The Effects of CEO Turnover on Firm Performance in High-Tech vs. Low-Tech Firms: Evidence from Turkey

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Abstract

The main responsibility of Chief Executive Officer (CEO) is to form and implement strategic goals, policies and plans of the firms. Researchers showed that the change of CEO who is on the top position of the organization has positive or negative impacts on firm performance.In the literature, It is not yet seen any study which measures the impact of the of CEO turnover on the firm performance in Turkey. In the international literature, factors that determine CEO turnover have not been examined by differentiating the high-tech and low-tech firms yet. The present research aims at determining factors that play a role turnover of CEO in 173 firms that are traded in Istanbul Stock Exchange (ISE) in the period of 2005-2011. In addition, firms in the research have been divided in two groups and these two groups have been analyzed in terms of the difference of the effect of CEO change rate on firm performance. The results of the analysis showed that decrease in the performance indicators of firms causes CEO turnover. Accordingly, the effects of CEO turnover on firm performance have been found to be higher in high-tech firms than low-tech firms.

Key words: Key Words: Firm Performance, Financial Indicators, CEO Turnover, High and Low Technology Firms

Introduction

Main responsibility of CEO is to form and implement effective strategies in order to achieve goals and objectives determined in the direction of the firm's vision and mission. Researchers showed that the change of CEO who is on the top position of the organization has positive or negative impacts on firm performance. The decision of CEO's change and who will be the new CEO is an extremely important issue especially for the firms. The change of CEO in the firms is carried out in two ways. The first is an external mandatory change occurred as a result of deterioration of their financial performance due to *economic crisis*, intense competition and other compelling reasons. In this case, there are performance improvements expectations by changing the CEO with identified a new and better strategies. The second is an internal voluntary change that occurs when the CEO resigns because of better career expectations and opportunities. In this case, board of directors often selects a new CEO from among the members of the board of the directors who knows well firm's current valid long-term strategies goals, policies and strategies. As result of this change, the new CEO does not major changes in the firm. Thus, firms generally do not face a bad performance (Lindrianasari and Hartono, 2012: 207).

High tech means the most advanced and developed technology and expresses the change happening in time. High tech is used to define current technologies rather than the past or future technologies. Therefore, the products considered to be high tech in 1960s, are considered to be standard or even low tech products today. Today, there are more high tech sector's depending on the intensity of technology used when compared with 20-30 years before (Akgün and Polat, 2011). Sectors using high technologies are sectors such as Energy, Telecommunication, Chemicals, Medical and Computers. On the other hand, low technology doesn't require an intense technology to be used in the production process or production of service and its investment costs are lower compared to high technology sectors. Sectors such as Textile, Food Production or Concrete Production are considered to be low technology sectors. Majority of the firms being traded in ISE belongs to low technology group.

No study measuring the influence of CEO turnover on firm performance in Turkish Capital Market has been encountered during the literature review. In international literature, on the other hand, no study analyzed the effect of CEO turnover on firms separately depending on their being in high and low tech sectors. The present study is expected to contribute both national and international literatures. Therefore this study is taken to be quite important.

The present research aims at determining factors that play a role in the change of CEO in 173 firms that are traded in Istanbul Stock Exchange (ISE) in the period of 2005-2011. In addition, firms in the research have been divided in two groups and these two groups have been analyzed in terms of the difference of the effect of CEO change rate on firm performance. The degree of CEO turnover is used as the dependent variable in this study. On the other hand, Return on Assets (ROA), Return on Equity (ROE) and Tobin's q(Q) are used as performance indicators or measures. Other independent variables are firms' sales, total assets, leverage ratio and liquidity level

This study consists of five sections. Second section found right after introduction summarizes academic studies measuring the relation between CEO change rate and firm performance. Third section consists of introduction of dependent and independent variables and explanation of methodology and sampling of the study. In addition, regression model has been explained and hypotheses have been developed in this section. Forth section contains the empirical results of analysis. And a general assessment of the study has been put forth in the last section.

Literature Review

There are two ways for a firm to change CEO. First one consists of the obligatory change of CEO depending on external influences due to worsening of firm's performance. Second one consists of the resignation of CEO due to better career opportunities and this is a voluntary change. Majority of the studies found in literature review show that CEO decisions and the change of CEO are influential factors on firm's financial performance.

