Is Old Always Gold? CEO Age and Corporate Performance: Evidence from an Emerging Market

Md Saimum Hossain, CFA[1]
Md Imran Hossain[2]

Abstract:

This paper examines whether CEO age influences corporate performance in Bangladesh, a South Asian emerging market, based on a hand-collected panel dataset of 121 listed companies in Dhaka Stock Exchange over the period 2009–2021. Employing Ordinary Least Squares regressions with firm and year fixed effects, we find that CEO age adversely affects corporate performance. In other words, older (younger) CEOs yield lower (higher) corporate performance. Our findings remain robust after addressing endogeneity concerns by employing several identification strategies and conducting a battery of robustness checks. We also find that the negative impact of CEO age on corporate performance is more pronounced for the larger firms and the firms with lower growth opportunities. These findings have significant policy implications for various stakeholders such as regulators, board of directors and shareholders of firms in emerging markets.

Keywords: Chief Executive Officer, CEO age, Firm Performance, Emerging markets.

JEL Classifications: G30, G32, G34

DOI: https://www.doi.org/10.61607/JFB.V22N1-2.A2

Article Info: Submission Date: January 14, 2025; Acceptance Date: June 8, 2025.

1.0 Introduction

The finance and corporate governance academic domains have attracted a lot of interest in the correlation between age of CEOs and performance of companies. As per the Upper Echelons Theory, researchers argue that executive characteristics such as age influence things like strategic decisions and organizational outcomes (Hambrick & Mason, 1984). Researchers view age of a CEO to be a proxy for variables like experience, risk preferences, and decision-making styles (Goll &

[1] Assistant Professor, Department of Finance, Faculty of Business Studies, University of Dhaka, Dhaka, Bangladesh, E-mail: saimum@du.ac.bd.

[2] Associate Professor, Department of Finance, Faculty of Business Studies, University of Dhaka, Dhaka, Bangladesh, E-mail: imran@du.ac.bd.

Rasheed, 2005; Hambrick & Mason, 1984). Researchers have also found that these variables have the ability to influence measures of firm performance as well. In this connection, performance metrics like profitability, growth, stock returns etc. have been found to be correlated with CEO age (Belenzon et al., 2019; Suherman et al., 2023; Mukherjee & Sen, 2022; Serfling, 2014; Simpson & Carter, 2016; Yim, 2013). However, the directions of the influence found in the empirical findings are mixed. Such mixed results reflect the complexity of the CEO age-firm performance relationship and its dependence on contextual factors. These contextual factors include variables such as firm type, industry, governance structures etc.

The pertinent question is: Why might CEO age matter? It matters because of its ability to influence managerial choices. Age frequently correlates with variations in cognitive abilities, motivational factors, and accumulated experience. These variables can influence managerial choices. These choices then, in turn, have impact over the firm's performance.

The importance of CEO age can further be understood through the several mechanisms mediating the relationship between CEO age and firm performance. Such mechanisms include risk preferences, impact of experience and networks, firm-specific relationships, and the prevailing industry environment. Younger CEOs have been linked to a greater propensity for risk taking (Baker & Mueller, 2002), which can boost innovation and growth in high-tech or competitive sectors. On the other hand, older CEOs tend to favor stability. This has industry-level consequences of benefiting firms in mature industries (Serfling, 2014). However, assuming older CEOs are not resisting technological or strategic shifts, they contribute substantial industry knowledge and professional networks. This phenomenon enhances decision-making and resource access (Falato et al., 2015). Merika et al. (2017) report that CEO age is positively influential for firm-employee relationship strength. However, it has an inverted U-shaped effect on firm-customer relationships as well. Another factor found to moderate the age-performance dynamic is the level of uncertainty in the industry environment. Older CEOs tend to perform well in stable environments (Bandiera et al., 2023). However, their younger counterparts thrive in turbulent ones. Some previous studies summarized these effects as "horizon problem" for older CEOs vs "career concerns" for younger executives. Specifically, as CEOs age, firms often exhibit lower investment, reduced sales growth, and diminished profitability. However, higher survival rates have also been reported under older CEOs. This indicates a potential trade-off between growth and stability (Belenzon et al., 2019). Such phenomenon is particularly evident in industries that heavily depend on human capital and innovation. Evidence like this is supportive of

the Upper Echelons theory which posits that CEO characteristics (including age) significantly influence firm strategic actions and performance (Wang et al., 2016).

A substantial body of work has linked CEO attributes to firm performance in developed markets (Bandiera et al., 2023; Bertrand & Schoar, 2003; Falato et al., 2015; Simpson & Carter, 2016). However, far less is known about whether these relationships hold in emerging economies, especially Bangladesh. The impact of CEO age on performance may vary in emerging economies, with "CEO tenure" potentially mediating this relationship (Cheema, 2020). Developing markets like Bangladesh differ from the developed markets in terms of institutional contexts, governance structures, and market dynamics (Haque et al., 2011; Khan et al., 2015; La Porta et al., 1999; Muttakin et al., 2015). Such differences could alter how CEO characteristics impact firm outcomes (Mukherjee & Sen, 2022). Given these unique settings, it is notable that no published study has directly examined the CEO age–performance link in Bangladesh, an emerging market.

Bangladesh is a compelling case to examine CEO age effects. The country's capital markets have seen growth in line with the economic growth in the last decade. The main bourse Dhaka Stock Exchange (DSE) has seen an increasing number of publicly listed companies in recent decades. However, unlike its more developed counterparts, there is a major concentration of family ownership in the corporate leadership in Bangladesh. Roughly 78% of Bangladeshi listed firms are led by owner-CEOs[1] and about 39% of firms have the CEO-chair duality[2] (Al Farooque et al., 2007). Such kind of concentration of ownership and control has the potential to amplify the influence a CEO's personal attributes have on firm decisions. Moreover, these characteristics indicate the likelihood that imported governance models from developed markets may not fully capture the uniqueness of the Bangladesh market although the country has been actively reforming corporate governance in line with international best practices (Rashid et al., 2010). These factors make Bangladesh an ideal setting to investigate whether and how CEO age matters for firm performance in an emerging market setting. However, to date, there is a dearth of research focusing on CEO age in Bangladesh or similar emerging economies. That gap provides a strong motivation for the present study.

In this connection, the objectives of this study are twofold:

1. We would like to test empirically the relationship between CEO age and firm performance in an emerging market like Bangladesh.

[1] CEOs who are also significant owners

[2] Same person serves as the CEO and the board chair

2. We would like to assess whether firm characteristics (e.g., size and growth opportunities) moderate the CEO age–performance relationship.

To empirically test these two competing hypotheses, we manually construct a panel dataset of 121 listed companies in Dhaka Stock Exchange (DSE), the premier stock exchange in Bangladesh, over the period 2009–2021. In our baseline model, we employ Ordinary Least Squares (OLS) regressions controlling for firm fixed effects (FE) and year FE. We find that in Bangladesh, age of a CEO is negatively related with performance of the corporation. In other words, older (younger) CEOs generate lower (higher) corporate performance. In arriving at this conclusion, we address endogeneity concerns by employing several identification strategies. These include the two-step system Generalized Method of Moments (GMM), Lewbel's two-stage least squares instrumental variable regression, propensity score matching, entropy balancing etc. Our baseline findings are rigorously tested for robustness checks. Finally, several cross-sectional analyses were conducted. In those analyses, it was found that the negative impact of CEO age on corporate performance is more pronounced for the larger firms and the firms with lower growth opportunities.

This study makes two primary contributions to the extant literature. *Firstly*, it adds to the growing stream of research investigating how CEO characteristics (particularly age) influence corporate policies and outcomes. Prior studies have documented that CEO age can influence a wide range of decisions, including risk-taking (Serfling, 2014), investment in innovation and strategic change (Han & Jo, 2024). Evidence on the relationship between CEO age and firm performance is mixed: some studies report a positive association, arguing that experience and industry knowledge improve outcomes in certain industry contexts (Henderson et al., 2006), while others find a negative association, linking age to greater risk aversion and potential entrenchment (Serfling, 2014). Much of this evidence, however, comes from developed markets such as the United States and Western Europe. These markets are characterized by substantially different capital markets, governance frameworks, and investor expectations. Therefore, Bangladesh presents a distinctly different context characterized by high ownership concentration, a prevalence of family-led firms, weaker investor protection, and capital markets with less depth. These institutional differences can condition how CEO age translates into firm performance, making it unwise to assume that results from developed economies will hold here. Our study addresses this gap by providing systematic evidence that CEO age inversely influences corporate performance in Bangladesh.

Secondly, our study contributes to the literature on the determinants of corporate performance. Existing research has identified a range of firm-level characteristics

such as size, leverage, profitability, liquidity, and asset structure as important drivers of performance (Goddard et al., 2005; Sangadji et al., 2025; Aldboush et al., 2023; Sudiyatno & Suwarti, 2022; Majumdar, 1997; Hall & Weiss, 1967). We extend this line of work by showing that CEO age, a managerial demographic variable often overlooked in studies of emerging markets, is a significant determinant of firm performance. In doing so, we highlight the importance of incorporating top executive characteristics into models of firm performance, particularly in environments where governance quality and market institutions differ from those in advanced economies.

