen et al., 2005; Huang and Wang, 2009). The study of Jensen and Mechling (1976) indicated that surveillance would align the goals and motivate the managers to step toward owners' interests through auditing.

Eskandari et al. (2012) illustrated that companies with higher research and development costs have significantly higher value creation.

Hardjou et al. (2014) showed that well-managed New Zealand companies, regarding other conditions, have experienced relatively lower levels of risk (fluctuation of stock return). These results were revealed explicitly that corporate management's divergent aspects, including the board of directors, shareholders' rights, and disclosure measures, have lower risk levels.

Hoelscher and Seavey (2014) found a positive relationship between specialization and risk-taking indexes, an annual standard deviation of stock returns, and research and development results. Lawal et al. (2016) declared that the capital market theory is related to the equilibrium of the relationship between risk and expected return of high-

risk assets. The results showed no significant relationship between the corporate size or any other sections and risk or return of a business unit in the capital market.

$H_{11}$: There is a significant relationship between corporate risk-taking and value creation.

### 2.7. What is value creation, and how it could be calculated?

Uddin (2016) introduced two values at the organizational analysis level: use of value and exchange of value. The value is concerned about the specific quality of a job, duty, product, or service that users will consider concerning their needs, as the velocity or quality of performance in a new career or the forms and functional peculiarities of a new product or service. As stated by Bowman and Ambrosini (2006), such judgments are of personal and subjective characteristics. They called the second type the exchange of value, which is defined as the sum of currency came from a certain period, namely during the exchange of duty, work, product, or new service, or as the amount of money incurred by the customer to the deal to use the value of that duty, work, product, or service.

Tseng et al. (2015) showed that human and financial capitals contribute to a business unit's value creation, and macroeconomic conditions should be considered in strategic and value creation management. Sung and Young (2016) indicated that companies with more senior managers from high-ranking universities enjoy a higher Tobin's Q index. This relationship is tougher in challenging situations where the company is facing more fluctuations confrontations, like financial bottlenecks.

Tantalou and Periem (2016) bring about new value creation opportunities, which are specifically and strategically effective, because an individual strategic operation would firstly cause the enhancement of various types of values for two or several groups of shareholders and secondly, will mitigate the value, which is created by another group of shareholders, so far. The interaction view of shareholders provides novel approaches for an extensive understanding of value creation.

## 3. Research methodology

**T**he study's statistical population includes all companies listed on the Tehran Stock Exchange, which active continuously from 2005 to 2016. Compared with other companies, such a statistical population's advantages are its clearer information, surveillance on financial statements, and its poignant information setting of listed companies on the Tehran Stock Exchange. The statistical sample of the study was companies listed in Tehran Stock Exchange from 2005 and had the following characteristics:

- The selected company was not among financial intermediaries and investment, holding, banking, and leasing companies;
- Their fiscal year ends in February;
- Did not have any operational cessation, change of activity, or change in their fiscal year;
- Were active in the stock during the study period.

Considering the limitation mentioned above, the statistical sample comprises 147 companies within 12 years, which made a total of 1764 company years.

### 3.1. Research model

To evaluate the relationship between audit quality, risk-taking, and value creation of a business unit and to test the research hypotheses, the following regression models were employed:

**Model 1:**

$$Vc= \beta_0+\beta_1 Specialist_{it}+\beta_2 Tenure_{it}+\beta_3 Firm\ size_{it}+\beta_4 BM_{it}+\beta_5 Ownership\ Concentration_{it}+\beta_6 Risk_{it}+\beta_7 Influence_{it}+\beta_8 Dpr_{it}+\beta_9 Ret_{it}+\beta_{10} Comp_{it}+\beta_{11} Std\text{-}Ocf_{it}+\beta_{12} Age_{it}+\beta_{13} Btm_{it}+\beta_{14} Roa_{it}+\beta_{15} Leverage_{it}+\beta_{16} size_{it}+e_{it}$$

