EVALUATING THE EFFECT OF *DIVERSIFICATION STRATEGIES* OF THE AUDIT FIRMS ON THEIR AUDIT QUALITY

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Abstract: *This study has evaluated the relationship between the effects of* diversification *strategies of the Audit firm on the quality of auditing them over a 6 year period from 2008 to 2013 in 50 companies listed on Tehran Stock Exchange. The panel data regression (panel-data) and F- Limmer and Hausman tests were applied to test the study hypotheses. Thus, in the studied model the effects of diversifying strategies in industry, clientele, and geographical distance and services on audit quality in the companies have been investigated. The results of study hypothesis show that the significance relation between diversifying strategies in industry, clientele, and geographical distance and services and the dependent variable audit quality at a 95% confidence interval.*

Keywords: *diversification strategies, Audit quality, panel data*

1. INTRODUCTION

Auditing is a systematic procedure in order to collect and fairly examine Evidence regarding claims related to economic activities and events to ascertain how far these claims comply with pre-determined and report of results to the beneficiary. In other words, auditing is dealing with documents and books of an institution or a business entity in order to prepare a report by which the auditor states their opinion on the entity's accounting method about financial statement. Auditing is a way of financial inspection.

Today, alongside the increasing number of audit firms, competition among them has also increased; Users of financial statements are considered the customers of this competitive market in order to make suitable and beneficial decisions. In any competitive market, meeting the information needs of the customers that is reliable and dependable financial statements is a priority. Financial statements are reliable and trustable when they have been audited and audit should have the necessary quality. The auditor quality represents the auditor's competence and merit and their quality

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in investigation. But audit quality reflects the quality of each audit project having quality.

However, audit quality is an issue of interest to various beneficiary groups in the company and also one of the important issues in the field of accounting and the capital market. On the other hand, decisions relating to the future are always faced with uncertainty and those who can predict the future and make decisions based on that will be successful in the competition. With the development of human knowledge, to predict the future better by employing a variety of strategies is provided. With the increasing development of human knowledge, better predicting of the future has been provided by employing a variety of strategies. In the field of accounting, like other sciences, these predictions can be applied. (Carlos *et al.*, 2010).

In general, business strategy emphasizes improving the competitive position of a company products or that of an entity (goods or services) in a particular industry or a sector of the market. Business strategy shows how a company has to compete or cooperate with a specific industry. It should be noted that because of the proximity and similarity of total level of a company and business level, some of their strategies can be the same.

In general, business growth in the singular works may be done through internal and external strategies. Diversification is one of the strategies that investors applied to be immune against the risk. So, diversifying strategies in the field of accounting divided into 2 divisions of market diversification (industry, customer and geographic distance) and diversification of product (service).

One of the companies' sources for the profit forecast is their financial statements, Therefore, their reliability and functionality is important. (Water and Zimmerman, 1990) so the audit quality of the financial statements is really critical. On the other hand, the actual audit quality is based on understanding of users or it is interpreted by the market. So, in many studies, audit quality is considered without being divided into actual audit quality audit and interpretation of audit quality. Since the actual audit quality cannot be observed before the audit or during the audit, Researchers are looking for valid variables so that they can assess the actual audit quality. (Francis, and Wang, 2008) This study examines the impact of the diversification strategies in the Audit firm on audit quality.

2. BACKGROUND RESEARCH

Leventis S. and P. E. Dimitropoulos (2001) Pricing of audit services, earnings quality and independence of the board of directors in 97 companies, between 2000 and 2004 were examined. The results of this study show that a positive relationship exists between auditor independence and audit services pricing. The positive relationship between audit services pricing and profit management exist which is true for small-sized companies.

Zureigat, Q. (2011) In a study examined the relationship between ownership structure and audit quality. He designated three indicators for ownership structure: institutional ownership, foreign ownership and ownership concentration and also measured audit quality through the size of the audit firm. He reviewed 198 companies listed on the Jordan stock market and learnt companies with foreign shareholders and institutional investors have significant and positive relationship with audit quality.

Alastair *et al.* (2011) studied the issue of whether the big differences in the quality of audit in four major institutions compared to 4 Non-large institutes can be attributed to Employers characteristics. In this review some subjects including audit quality, discretionary accruals, and predicted cost of shareholders' equity and the accuracy of analyst forecast have been applied. The results show that the difference in this case between four major institutions and Non-large institutes matches largely with employers' characteristics and in particular the size of the employer.