The remainder of our study is structured as follows. Section 2 discusses the theoretical foundations, covers the relevant literature, and develops the hypothesis. Following section 2, sections 3 and 4 represent the research design, methodology, and data analysis. Finally, Section 5 concludes the paper with important policy implications.

2.0 Literature Review and Hypothesis Development

2.1 Theoretical Foundations

Several theoretical frameworks explain the relationship between CEO age and firm performance, focusing on how age influences strategic decisions and organizational outcomes.

2.1.1 Upper Echelons Theory

Hambrick & Mason (1984), in their canonical work based on the strategic choices under managerial bounded rationality, postulated that the psychological and observable characteristics (including age) of the Upper Echelon (in other words, the top management) work as determinants of strategic choices. Such strategic choices then, in turn, impact the performances of the organization. This theory makes two propositions in the context of observable executive characteristic like age and the organizational characteristics. The first proposition addresses age and risk-taking behavior: Younger managers pursue strategies that are riskier than the older managers. It also asserts that younger managers will drive higher growth and profitability compared to industry averages than the older ones.

2.1.2 Agency Theory

Agency Theory introduces the idea of "horizon problem" that relates with the issue of age of the CEOs and performance motivation. Dechow and Sloan (1991) famously surmise that older CEOs (as managers age and approach exit), they

become prone to myopic behaviors. This view is closely related to one proposed by Fama (1980) whereby he argued that younger managers have an incentive to perform well to signal to the managerial labor market their value. Therefore, as managers approach the end of their careers, such motivations disappear and the market cannot discipline such managers anymore. This leads to potential shirking or risk aversion behavior on the managers' part. However, the foundational conflict emanates from the idea of "agency problem" whereby managers may prioritize personal interests over shareholders', with age influencing risk preferences and entrenchment (Jensen & Meckling, 1976). As managers age, this issue presents itself in the form of the Horizon Problem discussed earlier.

2.2 Literature Review: CEO Age on Firm Performance

Following the introduction of the Upper Echelons Theory, Bertrand and Schoar (2003) was probably among the first ones to test the effect of managers on several organizational metrics empirically. They find that manager fixed effects significantly explain the heterogeneity in metrics like investments and financial practices of firms. They also comment that managers of older birth cohort (older managers) tend to have a more conservative disposition. One notable qualification here is the non-mechanistic effect of age on performance: There exist mediating variables connecting CEO demographics such as age with performance. Goll and Rasheed (2005) support this argument, mentioning rational decision making and environmental factors playing the mediating roles rather than a direct age-performance channel. This is a repeating theme in many studies related to demographic characteristics and organizational performance.

Numerous studies empirically tested the Upper Echelon Theory's propositions and generally found a positive association between CEO age and firm performance (as reported in the meta-analytic study by Wang et al. (2016)). They also mentioned that CEO characteristics like age influence firm strategic action. These actions then influence firm performance. Such positive relationship is predicated on several factors including experience, network access, accumulated judgment, industry dynamism etc. Henderson et al. (2006)'s study found support for the dynamism context: CEO tenure was beneficial for performance in more stable industries like food. Similarly, older CEOs were associated with improved return on assets (ROA) and return on equity (ROE), Suherman et al. (2023) found in Indonesian listed firms. The authors linked this finding to the CEOs' ability to navigate complex regulatory and economic environments in developing markets. Using ROA and ROE as measures of performance, Nguyen et al. (2023) found a positive relationship between

age and firm performance in Vietnamese firms listed on the Ho Chi Minh Stock Exchange.

There also exists contrasting evidence that suggests that CEO age can have negative impact on firm performance when linked to risk aversion or reduced adaptability or specific contextual factors such as type of industry (stable vs. dynamic) are taken into consideration. Serfling (2014) possibly provides one of the clearest age-finance links in this regard: Older CEOs take less risk and produce less risk-adjusted portfolio returns compared to firms headed by younger CEOs. This is also consistent with Bertrand and Schoar (2003), who found that older CEOs tend to be more conservative, potentially stifling growth. Belenzon et al. (2019) extend this logic by analyzing a large sample of closely-held firms in Western Europe. They found that firms with older CEOs were more likely to have higher survival rates, but lower profitability, growth, and investment. In the Indian market, Mukherjee & Sen (2022) found that CEO age is negatively associated with corporate sustainable growth – a potential signal that older CEOs may struggle to adapt to modern sustainability demands. In a similar fashion, Cline and Yore (2016) observed that older CEOs might harm performance if their conservative tendencies clash with the need for agility in competitive markets. These findings are consistent with agency theory's view of managerial entrenchment, where entrenched CEOs are likely to prioritize personal job security over shareholder value (Adams et al., 2005).

Gender dynamics can further complicate the picture. Khan and Vieito (2013) reported that female CEOs, who are often younger on average, outperformed male counterparts in financial performance, though the study does not establish age as the direct causal predictor. Meanwhile, Simpson and Carter (2016) found no material pattern between CEO age and subsequent abnormal shareholder returns in Fortune 500 firms, indicating that market performance may be less sensitive to age than operational metrics.

In contrast to the large body of empirical evidence from the developed markets (as covered in the meta analytic study by Wang et al. (2016)), evidence from emerging markets remains sparse. Among the emerging markets, the Bangladesh market remains an interesting case due to the corporate governance structure that is markedly different from that of the developed markets. In this market, no published study examines CEO age and firm performance directly. Existing research has explored areas from a vector of CEO and board attributes like CEO tenure, CEO duality, gender diversity, board independence etc. vis-à-vis performance of the company (See Das & Hossain, 2025; Rashid, 2010; Rashid et al., 2010, Rouf, 2011).

Among these studies, Rashid et al. (2010) report that CEO duality is negatively associated with performance – an effect the literature often links to managerial entrenchment (while the study does not examine CEO age, such duality may be more prevalent among older CEOs).

Our research fills this gap by examining CEO age and firm performance in Bangladeshi listed firms, while controlling for other relevant variables. We contribute by clarifying mixed findings and providing insights into an underexplored emerging market.

2.3 Hypothesis Development

Based on the literature review, we predict the following two competing hypotheses regarding the relationship between CEO age and firm performance:

H_{1a}: There is a *positive* association between CEO Age and firm performance

H_{1b}: There is a *negative* association between CEO Age and firm performance

3.0 Data and Methodology

3.1 Data Source and Sample

The empirical analysis draws on a panel dataset of publicly listed non-financial companies in Bangladesh over the 2009–2021 period. Company financial data were manually obtained from the respective firms' annual reports, websites and the Dhaka Stock Exchange (DSE) library. The data on CEO characteristics were collected manually from a number of sources. These include annual reports, websites, professional social media platforms like LinkedIn. Our sample commences from 2009 and ends in 2021. These two years were the first and the latest years, respectively, for which we could trace the availability of the data on CEO characteristics.

To construct our sample, we first commence with the whole range of the publicly listed companies in the DSE. We then employ some screening criteria as per the standard literature (Hossain, 2016; Hossain & Hossain, 2015; Hossain & Moni, 2025; Lima & Hossain, 2018; Serfling, 2014). First, we excluded highly regulated institutions like banks, insurances and other financial institutions as their financial statements are distinct compared to the non-financial companies. Then, the missing values of all variables are dropped. These screening criteria result in a final unbalanced sample of 1124 firm-year observations from 121 companies grouped into 12 sectors for the said sampling period of 2009 to 2021. To avoid extreme

outliers, the winsorization function was performed on all continuous variables at 5% and 95% levels (Hossain et al., 2023).

3.2 Variables and their Measurements

3.2.1 Dependent Variables

Following standard literature (Waelchli & Zeller, 2013; Hou et al., 2022; Hossain & Moni, 2025), we use two proxies for firms' accounting performance as dependent variables in our study. First, Return on Assets (*ROA*) as measured by earnings before interest and taxes (EBIT) divided by total assets. Second, Return on Equity (*ROE*) as measured by net income divided by the book value of total equity.

3.2.2 Independent Variables

We use two measures for CEO age as the key independent variables of our study. The first measure is a continuous measure of CEO age i.e., *CEO Age (Log)* that captures the linear association between CEO-age and performance. This measure corresponds to the natural logarithm of the age of a firm's CEO in a year (Serfling, 2014; Belenzon et al., 2019; and Haider et al., 2020).[3]

Second, there might be contention that the association between CEO age and corporate performance may yield a non-linear pattern; not resembling the minor (marginal) changes in performance from an additional percentage change in the independent variable of age of CEO (Belenzon et al., 2019; Jenter & Lewellen, 2015; Yim, 2013). To capture this non-linear relationship, we categorize the CEOs into two subgroups based on a tertile-split of the CEO age value every year and create a discrete variable called the "*CEO Age Dummy"*. This variable takes on two types of values: Zero if the age of the CEO is in the bottom tertile and one if a CEO's age is in the top (Hossain & Moni, 2025).[4,5]

3.2.3 Control Variables

Following standard literature (Zhang, 2010; Peni, 2014; Waelchli & Zeller, 2013; Belenzon et al., 2019; Liu & Jiang, 2020; Rahman & Chen, 2023), we control for a

[3] Our results remain qualitatively similar if we use CEO Age in *years* instead of natural logarithm (untabulated).