**Model 2:**

$$Vc= \beta_0 +\beta_1 Specialist_{it}+ \beta_2 Tenure_{it} + \beta_3 Firm\ size_{it} + \beta_4 BM_{it} + \beta_5 Ownership\ Concentration_{it} + \beta_6 Risk_{it} +\beta_7 Risk .Specialist_{it}+ \beta_8 Risk. Tenure_{it} + \beta_9 Risk .Firm\ Size_{it} + \beta_{10} Risk. BM_{it} + \beta_{11} Risk .Ownership\ Concentration_{it} +\beta_{12} Influence_{it}+\beta_{13} Dpr_{it}+\beta_{14} Ret_{it}+ \beta_{15} Comp_{it} +\beta_{16} Std\text{-}Ocf_{it}+\beta_{17} Age_{it}+\beta_{18} Btm_{it}+\beta_{19} Roa_{it}+\beta_{20} Leverage_{it}+\beta_{21} Size_{it}+ e_{it}$$

In this research, the first model was used to evaluate the relationship between audit quality, risk-taking, and value creation. The second model was adopted to evaluate the effect of measurement criteria of audit quality on the relationship between risk-taking and value creation.



### 3.2. Research variables

#### 3.2.1. Dependent variable:

Value creation of a company (vc): to calculate the value creation, we focused on the difference between the company's common stock market value and the book value of the stock (Tseng e al., 2015).

#### 3.2.2. Independent variables:

**Specialization (specialist):** market share approach is used to calculate the specialization, such that an audit firm with a higher industry market share is considered as the specialist (Balsam et al., 2003; Dunn and Myhew, 2004).

**Auditor tenure:** Auditor tenure, as one of the independent variables of the model, displays the number of years an auditor is employed in a company. Auditor tenure of fewer than three years obtains number one, otherwise zero.

**Audit firm size:** If the audit organization addresses the company, obtains one, otherwise zero.

**The percentage of unbounded board members (BM):** the proportion of unbounded board members to total board members.

**Ownership concentration:** the proportion of share percentage held by major shareholders (higher than 5%) to total share.

**Risk:** standard deviation of stock returns (Markowitz, 1996).

#### 3. 2.3. Control variables:

**Client influence:** the ratio of a particular client's annual fee to total annual fees achieved by a specific audit firm.

**Dividend payout ratio (DPR):** the ratio of cash earnings payout to the earnings per share.

**Return:** the ratio of total earnings from investors within a certain period to the consumed investment.

**Board of directors' compensation (COMP):** natural logarithm of the Board of Directors' compensation.

**Operational cash flows (STD-OCF):** are derived from cash flows, which become homogenous through total assets in the first period (Kothari et al., 2005).

**Age of corporate manager (AGE):** the closer the executive authorities to their retirements, the lower their motivation to participate in high-risk investments. Therefore, their age is of great importance (Dechow and Solan, 1991).

**The book's ratio to market value (BTM):** dividing the book value into the market

value.

**Return of assets (ROA):** the ratio of earnings before extraordinary items to total assets.

**Financial leverage (LEV):** the ratio of the total book value of corporate debts to total assets.

**Firm size:** market value natural logarithm for the rights of corporate shareholders.

# 4. Research findings:

## 4.1. Descriptive statistics

Information related to descriptive statistics, including dependent, main, and independent control variables, were gathered from 12 years of corporates data. Table 1 shows the descriptive statistics of research variables and descriptive parameters per variable. These parameters mainly comprise central indexes, like minimum, maximum, mean, medium, and information related to dispersion indices, like the standard deviation. The most significant central index shows the equilibrium and center of distribution and could be an appropriate index for centrality.



