



Internal Control Quality Assessment based on the Characteristics of the Entity and Auditor and their Expected Goals in the Firm's Listed in Tehran Stock Exchange

Saeed Alipour^a, Asgar Pakmaram^{b,*}, Rasool Abdi^c, Jamal Bahri sales^d

^{a,b,c} Department of Accounting, Bonab Branch, Islamic Azad University, Bonab, Iran. Postcode 134/55518

^d Department of Accounting, Urmia Branch, Islamic Azad University, Urmia, Iran. Postcode 63896-57169

Article Info

Article history:

Received 12 July 2019

Accepted 16 September 2019

Keywords:

Internal Controls Quality

Internal control weaknesses

Characteristics of the Economic Unit

Characteristics of Auditor

Ogneva Model

ABSTRACT

According to the domestic studies conducted on in the field of internal controls, the gap of providing models for identifying weak internal controls is felt completely. The present study is aimed at providing a model for assessing the quality of internal controls based on the characteristics of the economic unit, the characteristics of auditor as well as their expected goals in the Firm's listed in Tehran Stock Exchange. This model is designed according to quantitative criteria. To achieve the research's goal, 86 Firm's from all Firm's accepted in Tehran Stock Exchange for the period 2012-2017 were selected and the research hypothesis was tested using the combined data approach. Given the research hypothesis that points out that the internal assessment model based on the characteristics of the economic units, the characteristics of auditor and their expected objectives may more accurately assess the quality of the internal controls, according to the significance level of less than 0.05, the independent variables indicate a significant relationship between the internal controls assessment model based on the characteristics of the economic units, the characteristics of auditor and their expected objectives as well as the weaknesses of the internal control of the Firm. Furthermore, the estimated coefficient of the control variables of the research indicates a significant relationship between these variables and the weaknesses of the internal controls.

1 Introduction

The implementation of the mechanisms and procedures for internal control is part of the employee job description; however, they might be unwilling to implement them without knowledge of the nature of these internal controls, even if the processes are thoroughly perceived. Liu et al. [1] pointed to the conflict of interests (COI) at the employee level concerning certain interests, which can lead them into abuse when there is an opportunity. The COI can prevent the proper implementation of mechanisms for internal controls especially when they are inconsistent with the interests of the employees. Despite the formulation of proper internal controls for the needs of managers and their expected goals, employee COI can cause problems in the proper and effective implementation of controls. The COI affects managers much more profoundly than employees, insofar as it makes managers opportunistic

* Corresponding author. Tel.: +98-914-343-2732 ; fax: +98-453-372-7802.
E-mail address: pakmaramas@yahoo.com

and abusive [Wolk ; Deegan]. According to the research literature, the problem gets worse considering that Iranian managers and employees have insufficient knowledge of the nature of internal controls. Kaviani [2] believes that it is very important to continuously train managers to implement the instructions for internal control, issued by the Securities and Exchange Organization, and identify the right time for the implementation of internal controls. However, these important points have been neglected. Therefore, financial reports are more likely to be based on inaccurate evaluations as a result of all potential disadvantages of COI at manager and employee levels, negligence of continuous training for managers, and insufficient knowledge about the nature of internal control. Considering Clause 30 Revised Iranian Standards Auditing 700 (ISA#700) , as well as in the same way in which the auditor comply with other regulations of Securities and Exchange Organization, the trusted auditor should provide the comments on the compliance with internal controls governing financial reports in the section «A report on other legal and regulatory requirements» in the report on financial statements, and in case of significant weaknesses in the internal controls governing financial reporting, the cases are announced in this section. Therefore, the auditors announce internal controls quality to management and the public users of financial statements by investigating the internal controls and reporting on their weaknesses in the management letter and referring to significant weaknesses in auditing reports. In the current research and similar research studies, the audit reports and management letter are used to measure the quality of internal control, which is the dependent variable of the research.

Based on the representation theory and COI at manager and employee levels as well as the intrinsic constraints on the implementation of internal control and relevant data collection tools, it is now barely possible to identify all of the businesses with poor internal control. Hence, it is necessary to develop certain tools that can identify such businesses more accurately. In this regard, Ogneva et al. [3] introduced a model based on the features of businesses to estimate possible significant weaknesses of internal control in different businesses. This model uses various business features such as size, complexity, foreign currency trade, profit and loss, lifetime, inventory, sales growth, number of different sections, market value, and bankruptcy prospect. According to this model, businesses with poor internal control share similar features, based on which a model or a framework can be developed to identify such businesses. Ogneva's model [3] was developed for a nonfinancial business and focused only on business features. Internal control is a new subject in Iran, which is very different from internal control as viewed by experts. At the same time, businesses serve as institutions with significant roles in Iran's economy, in which Iran's micro and macro capitals are accumulated. Therefore, it is very important to evaluate the efficiency of internal control in a bid to make the optimal use of financial resources. Following the previous studies on factors affecting the disclosure of weakness in internal controls [3,4,6], this study proposes a model for the evaluation of internal control. Considering national conducted research in the area of internal controls, the gap of presenting models to detect weakens internal controls is quite felt. Therefore, the new aspect of this research is proposing a model to assess and identify the economic units with weakens internal controls. The second innovation of research is proposing the model based on economic units characteristics, their auditors' characteristics, and indexing the objectives of internal controls based on the definition presented by an organization called COSO organization, for which no similar model was observed among conducted studies. Additionally, the other innovation of the research is the use of various statistical methods to investigate the