Hajiha and Rafii (2014): In an article studied the role of performance quality of internal audit on an independent auditor's report being timely. This study has been conducted by using data from 57 firms listed on Tehran Stock Exchange which prepared an internal audit report and offered the audit committee or the board of directors. It was a survey with questionnaires, data were collected and in order to test hypotheses, Pearson's correlation coefficient and logistic regression were used. To assess the quality of internal auditing section in the company, the criteria of impartiality, age and size of internal auditing section have been applied. The results show that impartiality and age have an inverse relation with independent audit delay, but the variable of size of internal auditing is not significantly correlated with that variable.

3. RESEARCH METHOD

This study in terms of its aim is correlative which analyzes the correlation between variables of the research and it is an applied study, because the results can be useful for users and since it deals with past data, it is considered retrospective. On the other hand, the study method is algebraic that is conducted through cause and effect relationship and econometric techniques and regression method on the data time series by using panel data.

1.3. Hypotheses

1. *Diversification* strategy of industry at the level of audit firm is effective on audit quality.
2. *Diversification* strategy of customer at the level of audit firm is effective on audit quality.
3. *Diversification* strategy of geographic distance at the level of audit firm is effective on audit quality.
4. *Diversification* strategy of service at the level of audit firm is effective on audit quality.

2.3. Research variables

Variable Type	Name	Symbol
Dependent variable	Discretionary accruals	DACC
	This variable is a binary variable with a value (0 or 1) If the company has a revenue expectation ratio higher than 1% and it will be 1, otherwise it will be zero. Analysts built a consensus about This proxy which is in IBES file.	MBEX
Independent variable	The natural logarithm of the number of customers who have received audit services at the office.	INDUSTRY_DIV
	The degree of engagement and participation of clients in the industrial sector	CLIENT_DIV
	Average natural logarithm of the distance between Audit Office and client offices	GEOG_DIV
	Average natural logarithm of the services offered to customers	SERVICE_DIV
Control variables	Total debt to assets	LEVERAGE
	Return on assets	ROA
	Sales growth rate	SGROWTH
	Natural logarithm of audit fees	LOFFICE

4.   EMPIRICAL RESULT

1.4. Variables Durability

Variable	Durability Test	The order of difference	Significance Level	Test statistic	Durable/ unreliable
DACC	Levin, lin & chu	Without difference	0.0000	-9.0136	Durable I(0)
INDUSTRY	Levin, lin & chu	Without difference	0.0000	-18.8270	Durable I(0)
CLIENT	Levin, lin & chu	Without difference	0.0000	-15.1004	Durable I(0)
GEOG	Levin, lin & chu	Without difference	0.0000	-4.85026	Durable I(0)
SERVICE	Levin, lin & chu	Without difference	0.0000	-14.8696	Durable I(0)
LEVERAGE	Levin, lin & chu	Without difference	0.0000	-12.3578	Durable I(0)
ROA	Levin, lin & chu	Without difference	0.0000	-6.94205	Durable I(0)
SGROWTH	Levin, lin & chu	Without difference	0.0000	-17.4543	Durable I(0)
LOFFICE	Levin, lin & chu	Without difference	0.0000	-6.55645	Durable I(0)

2.4. Findings

The first model: Calculation of audit quality by DACC criteria:

$$DACC = \beta_0 + \beta_1 INDUSTRY\_DIV + \beta_2 CLIENT\_DIV + \beta_3 GEOG\_DIV + \beta_4 SERVICE\_DIV + \beta_5 LEVERAGE + \beta_6 ROA + \beta_7 SGROWTH + \beta_8 LOFFICE + error$$

In order To explain the co-integration test of the above test the model we use *Pedroni* test the results of which can be seen in the table below.

H0 hypothesis tests the lack of co-integration that according to test statistic and Phillips-Peron (pp.-statistic) criterion the significance level of the test shows at least one vector of co-integration in the long term. Thus H0 is rejected, so data have equilibrium relationship in the long term.

Co-integration of research variables

Alternative hypothesis: common AR coefs. (within-dimension)

	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	-5.844288	1.0000	-4.678398	1.0000
Panel rho-Statistic	7.795789	1.0000	7.563676	1.0000
Panel PP-Statistic	-6.713578	0.0000	-7.225689	0.0000
Panel ADF-Statistic	-1.859034	0.0315	-3.164010	0.0008

Alternative hypothesis: individual AR coefs. (between-dimension)

	Statistic	Prob.
Group rho-Statistic	11.05601	1.0000
Group PP-Statistic	-14.41021	0.0000
Group ADF-Statistic	-4.588894	0.0000

Second Model: Calculation of audit quality through **MBEX** criterion.