**Table 1.** Descriptive statistics by the sample years understudy

| Variable | OwnCon | BM | Risk | ROA | AGE | BTM | RET | INFLUENCE | LEV | DPR | SIZE | STDOCF | COMP | VC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Medium | 0.408 | 0.642 | 12.73 | 0.131 | 33.44 | 0.759 | 0.04 | 0.714 | 0.667 | 0.115 | 13.18 | 0.088 | 9.634 | 13.106 |
| Mean | 0.330 | 0.6 | 9.595 | 0.121 | 35.00 | 0.775 | 0.103 | 0.253 | 0.668 | 0.069 | 13.02 | 0.041 | 9.454 | 13.07 |
| Minimum | 0.00 | 0.00 | 0.062 | -0.717 | 34.00 | 0.00 | 0.001 | 0.00 | 0.085 | 0.00 | 9.81 | 0.006 | 3.46 | 8.43 |
| Maximum | 1.18 | 1.00 | 46.79 | 1.533 | 62.00 | 5.964 | 4.01 | 5.33 | 3.064 | 1.779 | 18.82 | 9.032 | 16.201 | 18.86 |
| Standard Deviation | 0.343 | 0.161 | 17.418 | 0.139 | 12.98 | 0.335 | 0.208 | 2.039 | 0.226 | 0.162 | 1.387 | 0.256 | 1.778 | 1.482 |
| Variance | 0.118 | 0.026 | 30.34 | 0.02 | 16.856 | 0.112 | 0.043 | 4.158 | 0.051 | 0.026 | 1.926 | 0.066 | 3.162 | 2.197 |

According to the theoretical principles of statistics, one of the classic hypotheses of regression models is that the statistical distribution of research variables should be normal; however, when the sample size is big enough, and other classic hypotheses are regulated, deviation from the normal hypothesis is usually insignificant, and its consequences are trivial. In such a situation and concerning the Central Limit Theorem, we could conclude that even if the residuals were not normal, the test statistics would pursue appropriately asymptotical distributions, not be biased, and work efficiently. Hence, we could ignore some factors suggesting data abnormality and consider them normal regarding a large number of research data.

## 4.2. Data analysis and research model fitting:

**Model 1:**

Table 2 depicts the obtained results from a selection among regression models for research model fitting. For this purpose, the F Limer test was performed to evaluate and select both the fixed-effects model and the least ordinary squares model. Since the latter's P-value is less than 0.05, the null hypothesis is rejected, and the former model is selected. Secondly, using the Hausman test, we decided between fixed effects and random-effects models. Concerning Table 2, the P-value of this test is more than 0.05, and the results confirmed the use of a random-effects model for fitting. Next, data integrability studied using the Breusch-Pagan test. In this stage, the P-value was less than 0.05, which substantiated the lack of data integration. One of the regression models' basic hypotheses is that there should not be a serial autocorrelation among the model errors, so we used the Breusch-Godfrey test for this purpose. Since the resultant P-value is less than 0.05, we could conclude a serial autocorrelation in this model. An extended random effects panel data model should be used for fitting.

**Table 2.** The summary of diagnostic tests for the best regression model for panel data fitting

| Type of test | P-value | Null hypothesis | Result |
|---|---|---|---|
| F Limer test | 0.05> | Ordinary least squares Model | Fixed effects model |
| Hausman test | 0.934 | Random effects model | Random effects model |
| Breusch-Pagan test | 0.05> | Data integrability | Random effects model |
| Breusch-Godfrey test | 0.05> | The absence of serial autocorrelation | The presence of serial autocorrelation |



Table 3 presents the results of model fitting, the estimated beta coefficients, and the P-value regarding the performed tests and the random-effects model's optimal use to fit the regression model to evaluate the research hypothesis's significance.

