



## Board diversity and audit quality: Evidence from Turkey

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Aree S Mustafa <sup>1,\*</sup>, Ayoib B Che-Ahmad <sup>1</sup>, Sitraselvi A/P Chandren <sup>1</sup>

<sup>1</sup> School of Accountancy, COB, Universiti Utara Malaysia, 06010 Kedah, Malaysia

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### ABSTRACT

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Recent management studies report that demographic and cognitive characteristics of board of directors and corporate performance are related. [7] reported that demographic characteristics of managers influence positively on their voluntary disclosure styles. This study conjectures that demographic diversity (e.g. gender and age) and cognitive diversity (e.g. interlocking directorship and levels of education) of board of directors impacts on client's incentive and ability to demand high audit quality proxy by Big4 auditors. Utilizing data from a sample of 415 firm-year observations for the period of 2011 to 2015 of Turkey quoted firms and using random effect estimation model to estimate the regression, we find a positive relationship between director within 36-55 and 46-55 years old and audit quality. The study's findings also show that interlocking directorship and boards with Master degree holders has a significant positive impact on clients' demand for high audit quality. This study contributes to provide additional theoretical insight by examining interlocking directorship with audit quality, which to the best of the researcher's knowledge, have not been addressed in the environment of Turkey.

#### Keywords:

Audit quality, Board demographic and cognitive diversity

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## 1. Introduction

In recent times, regulators and practitioners concern have increased about the integrity of financial reporting quality, particularly after financial and accounting scandals like WorldCom, Enron and One\_Tel [14]. For developed countries especially Turkey, the weakness of institutional setting, accounting standards and corporate governance have been realized as one of the reasons behind such financial scandals [6]. Consequently, this undermines public confidence on accounting profession. Given that board demographic (e.g. gender, age) and cognitive characteristics (e.g. interlocking directorship and level of education) is an indicator of corporate governance and the selection of external auditor by the board of directors as an external monitoring mechanism. It is therefore, important to investigate the relationship between board structure and clients demand for

\* Corresponding author.

E-mail address: [areemustafa@uod.ac](mailto:areemustafa@uod.ac) (Aree S Mustafa)

high audit quality, because of corporate governance influence on auditor choice that in turn effect on the quality of audit service. This paper examines the influence of board demographic and cognitive characteristics on the clients' demand for high audit quality. The concentration at the initial level on top management team (TMT) leads to corporate failure and financial scandals [18]. Board of directors is considered as the main reason behind the stock market and financial collapses [3]. Thus, board team diversity attracts considerable attention to enhance board monitoring role in stock markets categorized with lack of strong external monitoring [16]. In the past decade, it is very clear to the world that Turkish listed firms have been making progress in terms of transparency, corporate governance, and financial reporting quality. Thus, this study aims to investigate how these improvements are associated to the demographic and cognitive diversity of board of directors.

Management theories long time ago proposed that board diversity attitudes play a significant role in organizations success, whereas different attitudes of the board of directors is a recent phenomenon in accounting studies. In particular, upper echelons theory suggestions that demographic attributes of the top management are strongly related to organization outcome [26]. In addition, recourse dependency theory by [36] proposes that human capital is an essential intangible asset for operation and decision making of corporations. Extending the suggestion of upper echelons theory and resource dependency theory, [5] provide evidence that demographic and cognitive attitudes (e.g. age, gender, interlocking directorship and level of education) and corporate performance of Turkey firms are related. Board demographic and cognitive diversity possess an essential role on clients' selection of external auditor and the process of financial reporting, according to these studies in accounting and management literature. This paper conjecture that the demographic and cognitive characteristics possess a significant role on auditor selection. Another motivation came from the general agreement between policy makers and regulators on the significant role of board diversity at company-level. For instance, Australia and UK Stock Exchange markets recommends listed firms to recruit directors with different attributes such as female directors, educational level, age, etc. (FRC, 2010; FRC, 2012). This study's main concern is on board diversity and its role to improve board monitoring effectiveness that in turn enhance financial reporting quality and minimize information asymmetry. Best of available literature and this study concern only two studies by [4] who examined gender and generation diversity in Turkey in the area of firm performance. On the other hand, this study examines interlocking directorship as another attitude of board cognitive diversity on clients' demand for high audit quality in Turkey. The significant of the top management's role in organizational outcome have been documented by management theories. The result of this study contributes to the accounting literature through connecting resource dependency theory to auditor selection. In particular, this study investigates how demographic and cognitive diversity of board of directors affects accounting outcome and particularly auditor selection.