Probability (MBEX = 1) = F{γ_0 + γ_1INDUSTRY_DIV + γ_2CLIENT_DIV + γ_3GEOG_DIV + γ_4SERVICE_DIV + γ_5 LEVERAGE + γ_6 ROA + γ_7SGROWTH + γ_8 LOFFICE + error}

Co-integration of research variables

	t-Statistic	Prob.
ADF	-7.009479	0.0000
Residual variance	44.80452	
HAC variance	11.76723	

We can see that based on ADF test statistic and Cao test the existence of co-integration vector between data in this model is confirmed. Actually, we can say that the long-term equilibrium relationship is established between the data. The first model estimation (calculation of audit quality by DACC criterion) For fitting the regression models according to the type of data, there are two types of fitting. If the data are Panel ones, a panel regression and if the data are combined the monetary regression or OLS is used. The recognition criterion of these fittings is F Limer test that it will be discussed below.

DACC = Discretionary accruals which are the minimum of TACC (Total accruals), which is calculated by the following formula:

(Net income minus cash flow from operations) divided by total assets

TACC = (IBC – OANCF) / Lag(AT)

F-Limer test results to
show combined data against
random effect model

Test type	Test statistic	Significance level	Test result
F limmer test	2.508924	0.00000	Confirming the fixed effects model versus the synthetic model

Source: research Calculations

Hausman test to
demonstrate fix model
against the random
model

Test type	Test statistic	Significance level	Test result
F limmer test	10.04643	0.0.397	Confirming the fixed effects model versus the random effects model

Regression model fitting in order to calculate the discretionary accruals (first criterion of quality audit)

The variables used in the model, in this study include:

ΔSALE= Changes in sale

RECCH= Decrease in Accounts receivable

PPEGT= Facilities and Equipment of Properties

ROA= return on assets

Due to the introduced variables by the applied model in this estimation is as follows:

$$TACC = \omega_1 + \omega_2[1/Lag(AT)] + \omega_3[\{\Delta SALE + RECCH\}/Lag(AT)] + \omega_4[PPEGT/Lag(AT)] + \omega_5 ROA + error$$

Results of model estimation using panel data

Dependent variable: Total accruals

variables		Variables coefficients	Standard Variation	T statistic	The significance level of the test	Result in the model
c	*y*-intercept	0.978856-	0.90930	1.0764-	0.2830	
SALE	Changes in sale	2.3005-	6.3706-	**3.3163**	0.0004	Effective
RECCH	Decrease in Accounts receivable	**0.26185**	**0.07547**	**3.4657**	0.0007	Effective

contd. table

variables		Variables coefficients	Standard Variation	T statistic	The significance level of the test	Result in the model
PPEGT	Facilities and Equipment of Properties	**0.14586**	**0.07370**	**1.9779**	0.0493	Effective
ROA	**return on assets**	**1.18631**	**0.20829**	**5.6953**	**0.0000**	Effective
AR(1)	**AUTO REGRESSIVE**	**0.29775-**	**0.19016**	**1.5644-**	**0.1193**	
	Durbin-Watson statistic	**1.84**	Errors in the model are not correlated			
	Coefficient of model determination	**0.81**	81% of the changes of total accruals are described by the significant independent variables-			
	F statistic		15.637			
	The significance level of the model	**0.000**	The linearity of the model is confirmed			

The results of model estimation by panel data regression (dependent variable: Total accruals) show that, the coefficient of determination is 0.81; it means that 81% of the changes in the dependent variable of Total accruals can be explained by significant variables in the model. Furthermore, Durbin-Watson statistic was 1.84 and because this amount is in the interval of 1.5 to 2.5. Therefore, we conclude that the errors of the model are not correlated.

After estimating the model using the above model residue, the variable of discretionary accruals was calculated that in the following the graph and table relevant to DACC are offered:

Descriptive statistics of the dependent variable of accruals quality (DACC) can be seen in the table below. These results have been extracted using Eviews software:

Descriptive statistics of the quality index of accruals quality

	Number	Mean	Standard Deviation	Skewness	Elongation	Minimum	Maximum
DACC	250	0.987378	0.158632	-0.025266	2.931669	0.5796	1.3677

According to the values of the table and the variable of skewness of DACC, it has been skewed to the left; moreover considering elongation, it is longer than normal distribution. The standard deviation of this index for the period of 2009-13 has obtained 0.1586. The average of transparency for this period was equal to 0.98.