**Table 3.** The results of the model fitting through random effects of extended panel regression

| Variable | Coefficient | S.d | Test of statistic | P-value |
|---|---|---|---|---|
| Intercepts | -8.23520 | 18.174 | -0.453 | 0.651 |
| factor(spi)1 | -1.17501 | 3.377 | -0.348 | 0.728 |
| factor(tenure)1 | 5.71615 | 2.453 | -2.330 | 0.020 |
| factor(firmsize)1 | -4.82802 | 4.138 | -1.167 | 0.243 |
| BM | 9.00612 | 9.703 | 0.928 | 0.353 |
| Owncon | 4.051932 | 7.357 | 5.508 | 0.000 |
| Risk | 3.208 | 0.057 | 0.560 | 0.576 |
| INFLUENCE | -4.6180 | 0.538 | -0.859 | 0.390 |
| DPR | -4.75657 | 8.118 | -0.586 | 0.558 |
| RET | 5.6542 | 4.720 | 0.120 | 0.905 |
| COMP | 3.1948 | 0.438 | 0.729 | 0.466 |
| STDOCF | 1.24590 | 4.079 | 0.305 | 0.760 |
| AGE | -2.115 | 0.128 | -0.166 | 0.869 |
| BTM | 1.47155 | 4.300 | 0.342 | 0.732 |
| ROA | -4.43515 | 11.170 | -0.397 | 0.691 |
| LEV | 4.46021 | 7.016 | 0.636 | 0.525 |
| SIZA | 4.2563 | 1.300 | 0.327 | 0.743 |

### 4.3. Results of the hypotheses of the first model

According to the results of table 3 and regarding the P-value of auditor specialization, which is equal to 0.728 and higher than 0.05, we could conclude that there is no relationship between auditor specialization and value creation of a business unit. On the other hand, since the auditor tenure variable has a P-value of 0.020, which is less than 0.05, the null hypothesis is rejected. We conclude that there is a significant relationship between auditor tenure and value creation.

Using the heuristic method, the result of three quantitative variables, namely the percentage of unbounded board members, ownership concentration, and risk, are as follows:

**Table 4.** The results of model fitting for evaluating the relationship between the percentage of unbounded members, ownership concentration, and risk and the value creation of a business unit

| Variable | Coefficient | S.d | Test of statistic | P-value |
|---|---|---|---|---|
| BM | 10.05618 | 9.66053 | 1.041 | 0.2979 |

| | | | | |
|---|---|---|---|---|
| Owncon | 40.76102 | 7.32869 | 5.562 | 2.67E-08 |
| Risk | 3134 | 0.05735 | 0.546 | 0.5847 |

According to Table 4 and the obtained P-value for the percentage of unbounded board members, which is equal to 0.2979 and more than 0.05, we conclude that the null hypothesis is rejected. There is no relationship significant between the percentage of unbounded board members and value creation.

**Model 2:**

We evaluated the range of integrability using the Breusch-Pagan test. In this stage, the P-value is less than 0.05 and indicates the lack of data integrability. Furthermore, since the Breusch test's P-value is less than 0.05, we conclude a serial autocorrelation. An extended random effects panel data model should be used for model fitting.



**Table 5.** The summary of diagnostic tests for the best second model for panel data fitting

| Type of test | P-value | Null hypothesis | Result |
|---|---|---|---|
| F Limer test | 0.05> | Ordinary least squares Model | Fixed effects model |
| Hausman test | 9.2334 | Random effects model | Fixed effects model |
| Breusch-Pagan test | 0.05> | Data integrability | Fixed effects model |
| Breusch-Godfrey test | 0.05> | The absence of serial autocorrelation | The presence of serial autocorrelation |

Table 6 displays the fitting results of the second model.

