# Three essays on Earnings Management Evidence from UK

## A thesis submitted for the degree of Doctor of Philosophy

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# Declaration

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# Abstract

The first essay researches the impact of the board characteristics on earnings management. Earnings management is a dependent variable and a proxy for discretionary accruals, which is predicted by applying three discretionary accruals models that include Jones model, modified Jones model and Kothari model. Independent variables comprise of board characteristics. The sample comprised of all listed companies on FTSE-350 from 2007 to 2018.

Based on the results and findings of the Jones model, modified Jones model Kothari model and earnings management model, this research study provides empirical evidence proving the impact of the board size, board independence and gender diversity on the earnings management which is shown to be negative, implying larger boards with higher number of independent directors and female directors are in a better position to oversee the management activities and ensure higher quality of financial information. However, the impact of the CEO duality and board activity on earnings management is positive, illustrating that boards in which both positions CEO and board chairman are holding by one person and the board meets more frequently loses its control over necessary practices such as controlling earnings management.

The prime objective of second research study is to study and understand the impact of the audit committee characteristics on the discretionary accruals in the companies listed on FTSE 350 from 2007 to 2018. The chosen period important because, the chosen period provides a window to test the Smith Report's recommendations for audit committees following the issue of the UK Code and to understand to what extent; the recommended characteristics of the audit committee can help the companies to improve the quality of financial reporting. In this research study, earnings management is a dependent variable, whereas audit committee characteristics comprise of independent variables that include audit committee size (ACS), audit committee independence (ACI), members on the audit committee having a background in accounting or finance or both (ACFEX) and the frequency of the audit committee meetings during a year (NACM). The empirical findings of the relationship between earnings management and audit committee characteristics show that ACS is negatively associated to earnings management, ACI is positive related to earnings management, ACFXP and earnings management are negative related, and the number of audit committee meetings (NACM) is negatively related to earnings management.

Third essay empirically tests the impact of the CEO's and executive's compensation on the discretionary accruals. To better understand the relationship of the CEO's and executive's compensation with discretionary accruals, the entire compensation is decomposed, and the

impact of each component of the total compensation is tested on the discretionary accruals. Earnings management is the dependent variable, which is the proxy for the discretionary accruals. The components of the CEO's and executive's compensation are independent variables, which include the CEO's total compensation, executive total compensation, CEO's equity-based compensation, executive's equity-based compensation, CEO's salary, executive's salary, CEO's bonus, executive's bonus, CEO equity to total compensation ratio and executive's equity to total compensation ratio. For this, a sample comprising of all listed companies on FTSE 350 is used. The sample period is from 2007 to 2018 and employs the annual data because most of the companies prepare and publish their financial statements annually. The empirical results and findings of this research study show that the CEO equity-based compensation, CEO bonus, CEO equity-based compensation to total compensation ratio, executive's equity-based compensation, executive's salary and executive's equity-based compensation to total compensation ratio are positively related to earrings management, whereas, CEO total compensation, CEO salary, executive total compensation and executive's bonus are negatively related with the earnings management.

1. Chapter One – Introduction

Corporate governance mechanisms have always held great importance when assessing and monitoring financial reporting effectiveness. Corporations have a vital responsibility in preparing financial reports and are a significant part of the corporate governance system (Klein, 2002). Financial reporting holds a key position in the corporate sector, as it is a major medium of communication between companies and stakeholders.

Nevertheless, despite the presence of a corporate governance system consisting of board of directors and sub committees including an audit committee and compensation committee, there have been several cases of earnings management and financial statements manipulation such as Enron and WorldCom (Demaki, 2011; Norwani, et al. 2011), which raises questions on the role of corporate governance. This suggests that the mere presence of these committees is not sufficient to control and to mitigate the tendencies for unethical accounting practices such as earnings management. Rather, an important element is to understand what the vital attributes of these committees are which can help mitigate and control undesired accounting practices such as earnings management. Therefore, research in recent times is not just concerned about the formation of the board of directors or audit and compensation committees, rather, the concern and emphasis are on the attributes and effectiveness of these committees in improving the quality of financial information by closely monitoring and enhancing the stakeholder's confidence in financial statements. Therefore, this research study is initiated to investigate and understand the role of corporate governance in controlling earnings management.

Earnings management and board characteristics researches the role of the board characteristics in controlling the earnings management. According to scholars and market participants, one of the major reasons for the financial crisis of 2008 was the distortion of financial numbers created by applying practices such as earnings management by the management itself. However, another opinion held is that the corporate governance system and board of directors were not effective in controlling such practices leading to collapse of the entire financial market. This juxtaposition raises the question of whether the board of directors' role alone is effective in controlling earnings management.

Discretionary accruals proxied by earnings management is the dependent variable in all the three essays. In terms of measuring earnings management, it is difficult to identify a single discretionary accruals model measure on which all scholars agree. Moreover, each model carries its own drawbacks. Therefore, to overcome the existing concerns in the literature and

minimize the error possibility, the first principal component rule is applied on the results of the three discretionary accrual models that comprises of Jones model (JM), modified Jones model (MJM) and Kothari model (KM) to measure the earnings management. As far as I know, this is the first research study that applies the first principal component rule to measure earnings management. The application of the first principal component rule is highly significant because, this model carries the components of more than one model and is more inclusive of other methods, which as a result enhances the validity and explanatory power of the model.

There are research studies that are conducted to understand the role of corporate governance in relation to earnings management in UK (Peasnell et al. 2000; Peasnell et al. 2005). Moreover, a few research studies examine and research the role of the corporate governance in relation to real earnings management in UK (Osma and Young 2009; Athanasakou et al. 2011), however, I was unable to identify any research studies conducted which are able to present a comparative analysis of the discretionary accruals-based earnings management and real earnings management in relation to corporate governance committees in UK. In addition, the research investigating the role of corporate governance in relation to discretionary accruals-based earnings management is heavily conducted, however, research investigating the role of corporate governance in relation to real earnings management is minimal, thus, there is a substantial gap in the literature in relation to the role of corporate governance for real earnings management (Cohen and Zarowin, 2010; Lemma et al. 2013; Kuo et al. 2014; Sellami, 2015). Therefore, this thesis does not exclusively research and examine discretionary accruals-based earnings management, whereas, in addition, it investigates the role of corporate governance by examining and studying the efficiency and effectiveness of the corporate governance on real earnings management and presents a comparative analysis of the discretionary accruals-based earnings management and real earnings management, which is one of the major contributions of this research study. As far as I know, this PhD research is the first research study that that presents a comparative analysis of the discretionary accruals-based earnings management and real earnings management in relation to board characteristics, audit committee characteristics and the components of CEO's and executive compensation.

