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THE EFFECT OF SIZE AND AGE OF AUDIT FIRMS ON AUDIT QUALITY

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Abstract: *The purpose of this study is to investigate the effect of size and age of audit firm on audit quality of a sample of public listed companies in Tehran stock exchange. The sample of this study is 120 companies during the period of 2007 to 2012. In this study dependent variable is discretionary accrual and independent variables are size and age of audit firms. Control variables of this study include logarithm of assets, operating cash flow, Zimsky bankruptcy index and financial leverage. In order to estimate a suitable model, Chow and Hausman tests were used. Correlation Analysis (Pearson coefficient) and regression analysis were used to test hypotheses. According to the research findings, size and age of audit firms through reducing discretionary accruals can increase audit quality. There is meaningful relationship among financial leverage and operating cash flow with discretionary accruals. But there is not a meaningful relationship between logarithms of assets and discretionary accruals.*

Keywords: *Size and Age of audit Firms, Audit Quality, Operating Cash Flow, Financial Leverage, Discretionary Accruals and Tehran Stock Exchange*

1. INTRODUCTION

To data users, audit report is very valuable. Its value is due to increasing the probability of detecting significant errors, and cases of non-compliance with generally accepted accounting principles and protective cover created for individuals and groups involved in the joint-stock companies. The quality of auditing increases reliability of reporting by reducing intentional and unintentional errors in historical profit (Francis, Maydew, & Sparks, 1999). The role of audit has received considerable importance accreditation compared to earnings after the recent re-presentation of earnings and big companies bankruptcy. Differences arising from the quality of auditing presents as difference in credit offered by auditors and the quality of their client profit. Since the audit quality has different aspects and is originally invisible there is no specific audit characteristic to be considered as a factor for representing the audit quality. Most past studies have used auditor's reputation as the quality factor for audit work and have investigated

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the relation between reputation and the quality of profit (Tendeloo & Vanstraelen, 2008). Myers, J.N., *et al.* (2003) have showed that long term audit tenure of an auditor leads to his increased knowledge and expertise in the employer industry and more long term tenure also increases the quality and stability of profit (Myers, Myers, & Omer, 2003). They have argued that increased time of cooperation of auditors improves their understanding of reporting the environment and internal controls of the company, and as a result they are able to detect false reporting more effective.

Also, evidences suggest that one of the most important measure factors for auditing quality is auditor size, so that there is a direct relation between them. As the size of auditor gets bigger, the audit quality gets better too. In the present study, the size of auditor refers to auditor reputation (brand). As a result of auditor reputation, credit of financial statements increases and therefor the quality of audit work will rise. Because, big audit firms do a lot of efforts for using and training professional and competent auditors and this protects the reputation and avoids litigation rights against the audit firm. DeAngelo (1981) and Palmrose (1988) have selected audit institutions members of 4 audit offices as big audit firms which have reputation and have raised their audits as the high-quality audits; and have introduce it as a factor and index of the audit quality in their research. Because firms members of 4 big audit institutions in addition to their reputation and credibility, are successful in training staff and maintaining independent from employers and other important issues affecting the quality. It seems that the size of audit institution apart from good influence on the audit quality, may also affect the speed and level of auditor knowledge of financial reporting environment. Chi and Hang (2005) have proved difference of learning and knowing between large and other audit institutions. According this, the main question of the present study arises as follows:

- **Do age and size of the audit firm affect the audit quality?**

1.1. Necessity of Research

Joint-stock companies play a major role in economy. Millions of people directly or indirectly invest in these companies and success of these companies depends on investors and creditors tends to invest in these companies, and considering that financial statements are one of the most important data sources of companies, they have a particular importance in investors and creditors decisions (Shabahang, 2002). Therefor managers are trying financial reports be the desire of investors, and this arises from benefit seeking incentives of managers, because many of their benefits are determined and paid based on company performance. Among them, the firm reported earning is very important and investors are more attended on it, and it is the basis of evaluating management performance future cash flows of the company (Givol & Hayn, 2000). Based on the principles outlined in the agency theory, interests of managers and owners of commercial units do not generally

align and this provides incentives to false and oriented financial reporting by mangers (Lafond & Watts, 2008). Final result of this operation will be such that commercial unit image seems better than actual situation and incentives of investment injection by people outside the company increases. In such situation monitoring mechanisms on managers reporting approaches reduces their profit seeking incentives and helps to protect investors' rights. Auditing and the quality and reliability of auditing process is one of external monitoring mechanisms which can play a major role in reducing agency conflicts.

2. RESEARCH PURPOSES

The main purpose of the present study is investigating the relation between age and size of the audit firm on the audit quality in companies listed on Tehran Stock Exchange. This general purpose follows by dividing to following scientific and practical purposes:

1) The scientific objective of the present study is investigating quality level of auditing in Iran financial situation and reporting environment. To reach this goal auditing quality factors of past studies have been tested and their efficiency in measuring this variable has been investigated.
2) Explaining the impact of audit quality on financial reports reliability of companies listed on Tehran Stock Exchange and help investors and participants of this market to evaluate quality of published information of companies.
3) Helping audit firms managers to improve the quality of audit work using determining effective factors on the audit quality.

3. LITERATURE REVIEW

In their research, Titman and Trueman (1986) resulted that more qualified auditing improves the accuracy of information provided and allows investor to have more precise estimation of the company value. In this investigation it is noted that greater auditors have better supervising ability and therefore are more qualified. DeAngelo, L.E (1981), considered audit firms which are members of four great audit office as large and credible audit firms, and discussed audits performed by them as high qualified auditing and presented them as measure of audit quality in their study, its why companies membered in four big audit offices in addition to their fame and credit, act successfully in staff training and keep the independence of them against auditees and other effective factors in increasing the quality. (Tendeloo &Vanstraelen, 2008). Lam and Chang (1994) found that big audit firms in general don't provide better audit quality than small ones. (Hay, 2002). Hogan& Jeter (1999) examined two items: 1- the expertise process in industry from 1976 to 1993 and 2- is it possible the companies which are specialist in industry increase their market share?