**Table 6.** The results of the model fitting through random effects of extended panel regression

| Variable | coefficient | The standard deviation of error | Test of statistic | P-value |
|---|---|---|---|---|
| (Intercept) | -1.105093 | 18.637902 | -0.210 | 0.8340 |
| factor(spi)1 | 5.58653 | 4.031037 | 0.089 | 0.9295 |
| Risk | -7.50752 | 0.326722 | -0.787 | 0.4314 |
| factor(tenure)1 | 5.446165 | 3.24927 | -1.729 | 0.0839 |
| factor(firmsize)1 | -3.16223 | 4.608503 | -0.686 | 0.4926 |
| BM | 1.37863 | 11.77603 | 0.117 | 0.9068 |
| owncon | 4.781928 | 8.052884 | 4.755 | 1.98E-06 |
| INFLUENCE | -8.59054 | 0.537519 | -0.839 | 0.4015 |
| DPR | -2.970634 | 8.141413 | -0.536 | 0.5922 |
| RET | 6.92585 | 4.718439 | 0.124 | 0.9013 |
| COMP | 2.34923 | 0.438334 | 0.752 | 0.4523 |
| STDOCF | 2.171421 | 4.079222 | 0.304 | 0.7608 |
| AGE | -2.0882 | 0.128036 | -0.225 | 0.822 |
| BTM | 7.321561 | 4.306358 | 0.383 | 0.7014 |
| ROA | -7.097544 | 11.19013 | -0.398 | 0.6904 |
| LEV | 3.861154 | 7.023182 | 0.642 | 0.5206 |
| SIZA | 6.79734 | 1.300242 | 0.337 | 0.7362 |
| factor(spi)1:Risk | -2.12931 | 0.166771 | -0.835 | 0.4039 |
| Risk:factor(tenure)1 | -5.603 | 0.169894 | -0.018 | 0.9856 |
| Risk:factor(firmsize)1 | -4.96731 | 0.186061 | -0.74 | 0.4593 |
| Risk:BM | 5.0346 | 0.504303 | 0.998 | 0.3181 |
| Risk:owncon | 2.70571 | 0.284738 | 0.615 | 0.5387 |

### 4.4. Results of the hypotheses of the second model

Regarding the P-value of 0.4039, which is more than 0.05, we conclude that auditor specialization does not affect the relationship between corporate risk-taking and value creation, so the seventh hypothesis is rejected.

Additionally, the board of directors' independence does not affect the relationship between corporate risk-taking and value creation because the related P-value is 0.3181 and more than 0.05, so the tenth hypothesis is rejected.

## 5. Conclusion

The obtained results indicated no relationship between auditor specialization and value creation of a business unit. The results revealed that the auditor's audit quality and even high specialization could not affect the value creation of companies listed on the Tehran Stock Exchange. Auditor specialization creates no value for the owners, as well. Jimmy et al. (2014) showed a positive relationship between auditor industry specialization and the two scales of risk-taking: stock return standard deviation and research and development costs. Hogan et al. (2015) indicated that the paid corporate tax is reduced by increasing audit quality (auditor specialization).



Further, the results show that auditor specialization does not affect the relationship between corporate risk-taking and value creation. Lennox et al. (2014) indicated a negative relationship between auditor specialization and auditor adjustments. Franco and Merton (2015) suggested a negative relationship between auditor specialization and temporal asymmetry of earnings.

Davis et al. (2016) indicated that the earnings forecast's power is more in companies with a higher tenure period. Choi and Jeter (2016) illustrated a significant relationship between auditor tenure and type of auditor statements. The results also reveal that auditor tenure does not affect the relationship between corporate risk-taking and value creation. Ewelt et al. (2016) showed that earnings management motivation is lower in companies audited by four big audit firms. It also reveals that audit firm size does not contribute to the relationship between corporate risk-taking and value creation., Heian Jing et al. (2015) indicated that companies, which are audited by four big audit firms, are faced with fewer restatements. Neal and Riley (2015) showed that companies with higher risk-taking would pay less tax expense. The results also show no significant relationship between unbounded members of the board of directors and a business unit's value creation. Richardson et al. (2015) indicated a significant relationship between the percentage of unbounded board members and tax expenses.

. Hanlon (2016) indicated an inverse relationship between the board structure (board independence) and systematic risk. The results show a significant relationship between ownership concentration and the value creation of a business unit.

Finally, suppose other academies intend to study audit quality. In that case, it should be more useful to use other audit quality indices, like the type of audit report, earnings management, annual adjustments, etc. to the calculation of audit quality and compare the results with the current findings. It is also suggested that future researchers take some other major criteria, like information asymmetry, agency expenses, type of ownership, and the presence or absence of audit committee into consideration in the evaluation of the relationship between audit quality and risk-taking of a business unit. It seems that such factors could contribute extensively to the relationship between audit quality and the risk of a business unit.

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