Earnings management and audit committee attributes provides research on the association between audit committee characteristics and earnings management in the companies listed on FTSE 350 from 2007 to 2018. The main concern of an audit committee is to oversee and supervise the corporate financial reporting practices and improve the quality of financial reporting and earnings by closely monitoring and overseeing the accounting practices and financial reporting. Therefore, the role of the audit committee is integral and significantly

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important for the quality of financial information. Moreover, it is important to understand which characteristics of the audit committee significantly improve the performance and effectiveness of an audit committee in terms of mitigating and controlling unethical accounting practices such as earnings management. The chosen period is significant because it provides a window to test the Smith Report's recommendations for audit committees following the issue of the UK Code and to understand the extent to which the recommended characteristics of the audit committee can help the companies to improve the quality of financial reporting. To better understand the role of the audit committee in mitigating and controlling unethical accounting practices, the characteristics and attributes of the audit committee are evaluated to understand its role in mitigating or controlling unethical accounting practices such as earnings management. The impact of the audit committee characteristics is tested on the earnings management by applying the new earnings management model (EM).

Many of the research studies on earnings management and corporate governance attributes are conducted by using FTSE 100 in the UK, whereas I was unable to find any research study which used FTSE 350. Therefore, this research uses FTSE 350, for the first time according to my understanding, to test the impact of the audit committee on the EM. In addition, FTSE 350 is a highly significant sample because, FTSE 350 is the combination of FTSE 100 and FTSE 250 companies, therefore, I believe that FTSE 350 carries the attributes of all kinds of firms listed in UK and therefore, better represents the British market as compared to just conducting research on FTSE 100 or FTSE 250. The attributes of audit committee that are examined in this research study comprise of audit committee size (ACS), audit committee independence (ACI), members on the audit committee with a background in accounting or finance or both (ACFEX) and the frequency of the audit committee meetings during a year (NACM).

Shareholders finance the company; therefore, ownership lies in the hands of the shareholders, with little or no control. However, management runs the company's operations, therefore, control lies in the hand of the management. Managers are in a position to control the company allowing them the opportunity to manipulate the financial information by applying the managerial discretion provided in the accounting standards, which directly jeopardizes the interest of the shareholders. To overcome the consequences of the mismatch between the ownership and control between shareholders and management respectively, one of the devices employed in the corporate governance structure is the executive's compensation plan. This aims to align the interest of the management with the shareholders, and internally motivate the management to work in the best interest of the shareholders. In this way, the incentive to

manipulate the financial information diminishes and therefore directly enhances the quality of the financial reporting and in turn the transparency of the financial reporting processes increases. However, the question arises whether the management still works in the best interest of the shareholders? And if the management is working in the best interest of shareholders, then the question arises as to why, cases such as Enron (2001), WorldCom (2002), Tyco (2002), Freddie Mac (2003), AIG (2005), Lehman Brothers (2008) etc. happened, which were primarily caused by earnings management or fraudulent financial reporting (Gunz and Thorne, 2017). In addition, despite evidence of earnings manipulation, little research has examined the influence of executive compensation on earnings management. Moreover, most of the research studies used executive compensation as one value or used a few components from executive compensation (Cheng and Warfield, 2005; Jones and Wu, 2010; Sun, 2012). However, executive compensation consists of many elements such as salary, bonuses, stock options, stocks granted, long-term incentive plans and short-term incentive plans. Therefore, this research study has decomposed the entire executive compensation into fixed and variable components (salary and bonus), in cash and equity-based compensation, and in short-term and long-term compensation and examined the impact of the each compensation components on the earnings management to better understand what form of executive compensation significantly or insignificantly, and positively or negatively affects the discretionary accruals in the listed companies on FTSE 350 during 2007 to 2018.

In addition, the research that addresses the impact of the executive compensation on earnings management in the UK is minimal, therefore, this research study makes a significant contribution, as this research study is among the pioneer research studies that decomposes the entire executive compensation and individually tests the impact of each component of the executive compensation on the discretionary accruals. The components of the executive compensation comprise of CEO and executive's total compensation, CEO and executive's equity-based compensation, CEO and executive's salaries, CEO and executive's bonuses, and CEO and executive's equity-based compensation as a proportion of the total compensation.

2. Chapter Two – Earnings Management and Board Characteristics

2.1. Introduction

In accounting, earnings management is typically described as the opportunistic behaviour of financial managers to exploit managerial discretion provided by accounting standards (Bergstresser and Philipon, 2006). According to McKee (2005), earnings management is a technique applied by management to manipulate financial information and communicate the desired message to the market. Leuz et al. (2003) defines earning management as the alteration of a company's reported economic performance and financial position by the management of a company in order to mislead the stakeholders or to influence the contractual outcome. The role of corporate governance is paramount in addressing earnings management practices so as to enhance transparency. To understand the role of corporate governance, it is important to decompose the board of directors based on its characteristics and to understand the impact of each characteristic on the earnings management.

On the one hand, according to scholars and market participants, one of the major reasons for the financial crisis of 2008 was the distortion of financial numbers created by applying practices such as earnings management by the management itself. However, another opinion is that the corporate governance system and board of directors were not effective in controlling such practices leading to collapse of the entire financial market. This juxtaposition raises the question of whether the board of directors' role alone is effective in controlling earnings management.

