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The Impacts of CEO Age and Education Level on Earnings Management: Evidence from Listed Vietnamese Real Estate Firms

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Abstract: *This study examines the impact of CEO age and education level on the earnings management of listed Vietnamese real estate companies in the period from 2007 to 2016. The results show that CEO age has a negative correlation to earnings management. Older individuals are more conservative and ethical than younger CEOs, and firms managed by CEOs who pursue higher education are less likely to encounter earnings management. In addition, firm performance, CEO gender, firm size and CEO duality are correlated to earnings management. Our research therefore suggests that investors should pay more attention to CEO age when investing in a company.*

Keywords: earnings management; CEO age; CEO education level; real estate firms; Vietnam
JEL Classification: M41, G34

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1. Introduction

Numerous studies identified that the characteristics of top management team influence firm performance. According to the upper echelons' perspective theory, the personal characteristics of senior management can affect the development and strategy of an organisation (Hambrick and Mason, 1984). The personal characteristics of a manager include age, qualifications, expertise, gender, and work experience. Kweh et al. (2019) indicate that independent CEOs and female CEOs negatively influence firm efficiency. Davidson (2007) finds that firms with CEOs approaching retirement age have a significant discretionary accrual in previous year's earnings. Hsieh et al. (2018) discover that knowledge and office term of the top management team helps limit companies' earnings management behaviour. Arun et al. (2015) suggest that firms with a higher number of female and independent

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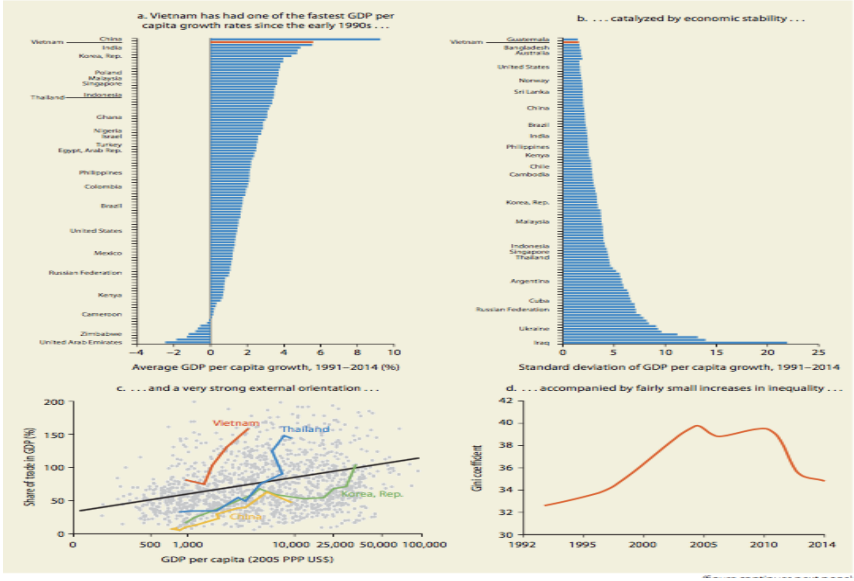
female directors are adopting restrained earnings management practices in the UK. They also conclude that female directors have a positive effect on earnings management in low debt companies. Managers may conceal poor performance from investors when facing adverse results that negatively affect investors' personal wealth (Bliss and Rosen, 2001). Erickson & Wang (1999) present evidence that companies inflate earnings to increase the stock price before a merger. Aygun et al. (2014) state that managers who own a significant portion of a firm's equity are more motivated to manipulate the financial statements and earnings of a company.

This study examines the relationship between a CEO's characteristics and income management based on the age and education level of the CEO. The context of the study focuses on the developing country - Vietnam, specifically, in real estate. Vietnam has recorded significant successes in the development process (World Bank, 2016). After nearly three decades since the beginning of its transformation process, Vietnam has achieved impressive economic growth while ensuring fairness and stability. The growth rate of GDP per capita reached 5.5% annually since 1990 (1991-2014), resulting in an increase in average income by 3.5 times. Globally, this result is second only to China.

Vietnam's GDP growth rate has always been higher than the average of the ASEAN region since 2013, and it reached the highest level over the past 10 years in 2017 (6.8%).