They found that the audit firm with commercial titles, increase their level of industrial specialty in order to improve their audit quality. They also understood that these audit firms try to focus onindustrial characteristics and regulations of companies that have relatively low lawsuit risk and rapid growth. They came to this conclusion that through focusing on a particular industry, an audit firm can raise its expertise level in that industry, also industrial experts provide higher quality and more services in compare with non-experts, so they can have more market share in compare with other audit firms in that industry(Mahdi, 2009). Tat (2001) got to this result that great audit firms don't always provide better audit quality than small firms. Kim et al. (2003) demonstrated that the difference of effectiveness between big and small audit firms stems from the contrast between motivations of company executives and auditors in reporting. When directors have sufficient motivation to increase the amount of profit using accounting profit multiplier methods, maintaining the neutrality of auditors leads to conflict between managers and auditors. They found that big audit firms have greater effectiveness in preventing the income effect than small firms (assuming there is a conflict between managers and auditors) (Ansari & Shafiei, 2009). Bauwhede & Willekens (2004), two Belgian researchers tested the effects of audit firm's size on audit quality in Belgium market and for auditing size took subordinates (secondary) such as the auditor's market share, number of audit firm's employers etc. finally their research result showed that, there is no significant association between the size of auditor and auditing quality.

Zhou and Elder (2004) studied the relation between auditing quality and profit management in SEO companies (the companies that are offering shares but their bond has been released before) from 1991 to 1999 for a sample of 2453 companies. They represented auditor's size and auditor's expert for auditing quality and discretionary accruals for profit management. And concluded that: 1- five great audit firms with low earnings management in the years before, after and even current year SEO are in relation. 2- The specialist auditors in industry with low earnings management in the year SEO is performed, are in relation with each other. Deltas & Doogar (2004) in their researches came to this conclusion that, the less the variety of audit products, the more the audit quality of statements. Bauwhede & Willekens (2004) two Belgian researchers tested the effects of size of audit firm on audit quality in Belgium market for a sample of 1302 companies. For audit size, they took indexes such as auditor's market share, number of audit firm's employers, number of audit firm's partners, total assets and audit firm's total operating profit. Their research hypothesis was '' there is a meaningful relationship between size of audit firm and auditing quality''. At last their research results showed that there isn't any significant association between size of auditing and audit quality. (Azinfar, Hassas Yeganeh, & Seyed Motahhari, 2007)Audit industry specialists was measured based on employer companies' assets to total assets of them in a particular industry and size of auditor was measured on the basis of whether these five audit firms were big or not. The result showed that the companies that are audited by higher

qualified auditors, have more accurate profit forecasts and the companies are audited by auditors except from 5 big companies' auditors, have more profit forecast deviation. Louis Henock (2005) revealed, larger audit firms often provide better services in compare with smaller firms. But there found cases where smaller audit firms present better consulting to their employers.

Fuerman in his study concluded that big audit firms have less audit failure (delinquency) (Ross, 2006). Tally (2006) estimated the risk of four large audit firms (four greats) that in reality have paid a loss of $1 billion to large companies in 5 years and demonstrated that large audit firms just as small ones undergo audit failure (Hema & Michael, 2007).

Gul *et al.* (1989) in their research reviewed the relationship between audit tenure and the level of audit quality. They considered the audit tenure in three levels: 1- short-term tenure (2-3 years), 2- mid-term tenure (4 to 8 years) and long-term tenure (more than 9 years). Their hypothesis was that there is a relationship between audit quality and different levels of audit tenure. In this research they concluded that 1- increasing the tenure, the auditor conservatism decreases and 2- audit report failure is more in early years of Auditee Company and the longer the audit firm's tenure than auditee company, the further the audit quality. Langary (2000) in a research examined the observance of 15 factors of audit quality monitoring, in audits conducted by Audit Office. These factors include: 1- superintendence, 2- labor division, 3- professional training, 4- professional qualification, 5- staff promotions, 6- accepting business continuity with staff, 7- surveillance, 8- independence, 9- neutrality(impartiality), 10- consultation, 11- conditions of employment, 12- adequate facilities, 13- description of auditors' duties, 14- evaluation of professional staff, 15- HAMPISHEGAN investigation. In his study, the researcher intends to answer the following question that if mentioned 15 factors and criteria for quality control in order to control conducted audits by auditing office are followed? In fact, the approach of this research is to observe the quality control parameters in performing the audits.

The research population was the audits conducted by the Audit Office. Based on 15 factors of quality monitoring, the researcher has designed 15 hypothesis on observing these factors. Hypothesis test was done through questionnaire distribution and objective observation of audit files in Audit Office. At the end of the research, Langary (2000) concluded that the quality monitoring factors aren't observed in audits of Audit Office. Aghaii (2002) states that the main objective of this research is to identfy the effective factors on audit quality independent from users and independent auditors' perspective. In this research, using audit texts and literature, accepted auditing standards, statements and considering the environmental conditions in Iran, 13 effective factors on the quality of dependent auditor were identified. The information necessary to realize the objectives of the research was collected using questionnaire. Research results showed that two

factors of audit size and expertise in industry are among effective factors on audit quality. Jafary (2006) studied the auditing quality of Iran CPAs community members. In his research, the issue that whether or not the CPAs have the independence and competence required in financial statements audits was evaluated. In his study, the audit quality was considered as auditors' qualification in discovery of material misstatement and it's reporting as audit quality. The researcher investigated the factors like auditors' specialization, existence of rules and regulations and also the size of Audit Office of CPAs community. This reseach was carried on in four stages below:

1) Identifying the effective factors on audit quality of Certificated Public Accountants' community members through library studying
2) Soliciting the opinion of accounting and audit experts about the effect of identified factors on audit quality of community members
3) Reviewing the actual audit quality of CPAs
4) Providing suggestions to improve the quality of auditing Certificated Auditors of CPAs

One of their research's hypothesis was that there is a significant relationship between the size of CPAs auditing office and their motivation to maintain neutrality in reporting the found distortions.

This hypothesis reproved through t test and finally, the researcher suggested that regulations be developed to integrate smaller audit firms, and form larger audit firms to improve the audit quality.