Writers such as Helmich (1974), Davidson et al. (1993) have argued that CEO change is effecting firms' performance positively while Grusky (1964), Allen et al. (1979), Carroll (1984), Beatty and Zajac (1987), Haveman (1993) have argued that CEO change is effecting firms' performance in a negative way. On the other hand, Boeker (1992) have argued that CEO change is not effective at all on firm's performance (Lindrianasari and

Hartono, 2012, p. 212). Other than these studies, Kesner and Sebora (1994) have used CEO turnover as a dependent variable. The results of their study showed that the higher turnover CEO results in lower firm performance. Similarly Virany et al. (1992), Shen (2000) have put forth a negative relation between ROA and CEO change rate. Deond and Park (1999), Engel et al. (2003) and Defond and Hung (2004) have determined a negative relation between profits before interests and taxes and CEO turnover. In contrast, writers such as Cannella and Lubatkin (1993), Zazac and Westphal (1996) have found weak relations between CEO turnover and firm performance.

Other than the studies summarized above, Smith et al. (2008) who have analyzed the relation between control variables and CEO change rate have found that the increase in total assets causes CEO turnover to slow down, while the increase in capital adequacy ratio (equities/total assets) causes an increase in the probability of CEO change. Conyon and He (2008) have analyzed the relation between CEO turnover and firm performance in firms operating in China. 1200 Chinese firms operating in the period of 1999-2006 have been included to their research. According to the findings of the study, a very strong and negative relation has been found between CEO turnover and firm performance. Similarly Lindrianasari and Hartono (2012) have studied the relation between CEO turnover and firm performance for the firms operating in Indonesia. Logistic regression analysis has been used in the study in which data belonging to the period of 1998-2006 has been included. According to the results of the study, negative relations between CEO turnover and Interest and Profit Before, ROA, ROE, total assets, sales and debt-equity ratio while there was a positive relation between current ratio and CEO turnover. Similarly Rachpradit et al. (2012) have studied the effect of CEO turnover and the structure of board of directors and partnership on firm performance in the firms operating in Thailand outside of the financial sector. According to the results of the analysis, probability of CEO change is much lower in cases in which firms are run by families, CEO being a member of the family or increase in the member number of board of directors. In addition, the sensitivity of CEO turnover on firm performance is proven to be much higher in cases in which CEO duality and decrease in the member number of independent board of directors. Additionally, CEO turnover has proven not to be influential on firm performance in cases in which CEO has reached the age of retirement.

Methodology

The present research aims at determining factors that play a role turnover of CEO in 173 firms that are traded in Istanbul Stock Exchange (ISE) in the period of 2005-2011. In addition, firms in the research have been divided in two groups and these two groups have been analyzed in terms of the difference of the effect of CEO change rate on firm performance. Logistic regression and t test methods have been used in empirical analysis. In the present study, firms which have changed CEOs in the period of 2008-2011 have been determined and factors to cause these changes have been determined. The dependent variable in the present study is CEO turnover. The cases in which a CEO change happens are considered as 1, others are taken as 0. Sectors such as Energy, Telecommunication, Chemicals and Computer are considered as high tech and others belong to low tech. Table 1 shows dependent and independent variables used in the present study.

Table 1: Descriptions of Variables Used in Analysis

Variables	Description
Dependent Variables (0, 1)	
Ceo Turnover (TURNOVER)	1= turnover , 0= otherwise
Independent Variables	
Return on Assets (ROA)	The ratio of net profit after tax to total assets
Return on Equity (ROE)	The ratio of net profit after tax to total equity capital
Tobin's q (Q)	Market value to the book value of total assets.
Size of firm 2 (SALES)	Natural logarithm of total sales
Size of firm 1 (ASSETS)	Natural logarithm of total assets
Leverage (DEPT)	The ratio of total liabilities to total assets
Liquidity (LIQ)	The ratio of current assets to current liabilities

Below regression model has been developed using the dependent and independent variables introduced in Table 1 and based on the studies of Defond and Hung (2004); Conyon and He (2008); Smith et al. (2008); Rachpradit et al. (2012); Lindrianasari and Hartono (2012).

$$TURNOVER\ (1,0)= \beta it+ \beta 2\ ROA_{it} + \beta 3\ ROE_{it} + \beta 4\ Q_{it}+ \beta 5\ LIQ_{it} + \beta 6\ ASSETS_{it}+ \beta 7\ SALES_{it}+ \beta 8\ DEBT_{it}+ e_{it}$$

The effect of CEO turnover on firm performance is thought to be higher in high technology firms. Since core competitiveness of these firms for the market and their customers are based on radical innovations. As long as this firms gains sustainable competitive advantage with these innovations, there will not experience an obligatory CEO change. The expectation from an obligatory CEO change in these firms is making innovations based on high technology that provides gains over sector average. These innovations which have a high added value for customers are reflected as high performance. This is provided faster compared to low tech firms. Therefore, the expectation of high performance in the change of CEO is considered to be higher in high technology firms. So main hypothesis of this study is:

$H_{1:}$ The effects of CEO turnover on firm performance will be higher for high technology firms than low technology firms.