Figure 1: Rapid and inclusive growth in Vietnam



Source: World Bank Report, 2016

Along with that development, Vietnam's real estate market is relatively attractive and growing significantly. In 2017, the real estate market increased by 4.1%, the highest level since 2011, contributing 0.2% to the 6.8% growth of GDP. This is the leading industry in terms of the growth of newly registered enterprises (+ 62% / year) and registered capital (17 billion USD, accounting for 30% of the capital). Besides, FDI inflows into this sector reached the highest level over the past seven years since 2011 (more than 3 billion USD).

According to a report by the Vietnam Real Estate Association (2016), the real estate market accounts for 20% of the total social investment, which plays an important role in Vietnam. However, in recent years, real estate companies have suffered from a serious shortage of capital, low debt ratio and tight liquidity. Since then, many projects have not been finished on time, leading to wasted investment despite favourable conditions such as company size, business sectors, attractive projects, etc. Earnings are also an essential target which most real estate companies tend to inflate in order to maximise investment capital.

According to the information published on the website of Ho Chi Minh and Ha Noi Stock Exchange, financial statements' information reported by independent real estate enterprises over the years does not match auditing figures. For instance, according to a report by the Viet Capital Company (2015), in 2013, Quoc Cuong Gia Lai Company (QCG) had their net revenue, financial revenue, financial expenses significantly changed after auditing, which led to a net profit increase of 123%, up to 14.7 billion VND. Yet, it suddenly decreased by 23 billion VND in 2014. In addition, Tan Tao Investment and Industry Corporation (ITA), in 2014, had many changes affecting various targets, including revenue deductions, other costs, provision, deferred CIT benefits. These changes affected its after-tax profit which reached 144 billion VND, declining 9% compared to pre-audit financial statements. In 2016, provision was considered the main reason for the first six-month losses of the Pacific Infrastructure Investment and Development Joint Stock Company (PPI). The loss increased from VND 2.6 billion to nearly VND 15 billion after review. After preparing provisions for bad receivables based on receivables' term, PPI suffered losses up to VND 12.2 billion. The increased loss was also caused by the delay of the 2017 budgeting capital distribution, which slowed the process of project implementation as well as increased the cost of enterprise management. PPI once announced that the 2016 auditing after-tax profit was less than 300 million VND, whereas the self-reported figure was nearly 17 billion VND.

The discrepancies of real estate enterprises' financial statements before and after review relate to accounting estimates such as provision, depreciation, allocation, inventory, or revenue recognition. Besides the expertise, skills and experience of the accounting department, the

transparency of the business is also a matter of concern. This is a significant warning regarding the quality of financial reporting and transparency of accounting data prepared by enterprises. Therefore, in order to provide investors with more accurate and reasonable information, managers must be alert to businesses that commit violations regularly to ensure deterrence and improve the transparency of the stock market.

Yet, it is quite rare to find empirical studies that focus on the association between CEO age, education and management within economic literature, especially in a developing country context. There is a notable paucity in studies investigating the association between CEOs' education and earnings management of real estate in Vietnam. Hence, in order to provide more empirical evidence of CEO characteristics and earnings management, this study examined the association between CEO age, education level and earnings management of listed Vietnamese real estate companies. As a result, we find that firms with older CEOs and higher educational level are associated with higher-quality financial reporting. Additionally, older individuals are more conservative, which is consistent with prior studies (Sundaram and Yermack, 2007; Huang et al., 2012).

This study contributes to management and earnings quality in several aspects. First, while studies have already focused on the impact of senior managers' characteristics on earnings management, this study, on the other hand, focuses on the impact of CEO age and education level on earnings management. Second, based on Vietnam's market, a developing country with an inadequate management mechanism (World Bank, 2014; World Bank, 2016), the research has provided in-depth analysis of the characteristics of the CEO including age and education level. Our study has also proved that firms hiring older CEOs with higher educational level would benefit from having higher-quality financial reporting, which lowers the cost of capital and increases firm value. Lastly, to distinguish our research from previous research on factors effecting earnings management of companies in Vietnam (Essa et al, 2016; Duong V. B. and Diep H. N., 2017), we have focused on the earnings management trend of listed Vietnamese real estate companies.

The remainder of the paper is organised as follows: section 2 reviews the relevant literature, theoretical framework and hypothesis development. Section 3 develops that methodology, followed by discussing the research results in section 4. Section 5 concludes the study and lists its limitations.