[4] Our findings remain unchanged if we use CEO age terciles instead of median as a cut-off point (untabulated).

[5] As a further robustness check, considering CEO age differences, we categorize CEO age into four groups (e.g., <=40 years, 41-50 years, 51-60 years and >60 years) and find consistent results (see section 4.6.1).

vector of firm-specific characteristics that may affect corporate accounting performance such as CEO stock ownership, firm age, firm size, leverage, sales growth rate, net working capital, cash holdings, and capital expenditure.[6] We control for CEO stock ownership as firms with higher CEO stock ownership experience better performance. We also control for firm size and firm age as larger and older firms have lower performance. Furthermore, firm performances are negatively associated with leverage and cash holding, whereas positively associated with higher sales growth, capital expenditure and net working capital. All of these variables are defined in the Appendix A.

3.3 Econometric Modelling

To estimate the association between CEO age and corporate performance, we employ Ordinary Least Squares (OLS) regression models with firm fixed effects (FE) and year FE, following Serfling (2014). Specifically, we employ the following baseline regression equation as shown in Equation (1):

$$\boldsymbol{Performance_{it} = \alpha + \beta CEO\ Age_{it} + \gamma Controls_{it} + \eta_i + \lambda_t + \mathcal{E}_{it}} \ldots\ldots\ldots\ldots\ldots\ldots \textbf{(1)}$$

where, $Performance_{it}$ represents one of the two proxies for accounting performance- ROA_{it} (i.e., earnings before interest and taxes divided by total assets) or ROE_{it} (i.e., net income divided by the book value of total equity) of a firm *i* in year *t*. Contrarily, $CEO\ Age_{it}$ is the key independent variable for which we use two proxies. First, we define the variable "*CEO Age (Log)"* as the natural log of CEO age of firm *i* in year *t* (to capture the linear relationship). Second, $CEO\ Age\ Dummy_{it}$ is a variable indicating whether a CEO is older or younger. If this variable takes on the value of one (zero) because a firm's CEO's age is higher (lower) than the median CEO age of the sample each year, the said CEO is an older (younger) CEO.

$Controls_{it}$ is a set of variables specific to the firms that may affect corporate performance measures. This vector includes variables such as ownership of the firm stock by the CEO, firm age, firm size, leverage, growth in sales, net working capital, cash holdings, and capital expenditure. Appendix A contains the definitions of each of these variables. Therefore, this equation captures, upon controlling for firm fixed effects (denoted by *ηi)*, unobserved time-invariant characteristics of the firm. Furthermore, to capture the macroeconomic effects (e.g., macroeconomic cycles,

[6] Note that most of the annual reports of the firms in Bangladesh do not separately report CEO stock ownership. However, they report Managerial Ownership (i.e., sponsor, directors, CEO, and manager-level shareholding %) that includes CEO stock ownership. Therefore, we take managerial ownership as a proxy for CEO stock ownership (Hossain & Moni, 2025).

regulatory changes) common to all companies over time, we control for year fixed effects (λ_t). Finally, $\mathcal{E}_{it}$ is the idiosyncratic error term.

4.0 Data Analyses and Results

4.1 Descriptive Statistics

Table 1 contains the summary descriptive statistics of all the major variables for this study. Our sample firms have a mean (median) ROA of about 8.1% (6.2%) and a mean (median) ROE of about 10.4% (7.2%). The lowest (highest) value of ROA of firms is -3.9% (26.2%) and of ROE is -5.3% (41.8%). The CEOs of the firms included in our sample had an average and median age of 55 years. The range was 37 years (youngest) and 76 years (oldest). Approximately 47.8% of CEOs are older than the median CEO age i.e., 55 years. Furthermore, on average, the firms in the sample have CEO stock ownership of 7.6%, sales growth rate of 10.9%, leverage of 48.7%, cash holding of 6.2%, net working capital of 14.1%, and capital expenditure of 5.6%. The average firm size, as measured by total assets is BDT 5,927 million. Finally, in our sample, age of the average firm is 28 years.

Table 1: Descriptive Statistics

The table below contains the summary statistics of major variables for this study (Panel data of 121 non-financial firms listed in the DSE grouped into 12 industries for the sample period 2009-2021). Appendix A contains the definitions of each of these variables.

Variables	Mean	Std. Dev.	Minimum	Median	Maximum	N
ROA	.081	0.075	-.039	.062	.262	1124
ROE	.104	0.113	-.053	.072	.418	1124
CEO Age (Years)	55.319	11.066	37	55	76	1124
CEO Age (Log)	4.011	0.200	3.638	4.025	4.344	1124
CEO Age Dummy	.478	0.500	0	0	1	1124
CEO Stock Ownership	.076	0.085	0	.045	.292	1124
Firm size (mln BDT)	5926.986	8667.153	133.931	2757.091	38434.74	1124
Firm Size (Log)	7.771	1.475	4.905	7.922	10.557	1124
Firm Age (Years)	28.181	12.972	10	27	56	1124
Firm Age (Log)	3.269	0.470	2.398	3.332	4.043	1124
Sales Growth Rate	.109	0.277	-.388	.072	.817	1124
Leverage	.487	0.311	.071	.452	1.607	1124
Cash Holding	.062	0.081	.001	.026	.305	1124
Net Working Capital (NWC)	.141	0.230	-.384	.145	.536	1124
Capex	.056	0.065	0	.032	.239	1124

4.2 Preliminary Diagnostic Checks

We conducted preliminary diagnostic tests for properties such as multicollinearity, heteroscedasticity and auto-correlation. We utilize the Pearson's correlation matrix to detect multicollinearity. Table 2 provides the evidence that multicollinearity is not a major concern for our dataset (Lin, 2008) as the correlation coefficients between independent variables are less than 0.80. Furthermore, the correlation coefficient of *CEO Age (Log)* is negative with both *ROA* and *ROE*, implying that there is a preliminary (unconditional) evidence of negative association between CEO age and firm performance.

To detect heteroscedasticity (i.e., whether the residual variances are constant or not), we conduct the Modified Wald test and find that the probability of Chi-square statistic is less than 0.05 (untabulated), implying the presence of heteroscedasticity in our dataset. *Finally*, we conduct the Wooldridge test to detect serial autocorrelation and find a value of less than 0.05 (untabulated) for the probability of F-statistic. This implies the presence of autocorrelation in our dataset. To solve these problems, we use robust standard errors and we cluster standard errors at firm level in our baseline regressions (Greene, 2012).

Table 2: Multicollinearity Test: Pearson's Correlation Matrix

This table presents the results of Pearson's Correlation Matrix to test multicollinearity. Appendix A contains the definitions of each of these variables.

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
(1) ROA	1.00											
(2) ROE	0.71	1.00										
(3) CEO Age (Log)	-0.09	-0.04	1.00									
(4) CEO Age Dum.	-0.10	-0.08	0.82	1.00								
(5) CEO Ownership	-0.14	-0.09	0.06	0.08	1.00							
(6) Firm Size	0.14	0.12	0.05	0.04	-0.08	1.00						
(7) Firm Age	0.05	0.10	0.12	0.13	-0.26	-0.07	1.00					
(8) Sales Growth	0.22	0.18	0.00	0.00	-0.08	0.08	0.00	1.00				
(9) Leverage	-0.06	0.11	-0.06	-0.07	-0.13	-0.16	0.14	-0.02	1.00			
(10) Cash Holding	0.28	0.25	0.00	0.00	0.00	0.06	0.02	0.12	-0.14	1.00		
(11) NWC	0.31	0.16	0.08	0.05	-0.05	0.23	-0.03	0.02	-0.40	0.22	1.00	
(12) Capex	0.25	0.20	-0.01	-0.01	0.06	0.11	-0.19	0.10	0.02	0.09	0.00	1.00

4.3 Univariate Analysis

Following Serfling (2014), a univariate analysis is conducted to find the association between our two variables of interest: CEO age and firm performance. More precisely, we compare performance of the firm (measured by their ROA and ROE) between the groups of old CEOs and young CEOs. To achieve that objective, we categorize the CEOs into two subgroups (old and young) based on the median CEO age value every year. We consider a CEO as old (young) if the CEO's age is higher (lower) than the median value of the CEO age sample. Then, we conduct a two-tailed *t*-test to investigate if the mean ROA and ROE of the old and young CEO groups are statistically different or not. As shown in Table 3, older CEOs, on average, earn 1.5% lower ROA and 1.77% lower ROE compared to their younger counterparts and both mean differences are statistically significant at 1% level. This provides initial unconditional evidence that firms led by older CEOs have lower firm performance compared to those led by younger CEOs.