## **2. Theoretical background of the study**

Corporate board shapes firms culture with their management values, which influence on their implementation of accounting and financial policies. Previous management literature and population ecology proposes that corporation outcomes (for instance firm performance), are strongly related to environmental selection and bureaucratic rules [23,27]. Thus, [24,26] evolve upper echelons theory and they propose a unique perception and suggested that board of directors make a difference. Review of previous literature addressed upper echelons theory indicates that the most common management demographic attitudes that possess a crucial impact on corporate outcome are gender [9,20,30], Tenure and age [8,25]. While from the perspective of resource dependency theory, the

human resource is an essential intangible asset for corporate operations [36]. Upper echelons theory and resource dependency proposed that human capital represent crucial elements to enhance corporate performance. Accordingly, [13] finds that directors attitudes for instance title and education; are significant factors of the social capital of the upper echelons that possess a positive influence on firms' performance. Furthermore, a study by [5] display that board demographic diversity for instance gender, age, education and nationality have a significant influence on performance of Turkish firms. In terms of external auditor's role, auditor might serve as an external representative to conduct the corporate governance task [19]. Previous studies obviously documented the influence of audit quality and auditor selection on corporations [1]. The accounting and audit literature proposes that there is a strong relationship between audit quality and corporate governance mechanisms [31]. Among the interpretations regarding the demand for high quality audit, a relevant interpretation is that external auditor might mitigate Type II Agency problem that exacerbate between majority shareholders and minority shareholders. According on this proposition, high quality audit could provide confidential environment to attract investors. To sum up, previous studies provide a clear foundation to propose the passable influence of demographic, cognitive and of board of directors on audit quality.

### 3. Hypotheses development

This part addresses the hypothesis development of this study. It is clear from the theoretical background that board demographic (age & gender) and cognitive (interlocking directorship and level of education) play a crucial role in enhancing client incentive and ability to demand high audit quality. This might improve monitoring management actions and align the interest between majority shareholders and minority shareholders.

#### 3.1. Female director

Management studies reports that gender and age of board of directors are associated with their tendency to accept changes and risk. Based on resource dependency theory, auditor selection depends on the various attitudes of board of directors. Female directors improve the efficiency of board monitoring functions. Therefore, they have strong tendency to hire high quality auditor to protect their reputation. This is because audit firms with brand name for instance Big-4 audit firms' possess a strong capability to provide high quality audit services. Consequently, high quality auditor improves internal control system that in turn reduce information asymmetric and this influence positively on the reliability of accounting information [40]. The same argument is provided by [1,10,33] that there is a positive relationship between female director and audit quality. Furthermore, older directors are more conservative and risk-averse than younger directors [8,12]. This study uses gender and age as demographic characteristics in the study model and proposes that female and older director should be more conservative than male and younger directors. Based on accounting literature, conservatism and prudent behavior possess equal influence in auditing process that leads to safer audit opinion and outcome for audit firms. This means that older directors with high experience should be more conservative, consequently they select Big-4 auditor. Thus, it is suggested that board demographic diversity is positively related with audit quality. On the basis of this, this study formulates the following hypothesis:

H<sub>1a</sub>: There is a positive relationship between female directors and audit quality.