2. Literature review and hypothesis development

Earnings management may reduce the credibility of the information presented by financial statements. When companies carry out earnings management, investors may not be given sufficiently accurate information

about earnings and portfolio risk assessment. Therefore, income is one of the parameters used to evaluate management efficiency. It also serves as a reference for investors to make decisions. The quality of information is also useful for creditors when making credit decisions. Arun et al. (2015) argue that earnings management reduces the earnings quality since the financial reports do not truly and fairly reflect the firms' financial state. Although CEOs are not the ones preparing financial statements, they can request chief financial officers (CFOs) to use accounting techniques in earnings management in order to meet investors' expectations (Mei et al., 2011). Therefore, this paper considers CEO characteristics, especially age and education, and their impact on financial reporting quality via earnings management.

2.1 The Association Between CEO Age and Earnings Management

Studies show that ethical beliefs are related to the age of business professionals. Andreou et al. (2017) state that CEO age plays an important role in shaping firm policies and outcomes. These prior studies represent a positive association between age and ethical behaviour, emphasising that older people are more ethical. Peterson et al. (2001) indicate that business professionals in the younger age group show a lower standard of ethical beliefs. Consistently, Peterson et al. (2001) also state that older business professionals exhibit a higher standard of ethical beliefs because older individuals are more likely than younger ones to draw inferences consistent with the trait-diagnostic implications of ethical behaviour. Twenge and Campbell (2008) found that the younger generation tends to be more narcissistic and higher self-esteem and that these characteristics could lead to unethical behaviour. Sundaram and Yermack (2007) find that older CEOs manage their firms more conservatively. Furthermore, Loe et al. (2000) report a positive correlation between age and ethical decision making.

Moreover, changes in personal characteristics that occur with age can also affect a CEO's behaviour. Yim (2013) states that CEO motivation may change with age. Psychological characteristics of the CEO and heterogeneous abilities change with age (Andreou et al., 2017). The physiological changes can make older CEOs become more conservative. Forbes (2005) and Serfling (2014) provide evidence that older CEOs invest less in research and development or risky activities, resulting in lower firm risk. Bertrand and Mullainathan (2003) state that many CEOs tend to adopt a safe and quiet life as the grow older, while energy levels also decline with age (Roberts and Rosenberg, 2006). Physiological changes in age make older CEOs less motivated to manage earnings since they are more likely to be afraid of risk factors.

On the other hand, older managers have more experience and are a more efficient consultant. Yin & Chun (2014) show that CEO age is one of the most significant factors which affect CEOs' behaviours. Iceoglu et al. (2012) shows that the influence of rewards or rival motivation are less attractive to older people. In contrast, young people are more likely to be affected. It can also be understood that older CEOs care more about public responsibility and are more cautious to avoid negative results. Consistently, as CEOs age, they will be more careful in their career and avoid making risky decisions (Vroom & Pahl, 1971; Sundaram & Yermack, 2007; Huang et al., 2012; Yim, 2013). On the other hand, the younger generation tends to be more selfish, that may lead to unethical behaviours (Twenge & Campbell, 2008).

Although there are many studies related to these changes in age and managerial behaviour, empirical studies examining the relationship between age and earnings management remain quite rare. Huang et al. (2012) find a positive relationship between CEO age and financial reporting quality, whereas Vroom & Pahl (1971) and Yin & Chun (2014) figure out a negative relationship between CEO age and earnings management. Davidson et al. (2007) provided evidence that CEOs approaching retirement age tend to increase firms' income through earnings management behaviour within the two years prior to their retirement. Additionally, these CEOs may believe that managing their earnings in the final years before retirement will help increase the firm's income, thereby increasing their personal earnings. In summary, earlier studies conclude that older CEOs are more ethical and risk averse than younger CROs. Therefore, older CEOs are less likely to perform earnings management.

On the other hand, based on agency theory (Jensen and Meckling, 1976), welfare varies with CEO age and becomes a source of agency problems. Younger CEOs lose more benefits as a result of disclosing negative information of firm performance, because their benefits or the corresponding remuneration rate is established basing on the disclosure (Andreou et al., 2017). Younger CEOs are more likely to be motivated to conceal poor financial performance. In contrast, older CEOs are risk-averse and less likely to manage earnings (Yim, 2013; Yin & Chun, 2014). Hence, companies led or managed by younger CEOs are at higher risk of having earnings management.