Azinfar (2007) in a research reviewed the relationship between auditing quality and audit size and discovered falsifications was chosen as the basis of audit quality. About the size of auditing, the audit institutions are divided into two categories: small and large institutions. In this research the Audit Office, large institutions and others were considered as small institution. The research hypothesis was that there is a meaningful relationship between the size of audit firm and different discovered distortions. The results of research showed that the audit firms which are a member of society of CPAs (non-major) are of higher auditing quality than the Audit Office, and being a large institution in Iran doesn't necessarily lead to audit quality. Seiiedy (2009) in a research with the title of the role of independent auditors in reducing profit management studied the relation of independent auditors and the type of commenting and also the number of condition's clauses in auditing report on discretionary accruals. In this research, in order to estimate the discretionary accruals, the modified version of Jones was used. In this research, the type of audit firm was divided in two categories of Audit Office and other institutions and the type of auditor's comment (opinion) was divided in two categories of unqualified and qualified, the research findings showed that just the type of audit firm is in relation with discretionary accruals. In his research, Ahmadi

(2009) reviewed the effect of auditing quality on the feature of profit forecast. The statistical population of his research was the listed companies in Tehran Exchange during 1382 and 1384. For audit quality section, he considered Iran's 10 large audit companies. Additionally, his research's hypothesis was as follow: in companies that were audited by large institutions, the amount of investor's ability in forecasting future profitability of company is more. In general, the result of the research confirms this hypothesis. And the companies that are audited by 10 larges, have more profit forecasting ability than companies which are audited by other companies than 10 larges. Nazemi Ardakani (2009) in his research, studied the relationship between expertise in auditing industry and different options of profit management. In order to address this issue, he tested 115 listed companies in Tehran Stock Exchange during 2002 and 2007. His research hypothesis was that the discretionary accruals of companies with expert auditor in industry is less in other companies. For discretionary accruals, he used the Jones model and for expertise in industry, the auditor used the market value. His research result was that the companies that their auditor is expert in industry, has lower accrual management.

In a research, Nonahal *et al.* (2011) reviewed the association between audit quality and reliability of accruals which in order to determine the audit quality has used two criteria of the size of audit firm and the auditor's term of tenure and in order to compute the reliability of accruals in following the model of Richardson *et al.* (2003) has used the stability of accruals. The time period of the research was from 2001 to 2007. The present study's hypothesis was that the reliability accruals of companies that be audited by more qualified auditors is more than companies that aren't audited by these auditors. The results of research showed that the companies that are audited by higher qualified auditors has more stability coefficient of accruals than the companies that are audited by lower qualified auditors, and as a result, has higher reliability accruals. Hassan Yeganeh and Azinfar (2010) studied the relationship between audit quality and the size of audit firm. For this purpose, the audit firms of society of CPAs were classified as small auditor (small audit firms), and the Audit Office, because of many staff and longer history was classified as large auditors. In order to study the quality, the investors' measure, the scale of found and reported distortions in audit reports divided as 5 kinds of distortion, was performed through comparing the current year's audit report and the accumulated loss and gain of the next year. The method of research was the ambivalent method and the conducted statistical analysis in this research represents the significant and inverse relationship between audit quality and the size of auditor (audit firm).

Namazi *et al.* (2011) in a research, reviewed the relation between audit quality and profit management and for determining auditing quality used two criteria of the size of audit firm and the auditor's term of tenure, and in order to compute the profit management, the modified version of Jones was used. In this research, also

61 companies were tested during 2001 and 2007. This research's hypothesis was that there is a meaningful relationship between size and term of tenure of audit firm and profit management. The results of research showed that there is a positive but insignificant relation between the size of auditor and profit management and there is a positive and meaningful relation between the auditor's term of tenure and profit management.

4. METHODS

4.1. Hypotheses and models

The first hypothesis: duration ofauditing has a positive effect on the audit quality.

The second hypothesis: audit firm size has a positive effect on the audit quality.

The third hypothesis: size and age of the audit firm has a positive effect on the audit quality.

4.2. Research Domain

4.2.1. Subject Domain of the Research

The present research is carried out on effective factors on the audit quality, so that it investigates the impact of two factors including the size of audit firms regarding the number of staff, and the age of audit firms regarding date of establishment on the audit quality.

4.2.2. Time Domain of the Research

This research is carried out on companies listed on Tehran Stock Exchange in a 5 years period of time from 2007 to 2011.

*Since Jones model data in calculating discretionary accruals has a one-year time lag because in this model all variables divided by total assets in (t-1) th year in order to match pattern variables, so values of variables in this model are located in the period of 2006 to 2011.

4.2.3. Spatial Domain of the Research

Spatial domain of this research consist companies listed on Tehran Stock Exchange. Reasons of selecting these companies as the basis for the study are as follows:

1) Access to financial data of companies listed on Tehran Stock Exchange is easier; especially, some data are accessible as databases on CDs.
2) Considering that financial data of listed companies on Tehran Stock Exchange have been supervised and examined, it seems that information

contained in the financial statements of these companies has higher quality.

3) According to entry into force of the rules, regulations and financial accounting standards in preparing financial statements of listed companies on Tehran Stock Exchange, it seems that information contained in the financial statements of these companies is more homogeneous and has more comparability.

4.3. Data Collection

Data used in the present study has been extracted from companies' audited financial statements information; major part of data has been extracted from RAHAVARDNOVIN and TADBIRPARDAZ softwares, website of Centre of Islamic Research, Development and Studies Management of Tehran Stock Exchange: *www.rids.com*, and also CDs published by Stock Exchange including data contained in database of this organization. Firstly, data collected have been entered to Excel spreadsheet and initial required calculations have been done. Then final analysis has been done using multivariate regression models via Eviews software.

4.4. The Population and Sampling Method

The population of this research includes companies listed on Tehran Stock Exchange until the end of 2011, and sample selected from them.

Statistical samples in this research have been selected using elimination (screening) method:

This process is presented in Table 1:

Table 1
Systematic elimination process

458	Total number of listed companies on Tehran Stock Exchange at the end of 2011
	Ratio
116	Number of inactive companies in 2005-2011
31	Number of companies that have entered Exchange after 2004
76	Number of companies that have changed their fiscal year within 2004 and 2011 or their fiscal year does not end in march
33	Number of companies that were in group of holding, investment and financial intermediation
1	Number of companies that there is no data of them in 2004-2011
201	Number of sample companies

According to the results presented in Table 1, 201 samples were selected for the study. In order to generalize results of samples to population, we should ensure about the adequacy of the number of samples. To reach this, equation offered by Cochran is used. This equation for populations with limited members is as follows:

Where:

N is the number of population members (total number of active companies in Tehran Stock Exchange);

n is the number of samples

p is success rate, when p is unknown if we assume p=50%, we will have the maximum number of samples, so we considered p=50% in this study

e is expected error which usually considered as 1

α is the first type error which is considered as 5% for significance level of 95% therefore, considering that total number of active companies in Tehran Stock Exchange in the study period of time is equal to 342, so:

$$\alpha = 0/05, Z_{\frac{\alpha}{2}} = 1/96 \rightarrow n \geq \frac{1.96^2(0.5)(0.5)(342)}{(0.10)^2(341)+(1.96)^2(0.5)(0.5)} = 75.15 \approx 76$$

Thus, to have reliable results we must have at least 76 samples. In this study because the number of samples is equal to 201 companies, generalizing the results is valid.