Table 3: Univariate Analysis: t-test of Mean Differences

Table 3 presents the results of univariate analysis using two-tailed t-tests of mean differences of ROA and ROE between old and young CEOs. A CEO is considered as old (young) if the CEO's age is higher (lower) than the sample median CEO age value every year. Appendix A contains the definitions of each of these variables. *** represents statistical significance at 1% level.

Variable	Old CEOs	Young CEOs	Mean Difference (Old – Young)
ROA	0.0727	0.0877	**-0.0150*** **
ROE	0.0943	0.1120	**-0.0177*** **
Observations	537	587	

4.4 Multivariate Analysis: Baseline Regressions

We conduct a multivariate analysis employing OLS regressions to investigate the association between CEO age and firm performance and present the results in Table 4. The dependent variables proxying firm performance in Panel A and B are *ROA* and *ROE*, respectively. In all specifications, we incorporate firm fixed effects (FE) and year FE to control for the unobserved heterogeneity across firms and over time. We also cluster standard errors at firm level.

The results in Columns 1 and 3 show the linear relationships between CEO age (using *CEO Age (Log)*) and firm performance. We find that the coefficient of *CEO Age (Log)* is negative for both *ROA* and *ROE* and statistically significant at 5% and 10% levels, respectively. These results are also economically meaningful. For

instance, a 1% increase in CEO age is associated with an approximately 5.3% decline in ROA and 7.9% decline in ROE, keeping everything else unchanged. This linear relationship implies that as CEOs get older, they deliver weaker firm performance.

Furthermore, we capture the non-linear relationships[7] between CEO age (using *CEO Age Dummy*) and firm performance in Columns 2 and 4. We find that *CEO Age Dummy* has a negative and statistically significant (at 5% level) coefficient for both *ROA* and *ROE*. These results epitomize economic significance as well. For instance, firms led by older CEOs experience 1.7% lower ROA and 2.8% lower ROE compared to the firms led by younger CEOs, keeping all other variables constant. This non-linear relationship indicates that older (younger) CEOs underperform (outperform) younger (older) CEOs.

Collectively, all these baseline findings consistently demonstrate that CEO age has a negative association with corporate performance measures in Bangladesh, corroborating our second competing hypothesis (H_{1b}). In terms of previous studies, these findings align with arguments by Bertrand and Mullainathan (2003) that older executives are more interested to advance self-interests and goals and enjoy the peaceful life. Such kind of an inclination may lead to a performance decline of the older-executives-led firms. Our findings contradict Peni (2014) and Mukherjee & Sen (2022) but align with the finding of Davidson et al. (2007). Our results also mirror Serfling (2014) who shows that older U.S. CEOs reduce risky investments (e.g., R&D) and acquisitions, which depresses growth-oriented profitability. Our findings also resonate with Amran et al. (2014) who show that CEO age negatively affects performance of firms in Malaysia. The Bangladesh evidence thus extends the emerging-market patterns, confirming that age-driven entrenchment and risk aversion are not confined to developed markets. Our findings are aligned with Agency Theory's prediction that aging CEOs become more risk-averse and entrenched, thereby suppressing firm investment and growth, resulting in lower firm performance.

In terms of control variables, most of the findings are consistent with prior literature (Zhang, 2010; Peni, 2014; Waelchli & Zeller, 2013; Belenzon et al., 2019; Liu & Jiang, 2020; Rahman & Chen, 2023). For instance, larger firms have lower performance, consistent with the notion of scale inefficiencies or diminishing marginal returns at a greater organizational scale. Additionally, firms with higher sales growth, capital expenditure and net working capital generate higher performance. These results imply that firms can enhance performance by increasing

[7] We also test for non-linear effects by including CEO age squared in the baseline specification. The squared term is statistically insignificant across all model specifications. Results are available upon request.

sales revenue, undertaking prudent investment decisions and implementing efficient working capital management.

Table 4: Baseline Regressions: CEO Age and Firm Performance

The table below contains the results of OLS regressions showing the association between CEO age and firm performance. The dependent variables are *ROA* (i.e., Earnings before interest and taxes / Total Assets) and ROE (i.e., Net Income / Total Equity) in Panel A and B, respectively. *CEO Age (Log)* is the natural logarithm of the age of a firm's CEO in a year. *CEO Age Dummy* takes the value of one if a CEO's age is above the sample median CEO age every year and zero otherwise. We control for firm FE and year FE in all specifications. Standard errors are shown in parentheses and clustered at firm level. ***, ** and * represent statistical significance at 1%, 5% and 10% levels, respectively.

Variables	Panel A: Dependent Variable- ROA		Panel B: Dependent Variable- ROE	
	(1)	(2)	(3)	(4)
CEO Age (Log)	**-0.053****		**-0.079***	
	(0.025)		(0.041)	
CEO Age Dummy		**-0.017****		**-0.028****
		(0.008)		(0.012)
CEO Stock Ownership	0.026	0.013	0.147*	0.130
	(0.063)	(0.061)	(0.084)	(0.083)
Firm Size	-0.027***	-0.028***	-0.026	-0.027*
	(0.009)	(0.009)	(0.016)	(0.016)
Firm Age	0.021	0.020	0.185**	0.185**
	(0.054)	(0.055)	(0.091)	(0.090)
Sales Growth Rate	0.040***	0.040***	0.061***	0.062***
	(0.007)	(0.007)	(0.014)	(0.014)
Leverage	0.037**	0.037**	0.007	0.008
	(0.015)	(0.014)	(0.022)	(0.022)
Cash Holding	-0.004	-0.006	0.115*	0.114*
	(0.039)	(0.040)	(0.065)	(0.066)
Net Working Capital	0.085***	0.085***	0.056**	0.056**
	(0.017)	(0.017)	(0.025)	(0.024)
Capex	0.070*	0.068*	0.156**	0.153**
	(0.041)	(0.041)	(0.066)	(0.066)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Standard errors clustered	Firm level	Firm level	Firm level	Firm level
Adjusted R^2	0.718	0.719	0.623	0.625
Observations	1124	1124	1124	1124

4.5 Addressing Endogeneity Concerns

Even though our baseline OLS regressions show that CEO age is negatively associated with firm performance, establishing causality that higher CEO age leads to lower firm performance is challenging because of several potential endogeneity concerns. First, there may be an omitted variable bias, or an unobserved factor (for instance, corporate culture or core values) that may be correlated with both CEO age (i.e., whether hiring an older or younger CEO) and firm performance. Second, our baseline analysis may omit the differences between the firms led by older CEOs and the firms led by younger CEOs. In other words, our baseline findings could be driven by the research design choice for our study. Finally, a reverse causality concern may arise as poorly performing firms might intentionally hire older or younger CEOs to stabilize or stimulate the business. As we use firm and year fixed effects in our baseline regressions, this should partially address omitted variable biases arising from unobserved heterogeneity across firms and over time (Hossain et al., 2025). Nevertheless, we mitigate these potential endogeneity concerns by using several identification strategies as follows:

4.5.1 Two-step System Generalized Methods of Moments (GMM) Regression

We conduct a dynamic panel data estimator- Generalized Method of Moments (GMM)- that robustly controls for potential unobserved heterogeneity biases and reverse causality (i.e, lower (higher) performing firms may recruit older (younger) CEOs) by incorporating the lagged dependent variables in the dynamic panel regressions (Andreou et al., 2017; Farag & Mallin, 2018; Sobhan & Tushi, 2025). Particularly, we employ the two-step system GMM estimator instead of the difference GMM since the former generates more reliable and efficient estimates by utilizing optimal weighting matrices (Greene, 2012). The results in Columns (1) and (5) in Table 5 corroborate our baseline findings that higher CEO age leads to lower firm performance (both ROA and ROE).

The dynamic panel models seem to be well-fitted as F-statistics in both columns are statistically significant at 1% level. The significance of F statistics shows that the models are well-fitted. The Arellano-Bond test results indicate the presence of first-order correlation (AR1) but the absence of second-order correlation (AR2). Finally, the Hansen test for over identification is not statistically significant, implying the validity of all instruments used in the dynamic panel models.

4.5.2 Lewbel's (2012) Two-Stage Least Squares (2SLS) Regression

To address the concerns of omitted variable biases or an unobserved factor correlated with both dependent and CEO characteristics, some of the prior studies use Two-Stage Least Squares (2SLS) instrumental variable (IV) approaches where they use dead founder, number of founders alive or sudden CEO death as external instruments (Adams et al., 2005; Al Mamun et al., 2020). Unfortunately, we could not incorporate these instruments in our paper because of these data unavailability in Bangladesh.

In such cases, following contemporary literature (e.g., Agca et al., 2022; Hasan et al., 2024), we employ Lewbel's (2012) 2SLS IV regression which generates instruments based on the heterogeneity of error term in the first stage regression instead of depending on external instruments. Lewbel (2012) suggests that this approach produces unbiased and efficient estimates when there are weak or no external instruments. The second-stage results of this test are presented in Columns 2 and 6 of Table 5.[8] It is evident from the results that older CEOs earn lower ROA and ROE compared to younger CEOs, which bolster our baseline findings. Furthermore, the statistical insignificance of over-identification and under-identification tests suggests that our analysis is immune from over-identification and under-identification problems.