relationships between research variables and achieve the final model of the research. As various logic models have been proposed, that each of which has its own advantages and disadvantages, in the current research the most important logic models are selected and tested to confirm the validity of the obtained results with greater reliability. Therefore, the main question and problem of this research can be proposed as follows: Can the model based on economic units' characteristics, auditor's characteristics, and expected objectives provide more accurate estimation of economic units with internal controls weakness, or cannot?

2 Theoretical Fundamentals and Research Background

2.1 Theoretical Foundations

The issue of COI among managers and owners rising from the representation theory [6], indicate that managers have different interests and demands than owners. Thus, business resources are used in favor of personal interests. Liu et al. [1] Analysed COI among employees and found out that the responsibilities of employees could be improperly performed due to contradiction with their interests. As a result, businesses would encounter problems in achieving their goals. Internal control is designed to manage and prevent certain situations that can result in abuse on the part of managers and employees. The representation theory is mainly based on the idea that managers, acting as the representatives of shareholders, may make certain decisions which cannot increase the wealth of investors. According to this theory, there must be sufficient controlling and monitoring mechanisms to protect shareholders from such conflicts of interest. Hence, Tehran Stock Exchange has been obligated to provide transparency and disclose financial statements as well as reports on poor internal control. These measures are used as practical solutions. Manager and employee COI can prevent the proper implementation of internal control processes and cause problems in achieving the expected goals. Thus, it is vital and useful to propose certain tools and processes which can Analysis and evaluate the effectiveness of controls.

- **Features of Businesses**

According to the framework presented by Basel Committee on Banking Supervision (BCBS, the establishment of an efficient internal control system can help ensure the fulfilment of goals pursued by businesses. The establishment of such a system can also guarantee that businesses achieve their long-term profitability goals and maintain the validity of financial and managerial reports. In addition, such a system can ensure that businesses act in compliance with internal rules, policies, plans, procedures, and regulations, something which can mitigate the risk of unexpected losses tarnishing the reputation of businesses. The abovementioned framework indicates that achieving the business goals is the one and only motivation for implementing internal controls. Therefore, proposing a model or a framework of indices for measuring the fulfilment of expected goals can be a useful criterion for assessing the efficiency or inefficiency of internal control at businesses. Finally, this framework can result in the development of a model for the evaluation of internal control and the identification of businesses with significant weaknesses [5]. Ogneva [3] relied on the studies of Ge and McVay [5], and Ashbaugh-Skaife et al. [4] and collected the factors indicating the specific features of businesses. Ogneva, then, developed a model to Analysis the role of each factor in identifying businesses with poor internal con-

trol. The results showed that the selected variables were powerful predictors.

- **Characteristics of Auditors**

The roles of auditors in internal control have two different aspects. On the one hand, expert and professional auditors, having the responsibility for analysing internal controls and validating financial reports, play key roles in identifying and eliminating weaknesses. Their advice can be helpful for the improvement of control environments in different businesses, mitigating internal control weakness. On the other hand, auditors can avoid identifying and exposing weak businesses by ignoring the efficiency of internal control and misallocating the right and sufficient time for analysis [6-11]. Auditing reports can be influenced by the fees and characteristics of auditors, something which can alter the quality of auditing. Identifying defects in internal control is based on analyses of the auditors. It is possible that deliberate or unintentional mistakes are made in identification of weaknesses. In other words, auditors may (deliberately or unintentionally) neglect significant weaknesses of businesses and forget to reflect them in their reports. Hence, it is very important to consider the characteristics of auditors acting as human factors in the process of disclosing such flaws [6-8].

- **Goals of Implementing Internal Controls**

According to the definition by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), an internal control is a process designed to logically ensure the fulfilment of three groups of goals including effectiveness and efficiency of operations, reliability of financial reporting, and compliance with necessary rules and regulations. This process is implemented by managers and employees at an organization. The first group indicates the primary objectives of a business including performance, profitability, and asset protection. The second group includes the process of codifying reliable financial reports for general purposes. The third group deals with the compliance with the rules and regulations governing different activities of businesses [1].

According to Ogneva et al. [3], businesses with successful internal control have distinctive features. The current definitions of internal controls indicate the implementation of these controls for the fulfilment of expected goals. Therefore, it is clearly concluded that failure in achieving internal control goals indicates an important defect in their implementation. However, auditors see these goals as no criteria for identifying defects; rather they rely on personal judgments, checklists, and other instruments such as questionnaires, observations, and interviews to evaluate controls.