### 3.2. Directors' age

Management literature proposes that directors' age is correlated with the tendency to accept risk and new changes. [12] argue that older directors compared to younger directors are more conservative and risk averse and they manage the firms better. This study control for directors' age and propose that older directors possess more experience and they are more conservative than less experience and younger directors. In the area of accounting and particularly audit, conservatism equal to prudent behavior of auditor. Consequently, this leads to safer opinion and audit outcome. Therefore, it is logic to propose that older director and more experience director should be more prudent. This in turn enhance director's tendency to demand high quality audit by selecting strong external auditor. Therefore, it is proposed that board demographic diversity proxy by directors' age is positively related with audit quality. Therefore, this work suggests the following hypothesis:

H<sub>1b</sub>: There is a positive relationship between director age and audit quality.

### 3.3. Interlocking directorship

Based on resource dependency theory assumption interlocking directorship generates a strong link for corporation with the external environment. Consequently, this improve corporate competency to overcome environmental contingences [36,41,42]. Board of directors who occupy more than one directorship have a concrete motivation to involve with Big4 auditor, in order to protect their reputation. Previous studies by [21,29,37,43] documented a positive relationship between interlocking directorship and auditor selection. This is because directors involve with more than one directorship are less likely to spend enough time to monitor management activities. As a result, they are more likely to hire high quality auditor in order to maintain their reputation. On the other side, some studies by [15,17,38] reports that interlocking directorship possess negative influence on clients' demand for high audit quality. This indicates that interlock directorship improve the relationship between the audited and auditor. Therefore, interlock organizations are more likely to hire the same auditor for longer time. Thus, this study proposes that cognitive diversity proxy by interlocking directorship is related to audit quality and it propose the following hypothesis:

H<sub>2a</sub>: There is a relationship between interlocking directorship and audit quality.

### 3.4. Level of education

In addition, based on resource dependency theory perceptions that directors with accounting and financial qualification possess a strong tendency to engage with Big4 auditor to properly enhance board monitoring function [28]. This is supported by [2] that level of education of board of directors' influence positively to improve clients' ability to demand high audit quality. Board of directors with high accounting and financial qualification has a capability to understand financial reporting issues. Thus, they are looking for further confirmation by involving with high quality auditor. Previous studies report that there is a positive relationship between directors' level of education and audit quality [4,35]. On the other hand, some studies documented a negative relationship between level of education and clients demand for high audit quality [13]. This is because educated directors are less conservative in making strategic decisions and they possess more tendencies to engage with high management manipulation. Based on inconsistency of previous studies, the study hypothesis is:

H<sub>2a</sub>: There is a relationship between board level of education and audit quality.

## 4. Methodology

This study utilized secondary data of the published financial reports of selected listed Turkish firms. The population of the study comprises of public firms listed on the Borsa Istanbul (BI) as obtained from the BI website. More specifically, public disclosure platform as at 31 December 2016 and 83 firms are drawn as a sample based on the availability of data. Meanwhile, financial firms listed under the financial sector are excluded due to the variances in regulatory environment and reporting features. The period covered by this study is 2011 to 2015. The main reason behind the selection of this period for this study is to take into consideration the new Turkish commercial code that has been issued, effective from July 1<sup>st</sup>, 2012. In order to estimate the regression, the study used random effect model and this is after pooled ordinary least square (OLS) failed to meet required standard.

## 5. Variable definition and measurement

### 5.1. Model specification and variables definition

To address the research objective of this study, the model of the study investigates the relationship between board demographic and cognitive diversity and other control variables (board of directors' size, board independent and board meeting and firm size) with audit quality. This study's hypotheses outlines are examined using the following model:

$$AUD_{it} = \beta_0 + \beta_1 FEMD_{it} + \beta_2 DIRA_{it} + \beta_3 INTD_{it} + \beta_4 DIRL_{it} + \beta_5 BOAS_{it} + \beta_6 BOAI_{it} + \beta_7 BOAM_{it} + \beta_8 FIRS_{it} + \epsilon_{it}$$

where, for each firm (i) and each year (t)

AUD<sub>it</sub> = Audit quality. A dichotomous variable used to examine the hypotheses variables.

FEMD = Board female director

DIRA = Directors age (AG1, AG2, AG3, AG4 and AG5)

INTD = Interlocking directorship

DIRL = Directors level of education

BOAS = Board size

BOAI = Board Independency

BOAM = Board of directors meeting

FIRS = Firm size

$\epsilon_{it}$  = Error term supposed to be normally scattered with constant differences.