List of sample companies is presented in appendix 1. The distribution of sample companies in the industry is presented in Table 2:

Table 2
Distribution of sample companies in the industry

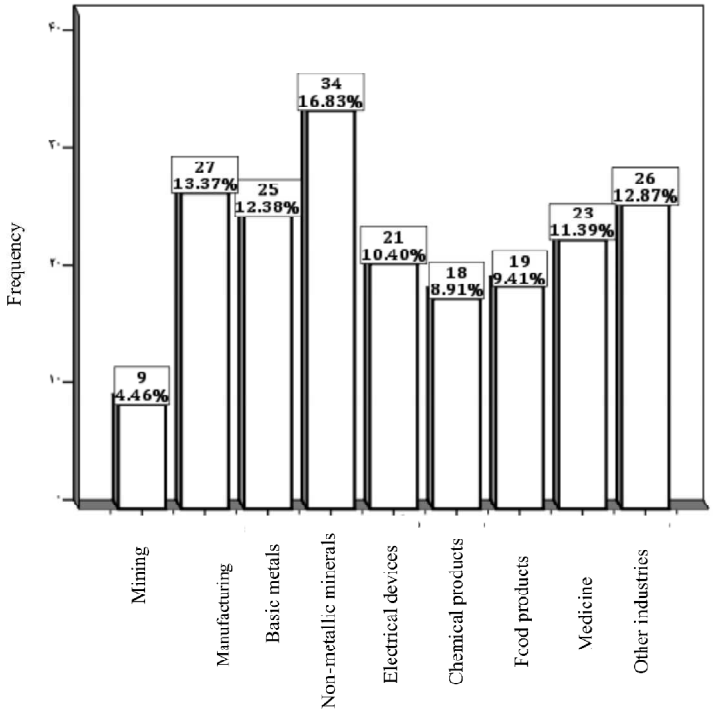
Percentage of observations divided by all companies in		Frequency of companies in		Industry title	Row
Sample	Industry	Sample	Industry		
4.48%	90.00%	9	10	Mining	1
13.43%	90.00%	27	30	AutomotiveandParts Manufacturing	2
12.44%	71.43%	25	35	Basic metals and metal products manufacturing	3
16.92%	56.67%	34	60	Tile, ceramic, non-metallic minerals and cement	4
10.45%	77.78%	21	27	Electricalappliances, machinery and equipment	5
9.45%	70.37%	19	27	Chemical products	6
8.96%	50.00%	18	36	Food, drinks and sugar	7
11.44%	88.46%	23	26	Medicine	8
12.44%	65.79%	25	38	Other industries*	9
100%	-	201	289	Total	
$\frac{17}{39} \times 100 = \%44$		Percentage of sample industries divided by total industries in Tehran Stock Exchange			
$\frac{201}{289} \times 100 = \%69$		Percentage of observations divided by all companies in samples industries			
$\frac{201}{342} \times 100 = \%59$		Percentage of observations divided by all companies in Tehran Stock Exchange			

*other industries including publishing, printing and reproduction, industrial contracting, technical and engineering services, computer and related activities, agriculture and animal husbandry and related services, coke and petroleum products and nuclear fuel, wood products, paper products, medical and optical devices, and textiles that there are less than 3 of them in sample.

In Table 1, to calculate percentage of observations in each industry, frequency of sample members of each industry has been divided by total number of companies in that industry and the result is multiplied by 100. For example the frequency of observations in automotive industry is equal to:. Above table shows that 44% of all industries are present in the sample and the percentage of sample members in each industry is more than 50%.

Bar chart of companies in each industry is as follows:

Figure 1: Bar chart of the percentage of sample companies in each industry



4.5. Measuring Variables

Basicallyin anyresearch, determining variables is one of the mainresearchprocesses. Variable can be changed in value and usually can take different numerical values and in fact is characteristics that researcher observes, control or manipulate them (Azar & Momeni, 2000). Variables in the present study are generally divided into 3 categories: independent variables, dependent variables and control variables.

4.5.1. Measuring Independent Variables

Two variables of audit firm size (Big) and auditing lifetime (Age) were considered as independent variables, each of which is calculated as follows:

Audit Firm Size: In this study it is assumed that audit firm size is a function of the number of employees, so to determine an index for audit firm size, the number of employees of that firm is used, and it is assumed that the number of staff in large firms is more.

Therefore, if $Nper_{it}$ representsthe number ofstaff in the audit firm that in the year t has audited the basic financial statements of the firm i, first to make the variable of the number of personnel homogeneous, this variable is divided to the average of total staff number of the firm, then the previously calculated mean is gained for all the institutes during the studyperiod, and, finally, the size of the virtual variable for audit size is defined as, if the number of staff to the average of the number of staff is more than the mean, it is considered as a large firm and has a value of one, otherwise, it is considered as a small firm and has a value of zero.

Auditing lifetime (Age): Inthis study it is assumed that the lifetime of audit firms is a function of the establishing date of the institute, therefore, to obtain an index for measuring the lifetime of the audit firms, the establishing date of the institute is used. Namely, first, for the year t, the time period from the establishing year of the firm to the year t is calculated and stored as the firm establishing experiences variables (SAB). Then the mean of the establishing experience variable is calculated and the virtual variable of the lifetime is calculated as such that this variable takes the value of 2 if the audit institution establishing experience is higher than the mean of the establishing experience of all the institutes in the time period of the study, otherwise, it will be zero.

4.5.2. Measuring Dependent Variables

Dependent variable in the present study is the quality of auditing Discretionary Accruals (DACC) as an indicator of earning quality, because it is assumed that auditor' agreement with decline in earnings management applied by company management leads to increase the quality of audit work. Jones model is used to measure this variable as follows:

At first total accruals (TACC) are measures as follows:

$$TACC=EARN-CFO$$

Where:

EARN is operating income

CFO is net cash flow from operations

Modified model of Jones is used to separate the discretionary part of accruals. This model is as follows:

$$TACC_{it} = \alpha_0 + \alpha_1[\Delta REV_{it} - REC_{it}] + \alpha_2 PPE_{it} + \varepsilon_{it}$$

Where:

ΔREV is change in operation income from year t-1 to year t ($REV_t - REV_{t-1}$)

ΔREC is change in net receivable accounts from year t-1 to year t ($REC_t - REC_{t-1}$)