2.2 Empirical Background

Lenard et al. [18] carry out a study on the Internal Control Weaknesses and Evidence of Real Activities Manipulation. They showed that the weakness of internal controls would damage the quality of financial reporting and impossibly reduce the fulfilment of financial reporting reliability. In a study entitled "Labour Organizations, Auditing Quality, and Internal Control", Bryan [16], indicated that the power and authority of labour unions and organizations depended on the high quality of auditing and flawless, proper, and important internal control. Bryan also showed that labour organizations were in dire need of reliable and high-quality financial statements to claim their demands and protect the rights of their workers. This is possible only through the high quality of auditing and weak internal

controls. Chen et al. [17], undertake a project on the Board Gender Diversity and Internal Control Weaknesses, showed that it was unlikely to observe the weaknesses of internal controls in a board of female directors. They also indicated that the weaknesses were not affected by the presence of women in the auditing committee and that the presence of even one woman in the board of directors could reduce the weaknesses of internal controls. According to them, a feature of Firm's with potential weak internal control was the absence of women in the board of directors. Thus, they recommended employing women in the board of directors to spontaneously resolve certain problems at lower costs [17]. Ashbaugh-Skaife et al. [4] carry out a study on the Effect of SOX Internal Control Deficiencies on Firm Risk and Cost of Equity. The results indicate that systematic risk, non-systematic risk, and capital costs increased significantly once the regular reports of internal risks were published after Sarbanes-Oxley instructions necessitated auditing internal controls and disclosing important weaknesses. However, the costs of capitals decreased after eliminating the weaknesses of internal controls. The research findings directly indicated an obstacle to the disclosure of important weaknesses in internal controls. Accordingly, managers are unwilling to disclose the facts of internal controls in order to prevent corporate risk and costs of achieving financial resources from increasing. Therefore, they conceal important weaknesses as much as possible. In a study entitled Internal Control Weakness and Cost of Equity, Ogneva [3] showed that Firm's with important internal control weaknesses faced high financing costs. Ogneva also used the variables of corporate features to develop a model indicating the relationship between corporate features and weakness of internal controls. As a result, Firm's with weak internal controls shared similar features, which could be developed into a model. Hajiha, Oradi and Saleh Abadi [13] analysed the weakness of internal controls and delayed audit reports. According to auditing standards, internal controls affect the reliance of an auditor on the collected auditing evidence in addition to the type, quality, execution scheduling, and limitations of auditing methods. Research findings show that there is a positive significant relationship between the defects of internal controls and delayed audit reports. In other words, auditor's report will be provided on time if there are no defects in internal controls. Raei and Nazari [14] analysed the effects of an IT control and evaluation framework on the quality of internal control and financial reporting at pharmaceutical Firm's listed in the Tehran Stock Exchange. Their findings indicated that the IT control and evaluation framework had direct effects on the quality of internal controls and the quality of financial reporting at these pharmaceutical Firms. In a study entitled Analysing the Effects of Internal Controls on Quality of Financial Reporting at Firm's Listed in Tehran Stock Exchange using McNichols Model, Cheraghi Zadeh and Moghadam showed that there were no significant relationships between internal control and the quality of financial reporting through the McNichols model. Considering that a goal of internal control is to increase the reliability of financial reports, they tried to prove it through the McNichols model. However, no significant results were observed [15].

3 Methodology and Hypotheses

The ability of the model including the characteristics of economic units, the characteristics of auditors, and the indicators for measuring the research model goals is specified as a hypothesis as follows:

H1: Internal control evaluation model based on the characteristics of economic units,

the characteristics of auditors, and their expected goals can have a more accurate evaluation of the internal control quality.

This research in terms of nature and method is correlation and based on the purpose is an applied study. Data collection was carried out using library method and research data by referring to financial statements and explanatory notes and through the official websites of the Iranian Securities and Exchange Organization, e.g. www.codal.ir and www.seo.ir with the programs of Rahavard Novin and Tadbir Pardaz. Then the data were analysed in Eviews. The statistical population included all Firm's listed in the Tehran Stock Exchange in six years from 2012 to 2017. The statistical population of this study is all Firms' accepted in Tehran Stock Exchange in the period of 2012-2017 which 86 Firm and 516 Firm/year are selected for the purpose of testing the statistical hypotheses using a targeted sampling.