I conduct this study to examine the impact of the board of director's characteristics on earnings management. The board characteristics examined comprise of board independence, board size, CEO duality, gender diversity, and board activity. The research questions for this study are as follows:

- Is the role of the board of directors effective in controlling the earnings management practices in FTSE 350 companies? Specifically, how do different board characteristics i.e., board independence, board size, CEO Duality, gender diversity, and board activity affect the practices of earnings management in companies listed on FTSE 350?

- Which discretionary accruals model better explain the relationship between the board characteristics and earnings management?

Although there are a number of research studies conducted to understand and explore the impact of the board characteristics on discretionary accruals in the UK (see Peasnell et al. 2000; Peasnell et al. 2005), however, there are a few research studies which are examining the

impact of the board characteristics on real earnings management (Osma and Young 2009; Athanasakou et al. 2011). Therefore, this research contributes to the existing literature by investigating empirically the relationship of board of director's characteristics with the discretionary accruals and real earnings management in Britain's market and explains which board characteristics positively or negatively affect the earnings management and real earnings management in the UK. This research also sheds light on the effectiveness of the recent corporate governance recommendations on enhancing financial reporting quality in the UK.

The sample for this study is comprised of companies listed on the FTSE350 index. FTSE350 index is selected because it includes, by capitalization, the largest 350 companies, which are primary listed on the London stock exchange. Moreover, FTSE350 account for a significant portion of the UK economic output. The sample period starts from 2007 to 2018 and uses annual data because most of the companies prepare and publish their financial statements annually. The chosen period is important as it enables the research study to understand the impact of board of director's characteristics on earnings management in the post-recession period. The data for earnings management and board of directors (BOD) is retrieved from Bloomberg.

My hypotheses examine the impact of different BOD characteristics on earnings management in the UK. The BOD characteristics examined comprises of board independence, board size, CEO Duality, gender diversity, and board activity.

The findings are presented based on the results of four empirical models comprising of Jones model (JM), modified Jones model (MJM) Kothari Model (KM) and earnings management model (EARNMGT). EARNMGT is estimated by applying the first principal component methodology. The results show that there is a negative and statistically significant association between board size (BS), board independence (BI) and gender diversity (GENDIV) with earnings management. Whereas, CEO duality (CEOD) and number of board meetings (NOBM) are positively related with earnings management, moreover, the results are statistically significant.

Academic scholars present a number of models predicting earnings management. Each model of earnings management carries pros and cons; therefore, this research study aims to detect the earnings management by applying the principal component approach that uses the weighted average earnings management of the three models comprised of Jones model (1991), modified Jones model (1996) and Kothari model (2005). This research study is among the pioneer research studies that apply the first principal component methodology to predict the earnings management.

2.2. Literature Review

    2.2.1.   Background on earnings management

Financial standards such as international financial reporting standards (IFRS) or generally accepted accounting principles (GAAP) provides flexibility in choosing from among alternative accounting treatments that is known as managerial discretion (Bergstresser and Philipon, 2006). These alternative methods and policies for reporting the financial information impacting the firm's profitability (McKee, 2005). Academics in past literature present the view that financial managers mostly employ those accounting standards and policies having economic benefit for the company, for the management or for both (Schipper, 1989). Moreover, these opportunistic practices intensify in the absence of a strong governance structure deteriorating the quality of reported earnings and investors' confidence in the financial reports published by companies (Baysinger and Butler, 1985). In accounting, the opportunistic behavior that the financial managers apply by exploiting managerial discretion provided by the accounting standards is known as earnings management (Bergstresser and Philipon, 2006). According to McKee (2005), earnings management is a technique applied by management to manipulate financial information and communicate the desired message to the market.

Schipper (1989) is the first to define earnings management and states that management for their private gain adjusts financial statement by manipulating the financial information. In addition, Leuz et al. (2003) defines earning management by stating that earnings management is the alteration of a company's reported economic performance and financial position by the management of a company in order to mislead the stakeholders or to influence the contractual outcome. Furthermore, they state that accounting standards and policies provide managerial discretion and flexibility to management providing them with the power to exercise their judgment and discretion over accounting estimates and policies, and to choose the allowable accounting method to change the financial information. Xiong (2006) says that managerial discretion in accounting standards provides opportunities to managers to apply their judgment and to manipulate the financial information. McKee (2005) states that managers manipulate financial information mostly through alteration of estimates and values of bad debts, changing the assumptions for estimating depreciation, using desired estimates for useful life of non-current assets, using estimates for assets valuation which meet their desired objective and applying those methods for inventory valuation which helps improve financial performance.

From the above definitions, it can be inferred that accounting standards allow managers to manipulate financial information by exploiting the flexibility in accounting policies in order

to achieve personal or the firm's objectives. In addition, it can also be stated that the prerequisite for earnings management is the management intention behind the alteration of financial information.

### 2.2.2. Measurement Models

In the past three decades, numerous research studies have been conducted which detect earnings management by employing different models. These models are as follows.

#### 2.2.2.1. The Healy Model (1985)

Healy (1985) decomposes the total earnings into cash flow from operations, non-discretionary accruals (NDA) and discretionary accruals (DA). Cash flow from operations represents the net cash flow generated by operating activities of the business. Operating activities are primarily comprised of sales and expenses arising from the core activities of the business.

*Non-discretionary accruals* are *"accounting adjustments to the firm's cash flows mandated by accounting standard-setting bodies (e.g., the Securities Exchange Commission and the Financial Accounting Standards Board)" (Healy, 1985, p, 89).*

Discretionary accruals represent adjustment by the managers to cash flows by exploiting the managerial discretion in the accounting standards with the intention to achieve personal or company's desired objectives. Healy states that DA is an unobservable variable, therefore, Healy's model relies on total accruals, which are presented in the following way.

$$ACC_t = -DEP_t + Extraords_t + \Delta INV_t - \Delta AP_t - (\Delta TP_t + DEF_t) \qquad (2.1)$$

Where:

| | |
|---|---|
| $ACC_t$ | ACC is the difference between reported earnings and cash flow from operations |
| $DEP_t$ | Depreciation |
| $Extraords_t$ | Extraordinary items |
| $\Delta INV_t$ | Change in Investments |
| $\Delta AP_t$ | Change in Accounts Payables |
| $\Delta TP_t$ | Tax Payable |
| $DEF_t$ | Deferred Tax |

Healy (1985) assumes that NDA are stable over years and across the firms, however, both these assumptions are unrealistic. In the real world, a firm's operations are dependent and influenced by their economic environment and therefore, NDA vary amongst firms and over years. For example, when there is an increase in the revenues of a firm, their NDA increases as well without manipulating the financial information. It shows that these two assumptions cannot hold in the real world. Therefore, Healy model produces a biased value for DA (Lee and Vetter, 2015).