In order to illustrate the impact of CEO age on earnings management as argued above, the following hypothesises is tested:

Hypothesis 1: *CEO Age has a negative relationship with earnings management.*

2.2 The Association Between CEO's Education Level and Earnings Management

Education level is one of significant factors contributing to advance CEOs' management skills (Hambrick and Mason, 1984; Chemmanur and Paeglis, 2005). Chemmanur and Paeglis (2005) show that CEOs, who hold a higher education level would show better managing standard. According to the upper-echelon theory, higher education level associates with open-mindedness, intellectual competence, and tolerance of change (Hambrick and Mason, 1984). Education level is often viewed as a good proxy for human capital, knowledgebase, or intellectual competence (Barro & Lee, 2010; Datta & Rajagopalan, 1998; Hambrick & Mason, 1984; Wailderdsak & Suehiro, 2004; Wiersema & Bantel, 1992).

In management literature, scholars have attempted to investigate whether the educational background of CEO and top managers influence managerial behaviour. Many studies show that CEOs' risky decisions can be influenced by their educational background. Bertrand and Schoar (2003) find that CEOs with an MBA are more aggressive in strategic and capital structure choices. Frank and Goyal (2007) provide evidence that firms managed by CEOs with an MBA are more dynamic and likely to adjust their capital structure quickly with optimal leverage ratios. Literature shows that CEOs with higher education may achieve better management quality and are able to select better projects and improve the firm's investment performance (Donkers et al., 2001; Frank and Goyal, 2007). Studies have shown that CEOs with a higher education background will possess better management quality, which helps identify appropriate projects and increase investment performance. Accordingly, education does improve a CEO's potential. Bhagat et al. (2010) find that new CEO appointments with impressive education records would have a positive impact on the stock market.

Bantel & Jackson (1989) suggest that CEOs with higher educational attainments are better at processing information and direct significant changes within the firm. Furthermore, Wiersema & Bantel (1992) prove that CEOs with a higher education level are more likely to undertake significant changes in corporate strategy.

Many researches have shown a positive correlation between management ability and firm performance (Cheng et al., 2010; Darmadi, 2013; Gottesman & Morey, 2006a; Graham & Harvey, 2002). Graham & Harvey (2002) recommend that chief financial officers (CFOs), who hold MBA degrees, are more likely to apply academic theory as well as conservative methods in project evaluation. Gottesman & Morey (2006a) suggest that educational qualification can be considered part of a manager's intellectual competence. Cheng et al. (2010) find that there exists a positive correlation between the education level of senior managers and financial performance. Bhagat et al.

(2010) provide empirical evidence that hiring new CEOs holding MBA can help improve firm performance in the short-term. According to Darmadi (2013), CEOs with postgraduate degrees have a positive influence on firm performance.

Based on resource dependence theory, board members with high qualifications and skills are strategic resources to connect and gather external resources (Pfeffer & Salancik, 2003) Education level helps enhance knowledge and understandings of CEO, widen their professional skills and awareness of complication, and advance their negotiating experience. Frydman (2007) shows that CEOs with a higher education level can have better management skills that support them in managing their firms more effectively. Yet, firms with high performance do not need to perform earnings management. Hence, firms managed by higher educated CEOs are less likely to encounter earnings management.

However, in contrast to the prior perspective, in 2008, Bathula's study on New Zealand listed companies in the period from 2004-2007 shows a negative relationship between the number of Ph.D. qualified members on board with firm performance. Bathula (2008) states that research and analytical skills are desirable but not necessary to require a high academic level like a Ph.D., but this may not add value to firm performance.

We expect that CEOs with higher education level are less likely to perform earnings management. The determination and measurement of CEO competence are not easy. Nevertheless, it is possible to use education level as a preference for CEO competence measurement (Bhagat et al., 2010).

Based on the aforementioned discussion, the following hypothesis is proposed:

Hypthesis 2: *CEO education has a negative relationship with earnings management.*

3. Research Data and Methodology

3.1 Measurements of Variables

3.1.1 Earnings Management

Studies determined that earnings management is defined as the deduction between Total Accruals (TA) and Non-Discretionary Accruals (NDA) occurring within the business (DeAngelo, 1986; Dechow et al., 1995; Healy, 1999; Jones, 1991). Kothari at al. (2005) further developed the model of Dechow et al. (1995) based on examining the company's current and past economic performance measured by ROA. By applying the same method

implemented by Swastika (2013), this research also employs the model of Kothari et al. (2005) to examine earnings management.