Model Variables

This model provides a comprehensive model by using three groups of (1) the characteristics of economic units, (2) the characteristics of auditors (3) and the indicators for measuring the expected goals [3]:

$$\begin{aligned}
 ICW_{it} = & \alpha_{it} + \beta_1 size_{it} + \beta_2 LnAge_{it} + \beta_3 Growth_{it} + \beta_4 IO_{it} + \beta_5 Board_ind_{it} + \beta_6 Con_Own_{it} + \beta_7 Duality_{it} \\
 & + \beta_8 Inventory_{it} + \beta_9 Loss_{it} + \beta_{10} Bankruptcy_{it} + \beta_{11} Audit_Fee_{it} + \beta_{12} Audit_ind_{it} \\
 & + \beta_{13} Audit_size_{it} + \beta_{14} Audit_Spec_{it} + \beta_{15} Audit_remunere_{it} + \beta_{16} ROA_{it} + \beta_{17} ROE_{it} + \beta_{18} EPS_{it} \\
 & + \beta_{19} Employee_Efficiency_{it} + \beta_{20} EPS_{it} + \beta_{21} FRQ_{it} + \beta_{22} MEFQ_{it} + \beta_{23} Restatement_{it} + \beta_{24} AO_{it} \\
 & + \beta_{25} Tax\ Avoid_{it} + \beta_{26} Legal\ Fine_{it} + \varepsilon_{it}
 \end{aligned} \tag{1}$$

Research Variables

$ICW_{i,t}$: When economic units have significant weakness based on audit report and management letter, this variable takes value 1, otherwise zero [30].

$SIZE_{i,t}$: The Firm Size, log of year-end total assets for Firm i in Time t [3]

$LNAGE_{i,t}$: computed as log of the difference between the year under investigation and the firm's year of birth. [20]

$GROWTH_{i,t}$: Sales growth of a business (income earned by providing services): this variable is one if a business has high growth in the industry; otherwise, it is zero. [13]

$IO_{i,t}$: Percentage of institutional ownership, determined by using the ratio of number of shares owned by institutional owners to total released shares. [13]

$BOARD_IND_{i,t}$: The percentage of board independence, determined by using the ratio of number of non-bound board members to the total number of board members. [13]

$CON_OWN_{i,t}$: Concentration of ownership, determined by using the total ownership of three major shareholders of businesses. [3]

$DUALITY_{i,t}$: Separation of a business CEO from the chairman of board. [3]

$INVENTORY_{i,t}$: The ratio of inventory, determined by using the ratio of cost of a sold product to the average inventory. [18]

$BANKRUPTCY_{i,t}$: The bankruptcy risk, determined through the Altman Z-score [31]

$$Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 1.0X5.$$

X1 = working capital / total assets. Measures liquid assets in relation to the size of the company.

X2 = retained earnings / total assets. Measures profitability that reflects the company's age and earning power.

X3 = earnings before interest and taxes / total assets. Measures operating efficiency apart from tax and leveraging factors. It recognizes operating earnings as being important to long-term viability.

X4 = market value of equity / book value of total liabilities. Adds market dimension that can show up security price fluctuation as a possible red flag.

X5 = sales / total assets. Standard measure for total asset turnover (varies greatly from industry to industry).

AUDIT_FEE_{i,t}: The audit fee, determined by using the natural logarithm of auditing fee [3]

AUDIT_IND_{i,t}: The audit independence, determined by using the percentage of received fee to the total incomes of an audit firm; the higher the percentage, the lower the audit independence. [3]

AUDIT_SIZE_{i,t}: The audit firm size; the audit organization is considered a large audit firm, whereas other trusted audit firms are regarded as small institutions. [3]

AUDIT_SPEC_{i,t}: The audit specialty in the industry. equals 1 for clients of specialist auditors and 0 for clients of nonspecialist auditors

AUDIT_TENURE_{i,t}: The audit tenure time. The number of years the auditor has been engages company [3]

ROA_{i,t}: The return of asset, determined by using the ratio of operational net profit to total assets [21]

ROE_{i,t}: The return of equity, determined by using the ratio of operational net profit to the total equity [21]

EPS_{i,t}: The earning per share, determined by using the ratio of net profit to the number of ordinary shares [21]

EMPLOEE_EFFICIENY_{i,t}: The employee efficiency, determined by using the ratio of operational net profit to the number of employees [3]

FQR_{i,t}: The financial reporting quality, determined by using the McNichols-Stein index [16]

$$\Delta AR_{i,t} = \beta_0 + \beta_1 \Delta Sales_{i,t} + \varepsilon_{i,t}$$

In this equation, ΔAR shows the annual change in accounts received by businesses, and $\Delta Sales$ indicates the annual change in the sale income. All of these variables are divided by total assets at the beginning of the fiscal year. The remainder shows change in received accounts, which can be explained by change in sales. The higher the absolute value of the remainder, the higher the financial reporting quality.