According to the above table the highest amount of DACC for this period is 1.36 and the lowest has been calculated 0.57.

In the following after calculating DACC we estimate the first model of the research with the dependent variable:

The fitting of the regression model for the first model of research (the dependent variable DACC)

$$DACC = \beta_0 + \beta_1 INDUSTRY\_DIV + \beta_2 CLIENT\_DIV + \beta_3 GEOG\_DIV + \beta_4 SERVICE\_DIV + \beta_5 LEVERAGE + \beta_6 ROA + \beta_7 SGROWTH + \beta_8 LOFFICE + error$$

In order to estimate the model, at first we estimate the considered model as fixed effects by the **generalized least squares** method, and then we used the F-Limer. If H0 is rejected, the estimated model is panel and then we estimate the model with random-effects, we and by using Hausman statistic test we determine that model should be estimated with fixed effects or random effects.

F-Limer test results to show *Synthetic* data against random effect model

Type of test	Test statistic	Significance level	Test result
F-limer test	**12.5333**	**0.0000**	Confirmation of the fixed effects model against the *Synthetic data* model

Source: research Calculations

Hausman test to show fix model against the random model

Type of test	Test statistic	Significance level	Test result
Hausman test	**11.5179**	**0.0420**	Confirmation of the fixed effects model against the random effects model

The variables used in the model, in this study include:

Dependent variable:

DACC= Discretionary Accruals which is the minimum of **TACC**

Independent variables:

INDUSTRY_DIV= the natural logarithm of the number of customers who have received audit services from the office.

CLIENT_DIV= the engagement and participation of clients in the industrial sector.

GEOG_DIV= Average natural logarithm of the distance between client offices and Audit Office client

SERVICE_DIV= Average natural logarithm of the services offered to the client

Control variables:

LEVERAGE= Total debt to total assets

ROA= Return on assets

SGROWTH= Rate of sales growth

LOFFICE= Natural logarithm of audit fees from office activities

Results of model estimation using panel data

Dependent variable: **DACC**

variables		Variables coefficients	Standard Variation	T statistic	The significance level of the test	Result in the model
c	**y-intercept**	1.610260-	1.55683-	1.03431	0.1208	
INDUSTRY	the natural logarithm of the number of customers who have received audit services from the office.	2.00E05-	2.90E06-	6.8723	0.0000	Effective
CLIENT	the engagement and participation of clients in the industrial sector.	5.05E05-	1.09E05-	4.62306	0.0000	Effective
GEOG	Average natural logarithm of the distance between client offices and Audit Office client	0.420934	0.06181	6.81016	0.0000	Effective
SERVICE	Average natural logarithm of the services offered to the client	0.19987	0.08433	2.36998	0.0186	Effective
LEVRAGE	Total debt to total assets	1.2201	0.32200	0.32200	0.0006	Effective
ROA	Return on assets	0.068340	0.048456	4.651787	0.0000	Effective
SGROWTH	Rate of sales growth	0.025520	0.562778	2.444101	0.0409	Effective
LOFFICE	Natural logarithm of audit fees from office activities	0.068654	0.337865	4.356950	0.0217	Effective
Durbin-Watson statistic		**2.14**	Errors in the model are not correlated			
Model determination coefficient		**0.75**	75 percent of changes in audit quality are explained by significant independent variables.			
F statistic			13.698			
The significance level of the model		**0.0000**	The linearity of the model is proved			

The results of estimating the model with panel data regression (dependent variables: audit quality) shows that the coefficient of model determination is 0.75; it means that 75% of the dependent variable of audit quality is explained by significant variables in the model. Moreover, Durbin-Watson statistic equaled 2.14 and because this amount is in the interval of 1.5 to 2.5. Therefore, we conclude that errors resulted from the model are not correlated.

The estimation of the variables and relevant coefficients is shown in the form of model below

The results of fitting the model of the impact of earnings management in companies with high corporate governance on firm value:

Results of fitting the above model showed being significance of the effects of independent variables of industry diversification, customer diversification, diversification of geographical distance and the diversification of services on the above regression model for the selected companies . Furthermore, the control variable of total debt to assets, return on assets, the rate of sales growth and logarithm of audit fees have significant and positive impact on audit quality log audit fees of shows As we can see the coefficient of all independent variables are positive and this means that independent variables directly affect the quality of audit quality.

So the hypotheses 1 to 4 of this study suggesting the significant effects industry diversification strategy, customer diversification, diversification of geographical distance and the diversification of services on audit quality are confirmed.