First, we use a cash flow approach to estimate total accruals TA_{it} (Collins and Hribar, 2002; Davidson et al., 2005). This approach involves deducting the cash flow from operations obtained from the statement of cash flows from the amount of net income (before extraordinary items) from the income statement as follows:

$$TA_{it} = Net\ income - Cash\ flow.$$

Where TA_{it}: Total accruals of firm *i* in year *t*.

Second, the modified Jones model seeks to measure the total discretionary accruals using the following variables, as described by Kothari et al. (2005):

$$\frac{NDA_{it}}{A_{it-1}} = \alpha_1\left(\frac{1}{A_{it-1}}\right) + \alpha_2\left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right) + \alpha_3\left(\frac{PPE_{it}}{A_{it-1}}\right) + \alpha_4 ROA_{it-1} \quad (1)$$

Where:

NDA_{it}: Non-Discretionary Accruals for firm *i* in year *t*;
A_{it-1}: Total assets for firm *i* in year *t-1*;
ΔREV_{it}: Change in net revenues for firm *i* in year *t*;
ΔREC_{it}: Change in net receivables for firm *i* in year *t*;
PPE_{it}: Net property, plant and equipment scaled by assets;
ROA_{it}: Return on total assets for firm *i* in year *t*;

Where $\alpha_1, \alpha_2, \alpha_3, \alpha_4$ are industry-specific coefficients estimated from ordinary least squares (OLS) for all firms in our sample at time *t*.

$$\frac{TA_{it}}{A_{it-1}} = \alpha_1\left(\frac{1}{A_{it-1}}\right) + \alpha_2\left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right) + \alpha_3\left(\frac{PPE_{it}}{A_{it-1}}\right) + \alpha_4 ROA_{it-1} + \varepsilon_i \quad (2)$$

ε_i: The residuals from the regressions are used as proxy for discretionary earnings management.

Having estimated non-discretionary accruals (*NDA*) form equation (1), the number of discretionary accruals (*DA*) for firm *i* for year *t* is calculated as the residual value from equation (3):

$$DA_{it} = TA_{it} - NDA_{it} \quad (3)$$

At different points in time, managers are motivated to inflate ($DA>0$) or deflate earnings ($DA<0$) within the period, thus, the DA value can be positive or negative depending on each company.

3.1.2 Age of CEO (Age)

In this study, the age of CEO refers to their age, following Huang et al. (2012). The information about CEO age is collected from annual reports, appointment decision or the curriculum vitae of the CEO.

3.1.3 Education Level of the CEO (Edu)

With respect to the education backgrounds of CEOs, we find that 32% of sample firms have a CEO with a postgraduate qualification. Furthermore, 58% of CEOs completed a degree qualification. Therefore, CEO education levels are classified following Darmadi (2013). If a CEO holds a postgraduate degree, he/she is scored 1, otherwise 0.

CEO education level information is collected from the CEO's information on annual reports, particularly in the education progress section of the CEO's resume.

3.1.4 Control Variables

Apart from the above-mentioned dependent variables, earnings management is influenced by other factors (Yin & Chun, 2014). Thus, the study adds other control variables to model in order to ensure that research results are more comprehensive when analysed. We include variable *ROE* (return on equity), which means that the higher ROE of the company, the higher earnings management. Dechow et al. (1995) showed that a company with high profits would have high earnings management and vice versa. On the contrary, Jiang et al. (2013) pointed out that the company with high ROE will limit earnings management. Next, we include firm size (*SIZE)* to control earnings management. Many studies have proved that the larger the firm size, the less the earnings management (Ali et al., 2008; Wuryani, 2012; Swastika, 2013). Another control variable is financial leverage (*LEV*) which is measured by using total payable debt divided by total assets of the company. Financial leverage has a relationship with earnings management (Naz et al., 2011; Jiang et al., 2013). We also include variables such as CEO's gender (*SEX*), CEO's duality (*DUAL*) and auditor quality (*AUD*) to control for the effects of CEO's characteristics and audit firms' reputation to earnings management (Huang et al., 2012).