### 2.2.2.2.  The DeAngelo Model (1986)

DeAngelo (1986) defines total accruals with a different method; he took the average changes of discretionary accruals and non-discretionary accruals by applying the following model.

$$(AC_1 - AC_0) = (NDA_1 - NDA_0) + (DA_1 - DA_0) \qquad (2.2)$$

Where:

$(AC_1 - AC_0)$ $\qquad$ Average change in total accruals

$(NDA_1 - NDA_0)$ $\qquad$ Average change in non-discretionary accruals

$(DA_1 - DA_0)$ $\qquad$ Average change in discretionary accruals

DeAngelo (1986) suggests the use of the following model as an alternate model to Healy's model to estimate the total accruals. In this model, total accruals are estimated by taking the difference of the change in net income and operating cash flow.

$$(AC_1 - AC_0) = (NI_1 - NI_0) + (CF_1 - CF_0) \qquad (2.3)$$

Where:

$(NI_1 - NI_0)$ $\qquad$ Average change in net income

$(CF_1 - CF_0)$ $\qquad$ Average change in operation cash flow

The empirical findings of the above model present the view that on average, the value from the above model is approximately zero, which lead to the conclusions that change in DA is positive and the change in the NDA is negative. It can be observed from both i.e. Moreover, both models estimate the NDA without error if NDAs are constant across the time and DA

mean is zero in the estimation period. However, if NDAs are not constant and changes from period to period, then there is a possibility that both models estimate the NDAs with error. In this situation, then the model that is the best and is more appropriate to measure the NDAs depends on the nature of the time-series process that is applied to estimate the NDAs.

Both models assume that NDAs are constant across the time; however, empirical evidence shows that it is highly unlikely that the NDAs could be constant. Kaplan (1985) states that the NDAs are directly related to the economic circumstances in the economy and should change when there is a change in the economic circumstances in the economy. By not including the economic circumstances in nondiscretionary accruals in the Healy and DeAngelo models, the standard errors increase. Moreover, those firms that are included in the sample systematically experience abnormal economic circumstances, and then not including the economic circumstances on nondiscretionary accruals in the model causes biased estimates of the coefficients.

### 2.2.2.3. The Jones Model (1991)

One of the major limitations of the Healy and DeAngelo model is that they assume that the non-discretionary accruals are zero or constant. However, Jones (1991) states that nondiscretionary accrual is a linear function of change in sales and non-current assets and therefore, NDA should be included in the accruals model. Moreover, he states that the nondiscretionary accruals stem from depreciation and change in the accruals arises from the business activities of the company.

The academic literature states that total accruals are comprised of NDA and DA. NDA are economically determined whereas DA determines by the managers. According this explanation of DA, it can be stated that DA provides an opportunity for managers to exercise their discretion over accounting principles and estimates to practice earnings management (Kasznik, 1999; Dechow et al. 1995; Warfield et al. 1995; DeFond and Jiambalvo, 1994; Sweeny, 1994; Cahan, 1992; Jones, 1991: Healy, 1985). Based on the above assumptions and explanations, Jones presented the following accruals model, which estimates the total accruals.

$$TA_{i,t}/A_{i,t-1} = \alpha_1(1/A_{i,t-1}) + \alpha_2(\Delta Rev_{i,t}/A_{it-1}) + \alpha_3(PPE_{it}/A_{it-1}) + \varepsilon_t \qquad (2.4)$$

Where:

$TA_{i,t}$          Total Accruals for firm $i$ at period $t$

$A_{i,t-1}$          Total Assets for firm $i$ at period $t$

$\Delta Rev_{i,t}$           Change in Revenue for firm $i$ at period $t$

$PPE_{i,t}$           Property Plant and Equipment for firm $i$ at period $t$

$\alpha_1$ - $\alpha_3$           Coefficients estimates

$\varepsilon_t$           Error term

$TA_{i,t}$ are estimated in the following manner.

$$TA_{i,t} = (\Delta Current\ assets - \Delta Cash - \Delta Current\ liabilities) - Depreciation\ and\ amortization\ expenses$$

In the above model, total assets of the company scale all the variables at the beginning of the year. The prime objective to scale all variables by the total assets is to minimize or reduces the problem of the heteroscedasticity. The residual term from the total accruals model represents the discretionary accruals (DA).

The discretionary accruals model (DA) presented by Jones attracted a significant number of research studies and scholars including Subramanyam (1996) and Guay et al. (1996). They state that compared to the DeAngelo and Healy models, Jones's model is more powerful as it produces the discretionary accruals consistent with the opportunistic accruals and measure performance hypotheses. Additionally, they state that the Jones model provides more control in a cross-section model as compared to time series data. Moreover, Dechow et al. (1995) says that the most powerful and effective model measuring earnings management is Jones model. However, Dechow et al. (1995) states that it is assumed in the Jones model that the entire sales in the period are non-discretionary, whereas, in the real world, the total sales are comprised of cash sales and credit sales. Theoretically, the accruals part of the sales is exposed to manipulation; therefore, the entire sales are not non-discretionary. In this situation, if the managers exercise their discretion over sales, it leads to the misspecification of the discretionary accruals model. Also, the Jones model is criticized for not including expenses in the non-discretionary model.

In addition, Kothari, et al. (2005) citing White (1980) criticizes the Jones model by claiming that scaling all variables may reduce the Heteroscedasticity problem; however, it cannot fully eliminate the Heteroscedasticity issue. In addition, Sweeney (1994) states that Jones's model may produce a biased estimate for DA because in the real world, it is difficult to separate the DA from NDA.