The second regression model (dependent variable criteria MBEX)

Probability (MBEX = 1) = F{$\gamma 0 + \gamma 1$INDUSTRY_DIV + $\gamma 2$CLIENT_DIV + $\gamma 3$GEOG_DIV + $\gamma 4$SERVICE_DIV + $\gamma 5$ LEVERAGE + $\gamma 6$ ROA + $\gamma 7$SGROWTH + $\gamma 8$ LOFFICE + error}

Flimer and husman tests results for this model are shown in the following tables.

F-Limer test results to show synthetic data against random effect model			
Test type	*Test statistic*	*Significance level*	*Test result*
F limmer test	12.5333	0.00000	Confirmation of the fixed effects model against the *Synthetic data* model

Hausman test to demonstrate fix model against the random model			
Test type	*Test statistic*	*Significance level*	*Test result*
Hausman test	74.84150	0.0102	Confirmation of the fixed effects model against the random effects model

Source: research Calculations
Results of model estimation using panel data
Dependent variable: **Audit Quality** MBEX

variables	*coefficients*	*coefficients*	*Standard Error*	*t statistic*	*Prob.*
c	**y-intercept**	-137215.4	30528.16	-4.494.714	0,000
INDUSTRY	The natural logarithm of the number of customers who have received audit services from the office.	65817.96	28382.28	2.318.980	0,0211
CLIENT	The engagement and participation of clients in the industrial sector.	-91610.73	37745.30	-2.427.077	0,015
GEOG	Average natural logarithm of the distance between client offices and Audit Office client	-122063.6	46031.96	-2.651.714	0,0084
SERVICE	Average natural logarithm of the services offered to the client	22891.14	28610.32	0.800101	0,4243
LEVRAGE	Total debt to total assets	-70896.52	66060.72	-1.073.202	0,2840
ROA	Return on assets	0.004408	0.002442	1.805.159	0,0721
SGROWTH	Rate of sales growth	31455.00	11682.08	2.692.585	0,0075
LOFFICE	Natural logarithm of audit fees from office activities	365891.8	72063.45	5.077.355	0,000
Prob-F=0.0000 F=2.97		D-W=1.70		R^2=44	

The results of estimating the model with panel data regression (dependent variables: audit quality) shows that the coefficient of model determination is 0.44; it means that 44% of the dependent variable of audit quality is explained by significant variables in the model. Moreover, Durbin-Watson statistic equaled 1.70 and because this amount is in the interval of 1.5 to 2.5. Therefore, we conclude that errors resulted from the model are not correlated.

5. DISCUSSION AND CONCLUSION

The variable of Industry diversification (INDUSTRY) with a significance level of less than 0.05 and a positive coefficient in the above model has been significant and it has positive and significant coefficient on the dependent variable. In fact, when industry diversification increases the audit quality with criteria of (MBEX) increases.

So, the first hypothesis of this study suggesting a significant impact of industry diversification on the quality of financial reporting is confirmed.

Customer diversification with a significance level of less than 0.05 and negative coefficient is significant in the above model and it has a significant and negative coefficient on the dependent variable. In fact, when Customer diversification increases the audit quality with criteria of (MBEX) decreases.

So, the second hypothesis of this study suggesting significant impact of Customer diversification on the quality of financial reporting is confirmed.

The Variable of geographical distance diversification (GEOG) with a significance level of less than 0.05 and negative coefficient in the above model, it has a significant and negative coefficient on the dependent variable. In fact, when geographical distance diversification increases the audit quality with criteria of (MBEX) decreases.

So, the third hypothesis of this study suggesting significant impact of geographical distance diversification on the quality of financial reporting is confirmed.

The variable of diversification of services (SERVICE) with a significance level of 0.05 and a positive coefficient in the above model is not significant.

So, the fourth hypothesis of this study suggesting significant impact of diversification of services on the quality of financial reporting is not confirmed.

The variable of Rate of sales growth (SGROWTH) with a significance level of less than 0.05 has a significant effect on the dependent variable In fact; this variable having a positive coefficient has direct effects on audit quality.

The Variable of logarithm of audit fees (LOFFICE) with a significance level of less than 0.05 has a significant effect on the dependent variable. The positive coefficient of Variable shows that, when audit fees increases the audit quality increases, as well.

The Variables of ROA, LEVERAGE with the significance levels of more than 0.05 do not have a significant effect on the dependent variable. So these variables had no significant effect on audit quality.

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