Table 1: Measurement of variables

Variable	Description	Measurement
Dependent variable		
DA	Earnings management	The value of discretionary accruals for firm *i* in year *t*
Independent variables		
CAGE	Age of CEO	
CEDU	Education level of CEO	1 if CEO holds a postgraduate degree and 0 otherwise
Control variables		
ROE	Return on Owner's Equity	The ratio of Return on Owner's Equity
SIZE	Firm size	The natural logarithm of total Assets in year *t*
LEV	The ratio of debt	The total liabilities on total Assets
SEX	CEO's gender	1 if CEO's gender is male and 0 otherwise
DUAL	CEO Duality	1 if CEO is chairman and 0 otherwise
AUD	Audit firm	1 if the audit firm is Big 4 and 0 otherwise

3.2 Regression Model

We tested Hypotheses 1 and 2 regarding the impact of age and education level of CEO on earnings management using an ordinary least squares (OLS) estimator. The main empirical specification is as follows:

$$DA_{it} = a + b_1 CAGE_{it} + b_2 CEDU_{it} + b_3 CONTROL_t + e_t$$

Where in*:*

- *DA* is calculated following the model of Kothari et al. (2005) to identify earnings management.
- *CAGE* is the age of the *CEO*; *CEDU* is a dummy variable equal to 1 if *CEO* holds a postgraduate degree, and O otherwise.
- The control variables include *ROE, SIZE, LEV, SEX, DUAL, AUD* (These variables are described in Table 1).

3.3 Sample and Data

The data used in this research is collected from real estate companies listed on the Vietnam stock market in the period between 2007 and 2016. This research chose the data from 2007 because there is scarce data before this time. Information released on the Vietnam stock market before this period is unstable and inadequate. This research also eliminated some observations with short listing times (less than 3 years), or observations that do not contain adequate or discontinuous data. We collect data from all the 60 firms of real estate companies listed on the Vietnam stock market, corresponding to 490 observations in the period of ten years, from 2007 to 2016.

This data was collected from information on the financial statements, annual reports and published on the websites of HOSE, HNX and securities companies. From the regression results, the authors carried out analysis, evaluation and drew conclusions about the relationship between age of CEO, education of CEO and earnings management.

4. Results and Discussions

4.1 Descriptive Statistics

Table 2 shows the descriptive statistics for earnings management and the variables. The results in Table 2 show that in real estate companies, the DA variable has an average value of 0.01403; the smallest value is 0.00000278, and the maximum value is 0.2112854. The earnings management of each company is different, showing the non-uniformity of the performance of earnings management of real estate companies on the Vietnamese stock market. For education, the result shows that 31.84% of CEOs have a postgraduate degree.

Table 2: Descriptive Summaries

Variable	N	Mean	Std. Dev.	Min	Max
DA	490	0.014043	0.018984	0.00000278	0.2112854
CEDU	490	0.3183673	0.4663189	0	1
CAGE	490	46.52857	9.158913	23	71
SIZE	490	6.094567	0.5921942	4.059098	8.256359
LEV	490	0.504743	0.1987705	0.0109895	0.910014
SEX	490	0.1639344	0.370596	0	1
AUD	490	0.344898	0.4758208	0	1
DUAL	490	0.3877551	0.5001565	0	1
ROE	490	0.0586978	0.0992322	-0.2951861	0.5491053

For the age of CEO, the findings show that age has an average value of 46.5 and standard deviation value of 9.1. The average age of a CEO in real estate companies is about 47 years. With a relatively low standard deviation, it is implied that the range of CEO age is between 38 and 56 years. The youngest and oldest CEO are 23 and 71, respectively.

Moreover, the mean ROE of 0.059 indicates that the ratio of return on equity in real estate companies is 0.059, which is relatively low. This is caused by a broad range of ROE values between over 55% maximum and -29.51% at the minimum ROE. Moreover, these real estate companies have the logarithm average of total asset of 6.09; the minimum value is over 4.05 and the maximum value is over 8.26. The differences between biggest and smallest company size is two times. This indicates that the size differences of real estate companies are very large. Companies in our sample are financed on average by 50%. Half of the firms have a CEO holding the position of chairman. Furthermore, some 34.5% of the real estate companies on the Vietnamese stock market are audited by the Big 4.

4.2 Correlation Analysis

The Pearson correlation coefficient among variables is described in Table 3. The results show that no correlation coefficient of variables is higher than 0.35 (the highest correlation coefficient is 0.340). It can be confirmed that multicollinearity may not be a serious problem for these variables. For a more secure result, we also re-tested by using the coefficient of VIF (Variance Inflation Factor) when running the regression, and results revealed no phenomenon of multicollinearity (VIF<2) (Tab. 3). Furthermore, this table presents a negative correlation between earnings management (DA) and CEOs' education level, size, leverage CEO age; auditing by Big 4; and a positive correlation between DA and firm performance (ROE), and CEO's gender.