4.5.3 Propensity Score Matching (PSM) Method

There is a possibility that our baseline analysis could omit the significant differences between the older-CEO firms and younger-CEO firms in our final sample. To address this concern, we employ Propensity Score Matching (PSM) method (Fang et al., 2014). First, we construct a dummy variable '*Treatment'* taking the value of one (zero) for the firms led by older (younger) CEOs based on the sample median CEO age as a cut-off point. Then, we run a logit regression including all control variables to estimate the propensity score (with a caliper of 0.005 and no replacement). This results in a total 882 observations in our matched sample including 441 observations from each treatment and control sample.[9] Finally, we re-run our baseline regression on this propensity-matched sample and the results presented in Columns 3 and 7 of Table 5 support our main baseline findings that older CEOs underperform younger CEOs in terms of both ROA and ROE.

---

[8] Please see the results of first-stage regression in Appendix B.

[9] Panel A of Appendix C shows that the pre-PSM and post PSM covariates of treatment and control samples are similar using two-tailed *t*-tests of mean differences.

4.5.4 Entropy Balancing (EB) Method

We also employ Entropy Balancing (EB) method that overcomes the limitations of PSM method (e.g., dropping observations during matching process, reduced test power etc.) by using a re-weighting system to make the mean, variance and skewness of all covariates comparable between the treatment and control groups (Hainmueller, 2012).[10] We use the same "Treatment" variable from the PSM method. We re-run our baseline regression on the entropy balanced sample and the results shown in Columns 4 and 8 are consistent with our baseline findings that firms led by Older CEOs experience lower performance (both ROA and ROE) than the firms led by younger CEOs.

Overall, the findings of all these identification tests suggest that there is causal relationship between CEO age and firm performance- i.e., higher (lower) CEO age leads to lower (higher) firm performance. In other words, older CEOs underperform younger CEOs.

Table 5: Tests to Address Endogeneity Concerns

This table presents the results of two-step system Generalized Method of Moments (GMM) (Columns 1 and 5), Lewbel's (2012) two-stage least squares (2SLS) instrumental variable regressions (Columns 2 and 6), Propensity Score Matching (PSM) method (Columns 3 and 7) and Entropy Balancing (Columns 4 and 8). The dependent variables are *ROA* (Earnings before interest and taxes/ Total Assets) and ROE (Net Income/ Total Equity) in Panel A and B, respectively. *CEO Age (Log)* is the natural logarithm of a firm's CEO age in a year. *CEO Age Dummy* takes the value of one if a CEO's age is above the sample median CEO age every year and zero otherwise. We control for firm FE and year FE in all specifications. Standard errors are shown in parentheses and clustered at firm level. ***, ** and * represent statistical significance at 1%, 5% and 10% levels, respectively.

Variables	Panel A: Dependent Variable- ROA				Panel B: Dependent Variable- ROE			
	2-step System GMM	**Lewbel's 2SLS (2nd Stage)**	**PSM**	**Entropy**	**2-step System GMM**	**Lewbel's 2SLS (2nd Stage)**	**PSM**	**Entropy**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
CEO Age (Log)	**-0.097****				**-0.219****			
	(0.048)				(0.109)			
CEO Age Dummy		**-0.038***	**-0.022*****	**-0.016****		**-0.070****	**-0.033****	**-0.025****
		(0.020)	(0.008)	(0.006)		(0.034)	(0.013)	(0.010)

[10] Panel B of Appendix C shows that all covariates between treatment and control samples are similar in terms of mean, variance and skewness after re-weighting.

CEO Stock Own.	-0.012	0.041	0.007	0.020	0.021	0.189**	0.084	0.115
	(0.026)	(0.065)	(0.075)	(0.051)	(0.053)	(0.090)	(0.098)	(0.092)
Firm Size	-0.001	-.028***	-0.037***	-.032***	0.005	-0.025*	-0.038**	-0.034**
	(0.002)	(0.008)	(0.011)	(0.008)	(0.004)	(0.015)	(0.018)	(0.016)
Firm Age	0.008	0.030	0.038	0.025	0.033**	0.206**	0.294***	0.202**
	(0.005)	(0.051)	(0.061)	(0.052)	(0.015)	(0.084)	(0.094)	(0.085)
Sales Growth Rate	0.041***	0.041***	0.041***	0.037***	0.048***	0.063***	0.067***	0.069***
	(0.008)	(0.007)	(0.009)	(0.006)	(0.017)	(0.013)	(0.014)	(0.013)
Leverage	0.013	0.038***	0.031*	0.039***	0.024	0.010	-0.010	0.016
	(0.010)	(0.013)	(0.019)	(0.014)	(0.021)	(0.020)	(0.029)	(0.023)
Cash Holding	0.061**	-0.005	-0.018	-0.004	0.086	0.114*	0.147**	0.138**
	(0.026)	(0.038)	(0.047)	(0.035)	(0.052)	(0.063)	(0.074)	(0.067)
Net Working Capital	0.033***	0.087***	0.079***	0.096***	0.032	0.060***	0.040	0.072***
	(0.010)	(0.015)	(0.022)	(0.015)	(0.022)	(0.022)	(0.034)	(0.024)
Capex	0.033	0.066*	0.089*	0.089**	0.137***	0.150**	0.193***	0.216***
	(0.033)	(0.040)	(0.052)	(0.035)	(0.048)	(0.065)	(0.068)	(0.065)
Lagged ROA	0.752***							
	(0.069)							
Lagged ROE					0.617***			
					(0.104)			
Firm FE & Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Std. Err. Clust.	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
Adjusted R^2	-	0.126	0.702	0.752	-	0.037	0.638	0.627
Observations	996	1124	882	1121	996	1124	882	1121
F-statistic	95.98***				27.06***			
Arellano-Bond test for AR(1)	-5.4***				-4.81***			
Arellano-Bond test for AR(2)	0.17				0.43			
Overidentification test (Hansen J statistic)	1.9	26.77			5.39	19.23		
Underidentification test (Kleibergen-Paap rk LM statistic)		24.36				24.36		

4.6 Robustness Checks

In this section, we check the robustness of our baseline findings through conducting several tests as follows and their results are presented in Table 6.

4.6.1 Alternative measure of CEO Age

In our baseline regressions, we create CEO Age Dummy based on the sample median CEO age as a cut-off point to distinguish between younger and older CEOs (see Columns 2 and 4 of Table 4). Now, to dive deeper into the CEO age differences, we categorize CEO age into four groups (e.g., <=40 years, 41-50 years, 51-60 years and >60 years) and create dummy variables for each of these groups (Andreou et al., 2017, Belenzon et al., 2019). In Columns 1 and 5 of Table 6, we use CEO age <=40 years as the base and the results show that compared to the youngest CEOs (i.e., less than 40 years old), oldest CEOs (i.e., more than 60 years old) have a negative and statistically significant influence on both ROA and ROE of firms, which are consistent with our baseline findings.

4.6.2 Industry FE, Year FE and Industry Clustering

While we control for firm FE and year FE in our baseline regressions, there is a concern that some time-invariant unobserved industry-specific factors could drive our results. To address this concern, we control for industry FE along with year FE and cluster standard errors at industry levels in Columns 2 and 6 of Table 6 and our results remain robust.

4.6.3 Tightest Specification (Industry FE×Year FE)

Furthermore, to control for the unobserved industry-specific factors that change over the time, we run the tightest specification by controlling for industry×year FE in Columns 3 and 7 of Table 6 and find consistent results.

4.6.4 Controlling for COVID-19 Dummy

As our sample period covers the COVID-19 periods in Bangladesh, we control for COVID-19 Dummy (i.e., takes the value of one for the years 2020 and 2021 and zero otherwise) in our baseline equation. The results shown in Columns 4 and 8 of Table 6 show that our baseline findings are not driven by COVID-19 periods.

Table 6: Robustness Tests

This table presents the robustness test results where the dependent variables are *ROA* and ROE in Panel A and B, respectively. CEO Age (Log) and several CEO age groups are the key independent variables. Standard errors are in parentheses. ***, ** and * represent statistical significance at 1%, 5% and 10% levels, respectively.