MEFQ_{i,t}: The quality of earning prediction, determined by using the difference between estimated profit and actual profit. [17]

RESTATEMENT_{i,t}: The financial restatement; this variable is one if financial statements are restated; otherwise, it is zero. [17]

AO_{i,t}: The auditor's opinion; this variable is one if the auditor's opinion is positive; otherwise, it is zero. [17]

$TAXAVOID_{i,t}$: tax avoidance, determined by using the tax accounting difference index determined by using the difference between the cost of tax on instrumental income and the actual cost of tax on income. The result is multiplied by a negative value. The higher the product, the higher the tax avoidance. [22]

$LEGALFINE_{i,t}$: The fines for failure to abide by laws and regulations; a business is willing to disregard laws and regulations if it discloses the fines of such crimes in financial reports; thus, this value becomes one; otherwise, it is zero. [22]

Table 1: Descriptive statistics (part 1)

	IC W	AUDIT_FE E	AUDIT_IN D	AUDIT_SIZ E	AUDIT_SPEC	AUDIT_TENUR E	FRQ
Mean	0.44	6.91	0.04	0.21	0.43	0.13	0.05
Median	0.00	6.84	0.03	0.00	0.00	0.00	0.48
Maximum	1.00	9.50	0.12	1.00	1.00	1.00	0.77
Minimum	0.00	4.60	0.01	0.00	0.00	0.00	-0.41
Std. Dev.	0.49	0.89	0.03	0.40	0.49	0.33	0.19
Skewness	0.44	0.22	0.25	-0.82	-0.21	0.63	0.48
Kurtosis	1.83	1.05	1.65	1.03	1.28	1.23	1.19

Table 2: Descriptive statistics (part 2)

	AO	TAXAVOID	LEGALFINE	IO	BOARD_IND	CON_OWN	NODUALITY
Mean	0.08	-0.11	0.20	0.57	0.34	0.40	0.85
Median	0.00	-0.13	0.00	0.64	0.33	0.31	1.00
Maximum	1.00	0.00	1.00	0.99	1.00	0.89	1.00
Minimum	0.00	-0.46	0.00	0.03	0.20	0.10	0.00
Std. Dev.	0.27	0.09	0.40	0.32	0.09	0.25	0.35
Skewness	0.60	0.42	-0.24	-0.50	0.45	0.20	-0.58
Kurtosis	1.36	1.04	1.86	1.71	1.65	1.05	1.02

4 Analysis and Findings

4.1 Descriptive Findings

Chart 1 presents some concepts of descriptive statistics on variables including mean, median, minimum, and maximum of observations as central indices. The standard deviation is presented as an index of dispersion. This chart also presents kurtosis and skewness as distributive measures. The main central index is the mean, stating a balance point and centre of gravity in the distribution. It shows the centrality of data. For instance, the mean was 0.44 for the weakness of internal controls, a value which indicates most of the data were centralized around the mean. The median is another central index showing the population status. According to the results, the audit fee median was 6.85, indicating that half of data were below, and the other half above, this point. The standard deviation is one of the most important indices of dispersion, employed to determine the deviation of observations from the mean. The standard deviation was reported at 0.50 for the weakness of internal control.

4.2 Inferential Findings

The prediction accuracy percentage test, used in the logic model, consists of two modes, the first of which is based on determining the probability of equality of the dependent variable to zero and one. Chart 2 presents the test results, according to which the prediction accuracy of $y=0$ observations was 3.25% when the accuracy was 91.23% for $y=1$ observations.

The total percentage was 87.02%. In the second mode, the results were based on the expected value of observations with zero and one. The above table shows the results of the first model. Accordingly, the prediction accuracy percentage of $y=0$ observations was 41.64% when this Value was 58.23 for $y=1$ observations. The total value was 52.14%. In fact, the closer these value to 100%, the more explanatory the model.

Table 3: Percentage Prediction Accuracy

	y =0	y =1	total
Percentage prediction accuracy	%7.10	%90.08	%88.17
	%32.36	%74.16	%52.71

Table 4: Hosmer-Lemeshow, Andrews Test

	Coefficient	Prob
Hosmer-Lemeshow	9.5214	0.3651
Andrews	9.6421	0.5819

- **Hosmer-Lemeshow Test**

The Hosmer-Lemeshow test can be conducted to Analysis the explanatory power of logit and probit models. This test classifies actual and estimated observations of the dependent variable as certain categories, in each of which the estimated values are compared with actual values. The comparison results led to Hosmer-Lemeshow and Andrews's statistics, both of which indicate the null hypothesis stating the quality of predicted observations and actual values of the dependent variable (the high explanatory power of the estimated model). The other hypothesis states the weak explanatory power of the model. According to Chart 3, the null hypothesis was rejected at a reliance level of 95%.

4.3 Research Model Results

The results of testing the research model are as Table 5. In this logic regression model, the significance level of likelihood (0.000000), resembling the F statistic in the linear regression model, indicates the total significance of the regression model at an error level of 5%. Given McFadden's determination coefficient, it can be claimed than nearly 40% of changes in the dependent variable is explained by the independent and control variables of the research model. According to the above table, the fourth hypothesis states that the evaluation model of internal controls, based on their expected goals, features of businesses, and characteristics of auditors, can result in a more accurate evaluation of the quality of internal controls.