Table 3: Correlation coefficient

Variable	DA	CEDU	CAGE	SIZE	LEV	SEX	DUAL	AUD	ROE
DA	1								
CEDU	-0.056	1							
CAGE	-0.142 ***	-0.132 ***	1						
SIZE	-0.159 ***	0.247 ***	0.012	1					
LEV	-0.122 ***	-0.084 *	0.120 ***	0.247 ***	1				
SEX	0.035	0.073	-0.078 **	0.265 ***	0.067	1			
DUAL	-0.065	-0.145 ***	0.177 ***	-0.064	0.068	-0.223 ***	1		
AUD	-0.080 *	0.103 **	-0.028	0.571 ***	0.046	0.073	-0.065	1	
ROE	0.340 ***	-0.028	0.060	0.010	-0.046	-0.033	-0.075 *	-0.184 ***	1

Notes: ***, **, *: indicate significance at the 1%, 5%, and 10%, respectively (2-tailed)

4.3 Analysis of Multivariate Regression Model

The study uses four models to analyse the relationship between the age of CEO and the education level of CEO on earnings management. It will also examine the relationship between earnings management and control variables. The following four models were used Pooled OLS model, Fixed Effect Model (FEM), Random Effect Model (REM), Feasible Generalised Least Squares (FGLS).

Table 4: OLS Model

OLS	**DA**		
Variable	**Coefficient**	**P-value**	**VIF**
CAGE	-0.0003116***	0	1.07
	-3.53		
CEDU	-0.0009592	0.593	1.13
	-0.53		
ROE	0.0715166***	0	1.09
	8.69		
SIZE	-0.0075476***	0	1.96
	-4.06		
LEV	-0.0040277	0.337	1.13
	-0.96		
SEX	0.0047817**	0.037	1.16
	2.1		
DUAL	0.0000926	0.955	1.12
	0.06		
AUD	0.0046396**	0.03	1.67
	2.18		
_cons	0.0702661***	0	
	6.57		
N	488		
R-square	0.1861		
F-statistic	13.69***	0	
Mean VIF			1.29

After performing the Hausman test and considering Autocorrelation and Heteroskedasticity, this paper chooses FGLS as an optimisation model to analyse relationships. Table 5 summarises the results of the regression analysis of the influence of age of and education level of the CEO on earnings management with earnings management as the dependent variable. This finding using OLS regression indicated that CEO age is negatively associated with earnings management. Firms led by older CEOs have less earnings management, with the less influence of reward and rival motivation (Iceoglu et al., 2012). This finding is consistent with Huang et al. (2012) and Yin & Chun (2014), who state that older CEOs are less motivated to perform earnings management. Age is also the most influential factor in decreasing

earnings management. This supports Hypothesis 1. Besides, this study discovers a positive correlation of ROE and gender of CEO on earnings management when the ratio of return on equity is higher and the CEO is male. In contrast, firm size and CEO duality have a negative effect on earnings management. The findings do not show a significant relation between CEO education level and earnings management.

Table 5: All Models summaries

Model	**OLS**	**Random**	**Fixed Effect**	**FGLS**
	DA	**DA**	**DA**	**DA**
Variable	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**
CAGE	-0.0003116***	-0.0003191**	-0.0002433*	-0.000105**
	-3.53	-2.82	-1.68	-2.59
CEDU	-0.0009592	-0.0036372	-0.0069562**	-0.000701
	-0.53	-1.5	-2.1	-0.79
ROE	0.0715166***	0.1049482***	0.1289322***	0.0796***
	8.69	10.62	11.16	13.75
SIZE	-0.0075476***	-0.0083637**	-0.0110677*	-0.00501***
	-4.06	-3.45	-2.84	-5.87
LEV	-0.0040277	-0.0007629	0.0029909	0.000656
	-0.96	-0.14	0.4	0.35
SEX	0.0047817**	-0.0006344	-0.0074118*	0.00327***
	2.1	-0.2	-1.76	3.61
DUAL	0.0000926	-0.0002714	-0.0020314	-0.00176*
	0.06	-0.13	-0.76	-2.39
AUD	0.0046396**	0.006463**	0.0063223**	0.000928
	2.18	2.68	2.28	0.97
_cons	0.0702661***	0.073525	0.0857629	0.0429***
	6.57	5.23	3.8	8.32
N	488	488	488	487

Note: * p<0.05, ** p<0.01, *** p<0.001

This result shows a linear model concerning the effect of CEO age on earnings management. As seen, when CEOs reach a certain age, they are likely to adjust earnings. Table 6 mainly demonstrates the details of this finding.