PPE is cost of property, plant and equipment in year t

In addition in this model, for homogenization factors and reducing volatility, total variables total assets of company at the beginning of year t, and model above is rewritten as follows:

$$\frac{TACC_{it}}{TA_{it-1}} = \alpha_1 \frac{1}{TA_{it-1}} + \alpha_2 \frac{[\Delta REV_{it} - \Delta REC_{it}]}{TA_{it-1}} + \alpha_3 \frac{PPE_{it}}{TA_{it-1}} + \varepsilon_{it}$$

Finally the discretionary part of ^{accruals} is defined as reduals of model above, thus after estimating the model above we have:

4.5.3. Measuring Control Variable

Zimsiki bankruptcy adjusted index (FC): to measure this Index, first by the pattern of Zimsiki

Bankruptcy the amount of Z is computed, the model is as follows:

Z_{it}=-1.432+2.78X_1+1.52X_2

X 1 the ratio of net income to the total assets

X 2 the ratio of total debt to total assets

If the value of calculated Z in year t is more than 0.5, the company is bankrupted and if it is less than 0.5, the firm is recognized as not bankrupted. Therefore, after calculating virtual Zimsikiindex variable, FC is defined as, if the company i at the end of the year t, based on Zimsikiindex is detected as bankrupt (Z> 0.5), it takes zero value otherwise takes one. Measuring other variables is presented in Table 3 with a summary of measuring variables above:

5. RESULTS OF TESTING HYPOTHESES

5.1. The First Hypothesis Test

The first hypothesis: Duration of auditing has positive effect on the audit quality.

In order to investigate the first hypothesis, the item 1 is used as follows:

Since independent variable of age (Age) has been defined based on establishing date of the audit firms as such that this variable takes the value of 2 if the audit institution establishing experience is higher than the mean of the establishing experience of all the institutes in the time period of the study, otherwise, it will be

Table 3
Measuring Methods of Variables

Calculation method	Symbol	Variable	Type
Calculated by modified model of Jones	**DACC**	Discretionary accruals	Dependet
Virtual variable for audit size, if the number of staffs to the average of the number of staffs is more than the mean, it has a value of 2; otherwise, it has a value of zero.	**BIG**	Audit firms sizes	Independent
The virtual variable of the lifetime is calculated as such that this variable takes the value of 0 if the audit institution establishing experience (SAB) is less than the mean of the establishing experience of all the institutes in the time period of the study, otherwise, it will be 2.	**AGE**	Age of audit firms	
$SIZE_{it} = Ln\,TA_{it}$ TA_{it}= total assets of company i at the end of year t	**LA**	Logarithm of assets	Control
The ratio of cash flow to total assets	**OCF**	Operation cash flow	
Virtual index variable, it takes 1 value if the company is detected as bankrupt based on Zimsikiindex otherwise zero.	**FC**	Zimsiki bankruptcy adjusted index	
$\mathrm{LEV_{it}} = \frac{\mathrm{TD_{it}}}{TA_{it}}$ TD_{it}= total debts of company i at the end of year t TA_{it}= total assets of company i at the end of year t	**LEV**	Financial leverage	

zero; so $Age^2 = 2\,Age$, therefore one of independent variables of the model is exactly a linear combination of the other one. So, in there is a quite collinearity between independent variables Age and Age^2. Thus, to fix collinearity problem two individual models have been used:

$$\textbf{Model1} - \textbf{1}: DA_{it} = \gamma_0 + \gamma_1 Age_{it} + \gamma_3 OCF_{it} + \gamma_4 LA_{it} + \gamma_5 LEV_{it} + \gamma_6 FC_{it} + \varepsilon_{it}$$
$$\textbf{Model1} - \textbf{2}: DA_{it} = \gamma_0 + \gamma_2 (Age_{it})^2 + \gamma_3 OCF_{it} + \gamma_4 LA_{it} + \gamma_5 LEV_{it} + \gamma_6 FC_{it} + \varepsilon_{it}$$

Since the research data is a combination of cross-sectional and time series data, so before estimating the item (1), to select between the combination data method or cross-sectional, the F test of Leamer is used. Accepting zero assumption represents cross-sectional data and rejecting that represents combination data (panel) method. Results of this test are presented in Table 3:

Table 3
Results of Leamer test (items of group 1)

Models	Test	t	Degree of freedom	Probability	Result
1-1	**Leamer F**	5.689	(997.200)	0.00	Using Panel Data
	Housman	102.104	5	0.00	Using Fixed OSL Effects
1-2	**Leamer F**	5.689	(997.200)	0.00	Using Panel Data
	Housman	102.104	5	0.00	Using Fixed OSL Effects

Source: researcher findings

Because F Leamer statistics is less than 5% in both models, so test assumption of using cross-sectional data is rejected and panel data is used. Similarly, probability of Housman test is also less than 5% and therefore there is no reason to reject first hypothesis and fixed OLS effects is used. Results of model 1 using fixed OLS effects have been presented in Table 4:

Table 4
The Test Result of the First Hypothesis

Method: Panel Least Squares
Sample: 1385 1390
Cross-sections included: 201

Model1 − 1: $DA_{it} = \gamma_0 + \gamma_1 Age_{it} + \gamma_3 OCF_{it} + \gamma_4 LA_{it} + \gamma_5 LEV_{it} + \gamma_6 FC_{it} + \varepsilon_{it}$
Model1 − 2: $DA_{it} = \gamma_0 + \gamma_2 (Age_{it})^2 + \gamma_3 OCF_{it} + \gamma_4 LA_{it} + \gamma_5 LEV_{it} + \gamma_6 FC_{it} + \varepsilon_{it}$

Model1-2				Model1-1			Models
Sig.	T-stat	Coefficients	Variables	Sig.	T-stat	Coefficients	Variables
0.00	3.86	0.477	**C**	0.00	3.86	0.477	**C**
0.01	-2.79	-0.003	**AGE²**	0.01	-2.79	-0.006	**AGE**
0.00	-57.32	-1.116	**OCF**	0.00	-57.32	-1.116	**OCF**
0.22	-1.22	-0.011	**LA**	0.22	-1.22	-0.011	**LA**
0.00	-12.10	-0.277	**LEV**	0.00	-12.10	-0.277	**LEV**
0.00	14.35	0.297	**FC**	0.00	14.35	0.297	**FC**
Value	Test	Value		Value	Test	Value	
0.35	K-S	0.83	R^2	0.35	K-S	0.83	R^2
22.99	F Fischer	0.79	R2 Adjusted	22.99	F Fischer	0.79	R2 B Adjusted
0.00	Probability of F Fischer	1.66	DW	0.00	Probability Of F Fischer	1.66	DW

Source: researcher findings

According to test results in Table 7, P-Value in F Leamer test is less than 0.05; at significant level of 95% the first hypothesis is accepted and panel data method is used. Results in Table 8 show that coefficient of determination is 83%. This indicates that 83 percent of the changes of accruals will be explained by the

independent variables of this pattern. The difference between the coefficient of determination and coefficient of balanced determination is because of the logarithm variable of the market value (LA) because this variable has increased the coefficient of determination without having any significant effect on the rate of accrual, however, the adjustment coefficient is calculated without taking into account the effect of neutral variables. Durbin-Watson statistics is equals to 1.66 and is located in range of 1.5-2.5, that confirms the correlation between error components.