Table 5: Hypothesis Test

Variable	Coefficient	Std. Error	z-Statistic	Prob.
SIZE	-0.008931	0.003864	-2.345771	0.0196
LNAGE	-0.105936	0.011442	-9.235687	0.0000
GROWTH	0.700404	0.070511	9.933247	0.0000
IO	-0.199934	0.042264	-4.729782	0.0000
BOARD_IND	-0.010451	0.002864	-3.631354	0.0003
CON_OWN	-1.150031	0.581341	-1.978334	0.0479
NODUALITY	-0.019993	0.008655	-2.320764	0.0209
INVENTORY	0.901841	0.432421	2.085661	0.0370
LOSS	0.000131	4.455461	3.687064	0.0003
BANKRUPTCY	0.225118	0.021336	10.55749	0.0000
AUDIT_FEE	0.161151	0.031625	5.098264	0.0000
AUDIT_IND	6.896140	1.319335	5.226710	0.0000
AUDIT_SIZE	3.210034	1.540312	2.086641	0.0377
AUDIT_SPEC	5.921881	1.148761	5.155131	0.0000
AUDIT_TENURE	4.094461	0.945361	4.332141	0.0000
ROA	-6.896421	0.829958	-8.309314	0.0000
ROE	-4.094431	0.444476	-9.211612	0.0000
EPS	-8.457761	0.269231	-31.40846	0.0000
EMPLOEE EFFICENY	-0.687581	0.308864	-2.225761	0.0260
FQR	-0.419551	0.008562	-48.88326	0.0000
MEFQ	-0.004531	0.000931	-4.760991	0.0000
RESTATEMENT	-0.686061	0.309771	-2.214764	0.0268
AO	-0.035641	0.015881	-2.248561	0.0251
TAXAVOID	0.393121	0.030121	13.05391	0.0000
LEGALFINE	0.422877	0.121793	3.473625	0.0018
C	5.981563	1.075964	5.559331	0.0000
McFadden R-squared	0.401521	Mean dependent var		0.871642
S.D. dependent var	0.769124	S.E. of regression		0.313698
Akaike info criterion	1.993171	Sum squared resid		14.55781
Schwarz criterion	1.512891	Log likelihood		-610.6361
Hannan-Quinn criter.	1.636910	Deviance		418.1487
Restr. deviance	601.8214	Restr. log likelihood		-210.4156
LR statistic	16.23741	Avg. log likelihood		-0.937160
Prob(LR statistic)	0.000000			

Considering the fact that the significance level was lower than 0.05, the dependent variables showed the significant relationship between the evaluation model of internal controls, based on their expected goals, and the feature of businesses, auditors, and weaknesses of internal controls. Moreover, the estimation coefficient of control variables indicated the presence of a significant relationship between

these variables and the weaknesses of internal controls. Hence, the research hypothesis was confirmed in accordance with the results of statistics.

5 Discussion and Conclusions

In this study, a model was developed to evaluate the quality of internal controls based on business features, auditor characteristics, and the expected goals at Firm's listed in the Tehran Stock Exchange. Model development and estimation produced the following results:

Large businesses have abundant resources to spend on consultation and internal auditors. They also have many processes of financial reporting and sufficient employees for separation of duties. Hence, they have fewer important weak controls [19, 20]. Therefore, the Firm size coefficient becomes negative. A business lifetime has a very significant relationship with experience; thus, businesses with a longer lifetime have more experiences on the implementation of internal controls [3]. As a result, the Firm lifetime has a negative value. The rapid growth requires rapid changes. The necessary correlation between all sections at the same rate is unlikely [21, 22]. Therefore, the Firm growth coefficient has a positive value. Institutional investors, the independence of board of directors, ownership centralization of businesses, and probability of weak internal control will reduce as a result. The coefficients of these variables have negative values. Businesses of poor performance may lack the capability of temporal or monetary investment in the development of proper controls. The right internal controls require both financial resources and time management [23]. Therefore, the weakness of internal control is positively related to three performance criteria: inventory, loss, and bankruptcy probability. Hence, the coefficients of these variables became positive. According to the literature, auditors are displeased with the audit fees, a fact which can discourage them to Analyse internal controls more accurately. There are no relevant regulations and instructions persuading auditors to implement internal controls more accurately. Hence, it is essential to Analyse the characteristics of auditors for validation. The audit fee creates a powerful incentive for providing better and high-quality services, leading to the highly probable identification of businesses with weak internal [6]. Hence, the audit fee has a positive value. An auditor's independence can lead to biased statements, and adversely affect the audit quality. IT can finally lead to the negligence or concealment of important weaknesses in internal controls. Therefore, the board independence coefficient has a positive value. According to the literature, the audit firm size can lead to high-quality audits. Large audit firms are unwilling to agree to the demands of their clients for false reports in order to maintain their reputation. Therefore, the audit firm size is a positive coefficient. The larger the audit firm size, the higher the probability of discovering weaknesses. It takes time and experience to get acquainted with the structures of businesses, develop sufficient internal controls, and implement them properly. Hence, if auditors work at a business for more consecutive years and gain auditing experience on other businesses, they can industrially have the right insight into the procedures and systems of businesses, and also prevent the occurrence of common errors [25-27]. Hence, the coefficients of auditing specialty and audit firm tenure have positive values.