## 5. Results and discussions

Table 1 displays descriptive statistic about audit quality. Audit quality code is a categorical variable (3, if the firm used one of the Big4 auditing firms; 2, if a smaller international audit firm; 1, if it used a local auditor). While table 2 shows the number of observation, mean, standard deviation, min and max for of female directors, directors' age, and interlocking directorship, level of education and control variables (board size, board independent, board size and firm size). Female director is measured by number of female directors working in the board of director. Age is classified into 5 categories, where 1 =25-35, 2 = 36-45, 3 = 46-55, 4= 56-65, and 5 = greater than 65 years. Interlocking directorship is measured as a proportion of interlocking directors to total number of directors.

This study following [4] classifies level of education to four educational levels, based on total number of years of formal education in Turkey after high-school: elementary, high school, college and graduate school graduates and board of directors with Ph.Ds. Board size represents number of

directors working in the corporate board. Board independent is measured by proportion of independent directors to total number of board of directors. Number of board meetings (categorized as low, medium, and high levels of monitoring effort: 1 = 2-12 meetings, 2 = 13-30 meetings, 3 >30 meeting).  $\log_n$  (Total Assets) is firm size.

Table 3 displays the correlation between this study variable. The general overview indicates that the correlation between variable is less than 0.80 (the threshold value). This infers that the multicollinearity between variables is at low level. The correlation between FDIRECT and old directors is found to be positively correlated with audit quality. While younger director negatively correlated with audit quality in term of brand name auditor. Table 3 also, shows that directors occupy more than one sit within business group are more likely to engage with high audit quality and this indicates that there is a positive relationship between interlocking directorship and audit quality.

This aligns with the suggestions provided by previous studies such as [29,37] that director who work in more than one sit is less likely to spend enough time in organisation. Thus, in order to protect their reputational capital, they are more likely to hire high audit quality. Furthermore, the Table 3 indicates that there are positive relationships between directors hold master certificate and audit quality and directors hold high school certificate negatively correlated with high audit quality. This study result is in the same line of [5] that directors with high education level are more likely to protect their reputational. Thus they are more likely to hire high quality audit. The following subsection shows the multiple regression results.

**Table I**  
 Descriptive Statistics (percentage) for Dummy Variables

Dichotomous Variables Big-4	Frequency	Percentage	Cumulative
1	58	13.98	13.98
2	187	45.06	59.04
3	170	40.96	100.00
Totals	411	100.00	

This study investigates empirically, the effects of demographic and cognitive diversity on clients' incentive and abilities to demand high audit quality of firms listed in the BI. This section shows the descriptive statistic, correlation matrix and multiple regressions of independent variables and dependent variable. Table 1 displays that 13.98% of firms sampled are audited by the local auditor and they numbered about 58 of observations and the rest about 45.06% and 40.96% of firms observed are audited by international audit firms and Big4 audit firms respectively. Table 2 shows the mean for the explanatory variables, the values of standard deviation (SD) and their maximum and minimum values.

The statistics in the Table 2 display that the minimum and maximum value of female directors are 0 and 3 respectively. On the other side, the minimum proportion of directors to total number of board of directors' is 0 for all categories AG1, AG2, AG3, AG4 and AG5 and the maximum is .6666, 1, 1.2, 0.875 and 0.7777 respectively. The minimum and maximum values of interlocking directorship are between 0 and 1.20 respectively showing that this study's explanatory variable is within those values.