Kolmogorov-Smirnov test (K-S) is used to investigate normality of remains. Zero assumption of this test confirms normality of remains distribution. According to results of table 9, significant probability of this test is 0.35 which is more than 5%, so zero assumption about normality of remains distribution is acceptable. Therefore basic assumptions of regression models (non collinearity, normality of residuals and non-autocorrelation) are exist in both models.

The probability of F statistics is less than 0.01 and at 99% significant level, models 1-1 and 1-2 are linear. According to test results, the significance of the regression coefficients is shown in this figure: except the control variable of log asset value (LA), other variables have a significant effect on discretionary accruals as the dependent variable because the probability of significance of these coefficients in both models is less than 5 percent. The results also indicate that both variables Age and Age 2 have a negative relationship with accruals, in other words, increasing experience of establishing audit firms, besides having effect on the audit quality, decreases the application of accruals and thus increases the audit quality.

Therefore, the results show that the establishment of institutions as an index of age of the audit firms has significant effect on audit quality auditing, and, so, there is no reason to reject the hypothesis, and this hypothesis is accepted at a confidence level of 99 percent.

5.2. The Test Results of the Second Hypothesis

The Second Hypothesis: Audit firm size has positive effect on audit quality.

To test the second hypothesis the pattern number (2) is defined as follows:

Since independent variable of audit firms sizes (Big) has been defined based on the number of auditing staffs of audit firms as such that this variable takes the value of 2 if the number of auditing staffs is higher than the mean of the number of auditing staffs of all the institutes in the time period of the study, otherwise, it will be zero; so $Big^2 = 2\ Big$, therefore one of independent variables of the model is exactly a linear combination of the other one. So, in there is a quite collinearity between independent variables Big and Big. Thus, to fix collinearity problem two individual models have been used:

Since the research data is a combination of cross-sectional and time series data, so before estimating the item (2), to select between the combination data method or cross-sectional, the F test of Leamer is used. Accepting zero assumption represents cross-sectional data and rejecting that represents combination data (panel) method. Results of this test are presented in Table 5:

Table 5
Leamer test results (item 2)

Models	Test	t	Degree of Freedom	Probability	Result
2-1	**Leamer F**	5.667	(997.200)	0.00	Using Panel Data
	Housman	101.889	5	0.00	Using Fixed OSL Effects
2-2	**Leamer F**	5.667	(997.200)	0.00	Using Panel Data
	Housman	101.889	5	0.00	Using Fixed OSL Effects

Source: researcher findings

Because F Leamer statistics is less than 5% in both models, so test assumption of using cross-sectional data is rejected and panel data is used. Similarly, probability of Housman test is also less than 5% and therefore there is no reason to reject first hypothesis and fixed OLS effects is used. Results of model 2 using fixed OLS effects have been presented in Table 6:

Table 6
The test results of the second hypothesis

Method: Panel Least Squares Sample: 1385 1390 Cross-sections included: 201							
Model2 − 1: $DA_{it} = \gamma_0 + \gamma_1 Big_{it} + \gamma_3 OCF_{it} + \gamma_4 LA_{it} + \gamma_5 LEV_{it} + \gamma_6 FC_{it} + \varepsilon_{it}$ **Model2 − 2**: $DA_{it} = \gamma_0 + \gamma_2 (Big_{it})^2 + \gamma_3 OCF_{it} + \gamma_4 LA_{it} + \gamma_5 LEV_{it} + \gamma_6 FC_{it} + \varepsilon_{it}$							
Model2-2				Model2-1			Models
Significance probability	t-statistics	Coefficients	Variables	Significance probability	t-statistics	Coefficients	Variables
0.00	3.82	0.473	**C**	0.00	3.82	0.473	**C**
0.01	-2.79	-0.002	**BIG^2**	0.01	-2.79	-0.003	**BIG**
0.00	-57.15	-1.116	**OCF**	0.00	-57.15	-1.116	**OCF**
0.23	-1.21	-0.011	**LA**	0.23	-1.21	-0.011	**LA**
0.00	-12.14	-0.278	**LEV**	0.00	-12.14	-0.278	**LEV**
0.00	14.34	0.297	**FC**	0.00	14.34	0.297	**FC**
Value	Test	Value		Value	Test	Value	
0.381	K-S	0.825	R^2	0.381	K-S	0.825	R^2
22.954	F Fischer	0.789	R^2Adjusted	22.954	F Fischer	0.789	R^2Adjusted
0.000	Probability of F Fischer	1.656	DW	0.000	Probability of F Fischer	1.656	DW

Source: researcher findings

According to test results in Table 9, P-Value in F Leamer test is less than 0.05; at significant level of 95% the first hypothesis is accepted and panel data method is used. Results in Table 10show that coefficient of determination is 83%. This indicates that 83 percent of the changes of accruals will be explained by the independent variables of this pattern. The difference between the coefficient of determination and coefficient of balanced determination is because of the logarithm variable of the market value (LA) because this variable has increased the coefficient of determination without having any significant effect on the rate of accrual, however, the adjustment coefficient is calculated without taking into account the effect of neutral variables. Durbin-Watson statistics is equals to 1.66 and is located in permissible range of 1.5-2.5, that confirms the correlation between error components.

Kolmogorov-Smirnov test (K-S) is used to investigate normality of remains. Zero assumption of this test confirms normality of remains distribution. According to results of Table 10, significant probability of this test is 0.38 which is more than 5%, so zero assumption about normality of remains distribution is acceptable. Therefore basic assumptions of regression models (non collinearity, normality of residuals and non-autocorrelation) are exist in both models.

The probability of F statistics is less than 0.01 and at 99% significant level, models 2-1 and 2-2 are linear. According to test results, the significance of the regression coefficients is shown in this figure: except the control variable of log asset value (LA), other variables have a significant effect on discretionary accruals as the dependent variable because the probability of significance of these coefficients in both models is less than 5 percent.