Internal controls are implemented to achieve the expected goals. Otherwise, businesses will face only waste of time and resources. Return on assets, return on equity, employee efficiency, and earning per share were used as indices of performance and profitability in previous studies [3, 7, 12, 28]. Accord-

ing to the definition of internal controls, businesses of efficient internal controls are expected to produce high profits. Thus, negative coefficients were obtained for ROA, ROE, EPS, and employee efficiency. In other words, businesses of better performance and higher profitability are less likely to have weakness in their internal controls. The efficient internal controls try to increase reliability of financial reporting, something which is a qualitative feature of financial reporting. Hence, businesses of high-quality internal controls are expected to have high-quality financial reports. As a result, the financial reporting quality has a negative coefficient. The more accurate estimation of future profits can affect the quality of information disclosure and financial reporting reliability. Therefore, businesses with significant internal control weaknesses are characterized with lower financial reporting reliability [29]. Thus, the financial reporting reliability has a negative coefficient. Kini and McDaniel [9] believed that financial restatement was a sign of weakness in internal controls. Hence, financial restatement was regarded as another criterion for financial reporting reliability in the research model, and the quality of profit prediction had a negative coefficient. The audit statement was regarded as a criterion for evaluating the quality and reliability of financial reporting in many studies [26]. Therefore, the audit statement obtained a negative value. In other words, if the audit statement improves (and becomes acceptable), the probability of significant weaknesses will decrease. If businesses disclose their violation of rules and regulations in their financial reports and have a high probability of tax avoidance, they are classified as businesses willing to breach laws. These two criteria are used more often to identify businesses which are more likely to violate laws and regulations. As a result, tax avoidance and violation of rules had positive coefficients. If their values increase, the probability of weak internal controls will increase. It is hoped that these findings can enrich the accounting literature and help identify and improve internal control weaknesses. These findings can help investors select the right portfolios. They can also help businesses to procure the necessary requirements to Analysis and discover weaknesses and improve the quality of internal controls.

References

- [1] Liu, C., Lin, B., Shu, W., *Employee quality, monitoring environment and internal control*, China Journal of Accounting Research, 2017, **10**(1), P. 51-70. Doi: 10.1016/j.cjar.2016.12.002
- [2] Kaviani, M., *A Review of the Challenges in the Reporting of Internal Controls in Iran*, Auditors' Audit, 2015, **78**, P. 42-50. (In Persian)
- [3] Ogneva, M., Subramanyam, K. R., Raghunandan, K., *Internal control weakness and cost of equity: Evidence from SOX Section 404 disclosures*, The Accounting Review, 2007, **82**(5), P.1255-1297. Doi: 10.2139/ssrn.766104
- [4] Ashbaugh-Skaife, H., Collins, D. W., Kinney, W. R., *The discovery and reporting of internal control deficiencies prior to SOX-mandated audit*, Journal of Accounting and Economics, 2007, **44**(1), P. 166-192. Doi: 10.1016/j.jacceco.2006.10.001
- [5] Ge, W., McVay, S., *The disclosure of material weaknesses in internal control after the Sarbanes-Oxley Act*, Accounting Horizons, 2005, **19**(3), P. 137-158. Doi: 10.2308/acch.2005.19.3.137