**Table 2**  
 Descriptive Statistics of Continuous Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
FEMLD	413	.8184019	.7965035	0	3
AG1	413	.080355	.1332692	0	.6666667
AG2	413	.1756933	.1799815	0	1
AG3	413	.3477556	.2165027	0	1.2
AG4	413	.2794994	.1945909	0	.875
AG5	413	.1222271	.14419	0	.7777778
INTERD	413	3.767157	2.633595	0	12
HIGHSG	413	.2033898	.5188562	0	3
UNDERG	413	4.663438	1.764137	0	9
MASTER	413	1.479419	1.488691	0	7
PhD	413	.5447942	.8041478	0	4
BOAS	413	6.881356	2.182892	3	15
BOAI	413	.2628394	.1395546	0	.5
BOAM	413	2.024213	.5947951	1	3
LnTASS	413	8.220792	.8825718	4.898588	10.22392

The minimum proportion of directors to total number of board of directors' is 0 for all categories that are high school graduate, undergraduate, Master and PhD degrees and the maximum value are 3, 9, 7 and 4 respectively. Standard deviation or degree of dispersion of variables is another part of descriptive statistic. The standard deviation of interlocking directorship is 2.6335 and that of board size is 2.1828. In general, the level of divergence from the mean is not high in interlocking directorship and board size. This infers that the distribution of the data of variables is close clustering around the mean indicating its reliability. The next subsection shows the correlation matrix findings displayed on Table 3.

Panel data regression models such as pool OLS, random effect and fixed effect model have been used in this study to examine the relationship between dependent variable (audit quality) and independent variables (female directors, directors' age, interlocking directorship, level of education). An appropriate estimation of the results and variance in the determination coefficient (R-Squared), signs, and their insignificant level shows in the following table. The first estimation was for OLS and the result of the estimation failed to meet the standard assumption. Thus, the estimation of fixed effect model and random effect model was carried out using Hausman test to select between fixed and random models. The results of Hausman test propose to report the results of random effect model and reject fixed effect model. In addition, Lagrange Multiplier (LM) test by Breush and Pagan carried to confirm the fitness of random effect model (to select between pool OLS and Random effect model). The findings interpret the fitness of the random effects model.

**Table 3**  
 Correlation Matrix Results

	Big4	FEMD	AG1	AG2	AG3	AG4	AG5	INTERD	HIGHGS	UNDERG	MASTER	PhD	BOAS	BOAI	BOAM	LnTASS
<b>Big4</b>	1.0000															
<b>FEMD</b>	0.1249	1.0000														
<b>AG1</b>	-0.1698	0.1794	1.0000													
<b>AG2</b>	0.0793	-0.0770	-0.1280	1.0000												
<b>AG3</b>	-0.0417	-0.1530	-0.3181	-0.1969	1.0000											
<b>AG4</b>	-0.0028	0.0786	-0.1393	-0.4395	-0.3482	1.0000										
<b>AG5</b>	0.1610	0.0432	-0.1610	-0.1979	-0.3554	-0.0668	1.0000									
<b>INTERD</b>	0.2400	0.2402	-0.0396	-0.0301	-0.0782	0.0772	0.1331	1.0000								
<b>HIGHGS</b>	-0.2866	-0.1378	0.0766	0.0296	0.0119	-0.0870	0.0145	-0.2231	1.0000							
<b>UNDERG</b>	-0.2791	-0.1259	0.0662	0.1634	0.0780	-0.0642	-0.1708	-0.0511	0.0011	1.0000						
<b>MASTER</b>	0.4202	0.1389	-0.0613	-0.0790	-0.0104	0.0481	0.0915	0.2485	-0.3516	-0.7525	1.0000					
<b>PhD</b>	0.1044	0.1579	-0.0776	-0.2424	-0.0613	0.1722	0.1853	-0.0225	-0.1209	-0.5070	0.0812	1.0000				
<b>BOAS</b>	0.4114	0.0775	-0.2793	-0.1501	-0.0031	0.1244	0.2319	0.1612	-0.1997	-0.2399	0.2738	0.1715	1.0000			
<b>BOAI</b>	-0.1401	-0.0670	-0.0636	0.1158	-0.0266	-0.0225	-0.0304	-0.1642	0.0333	0.0610	0.0045	0.0727	-0.0964	1.0000		
<b>BOAM</b>	-0.1832	0.0655	-0.0163	-0.0824	0.0728	0.1180	-0.0500	0.1096	0.1263	0.0200	0.0440	-0.0351	-0.1433	0.0562	1.0000	
<b>LnTASS</b>	0.4286	-.0293	-0.2964	-0.1367	-0.0528	0.1736	0.2791	0.2226	-0.2348	-0.2063	0.2945	0.1827	0.5452	-0.0147	-0.0830	1.0000