Other hypotheses on performance indicators which have a determining effect on CEO turnover are shown below.

H_2: ROA has a negative relation with CEO turnover.
H_3: ROE has a negative relation with CEO turnover.
H_4: Tobin's q (Q) has a negative relation with CEO turnover.
H_5: Liquidity ratio has a negative relation with CEO turnover.
H_6: Total Assets have a negative relation with CEO turnover.

H_7: Sales have a negative relation with CEO turnover.

H_8: Debt ratio has a positive relation with CEO turnover.

Findings

Table 2 shows the results of logistic regression analysis related to the model developed above. Factors causing CEO change have been determined using financial data of 2008-2011.

Table 2: Results of Logistic Regression Analysis

Variables	B	Wald	Sig.	Exp(B)
Constant	*-1,863*	20,352	*0,000*	0,080
ROA	*-1,945*	13,250	*0,008*	1,234
ROE	*-,600*	13,652	*0,009*	0,945
Tobin's (Q)	*-1,122*	15,005	*0,005*	1,052
LIQ	*0,072*	10,287	*0,085*	1,072
ASSETS	*-0,092*	11,350	*0,042*	1,096
SALES	*-0,078*	12,665	*0,023*	1,081
DEPT	*-1,309*	14,354	*0,080*	3,703
Observation			692	
N. R Square			,262	

When results from Table 2 are evaluated, the independent variables of *ROA, ROE, Q, LIQ, ASSETS, SALES and DEPT* are observed to be influencing CEO turnover which is the dependent variable. CEO turnover of firms increases with the decrease of asset profitability, equity profitability, Tobin's Q rate, total assets, sales and liabilities. In other words, the decrease in accounting and market based performance indicators of firms, results with CEO change. In addition, there is a positive relation between liquidity rate and CEO turnover. In other words, higher ability to pay (solvency) results with higher CEO turnover. As a result hypotheses H_2, H_3, H_4, H_6 and H_7 are accepted and H_5 and H_8 hypotheses are rejected.

Table 3: T-Test

VARIABLES	*No Ceo Turnover (0)*			*Ceo Turnover (1)*			MEAN DIFFERENCE	T-TEST
	OBSV.	MEAN	STD. ERROR	OBSV.	MEAN	STD. ERROR		
ROA	71	0,042	0,090	102	0,028	0,105	0,014	2,120***
ROE	71	0,048	0,316	102	-2,271	45,61	2,223	3,126***
Tobin's(Q)	71	2,879	10,21	102	2,164	32,67	0,715	2,565***
LIQ	71	2,339	3,192	102	2,585	2,224	-0,246	-1,115*
ASSETS	71	20,04	1,636	102	19,48	1,694	0,56	2,107*
SALES	71	20,73	1,768	102	19,28	1,914	1,45	1,852**
DEBT	71	0,486	0,243	102	0,464	0,241	0,022	1,050*

Table 3 shows the results of t test concerning dependent and independent variables used in analysis. In Table 3, firms are grouped as the ones which have not changed CEOs and the ones which have changed CEOs, so the two groups have been analyzed to determine whether they have a difference in performance or not.

102 firms have changed CEOs and 71 firms haven't changed CEOs of the firms which were included in the analysis. Between the years 2008-2011, mean ROA, ROE and Tobin's Q rates of the firms whose CEO's didn't change are calculated respectively 3.2%; 4.8% and 2.87, firms whose CEO's did change calculated 2.8%; -227% and 2.16. The firms which have not changed CEOs during the mentioned years have higher performance indicators both in terms of accounting and market. In addition, total assets and total sales of the firms which have not changed CEOs are higher compared to the firms which have changed CEOs and their short term solvencies and capital adequacy ratio are lower.