Regarding the robustness of the fixed-effect model, both linear CEO age and non-linear CEO age have a relationship with earnings management. There is a positive non-linear relationship between CEO age and earnings management and a negative linear relationship when the CEO reaches a certain age, compared to younger CEOs (Table 6).

Table 6: Other robustness checks on the non-linear impacts of CEO age

Model	**OLS**	**Random**	**Fixed Effect**	**Robustness Fixed**
	DA	**DA**	**DA**	**DA**
Variable	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**
CEOOLD	-0.000562	-0.00128	-0.00218+	-0.00218+
	-0.70	-1.30	-1.88	-1.81
CEOOLD2	0.0000027	0.0000105	0.0000212+	0.0000212+
	0.31	0.98	1.68	1.84
CEOGRADSDH10	-0.000934	-0.00361	-0.00677*	-0.00677
	-0.52	-1.48	-2.05	-1.34
SIZE	-0.00744***	-0.00811***	-0.0109**	-0.0109*
	-3.93	-3.32	-2.81	-2.15
LEV	-0.00413	-0.00105	0.00245	0.00245
	-0.98	-0.19	0.33	0.14
SEX	0.00486*	-0.000444	-0.00702+	-0.00702
	2.12	-0.14	-1.67	-1.45
DUAL	0.0000721	-0.000408	-0.00242	-0.00242
	0.04	-0.19	-0.90	-1.28
AUDITBIG41	0.00463*	0.00666**	0.00699*	0.00699
	2.18	2.75	2.50	1.63
ROE	0.0716***	0.106***	0.131***	0.131**
	8.69	10.69	11.30	3.28
_cons	0.0752***	0.0933***	0.127***	0.127**
	3.94	3.80	3.81	3.00
N	488	488	488	488

Note: + p<0.1, * p<0.05, ** p<0.01, *** p<0.001

5. Conclusion

This paper examined the impacts of CEO age and education level on the earnings management of listed Vietnamese real estate companies. The authors use a sample of all real estate firms for the period from 2007 to 2016, with a total of 490 observations.

The finding indicates that CEO age is negatively associated with earnings management. Firms led by older CEOs record less earnings management, with the less influence of reward and rival motivation (Iceoglu et al., 2012). This means older CEOs are less capable of managing earnings than younger CEOs. Our findings are consistent with prior studies, in which older individuals are more conservative (Wallach and Kogan, 1961; Sundaram and Yermack, 2007). However, we do not find evidence about the relationship between CEO education level and earnings management. Our research, therefore, suggests that investors should pay more attention to CEO age when investing in a company. Companies with older CEOs will be more reliable than companies with young CEOs because firms led by older managers are less likely to face earnings management.

Next, this research provides useful evidence for real estate companies in choosing CEOs. Firms hiring older CEOs would benefit from the reduction of earnings management and improve the quality of financial statement. Our findings help improve the government's ability to evaluate the financial statements of public companies. However, it should be noted that when CEOs reach a certain age, they begin to engage in earnings management behaviour similar to younger CEOs. Such findings have important implications for planning an audit. Auditors could consider CEO age as an important source of information in determining the risk of an audit.

In addition to independent variables, control variables such as ROE and gender of CEO have a positive relationship with earnings management, which means the higher the firm performance of a company, the higher the level of earning management with male CEOs exercising more earnings management than females. This finding is consistent with Ali et al. (2008), Aygun et al. (2014), and Dechow et al. (1995). Besides, firm size and CEO duality are negatively associated with earnings management.

The limitation of this study is that some of the CEOs could have been moved up to a different band during the analysis period. However, this was not considered and analysed. Another limitation is that other independent variables affect the earnings management used in this research to control the models.

The quality and accuracy of this study can be improved by interviewing experts on earnings management and conducting surveys among the accountants of real estate companies to ascertain the causes and motivation for earnings management at real estate companies. Based on these limitations, future research could concentrate on different industries in order to compare across sectors. Moreover, it is necessary to extend the range of the data to examine the characteristics of CEOs who have been moved to a different band. Future studies could also add other independent variables into the research model for a more comprehensive and accurate conclusion.

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