**Table 4**  
 Regression Results (Note: \*\*\* significant at 1% level of significance)

Variable	Coeff.	T-Value	Probability
FEMD	-.3425335	-1.32	0.188
AG1	.1984463	0.58	0.563
AG2	.6895845	2.27***	0.023
AG3	.6134976	.2789055***	0.028
AG4	.2860773	1.5	0.116
AG5	.379045	1.19	0.236
INTERD	.2871491	2.42***	0.015
HIGHSG	-.0814201	-0.14	0.885
UNDERG	.424396	1.16	0.246
MASTER	.8272904	2.20***	0.028
PhD	.2381093	0.53	0.599
BOAS	.0182181	1.01	0.311
BOAI	-.1341479	-0.98	0.328
BOAM	-.009565	-2.13***	0.033
LnTASS	.0538185	2.45	0.014

The reported  $R^2$  using random effect model is 0.27. This indicates that independent variables explain about 27% of the deviation in the dependent variable. The suggestion is that, about 25% of the deviation in the audit quality is explained by (female director, directors' age, interlocking directorship and level of education) and about 75% of the deviation is explained by variable not controlled in the model of this study. The random effects results indicate there is no relationship between female directors and audit quality. This indicates that female possess inability to impact in the board room in term of auditor selection. The result support study of [32] that increase in the number of female directors lead to increase earning management. This indicates that female director in Turkish family firms are not participating in the process of the selection of external auditor and our alternative hypothesis ( $H_{1b}$ ) is rejected.

The influence of different age categories on the explained variable varied. There is no significant effect of young directors between 24-35 years old on clients' demand for high audit quality. There is a positive influence found between directors 36-45 and 46-55 and the clients demand for high audit quality. There is no relationship between directors between 56-65 and greater than 65 and clients demand for high audit quality. This indicates that our alternative hypothesis ( $H_{1b}$ ) that expects a positive relationship between directors age and audit quality is rejected. This result is contradicted to the proposition of resource dependency theory that older directors are more conservative and risk-averse. The result is tandem with [30] finding that directors age negatively influences board effectiveness in terms of directors' attendance of board meeting. The logistic regression results indicate that interlocking directorship positively influence on audit quality and significant at 5% level. This also aligns with the results of [17,34] that interlocking firms are more likely to hire high audit quality. This is as a consequence of directors' tendency to protect their reputation by engagement with quality auditors. However, the result is in contrast with [15,22,38].

There is no significant influence of high graduate, undergraduate and PhD on clients' ability to demand high audit quality. While, directors possess high level of education for instance Master degree, are more likely to involve with high audit quality. This study's result supported by several scholars such as [5,35]. Nevertheless, it is contradicted to the finding of [13]. Furthermore, in terms of control variables, the influence found between board sizes, independency and audit quality is not significant. While, there is negative relationship between board meeting and audit quality and positive relationship between firm's size and audit quality. The result support study of [33,39]. However, it also contradicts the findings of [11,44].

## 6. Conclusion

The discussion addressed above has revealed that demographic diversity (directors age) and cognitive diversity (interlocking directorship and level of education) possess positive influence on clients' ability to demand high audit quality of Turkish listed firms. A part from integrated capability of independent variables which impacts on clients' ability to demand high audit quality, individually directors age of 36-45, 46-55, interlocking directorship and Master degree directors can enhance clients' ability to demand high quality audit services. This is because diverse attributes of board of directors' influence not only on directors' incentive to monitor, but also their abilities to do so. Thus, the study infers that demographic and cognitive diversity of board of directors has significant impacts on clients' incentive and ability to demand high audit quality. The research therefore, recommends that policy makers enforces listed firms to create their boards with different attitudes of directors. The study also recommends further studies that will include more data, inclusion of other attitudes of board of directors both before and after the regulatory changes of 2012 for comparison of clients' demand before and the amendments.

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