The results also indicate that both variables Big and Big^2 have a negative relationship with accruals, in other words, increasing the number of staffs of audit firms, besides having effect on the audit quality, decreases the application of accruals and thus increases the audit quality. Therefore, the results show that the number of staffs of institutions as an index of size of the audit firms has significant effect on audit quality auditing, and, so, there is no reason to reject the hypothesis, and this hypothesis is accepted at a confidence level of 99 percent.

5.3. The Test Results of the Third Hypothesis

The Third Hypothesis: Audit firm size and duration of auditing have a positive effect on the audit quality.

To test the second hypothesis the pattern (3) is defined as follows:

Since the research data is a combination of cross-sectional and time series data, so before estimating the item (3), to select between the combination data method or cross-sectional, the F test of Leamer is used. Accepting zero assumption

represents cross-sectional data and rejecting that represents combination data (panel) method. Results of this test are presented in Table 7:

Table 7
Results of F Leamer test (item 1)

Pattern	Test	t	Degree of Freedom	Probability	Result
3	Limer F	5.673	995.200	0.00	Using Panel Data
	Housman	102.655	7	0.00	Using Fixed OSL Effects

Source: researcher findings

Because F Leamer statistics is less than 5% in both models, so test assumption of using cross-sectional data is rejected and panel data is used. Similarly, probability of Housman test is also less than 5% and therefore there is no reason to reject first hypothesis and fixed OLS effects is used. Results of model 3 using fixed OLS effects have been presented in Table 8:

Table 8
The Test Result of the Third Hypothesis

Method: Panel Least Squares
Sample: 1385 1390
Cross-sections included: 201

Model3: $DA_{it} = \gamma_0 + \gamma_1 Age_{it} + \gamma_2 Big_{it} + \gamma_3 (Age_{it} \times Big_{it}) + \gamma_4 OCF_{it} + \gamma_5 LA_{it} + \gamma_6 LEV_{it} + \gamma_7 FC_{it} + \varepsilon_{it}$

Significance probability	t-statistics	Coefficients	Variables
0.00	3.82	0.473	**C**
0.00	-6.59	-0.004	**AGE**
0.00	-5.86	-0.006	**BIG**
0.00	-6.02	-0.009	**AGE*BIG**
0.00	-57.14	-1.116	**OCF**
0.25	-1.16	-0.011	**LA**
0.00	-12.08	-0.277	**LEV**
0.00	14.27	0.296	**FC**
Value	Test	Value	
0.425	K-S	0.825	R2
22.756	F Fischer	0.799	R2 adjusted
0.000	Probability of F Fischer	1.664	DW

Source: researcher findings

According to test results in Table 7, P-Value in F Leamer test is less than 0.05; at significant level of 95% the first hypothesis is accepted and panel data method is used. Results in Table 8 show that coefficient of determination is 83%. This indicates that 83 percent of the changes of accruals will be explained by the independent variables of this pattern. The difference between the coefficient of

determination and coefficient of balanced determination is because of the logarithm variable of the market value (LA) because this variable has increased the coefficient of determination without having any significant effect on the rate of accrual, however, the adjustment coefficient is calculated without taking into account the effect of neutral variables. Durbin-Watson statistics is equals to 1.66 and is located in permissible range of 1.5-2.5, that confirms the correlation between error components.

Kolmogorov-Smirnov test (K-S) is used to investigate normality of remains. Zero assumption of this test confirms normality of remains distribution. According to results of Table 8, significant probability of this test is 0.42 which is more than 5%, so zero assumption about normality of remains distribution is acceptable. Therefore basic assumptions of regression models (non collinearity, normality of residuals and non-autocorrelation) are exist in both models.

The probability of F statistics is less than 0.01 and at 99% significant level, model 3 is linear. According to test results, the significance of the regression coefficients is shown in this figure: except the control variable of log asset value (LA), other variables have a significant effect on discretionary accruals as the dependent variable because the probability of significance of these coefficients in both models is less than 5 percent.

The results also indicate that all three variables Age, Big, Age*Big have a negative relationship with accruals, in other words, increasing the size and age of audit firms simultaneously, besides having effect on the audit quality, decreases the application of accruals and thus increases the audit quality. The coefficient of Age*Big with the value of -0.009 is more than the two variables of size and bigness of -0.004 and -0.006. It shows that the consideration of the two factors of size and magnitude of audit firms at the same time have a great effect on audit quality of audit firms.

5.3.1. The Test Results of the First Hypothesis

According to test results, the significance of the regression coefficients is shown in this figure: except the control variable of log asset value (LA), other variables have a significant effect on discretionary accruals as the dependent variable because the probability of significance of these coefficients in both models is less than 5 percent. The results also indicate that both variables Age and Age2 have a negative relationship with accruals, in other words, increasing experience of establishing audit firms, besides having effect on the audit quality, decreases the application of accruals and thus increases the audit quality.

Therefore, the results show that the establishment of institutions as an index of age of the audit firms has significant effect on audit quality auditing, and, so, there is no reason to reject the hypothesis, and this hypothesis is accepted at a confidence level of 99 percent.

Also, other results about the assumption indicate that 83 percent of changes in discretionary accruals are explained by the independent variables of these patterns. The difference between the coefficient of determination and coefficient of adjusted determination is because of the logarithm variable of the market value (LA) because this variable has increased the coefficient of determination without having any significant effect on the rate of accrual, however, the adjustment coefficient is calculated without taking into account the effect of neutral variables .

5.3.2. The Test Results of the Second Hypothesis

The results indicate that both variables Big and Big 2 are negatively related to the application of accruals, on the other hand, the increase in the number of audit firm employees, along with being an effective factor in audit quality, reduces the use of accruals and, as a result, increases audit quality. So, the results show that the number of employees as an index of the size of auditing firms has significant effect on audit quality and therefore there is no reason to reject the hypothesis and it is accepted at the confidence level of 99% percent. About this assumption, the other results indicate that 83% percent of the changes in the accruals by the independent variables, this pattern is explained. The difference between the coefficient of determination and coefficient of balanced determination is because of the logarithm variable of the market value (LA) because this variable has increased the coefficient of determination without having any significant effect on the rate of accrual, however, the adjustment coefficient is calculated without taking into account the effect of neutral variables.