-
- [6] BaniMahd, B., Nejati, A., *The relationship between organizational culture and auditors' commitment*, Financial Accounting and Audit Research, 2016, **8** (30), P. 138-119. (In Persian)
- [7] Vaez, S.A., Ahmadi, M.R., Rashidi Baghi, M., *Effect of audit quality on corporate audit fees*, Empirical Research of Financial Accounting, 2014, **1**(10), P. 110-87. (In Persian)
- [8] Yazdi, H., Mohammadian, M., *Effect of Profitability Indices on the Capital Structure of Listed Firms in Tehran Stock Exchange*, Advances in mathematical finance & applications, 2017, **2**(3), P. 1-11, (in Persian). Doi:10.22034/amfa.2017.533085
- [9] Kiwi, R., Campenhead, L.V., *Methodology in the Social Sciences*, Translation by Abdolhossein Nik Gohar, Tehran: T. Sixth Edition, 2008 (In Persian)
- [10] Coleman, S; Watson, H., *An Introduction to Humanities*, Translated by Mohsen Solati, Tehran: Scientific. Second edition, 2002, (In Persian)
- [11] Maham K; Tak rousta, M., Knowing., *The Obstacles to Assessing Internal Controls in Independent Audit*, Audit Knowledge, 2012, **12** (46), P. 62-79. (In Persia)
- [12] Fandersky, A., Safari Grayli, M., *The effectiveness of internal controls and the risk of falling stock prices*, Financial Accounting and Audit Research, 2018, **10** (38), P. 186-169. (In Persian)
- [13] Hajih, Z., Oradi, J., Saleh Abadi, M., *Weakness in internal control and delayed audit report*, Financial Accounting Phrases, 2017, **9** (33), P. 78-96. (In Persian)
- [14] Mashhadi, S., Nazari, J., Ehtesham Ratsi, R., *Influence of the Information Technology Control and Evaluation Framework on the quality of internal controls and the quality of financial reporting Firm's in the pharmaceutical industry accepted on the stock exchange*, Quarterly Journal of Development and Development. 2017, **28**, P. 71-81. (In Persian)
- [15] Cheraghizadeh, M., Moghadam, A., *The Effect of Internal Controls on Financial Reporting Quality in Firm's Accepted in the Stock Exchange Using the Francis et al. Model*, Fourth National Conference on Accounting, Financial Management and Investment, Azadshahr, Scientific Association Professionals of Golestan Managers and Accountants, Islamic Azad University, Azadshahr Branch.2015, (In Persian)
- [16] Bryan, D. B., *Organized labor, audit quality, and internal control*, Advances in Accounting, 2017, **36**, P. 11-26. Doi: 10.1016/j.adiac.2016.09.005
- [17] Chen, Y., Eshleman, J. D., Soileau, J. S., *Board gender diversity and internal control weaknesses*, Advances in Accounting, 2016, **33**, P. 11-19. Doi: /10.1016/j.adiac.2016.04.005
- [18] Lenard, M. J., Petruska, K. A., Alam, P., & Yu, B., *Internal control weaknesses and evidence of real activities manipulation*, Advances in Accounting, 2016, **33**, P. 47-58. Doi: 10.1016/j.adiac.2016.04.008
- [19] Balouei, E., Anvary Rostamy, A.R., Sadeghi Sharif, J., Saeedi,A., *The Impacts of Financial Structure on*

Financial Performance of Banks listed in Tehran Stock Exchange: An Empirical Application, Advances in mathematical finance & applications, 2018, **3**(3), P. 11-26, (in Persian). Doi: 10.22034/amfa.2018. 544946

[20] Abbaszadeh, M, R., Mohammadi, J., Mohammadi, K., *Necessity of Internal Controls in the Public Sector*, Journal of Financial Research, 2011, **13** (56), P. 7-1. (In Persian)

[21] Ji, X. D., Lu, W., Qu, W., *Voluntary Disclosure of Internal Control Weakness and Earnings Quality: Evidence from China*, The International Journal of Accounting, 2017, **52**(1), P. 27-44.

[22] Jokar, H., Shamsaddini, K., Daneshi, V., *Investigating the Effect of Investors' Behaviour and Management on the Stock Returns: Evidence from Iran*, Advances in Mathematical Finance and Applications, 2018, **3**(3), P. 41-52. (In Persian)

[23] Izadikhah, M., Saen, R.F., Roostae, R., *How to assess sustainability of suppliers in the presence of volume discount and negative data in data envelopment analysis?* Annals of Operations Research, 2018, **269**, P. 241–267, Doi: 10.1007/s10479-018-2790-6

[24] Fakhari, H., Kabiri M, T., *The effect of moderating the audit report on the relationship between the disclosure of weaknesses in internal control and information asymmetry*, Empirical Accounting Research: Spring, 2018, **7**(27), P. 172-147. (In Persian)

[25] Moshirzadeh H., *The challenge of deploying the internal controls system in Iran*, The Official Accountant, 2012, **20**, P. 18-23. (In Persian)

[26] Piri, P., Sheikh Mohammadi, A., Javadi, N., *Investigate the relationship between the size of the audit firm, the number of clients of the audit firm with audit quality*, Audit Knowledge, 2014, **13** (51), P. 26-1. (In Persian)

[27] Tavangar Hamzeh Kalayi, A., Ascahi Aal, M., *The relationship between CEO power, audit committee characteristics and internal control quality*, Financial Accounting and Audit Research, 2018, **10** (38), P. 207-187. (In Persian)

[28] Jamei, R., Rastmian, A., *Effect of Financial Audit Committee Members' Profit on Predictable Profitability Characteristics*, Financial Accounting and Audit Research. 2016, **8** (29), P. 17-1. (In Persian)

[29] Izadikhah, M., *Improving the Banks Shareholder Long Term Values by Using Data Envelopment Analysis Model*, Advances in Mathematical Finance and Applications, 2018, **3**(2), P. 27-41.
Doi: 10.22034/amfa.2018.540829

[30] Khlif, H., Samaha, K., Soliman, M.T., *Internal Control Quality, Disclosure and Cost of Equity Capital: The Case of an Unregulated Market*, 2017. Doi:10.2139/ssrn.3059702

[31] Yu-Chien K., Hamido F., Tianrui L., *An evidential analysis of Altman Z-score for financial predictions: Case study on solar energy companies*, Applied Soft Computing, 2017, **52**, P. 748-759.
Doi: 10.1016/j.asoc.2016.09.050