### 2.2.2.4. The Modified Jones Model (Dechow, Sloan and Sweeney, 1995)

Dechow et al. (1995) highlight that one of the major limitations of the Jones model arises from its assumptions that the total revenue is non-discretionary. Dechow et al. (1995) model is primarily based on the assumption that total revenue is not non-discretionary, whereas, a certain part of the revenue is discretionary, this occurs where managers exercise discretionary power over revenues to manipulate revenues. Based on this new development, Dechow et al. (1995) modified the Jones model by adjusting the change in revenue to change in receivables and presents the evidence that their model is more powerful in comparison to Jones model as their model is good at detecting cases of revenue manipulation.

$$TA_{it}/A_{it-1} = \alpha_1(1/A_{it-1}) + \alpha_2(\Delta Rev_t - \Delta Rec_t /A_{it-1}) + \alpha_3(PPE_t /A_{it-1}) + \varepsilon_t \quad (2.5)$$

Where:

| | |
|---|---|
| $TA_{it}$ | Estimated total accruals for firm $i$ at period $t$ |
| $\Delta Rev_t$ | Change in revenue for firm $i$ at period $t$ |
| $\Delta Rec_t$ | Change in receivables for firm $i$ at period $t$ |
| $PPE_t$ | Property, plant and equipment for firm $i$ at period $t$ |
| $A_{i,t-1}$ | Total assets in the prior year for firm $i$ |
| $\varepsilon_t$ | The Residual |

Numerous studies apply the Jones and modified Jones models in order to measure the earnings management and most of the scholar's state that both of the models are the most effective and efficient models to measure and detect earnings management (Kasznik, 1999; Becker et al. 1998; Beneish, 1997; Guay et al. 1996; Dechow et al. 1995 and DeFond and Jiambalvo, 1994). Moreover, both models i.e., Jones and modified Jones models are primarily presented as time series. However, Subramanyam (1996) and Bartov et al. (2002) tests both models under time series and cross-sectional data and concludes that both i.e., Jones and modified Jones models are more powerful in cross sectional as compare to time series in measuring the earnings management. They support this view by arguing that the Jones and modified Jones models can be controlled for year and industry specific influence and therefore, both models outperform other models in cross sectional data. In addition, the cross sectional is known for larger samples and higher number of observations and cross-sectional data does not assume the stationarity of the discretionary accrual models (Subramanyam 1996; Peasnell et al. 2000). However, modified jones model assumes that the discretionary accruals for cross

sectional data are the same for each firm in the industry, moreover, the discretionary accruals are the same regardless the operating strategy or its product life cycle for all the firms. Under this assumption, the results of the non-discretionary models are unbiased and efficient if all the firms in the industry are homogenous. However, if the firms are not homogenous and the firms are different from each other in terms of operating strategy or product life cycle, then, the earnings management estimated by the modified jones model might involve measurement errors (Dechow et al. (1995).

### 2.2.2.5. Dechow and Dichev Model (2002)

Dechow and Dichev (2002) state that although the managers do not exercise their managerial discretion to manipulate earnings, accruals are still related to the firm and industry. Therefore, Dechow and Dichev (2002) present a new model in which, they include working capital as a dependent variable whereas operating cash flow as an independent variable. They support their model by the view that both factors are short term and reverses within one year.

$$\Delta WC_{i,t} = \beta_0 + \beta_1 CFO_{i,t-1} + \beta_2 CFO_{i,t} + \beta_3 CFO_{i,t+1} + \varepsilon_{i,t} \qquad (2.6)$$

Where:

| | |
|---|---|
| $\Delta WC_{i,t}$ | Change in Working capital in the year $t$ for firm $i$ scaled by $A_{it-1}$ |
| $\beta_0$ | Constant |
| $CFO_{i,t-1}$ | Cash flow from operations for the year $t$-1 for firm $i$ scaled by $A_{it-1}$ |
| $CFO_{i,t}$ | Cash flow from operations for the year $t$ for firm $i$ scaled by $A_{it-1}$ |
| $CFO_{i,t+1}$ | Cash flow from operations for the year $t$+1 for firm $i$ scaled by $A_{it-1}$ |
| $\varepsilon_{i,t}$ | Error term in the year $t$ for firm $i$ |

The Dechow and Dichev (2002) model studies the earnings quality by examining the relationship between accruals and operating cash flow, the standard deviation of residuals represents the earnings quality. The Dechow and Dichev model assumes that there is a negative relationship between accruals and current cash flows, whereas the relationship between accruals and past and future cash flows are positive. Moreover, the error term captures accruals. Dechow and Dichev model states that the future cash flow is judgmental and is an estimate, from which, it can be inferred that future cash flow estimate might be inaccurate.

There are a number of limitations of the Dechow and Dichev model. McNichols (2002) criticizes the model and states that if the explanatory variables contain a measurement error as stated by Dechow and Dichev, the explanatory variable coefficients are then biased. McNichols states that this model does not help in explaining the impact of the discretionary accruals on the total accruals.

### 2.2.2.6. McNichols Model (2002): An Integrated Approach

McNichols (2002) states that the Jones model (1991) is good in terms of splitting the entire accruals in discretionary and non-discretionary accruals, however, the Jones model is miss-specified, and some important explanatory variables are missing. Regarding the Dechow and Dichev model (2002), she states that this model estimates the accruals as a whole, which does not explain how discretionary accruals may affect total accruals. McNichols (2002) tests both model and concludes that there are evidences of misspecification in both models. Her analysis shows that Jones model is statistically significantly correlated with current, past and future cash flows. Moreover, she states that in the Dechow and Dichev model, the residuals and changes in revenue are significantly correlated. Based on the above discussion, McNichols (2002) incorporates the strengths of both models by developing a new model that combines the Jones and Dechow and Dichev models.

$$\Delta WC_{i,t} = \beta_0 + \beta_I CFO_{i,t-1} + \beta_2 CFO_{i,t} + \beta_3 CFO_{i,t+1} + \beta_4 \Delta Rev_{i,t} + \beta_5 PPE_{it} + \varepsilon_{i,t} \quad (2.7)$$