Variables	Panel A: Dependent Variable- ROA				Panel B: Dependent Variable- ROE			
	Alternative measure of CEO Age	Industry FE and Industry Clustering	Industr* Year FE	COVID-19 Dummy	Alternative measure of CEO Age	Industry FE and Industry Clustering	Industry* Year FE	COVID-19 Dummy
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CEO Age (<=40 Yrs) (Base)								
CEO Age (41-50 Yrs)	-0.002				-0.004			
	(0.011)				(0.015)			
CEO Age (51-60 Yrs)	-0.016				-0.023			
	(0.011)				(0.016)			
CEO Age (>60 Yrs)	**-0.029****				**-0.038****			
	(0.013)				(0.019)			
CEO Age (Log)		**-0.037*****	**-0.048****	**-0.053****		**-0.040***	**-0.078****	**-0.079***
		(0.011)	(0.023)	(0.025)		(0.018)	(0.039)	(0.041)
COVID-19 Dummy				-0.015				-0.087*
				(0.029)				(0.052)
All Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	Yes	Yes	Yes	No	Yes
Firm FE	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Industry FE	No	Yes	No	No	No	Yes	No	No
Industry × Year FE	No	No	Yes	No	No	No	Yes	No
Std. error clustered	Firm	Industry	Firm	Firm	Firm	Industry	Firm	Firm
Adjusted R^2	0.719	0.313	0.734	0.718	0.623	0.251	0.670	0.623
Observations	1124	1124	1124	1124	1124	1124	1124	1124

4.7 Cross-sectional Heterogeneity Analyses

After we establish causality and robustness of our baseline findings that higher CEO age leads to lower firm performance, now we conduct two cross-sectional analyses to investigate whether the relationship between CEO age and firm performance differs between the firms in our sample. The results are presented in Table 7.

4.7.1 Large vs. Small Size Firms

We split our sample firms into two subgroups (i.e., large and small firms) based on firm size where *Large* (*Small*) takes the value of one if a firm's total assets are above (below) the sample median total assets in a year and zero otherwise. Then we re-run our baseline equation for each of these subgroups and present the results in

Columns 1-2 and 5-6 of Table 7. We find that the coefficient of CEO Age (Log) is negative and statistically significant for both ROA and ROE in the large sample. This implies that the negative influence of CEO age on firm performance is more pronounced for larger firms which is consistent with the notion that older CEOs find it challenging to manage firms at a greater organizational scale and therefore, deliver poor performance.

4.7.2 High vs. Low Growth Firms

We also split our sample firms into two subgroups (i.e., high and low growth firms) based on firms' growth opportunities (measured by Tobin's Q) where *High* (*Low*) takes the value of one if a firm's Tobin's Q ratio is above (below) the sample median Tobin's Q value in a year and zero otherwise. Then we re-run our baseline equation for each of these subgroups and present the results in Columns 3-4 and 7-8 of Table 7. As CEO Age (Log) is negatively and significantly related with both ROA and ROE in the low growth sample, we argue that the negative influence of CEO age on firm performance is more pronounced for the firms having lower growth opportunities. This is consistent with our baseline findings as older CEO-led firms have lower growth opportunities, ultimately resulting in lower firm performance.

Table 7: Cross-sectional Analysis

This table presents the results of cross-sectional analysis based on firm size (i.e., Total Assets) and growth opportunities (i.e., Tobin's Q). *Large* (*Small*) takes the value of one if a firm's total assets are above (below) the sample median total assets in a year and zero otherwise. *High* (*Low*) takes the value of one if a firm's Tobin's Q ratio is above (below) the sample median Tobin's Q value in a year and zero otherwise. The dependent variables are *ROA* and ROE in Panel A and B, respectively. The difference between the coefficients of *CEO Age (Log)* across two subsamples is checked by joint hypothesis test based on the Chi² value. Standard errors are in parentheses. ***, ** and * represent statistical significance at 1%, 5% and 10% levels, respectively.

Variables	Panel A: Dependent Variable- ROA				Panel B: Dependent Variable- ROE			
	Firm Size		Growth Opportunities		Firm Size		Growth Opportunities	
	Large	Small	High	Low	Large	Small	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CEO Age (Log)	**-0.081*** **	-0.018	0.001	**-0.089*** **	**-0.159*** **	0.028	0.049	**-0.109*** **
	(0.022)	(0.022)	(0.025)	(0.020)	(0.037)	(0.036)	(0.043)	(0.036)
All Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Firm FE	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Adjusted R^2	0.801	0.664	0.749	0.708	0.767	0.555	0.690	0.565
Observations	562	562	562	562	562	562	562	562

Joint Hypothesis Tests (Chi^2):					
Large = Small	6.48**		17.40***		
High = Low		11.78**			12.53**

5.0 Conclusion and Policy Recommendations

This study investigates whether CEO age affects corporate performance in Bangladesh, a South Asian emerging market that differs from developed markets in terms of institutional settings, governance structures, and market dynamics. Based on theoretical development from Upper Echelons Theory and Agency Theory, we employ OLS regressions with firm and year fixed effects on a panel dataset of 121 listed companies in Dhaka Stock Exchange over the period 2009–2021. We primarily find that CEO age is negatively associated with accounting-based corporate performance measures (i.e., both ROA and ROE). In other words, older (younger) CEOs yield lower (higher) corporate performance. This finding remains consistent across different alternative estimation techniques and econometric strategies (e.g., two-step system GMM, Lewbel's two-stage least squares instrumental variable regression, propensity score matching, and entropy balancing) for endogeneity concerns. Our baseline results also survive a battery of robustness checks. Finally,

There are additional insights to be had from our analyses: our cross-sectional analyses reveal that the negative impact of CEO age on corporate performance is more pronounced for the larger firms and the firms with lower growth opportunities. We posit that in larger organizations, resource allocation decisions carry greater scale and long-term implications. In such settings, conservative decision-making orientation stemming from age-related reasoning may reinforce stagnation rather than preserve value. These cross-sectional patterns are consistent with the interpretation that age-related differences in strategic orientation, particularly toward risk and investment, may explain our findings. The results do not imply that experience is unimportant; rather, we contend that the results point out that in an emerging market characterized by developing governance structures and growth-oriented opportunities, strategic flexibility and willingness to take risk may be particularly valuable.

Our study contributes to the corporate governance literature by showing empirical evidence from an emerging market like Bangladesh that CEO age matters for corporate performance even in emerging markets. While there is inconclusive evidence in the extant literature regarding the impact of CEO age on corporate

performance in the developed and developing markets, our study makes an important contribution by taking a specific position backed by robust empirical evidence that CEO age adversely impacts corporate performance in the emerging markets. Our findings are consistent with the viewpoint of the Upper Echelons Theory that demographic attributes have relationship with the strategic outcomes. The findings also receive support from the Agency Theory on the direction of the effect through the concept of "horizon arguments". This concept suggests that shorter career horizons (linked with higher age) may induce higher conservative orientation, leading to a decline in firm performance.

The findings of this study have significant policy implications for various stakeholders of the firms. For instance, to accelerate corporate performance, the board of directors of firms may adopt some policies like age diversity in CEO succession planning, grooming in-house mid-level talents to fast-track into top executive roles, CEO incentive structure aligned with corporate performance and so on. Additionally, the regulators may introduce disclosure requirements for CEO age and succession plans in firms' annual reports. Regulators may also consider guidelines limiting the share of board seats and executive posts held by individuals above a certain age without evidence of active succession planning. Finally, shareholders may take CEO age into consideration while taking investment decisions and they may purchase the shares of those firms led by younger CEOs as these firms' improved performance is more likely to result in higher stock returns.

Finally, we recognize limitations like a lack of our ability due to data constraints to test risk-taking incentives as a variable mediating the CEO age-corporate performance. Risk-taking incentives are measured by compensation-based measures such as Vega, which is absent for the Bangladeshi firms. Future research in contexts with detailed executive compensation disclosures may be able to formally test whether risk-taking behavior explains the age–performance relationship. We suggest another future scope of research on our study. Further research could be done to investigate whether CEO age, along with other characteristics, influences other corporate policies and outcomes such as risk-taking behavior, stock price crash risk, corporate payouts in Bangladesh and/or other emerging markets.

References

Adams, R. B., Almeida, H., & Ferreira, D. (2005), "Powerful CEOs and their impact on corporate performance," *The Review of Financial Studies*, *18*(4), 1403–1432. https://doi.org/10.1093/rfs/hhi030

Agca, S., Babich, V., Birge, J. R., & Wu, J. (2022), "Credit shock propagation along supply chains: Evidence from the CDS market," *Management Science*, *68*(9), 6506–6538.

Aldboush, H. H., Almasria, N. A., & Ferdous, M. (2023), "Determinants of firm profitability: Empirical evidence from Jordan's service sector," *Business: Theory and Practice*, *24*(2), 438-446. https://doi.org/10.3846/btp.2023.18623

Al Farooque, O., van Zijl, T., Dunstan, K., & Karim, A. K. M. W. (2007), "Corporate governance in Bangladesh: Link between ownership and financial performance," *Corporate Governance: An International Review*, *15*(6), 1453–1468. https://doi.org/10.1111/j.1467-8683.2007.00657.x

Al Mamun, M., Balachandran, B., & Duong, H. N. (2020), "Powerful CEOs and stock price crash risk," *Journal of Corporate Finance*, *62*, 101582.

Amran, N. A., Yusof, M. A. M., Ishak, R., & Aripin, N. (2014), "Do characteristics of CEO and chairman influence government-linked companies performance?," *Procedia - Social and Behavioral Sciences*, *109*, 799–803. https://doi.org/10.1016/j.sbspro.2013.12.546

Andreou, P. C., Louca, C., & Petrou, A. P. (2017), "CEO age and stock price crash risk," *Review of Finance*, *21*(3), 1287–1325.