5.3.3. The Test Results of the third Hypothesis

These results indicate that all three variables of Age and Big and Age * Big have a negative relation with accruals; in other words, the simultaneous increasing of the size and duration of establishment, along with being an effective factor in the audit quality, will reduce the application of the accruals, and, as a result, increases the audit quality. The coefficient of Age * Big with the amount of -0.009 is more than the two variables of size and bigness of -0.004 and -0.006. It shows that the consideration of the two factors of size and magnitude of audit firms at the same time have a great effect on audit quality of audit firms. Also, the other results suggest that 83% percent of the changes of accruals will be explained by the independent variables of this pattern. The difference between the coefficient of determination and coefficient of adjusted determination is because of the logarithm variable of the market value (LA) because this variable has increased the coefficient of determination without having any significant effect on the rate of accrual, however, the adjustment coefficient is calculated without taking into account the effect of neutral variables. Also, except the control variable of the asset's value (LA), other variables have a significant effect on accruals as the dependent variable

because the probability of significant coefficients in the model is less than 5% percent.

5.3.4. Other Findings

Other findings of the present study indicate that Discretionary accruals(DACC)on average 1% of total assetsand the ratio ofoperating cashflowby an average of12% of the totalassets of themember companiescomprisethe sample. The mean of Zimniski index (Zim) shows that on average samplemember companiesarenon-bankrupt companies, because based on results of this index, if Zim statistics is less than 0.5, companies are non-bankrupt, so since the average of this index in companies member in sample is equals to -0.13 is less than 0.5. The establishment of institutions as an index of age of the audit firms is about 17.5 year and the average number of employees as an index of the size of auditing firms is 418 persons. However, standard deviation shows that two variables of establishment and number of employees are highly distributed and the number of employees is 8 to 1564 persons. 8 personnel is related to Avand audit firm and 1564 staffs is related to Audit Organization. Duration of auditing in audit firms of sample companies is between 3 and 37 years. 37 years auditing duration is related to Momayez audit firm in 2007 for auditing sand casting firm, and 3 years is related to Shohud Amin audit firm in 2008.

5.4. Conclusions and Interpretation

Following Table 9 shows hypothesis and results briefly:

Table 9
Results of hypotheses tests

Hypothesis	Description	**Result**
FirstHypothesis	Duration of auditing has an effect on the audit quality.	Not rejected
Second Hypothesis	Audit firm size has an effect on audit quality.	Not rejected
Third Hypothesis	Audit firm size and duration of auditing have an effect on the audit quality.	Not rejected

5.4.1. Consistentandinconsistentwith the findings ofotherresearches andtheory of research

5.4.1.1. The first hypothesis: Not rejecting the first hypothesis is in accordance with the theory of research and findings of Hogan and Jeter (1999), Chen and Lin (2005) and can be related to findings of Namazi *et al.* (2011).

5.4.1.2. The second hypothesis: Not rejecting the second hypothesis is in accordance with the theory of research and findings of DeAngelo (1981), Deis and Girogs (1992), Colbert and Murray (1998), Palmros (1988), Lennox(1999), Krishnan and Scheuer(2000), Deltas and Doogar (2004), Fuerman (2007), Aghaii (2002), Jafary(2006), Azinfar (2007), Ahmadi (2009), Nonahal et al (2011), and in Contrast with the findings of Lam and Cheng (1994), Louis Henock (2005), Bauwhede and Willekens (2004), Kim et al. (2003) as well as, Hassas Yeganeh and Azinfar (2010). So, the contrast in the findings of this research with other findings outside the country may be due to differences in environment of Iran and abroad, and its conflict with the researches of Hassas Yeganeh and Azinfar (2010) can be due to the effective factors that are considered for audit quality.

5.4.1.3. The third hypothesis: The third hypothesis is a combination of first and second hypotheses and investigating both of them at the same time. As a result, it is in sync with accordance between these hypotheses and other researches and also in contrast is sync with them. Results of this hypothesis are in accordance with theory of the research and verifythe accuracy ofassumptionsof this study.

Table 10
Accordance and Contrast

Hypothesis	Result	Accordance	**Contrast**
First hypothesis	Not rejected	Hogan and Jeter (1999), Chen and Lin (2005)	
Second hypothesis	Not rejected	DeAngelo (1981), Deis and Girogs (1992), Colbert and Murray (1998), Palmeros (1988), Lennox (1999), Krishnan and Scheuer (2000), Deltas and Doogar (2004), Fuerman (2007)	Lam and Cheng (1994), Louis Henock (2005), Bauwhede and Willekens (2004), Kim et al. (2003) as well as, Hassas Yeganeh and Azinfar (2010)
Third hypothesis	Not rejected	Hogan and Jeter (1999), Chen and Lean (2005), DeAngelo (1981), Deis and Girogs (1992), Coolbert and Murray (1998), Palmerous (1988), Lennox (1999), Krishnan and Scheuer (2000), Deltas and Doogar (2004), Fuerman (2007)	Lam and Cheng (1994), Louis Henock (2005), Bauwhede and Willekens (2004), Kim et al (2003) as well as, Hassas Yeganeh and Azinfar (2010)

5.5. Recommendations

This research, according to the evidences from the studies and the test results of the hypothesis, recommends some suggestions for the Tehran Stock Exchange Organization, corporate management, shareholders, creditors, banks and credit institutions, students and researchers as follows:

1) It is proposed that in order to increase the audit quality we should use the firms with long age than short age. It is hoped that the considerations relating to company's brand and reputation will increase the audit quality.
2) It is recommended to combine the institutes with small size and by giving the facilities to the smaller institutes cause the growth and better training of the staffs.
3) It is recommended that in order to maximize the quality of audits the firms with longer ages are used.

5.6. Suggestions for Future Researches

1) The use of audit firms that have higher audit quality will provide relative confidence in the users of financial statements with respect to the accuracy of information provided in the financial statements. Hence, in relation with the first hypothesis, it is recommended to pay attention to the effect of audit firm reputation and brand on the value of the audited company.
2) As the number of clients are more in the large firms, the auditors will be able to observe and gain experience in different industries, and with the absorption of more forces which will bring the experience of different industries, the possibility of using their experiences will increase, so in relation with the second hypothesis, it is proposed to investigate the effect of audit firm size on firm specialization in the industry.
3) As analyzing the third hypothesis shows, the two factors of greater age and greater size simultaneously will have greater effect on the audit quality. But about the third hypothesis it is recommended to investigate the effect of these two factors individually on audit quality. Also, according to the previous research on the relationship between corporate governance, the combined effect of size and age of the audit firm and corporate governance tools used in the audited firm on audit quality can be examined.

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