Where:

| | |
|---|---|
| $\Delta WC_{i,t}$ | Change in Working capital in the year $t$ for firm $i$ scaled by $A_{it-1}$ |
| $CFO_{i,t-1}$ | Cash flow from operations for the year $t$-1 for firm $i$ scaled by $A_{it-1}$ |
| $CFO_{i,t}$ | Cash flow from operations for the year $t$ for firm $i$ scaled by $A_{it-1}$ |
| $CFO_{i,t+1}$ | Cash flow from operations for the year $t$+1 for firm $i$ scaled by $A_{it-1}$ |
| $\Delta Rev_{i,t}$ | Change in Revenue scaled by $A_{it-1}$ |
| $PPE_{it}$ | Gross property, Plant and Equipment in the year $t$ for firm $i$ scaled by |
| $A_{it-1}$ | Total assets in year $t$-1 for firm $i$ |
| $\beta_0$ | Constant |
| $\varepsilon_{i,t}$ | Error term in the year $t$ for firm $i$ |

To know the efficiency and effectiveness of each model, McNichols (2002), applies Jones model, Dechow and Dichev model and the McNichols (2002) model by using data from 15015 firms for a period of 10 years starting from 1988 to 1998. The findings of the tests show

that the Jones model R square ($R^2$) is 7%, Dechow and Dichev's $R^2$ is 20% and McNichols model $R^2$ is 30%. From these results it can be inferred that among all the three models i.e., Jones model, Dechow and Dichev model and McNichols model, McNichols (2002) model explanatory power and goodness of fit are highest. Moreover, the signs and relationship of the variables in the McNichols (2002) model are consistent with both Jones and Dechow and Dichev model. Additionally, the coefficients of all the explanatory variables in the McNichols (2002) model are statistically significant.

Nevertheless, there are a few limitations of the McNichols model. According to McNichols, his model is more effective and useful for understanding the relationship of earnings management, corporate governance and external audit attributes. However, Kothari (2005), states that although, these models may produce good outcomes, they all lack inclusion of performance based independent variables in their models.

### 2.2.2.7. Performance Matched Discretionary Accruals, Kothari (2005)

A number of research studies raise concerns regarding the performance and estimation of earnings management. Dechow et al. (1995) and Kasznik (1999) applied the Jones model to detect and measure earnings management. According to their research findings, there is a positive statistically significant relationship between the discretionary accruals and return on assets (ROA), which cause misspecification in the model. Numerous research studies are conducted to overcome the miss-specification problem (Kasznik, 1999; Bartov et al. 2002 and Kothari et al. 2005). In these research studies, they exclude the potential effects of the correlation between the discretionary accruals and earnings performance by applying a matched-firm method to adjust the discretionary accruals. Kothari et al. (2005) is among the pioneer academics and researchers who states that performance-based variables need to be included in the modified jones model to estimate the earnings management, therefore, he suggests including the return on assets (ROA) as a performance variable in the modified jones model and presented the following model.

$$TA_{it}/A_{it-1} = \alpha_1(1/A_{it-1}) + \alpha_2(\Delta Rev_{t-} \Delta Rec_t /A_{it-1}) + \alpha_3(PPE_t /A_{it-1}) +$$
$$\alpha_3 ROA_{it-1} + \varepsilon_t \qquad (2.8)$$

Where:

$TA_{it}$          Estimated total accruals at time t.

$\Delta Rev_t$        Change in revenue at time t

$\Delta Rec_t$        Change in receivables at time t

$PPE_t$           Property, plant and equipment at time t

$A_{t-1}$           Total assets in the prior year

$ROA_{it-1}$        Return on assets of the previous year

Kothari et al. (2005) adjusts the Jones and modified Jones model for firm performance and examines the effectiveness and reliability of each model. Their findings state that by including the performance as an independent variable in the Jones and modified Jones model, the reliability of the discretionary accruals models enhances. Their findings can also be interpreted in a different way that earnings management varies with the performance of the firm.

### 2.2.2.8.    Absolute Abnormal Accruals Model (ABS_AA) (2007)

Larcker and Richardson (2007) apply the absolute abnormal accruals model (ABS_AA) to measure earnings management. The ABS_AA is the extension of the modified Jones model, which adds the cash flow from operations (CFO) and book value of common stock (BV) to the modified jones model so as to minimize the measurement error related to discretionary accruals. He states that based on accrual basis of accounting, the accrual revenue is less reliable and highly exposed to earnings management when compared to cash component of revenue and therefore, adds the CFO to measure the non-discretionary revenues (Larcker and Richardson, 2007).

On the basis of modified Jones model, which assumes that the difference between the change in revenue and the change in receivables is not exposed to managerial discretion. Therefore, the difference between the change in revenue and the change in receivables is free from managerial discretion. In addition, the capital intensity of a firm drives normal accruals. ABS_AA model includes the difference between the change in revenue and the change in receivables and the gross value of the property, plant and equipment to control for the expected, economic based components in the total accruals.

Larker and Richardson (2004) state that the benefit of engaging in earnings management depends upon the growth opportunities and operating performance. Of particular significance is the incentive for the management to manage earnings, which is higher when the market expectations are higher for future growth (Dechow and Skinner, 2000). Therefore, book value to market value (BM) and cash flow from operations (CFO) is included in the accruals model. BM controls for growth in operations, if BM is not controlled and left uncontrolled in the absolute abnormal accruals model, then growth in operations is picked-up as discretionary

accruals. Whereas CFO is included in the accruals model to control for the effects of the current operating performance of the company because firms with extreme levels of operating performance are highly likely to miss-specify their discretionary accruals (Dechow, Sloan, and Sweeney, 1995).

$$TA_{it}/A_{it-1} = \beta_0(1/A_{it-1}) + \beta_1(\Delta Rev_{it} - \Delta Rec_{it}/A_{it-1}) + \beta_2(GPPE_{it}/A_{it-1}) +$$
$$\beta_3 BM_{it} + \beta_4(CFO_{it}/A_{it-1}) + \varepsilon_{it} \qquad (2.9)$$