Baker, M., & Mueller, L. F. (2002), "CEO characteristics and firm R&D spending," *Management Science*, *48*(6), 782–801. https://doi.org/10.1287/mnsc.48.6.782.187

Bandiera, O., Prat, A., & Sadun, R. (2023), "CEO behavior and firm performance: Evidence from randomized experiments," *Journal of Political Economy*, *131*(3), 645–689. https://doi.org/10.1086/721803

Belenzon, S., Shamshur, A., & Zarutskie, R. (2019), "CEO's age and the performance of closely held firms," *Strategic Management Journal*, *40*(6), 917–944. https://doi.org/10.1002/smj.3003

Bertrand, M., & Mullainathan, S. (2003), "Enjoying the quiet life? Corporate governance and managerial preferences," *Journal of Political Economy*, *111*(5), 1043–1075. https://doi.org/10.1086/376950

Bertrand, M., & Schoar, A. (2003), "Managing with style: The effect of managers on firm policies," *The Quarterly Journal of Economics*, *118*(4), 1169–1208. https://doi.org/10.1162/ 003355303322552775

Cheema, S. (2020), "Does CEO age matters? A case of an emerging economy," *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3657542

Cline, B. N., & Yore, A. S. (2016), "Silverback CEOs: Age, experience, and firm value," *Journal of Empirical Finance*, *35*, 169–188. https://doi.org/10.1016/j.jempfin.2015.11.002

Crook, T. R., Todd, S. Y., Combs, J. G., Woehr, D. J., & Ketchen, D. J. (2011), "Does human capital matter? A meta-analysis of the relationship between human capital and firm performance," *Journal of Applied Psychology*, *96*(3), 443–456. https://doi.org/10.1037/a0022147

Das, S. K., & Hossain, M. M. (2025), "The moderating effect of board gender diversity in the relationship between firm performance and CEO compensation—evidence from an emerging economy," *Journal of Management and Governance*, 1–37. https://doi.org/10.1007/s10997-025-09741-3

Davidson, W. N., III, Xie, B., Xu, W., & Ning, Y. (2007), "The influence of executive age, career horizon and incentives on pre-turnover earnings management," *Journal of Management & Governance*, *11*(1), 45-60. https://doi.org/10.1007/s10997-007-9015-8

Dechow, P. M., & Sloan, R. G. (1991), "Executive incentives and the horizon problem," *Journal of Accounting and Economics, 14(1),* 51–89. https://doi.org/10.1016/0167-7187(91)90058-s

Falato, A., Li, D., & Milbourn, T. (2015), "Which skills matter in the market for CEOs? Evidence from pay for CEO credentials," *Management Science*, *61*(12), 2845–2869. https://doi.org/10.1287/mnsc.2014.2023

Fama, E. F. (1980), "Agency Problems and the Theory of the Firm," *Journal of Political Economy, 88(2),* 288–307. https://doi.org/10.1086/260866

Fang, V. W., Tian, X., & Tice, S. (2014), "Does stock liquidity enhance or impede firm innovation?," *The Journal of Finance*, *69*(5), 2085-2125. https://doi.org/10.1111/jofi.12187

Farag, H., & Mallin, C. (2018), "The influence of CEO demographic characteristics on corporate risk-taking: Evidence from Chinese IPOs," *The European Journal of Finance*, *24*(16), 1528–1551

Goddard, J., Tavakoli, M., & Wilson, J. O. S. (2005), "Determinants of profitability in European manufacturing and services: Evidence from a dynamic panel model," *Applied Financial Economics*, *15*(18), 1269–1282. https://doi.org/10.1080/09603100500387139

Goll, I., & Rasheed, A. A. (2005), "The relationships between top management demographic characteristics, rational decision making, environmental munificence, and firm performance," *Organization Studies*, *26*(7), 999–1023. https://doi.org/10.1177/0170840605053538

Greene, W. H. (2012), "Econometric analysis (7th ed.)," *Prentice Hall.*

Haider, I., Sultana, N., Singh, H., & Tham, Y. H. (2020), "CEO age and analysts forecast properties," *Asian Review of Accounting*, *28*(1), 1–23.

Hainmueller, J. (2012), "Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies," *Political Analysis*, *20*(1), 25–46.

Hall, M., & Weiss, L. (1967), "Firm size and profitability," *The Review of Economics and Statistics*, *49*(3), 319–331. https://doi.org/10.2307/1926642

Hambrick, D. C., & Mason, P. A. (1984), "Upper echelons: The organization as a reflection of its top managers," *Academy of Management Review*, *9*(2), 193–206. https://doi.org/10.5465/amr.1984.4277628

Han, J., & Jo, S. J. (2024), "How much does the CEO's age impact corporate performance under a changing environment?," *Administrative Sciences*, *14*(11), 304. https://doi.org/10.3390/admsci14110304

Haque, F., Arun, T. G., & Kirkpatrick, C. (2011), "The political economy of corporate governance in developing economies: The case of Bangladesh," *Research in International Business and Finance*, *25*(2), 169–182. https://doi.org/10.1016/j.ribaf.2011.01.001

Hasan, M. M., Hossain, A., & Jiang, H. (2024), "Political sentiment and credit ratings," *The British Accounting Review*, 101432

Henderson, A. D., Miller, D., & Hambrick, D. C. (2006), "How quickly do CEOs become obsolete? Industry dynamism, CEO tenure, and company performance," *Strategic Management Journal*, *27*(5), 447–460. https://doi.org/10.1002/smj.524

Hossain, A. T., Attig, N., Hebb, G. M., & Hasan, M. M. (2025), "Firm-level litigation risk and CEO equity incentives," *Finance Research Letters*, *78*, 107151. https://doi.org/10.1016/j.frl.2025.107151

Hossain, M. I. (2016), "Effects of capital structure and managerial ownership on profitability: Experience from Bangladesh," *International Journal of Business and Management*, *11*(9), 218

Hossain, M. I., Duong, H. N., Al Mamun, M., & Docherty, P. (2023), "Collateral shocks and M&A decisions," *Journal of Corporate Finance*, 102433

Hossain, M. I., & Hossain, M. A. (2015), "Determinants of capital structure and testing of theories: A study on the listed manufacturing companies in Bangladesh," *International Journal of Economics and Finance*, *7*(4), 176–190.

Hossain, M. I., & Moni, F. M. (2025), "CEO age and corporate investment decisions in Bangladesh," *Journal of Finance and Banking*, *21*(1-2), 25–48.

Hou, K., Hsu, P. H., Wang, S., Watanabe, A., & Xu, Y. (2022), "Corporate R&D and stock returns: International evidence," *Journal of Financial and Quantitative Analysis*, *57*(4), 1377–1408.

Jensen, M. C., & Meckling, W. H. (1976), "Theory of the firm: Managerial behavior, agency costs and ownership structure," *Journal of Financial Economics*, *3*(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Jenter, D., & Lewellen, K. (2015), "CEO preferences and acquisitions," *The Journal of Finance*, *70*(6), 2813–2852.

Khan, A., Muttakin, M. B., & Siddiqui, J. (2015), "Audit fees, auditor choice and stakeholder influence: Evidence from a family-firm dominated economy," *The British Accounting Review*, *47*(3), 304–320. https://doi.org/10.1016/j.bar.2015.03.002

Khan, W. A., & Vieito, J. P. (2013), "CEO gender and firm performance," *Journal of Economics and Business*, *67*, 55–66. https://doi.org/10.1016/j.jeconbus.2013.01.003

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1999), "Corporate ownership around the world," *The Journal of Finance*, *54*(2), 471–517. https://doi.org/10.1111/0022-1082.00115

Lewbel, A. (2012), "Using heteroscedasticity to identify and estimate mismeasured and endogenous regressor models," *Journal of Business & Economic Statistics*, *30*(1), 67–80. https://doi.org/10.1080/07350015.2012.643126

Lima, M. M., & Hossain, M. I. (2018), "Ownership structure and firm performance: Testing monitoring and expropriation hypotheses for Bangladeshi companies," *Journal of Finance and Banking*, *14*(1–2), 1–21.

Lin, F. J. (2008), "Solving multicollinearity in the process of fitting regression model using the nested estimate procedure," *Quality & Quantity*, *42*, 417–426.

Liu, C., & Jiang, H. (2020), "Impact of CEO characteristics on firm performance: Evidence from China listed firms," *Applied Economics Letters*, *27*(14), 1–5.