Table 4: T-Test High and Low Tech Firms

VARIABLES	*Low Tech*			*High Tech*			MEAN DIFFERENCE	T-TEST
	OBSV.	MEAN	STD. ERROR	OBSV.	MEAN	STD. ERROR		
ROA	74	0,024	0,101	28	0,038	0,075	-0,014	-2,225**
ROE	74	-0,047	32,65	28	-0,001	0,305	-0,046	-2,532***
Tobin's(Q)	74	1,567	18,15	28	2,389	10,85	-0,822	-3,128***
LIQ	74	2,517	1,995	28	2,400	3,005	0,117	1,005
ASSETS	74	19,81	1,465	28	20,65	1,542	-0,84	-1,985*
SALES	74	19,50	1,854	28	20,36	1,654	-0,86	-1,352**
DEBT	74	0,4571	0,125	28	0,519	0,198	-0,061	0,984*

Table 4 shows the results of t test concerning dependent and independent variables of the firms which have changed CEOs. Firms are divided in two in Table 4 as high and low technologies and these two groups have been analyzed in terms of their difference in CEO

turnover. 122 firms are considered to be low technology and 51 are considered to be high technology from 173 firms being traded in ISE. 74 firms from low tech group have changed their CEOs, 28 firms from high tech group have changed their CEOs. Between 2008 and 2011, mean ROA, ROE and Tobin's Q rates of high tech firms were 3.8%; -0.1% and 2.38 respectively, the mentioned rates for low tech firms were calculated as 2.4%; -4.7% and 1.56. Even though CEOs of the high and low tech firms have been changed in those years, high technology firms still have higher performance indicators both in terms of accounting and market. In other words, high technology firms have a higher CEO turnover in the cases of decreasing of accounting and market based performance indicators by low-tech firms. In addition to this, total assets and sales of high tech firms are higher than low tech firms. In other words, a faster reaction is observed when high tech firms' sales and assets decrease. However, low tech firms have higher liquidity rate (LIQ) and capital adequacy (DEPT) compared to high tech firms. Since the effect of CEO turnover on the firm's performance is higher in high tech firms, H_1 hypothesis is accepted.

General Assessment

The present research aims at determining factors that play a role in turnover of CEO in 173 firms that are traded in Istanbul Stock Exchange (ISE) in the period of 2005-2011. In addition, firms in the research have been divided in two groups and these two groups have been analyzed in terms of the difference of the effect of CEO change rate on firm performance. The present study analyzes the interactions between liquidity level, capital adequacy, total assets, sales, accounting and market based performance indicators and CEO turnover.

There are two ways for a firm to change CEO. First one consists of the obligatory change of CEO depending on external influences due to worsening of firm's performance. Second one consists of the resignation of CEO due to better career opportunities and this is a voluntary change. The results of analysis show that CEO turnover increases when asset profitability, equity profitability, Tobin's Q rate, total assets, sales and liabilities decrease. In other words, the decrease in accounting and market based performance indicators of firms, results with CEO change. There is a positive relation between liquidity rate which is another control variable and CEO turnover. In other words, higher solvency results with higher CEO turnover. So, CEO change seen in firms traded in ISE happened as a result of worsening of financial performance.

102 firms have changed CEOs and 71 firms haven't changed CEOs of the firms which were included in the analysis. Between the years 2008-2011, mean ROA, ROE and Tobin's Q rates of the firms whose CEO's didn't change are calculated respectively 3.2%; 4.8% and 2.87, firms whose CEO's did change calculated 2.8%; -227% and 2.16. The firms which have not changed CEOs during the mentioned years have higher performance indicators both in terms of accounting and market.

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1.56. Even though CEOs of the high and low tech firms have been changed in those years, they still have higher performance indicators both in terms of accounting and market. In other words, high tech firms have a higher CEO turnover in cases in which accounting and market based performance indicators decrease. In addition to this, total assets and sales of high tech firms are higher than low tech firms. In other words, a faster reaction is observed when high tech firms' sales and assets decrease. However, low tech firms have higher liquidity rate (LIQ) and capital adequacy (DEPT) compared to high tech firms. Additionally, high liquidity level in a firm doesn't necessarily show its efficiency and effectiveness. For firms, it is important to keep liquidity level at minimum and to have profitability at maximum. Moreover, it is important for firms to establish a balance between costs and risks, decrease capital costs and raising their market value by doing so. So, the effect of CEO turnover on firm performance is higher in high tech firms. Since intense competition in the high tech sector drives them to be more creative and innovative in terms of their products in order to meet rapidly changing and developing demands, expectations and preferences of the customers. These products and services, which cannot be reproduced and replaced, and which are based on core capabilities with a high added value, take effect faster on performance. With CEO turnover, the success of providing creative and innovative, high quality products are reflected more and quickly in high tech firms compared to low tech firms.

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