Where:

$TA_{it}$ — The total accruals, calculated as firm's net income minus operating cash flows in year t taken from the statement of cash flows,

$A_{it-1}$ — The total assets for firm $i$ at period $t-1$

$\Delta Rev_{it}$ — The change in revenues for firm $i$ from $t-1$ to year t

$\Delta Rec_{it}$ — The change in accounts receivable for firm $i$ from $t-1$ to year t

$GPPE_{it}$ — The gross property, plant and equipment for firm $i$ for year t

$BM_{it}$ — Ratio of value book value of equity for firm $i$ for year t to market value of equity for firm $i$ for year t

$CFO_{it}$ — The operating cash flows for firm $i$ for year t

$\varepsilon_{it}$ — The error term for firm $i$ for year t

To estimate the non-discretionary accruals (NDA), the coefficients from equation (9) are ploughed back in equation (10) to measure the firm specific non-discretionary accruals.

$$NDA_{it} = \beta_0(1/A_{it-1}) + \beta_1(\Delta Rev_{it} - \Delta Rec_{it}/A_{it-1}) + \beta_2(GPPE_{it}/A_{it-1}) +$$
$$\beta_3 BM_{it} + \beta_4(CFO_{it}/A_{it-1}) \qquad (2.10)$$

Where:

$NDA_{it}$ — The Non-discretionary accruals for firm $i$ for year t

$\beta_0$ - $\beta_4$ — The industry specific estimated coefficient which are estimated from the first equation

Once the total accruals and non-discretionary accruals are estimated, then the discretionary accruals are estimated by taking the difference between the total accruals and non-discretionary accruals.

$$DA_{it} = TA_{it}/A_{it-1} - NDA_{it} \qquad\qquad (2.11)$$

Where:

$DA_{it}$             Discretionary Accruals

$TA_{it}/A_{it-1}$     Total Accruals scaled by total assets at beginning of the year

$NDA_{it}$          Non-discretionary accruals for firm $i$ for year t

The findings and results of Larker and Richardson (2007) are consistent with the findings of prior research studies. The coefficient on ($\Delta Rev_{it} - \Delta Rec_{it}$ ) is positive whereas, GPPE coefficient is negative. Moreover, the findings show that the coefficients on the BM and CFO are both negative, from which, it can be inferred that there is an inverse relationship between the total accruals with BM and CFO. The $R^2$ of the model is approximately 31% that shows that 31% of the variations in the total accruals are explained by the independent variables in the model. McNichols (2002) findings show that Jones model $R^2$ is 7%, Dechow and Dichey's $R^2$ is 20% and McNichols model $R^2$ is 30%. In comparison to McNichols (2002), the Larker and Richardson (2004), ABS_AA Model $R^2$ is highest.

Moreover, according to Larker and Richardson (2007), the ABS_AA model effectively measures the earnings managements as compared to modified Jones model because ABS_AA model explanatory power, as compare to modified Jones model is higher. Moreover, the ABS_AA model helps to identify the unexpected accruals, which is less persistent as compare to other components in the total earnings and the estimated discretionary accruals that detect and measure the earnings management.

### 2.2.3. Discussion on earnings management models

Healy (1985) is among the pioneers who initiated research on the topic of earrings management and presented a model to detect earnings management. His model is based on the assumptions that the NDA are stable over years and across the firms, however, both these assumptions are unrealistic. In real world, a firm's operations are dependent and influenced by their economic environment and therefore, NDA vary among firms and over years.

DeAngelo (1986) presents a model that estimates the total accruals as Healy. However, he defines total accruals by taking the average changes of discretionary accruals and non-discretionary accruals. Moreover, both models estimate the NDA without error if NDA are constant across time and DA mean is zero in the estimation period. However, if NDAs are not constant and changes from period to period, then there is a possibility that both models, estimate the NDAs with error.

Jones (1991) states that the non-discretionary accruals cannot be zero or constant, however, Jones (1991) states that nondiscretionary accrual is a linear function of change in sales and non-current assets and therefore, NDA is included in the accruals model. Moreover, he states that the nondiscretionary accruals stem from depreciation and the change in the accruals arises from the business activities of the company. Jones model assumes that sales are not exposed to managerial discretion and therefore, managers do not exercise discretion over sales. However, Dechow et al. (1995) states that if the managers exercise their discretion over sales, it leads to the misspecification of the discretionary accruals model.

Therefore, Dechow et al. (1995) presents modified Jones model to estimate NDA and DA by assuming that total revenue is not non-discretionary whereas, a certain part of the entire revenue is discretionary, where managers use discretionary power to manipulate revenues. Some assumptions of the modified Jones model are unrealistic such as the discretionary accrual for cross sectional data which are the same for each firm in the industry, moreover, the discretionary accruals are the same regardless of the operating strategy or its product life cycle for all the firms. Under these assumptions, the results of the non-discretionary model are unbiased and efficient if all the firms in the industry are homogenous. However, if the firms are not homogenous rather, are different from each other in terms of operating strategy or product life cycle, then, the earnings management which is estimated by the modified Jones model carries measurement errors.

Therefore, Dechow and Dichev (2002) present a new model to estimate the accruals by applying short term variables in the model and, to justify their model, state that although the managers do not exercise their managerial discretion to manipulate earnings, accruals are still related to the firm and industry and vary from firm to firm and industry to industry. Therefore, Dechow and Dichev (2002) presents a new model, in which they include working capital as a dependent variable and operating cash flow as an independent variable. The Dechow and Dichev model assume that there is a negative relationship between accruals and current cash flows, rather in contrast, the relationship between accruals and past and future cash flows are positive. Dechow and Dichev model also states that the future cash flow is judgmental and is an estimate, from which, it can be inferred that future cash flow estimate might be inaccurate. McNichols (2002) criticizes the model and states that if the explanatory variables carry a measurement error as stated by Dechow and Dichev, then the explanatory variable coefficients are biased. McNichols states that this model does not help in explaining the impact of the discretionary accruals on the total accruals.