Majumdar, S. K. (1997), "The impact of size and age on firm-level performance: Some evidence from India," *Review of Industrial Organization*, *12*(2), 231–241. https://doi.org/10.1023/A:1007766324749

Merika, A., Triantafyllou, A., & Zisis, V. (2017), "The impact of CEOs' life cycle on firm performance: Evidence from the shipping industry," *Maritime Policy & Management*, *44*(8), 1011–1028. https://doi.org/10.1080/03088839.2017.1371346

Mukherjee, T., & Sen, S. S. (2022), "Impact of CEO attributes on corporate reputation, financial performance, and corporate sustainable growth: Evidence from India," *Financial Innovation*, *8*, 40. https://doi.org/10.1186/s40854-022-00344-7

Muttakin, M. B., Monem, R. M., Khan, A., & Subramaniam, N. (2015), "Family firms, firm performance and political connections: Evidence from Bangladesh," *Journal of Contemporary Accounting & Economics*, *11*(3), 215–230. https://doi.org/10.1016/j.jcae.2015.09.001

Nguyen, D. V., Nguyen, N. H. K., & Dinh, T. T. (2023), "CEO attributes and firm performance: Evidence from companies listed on Ho Chi Minh Stock Exchange," *Cogent Economics & Finance*, *11*(2). https://doi.org/10.1080/23322039.2023.2282838

Peni, E. (2014), "CEO and Chairperson characteristics and firm performance," *Journal of Management & Governance*, *18*(1), 185-205. https://doi.org/10.1007/s10997-012-9224-7

Rahman, M. J., & Chen, X. (2023), "CEO characteristics and firm performance: Evidence from private listed firms in China," *Corporate Governance: The International Journal of Business in Society*, *23*(3), 458–477.

Rashid, A. (2010), "CEO duality and firm performance: Evidence from a developing country," *Corporate Ownership and Control*, *8*(1), 163–175.

Rashid, A., De Zoysa, A., Lodh, S., & Rudkin, K. (2010), "Board composition and firm performance: Evidence from Bangladesh," *Australasian Accounting, Business and Finance Journal*, *4*(1), 76–95. https://doi.org/10.14453/aabfj.v4i1.5

Rouf, M. A. (2011), "The role of CEO, board composition and firm performance: An empirical study of listed companies in Bangladesh," *Indian Journal of Commerce and Management Studies*, *2*(2), 77–84.

Sangadji, N., Hermuningsih, S., & Rinofah, R. (2025), "Profitability, firm size, and liquidity as determinants of firm value: Evidence from Indonesia's textile and garment sector," *MAKSIMUM: Media Akuntansi Universitas Muhammadiyah Semarang*, *15*(1), 20-29.

Serfling, M. A. (2014), "CEO age and the riskiness of corporate policies," *Journal of Corporate Finance*, *25*, 251–273. https://doi.org/10.1016/j.jcorpfin.2013.12.013

Simpson, W. G., & Carter, D. A. (2016), "CEO age and firm performance: An empirical investigation," *Journal of Business and Economic Studies*, *22*(1), 1–15.

Sobhan, R., & Tushi, T. H. (2025), "CEO characteristics and integrated reporting: Insights from the banking sector of an emerging economy," *International Journal of Disclosure and Governance*. Advance online publication. https://doi.org/10.1057/s41310-025-00292-5

Sudiyatno, B., & Suwarti, T. (2022), "The role of liquidity in determining firm performance: An empirical study on manufacturing companies in Indonesia," *European Journal of Business and Management Research*, *7*(6), 183-188. https://doi.org/10.24018/ejbmr.2022.7.6.1711

Suherman, S., Rahmawati, R., & Buchdadi, A. D. (2023), "CEO characteristics and firm performance: Evidence from Indonesia," *Journal of Asian Finance, Economics and Business*, *10*(3), 193–202. https://doi.org/10.13106/jafeb.2023.vol10.no3.0193

Waelchli, U., & Zeller, J. (2013), "Old captains at the helm: Chairman age and firm performance," *Journal of Banking & Finance*, *37*(5), 1612–1628. https://doi.org/10.1016/j.jbankfin.2012.12.012

Wang, G., Holmes, R. M., Jr., Oh, I.-S., & Zhu, W. (2016), "Do CEOs matter to firm strategic actions and firm performance? A meta-analytic investigation based on upper echelons theory," *Personnel Psychology*, *69*(4), 775–862. https://doi.org/10.1111/ peps.12140

Yim, S. (2013), "The acquisitiveness of youth: CEO age and acquisition behavior," *Journal of Financial Economics*, *108*(1), 250–273. https://doi.org/10.1016/j.jfineco.2012.11.003

Zhang, Y. (2010), "CEO age and firm performance [Master's thesis, Concordia University]," *Spectrum: Concordia University Research Repository*. https://spectrum.library.concordia.ca/id/eprint/979459/

Appendix A: Definitions of Variables

Variable	Definition
Dependent Variables	
ROA	Return on Assets = (EBIT) / (Average Total Assets).
ROE	Return on Equity = (Net Income) / (Average Shareholders' Equity).
Key Independent Variables (CEO Characteristics)	
CEO Age (Years)	The CEO's age in completed years at fiscal-year end.
CEO Age (Log)	Natural logarithm of CEO age, capturing potential nonlinear (percentage-change) effects.
CEO Age Dummy	Binary indicator = 1 if CEO's age is in the top tertile of the sample distribution (older-age group), 0 if in the bottom tertile (younger-age group).
Control Variables	
CEO Stock Ownership	Fraction of firm shares directly held by the CEO (range: 0–1).
Firm Size (Log)	Natural logarithm of total assets (in million BDT).
Firm Age (Log)	Natural logarithm of the number of years since incorporation.
Sales Growth Rate	Year-over-year percentage change in total sales.
Leverage	Total debt divided by total assets (book-value basis).
Cash Holding	Cash and cash equivalents divided by total assets.
Net Working Capital	(Current Assets – Current Liabilities) divided by total assets.
Capex	Capital expenditures divided by total assets.

Appendix B: First Stage Results of Lewbel's (2012) 2SLS Regression Model

This table shows the first stage regression results of Lewbel's (2012) two-stage least squares regression model. CEO Age Dummy is a binary variable taking the value of 1 if CEO's age is in the top tertile of the sample distribution (older-age group) and 0 if in the bottom tertile (younger-age group).

Variables	**Dependent Variable: CEO Age Dummy**
CEO Stock Ownership	1.486**
	(0.668)
Firm Size	0.032
	(0.038)
Firm Age	0.621*
	(0.316)
Sales Growth Rate	0.033
	(0.038)
Leverage	0.071
	(0.066)
Cash Holding	0.014
	(0.273)
Net Working Capital	0.075
	(0.113)
Capex	-0.050
	(0.222)
Firm FE	Yes
Year FE	Yes
Standard errors clustered	Firm level
Adjusted R-squared	0.057
Observations	1124

Appendix C: Comparisons of Treatment and Control Groups in PSM and EB Methods

Panel-A presents the two tailed *t*-statistics of mean differences of variables between treatment sample (*i.e.*, older CEOs) and control sample (*i.e.*, younger CEOs) under Propensity Score Matching (PSM) method. Panel-B presents the variations of mean, variance, and skewness of variables between treatment and control sample under Entropy Balancing (EB) method. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels, respectively.

Panel- A: Mean Differences between Treatment and Control Samples in PSM

Variables	Pre-PSM			Post PSM		
	Treatment	Control	Difference	Treatment	Control	Difference
CEO Stock Ownership	0.083	0.069	0.014***	0.077	0.076	0.001
Firm Size	7.830	7.710	0.120	7.800	7.780	0.020
Firm Age	3.330	3.210	0.120**	3.280	3.290	-0.010
Sales Growth Rate	0.109	0.108	0.001	0.112	0.116	-0.004
Leverage	0.463	0.507	-0.044**	0.478	0.477	0.001
Cash Holding	0.061	0.061	0.000	0.058	0.058	0.000
Net Working Capital	0.153	0.129	0.024*	0.151	0.153	-0.002
Capex	0.055	0.057	-0.002	0.055	0.057	-0.002

Panel- B: Comparison between Treatment and Control Samples in EB

Variables	Before: without weighting						After: with weighting					
	Treatment			Control			Treatment			Control		
	Mean	Variance	Skewness	Mean	Variance	Skewness	Mean	Variance	Skewness	Mean	Variance	Skewness
CEO Stock Ownership	0.083	0.007	1.196	0.069	0.007	1.489	0.083	0.007	1.196	0.083	0.007	1.196
Firm Size	7.837	2.378	-0.149	7.711	1.986	-0.301	7.837	2.378	-0.149	7.837	2.378	-0.149
Firm Age	3.332	0.178	-0.428	3.211	0.253	-0.010	3.332	0.178	-0.428	3.332	0.178	-0.428
Sales Growth Rate	0.110	0.079	0.785	0.108	0.075	0.623	0.110	0.079	0.785	0.110	0.079	0.785
Leverage	0.464	0.079	1.118	0.508	0.112	1.275	0.464	0.079	1.118	0.464	0.079	1.118
Cash Holding	0.062	0.006	1.671	0.061	0.007	1.783	0.062	0.006	1.671	0.062	0.006	1.671
Net Working Capital	0.154	0.044	-0.268	0.129	0.061	-0.405	0.154	0.044	-0.268	0.154	0.044	-0.268
Capex	0.056	0.004	1.538	0.057	0.005	1.444	0.056	0.004	1.538	0.056	0.004	1.538