McNichols (2002) presents a new model by combing the Dechow and Dichev model (2002) and Jones model (1991). According to McNichols (2002) the Jones model (1986) is good in terms of splitting the entire accruals into discretionary and non-discretionary accruals; however, the Jones model is miss-specified because some important explanatory variables are missing. Regarding the Dechow and Dichev model (2002), she states that this model estimates the accruals as a whole that does not explain and shows how discretionary accruals may affect total accruals. In addition, McNichols (2002) tests both models and concludes that there are evidences of misspecification in both models. Based on the above discussion, McNichols (2002) incorporated the strengths of both models by developing a new model combining the Jones model and the Dechow, and Dichev model. However, there are a few limitations of the McNichols model. According to McNichols, his model is more effective and useful for understanding the relationship of earnings management and corporate governance and external audit attributes. However, Kothari (2005) states that although these models might produce good outcomes, however they all lack the inclusion of performance based independent variables in their models.

To overcome one of the major limitations of the McNichols model (2002), which is ignoring the firm performance in the accruals model, Kothari et al. (2005) adjusts the Jones and modified Jones models for firm performance and examines the effectiveness and reliability of each model. Their findings present the view that by including performance as an independent variable in the Jones and modified Jones model, the reliability of the discretionary accruals models is enhanced. Their findings can also be interpreted in a different way that earnings management varies with the performance of the firm.

Larker and Richardson (2007) disagree with Kothari et al. (2005) and recommend adjusting the model for cash flow from operation (CFO) and book value of the common stock (BV) and present an extended version of the modified Jones model called absolute abnormal accruals model (ABS_AA). The ABS_AA is the extension of the modified Jones model, which add the cash flow from operation (CFO) and book value of the common stock (BV) to the modified jones model to minimize the measurement error related to discretionary accruals.

Based on the above empirical findings, it can be stated that each model of earnings management carry pros and cons, in addition, there is no consensus among the researchers on the earnings management model, therefore, this research study aims to detect the earnings management by applying the principal component approach that uses the weighted average earnings management of the three models comprised of Jones model (1991), modified Jones model (1996) and Kothari model (2005).

### 2.2.4. Board Characteristic and Hypothesis development

#### 2.2.4.1. Board Independence (BI) and Earnings Management

One of the most important functions of the board is to reduce the manager's discretion and opportunism. The most important factor in achieving this goal is to establish an independent board. A board is more independent when the independent directors (outside directors) compared to inside directors are higher in proportion.

Empirical studies show an association between the fraction of independent directors and the board effectiveness in monitoring the earnings management. Dechow et al. (1996) looked at firms violating the GAAP and compared their board of independent directors to those who do not violate GAAP. The findings show that those companies, in which the percentage of independent directors is lower, violate GAAP by overstating their earnings. Dechow et al. (1996) states that there is a negative relationship between the percentage of the independent directors and the earnings management. Research on U.S. companies by Klein (2002) supports the findings of Dechow. Peasnell et al. (2000) conducts similar studies into studying the relationship between upwards earnings management and board independence in British firms and concludes similar finding by stating that there is a negative relationship between the earnings management and board independence. The findings of the Donnelly and Lynch (2002) show that a lower percentage of independent director's results in a higher level of earnings management in Mexico. Cornett, et al. (2009) states that enhancing the independence of the board can control the earnings management. In contrast, Wang (2007) states that the role of independent directors on the board of directors is not effective and efficient in China. In addition, according to Li and Ang (2000) and Sarkar et al. (2008), just increasing the number of independent directors on the board of directors does not affect the director's performance in monitoring management and especially in those cases which require the director's expertise. Considering the contradictory findings of scholars and unclear relationship of board independence with earnings management, this area requires further research. Therefore, the following (non-directional) hypothesis is presented.

*Hypothesis 1: Board Independence is associated with earnings management.*

#### 2.2.4.2. Board Size (BS) and Earnings Management

Literature relating to corporate governance is largely interested in understanding the role of the board size in the effectiveness of the BOD. Beasley (1996) state that the size of the board is an important factor for the effectiveness of the board. According to Park and Shin

(2004), there are three different views describing the impact of board size on earnings management. According to the first view, a large board is in a better position to control the management and managerial operations and therefore, when the board size is high, the earnings management is lower, suggesting that there is an inverse relationship between board size and earnings management (Ahmed et al. 2006). In addition, Xie et al. (2003) studied the relationship between the size of the board and earnings management by using a sample of US companies and present the view that a larger board is more effective in controlling practices such as earnings management. Defond et al. (1994) findings show that there is an inverse relationship between the board size and earnings management. Cheng and Warfield (2005) state that there is a negative relation between earnings management and board size in the USA. Fama et al. (1983) indicated a larger board size allows board members to communicate with each other in a more appropriate manner. As per the second view, the BOD should not be either too small or too large, an optimal size is between around five and nine members. Whereas Fama and Jensen (1983) state that the optimum size is between seven and eight members. According to the third view, small sized of boards are more effective in monitoring and controlling management and better represent the shareholders as compared to larger boards (Klein 2002; Ikechukwu 2013 and Peasnell et al. (2000). Most of the researchers' state that the earnings management is negatively associated with the size of the BOD. Therefore, the following (non-directional) hypothesis is proposed to be tested:

*Hypothesis 2: Board size is associated with earning management.*

### 2.2.4.3.    CEO Duality (CEOD) and Earnings Management

Another vital characteristic of the board is CEO duality. CEO duality refers to when the company CEO also holds the position of the board chairman; it means that one person holds two vital roles, which are management and control. Past literature suggests that the BOD is usually more effective when one person does not hold both positions, i.e., chairman of the BOD and CEO of the company's management. Jensen et al. (1976) states that the chairman of the board has a very important role in its responsibility for running board meetings, hiring or firing and compensation and evaluation of the CEO and management. Therefore, if the chairman of the board and the CEO are one person then it is a one-man show and there is a real risk that the board will not be independent from management. In addition, The Cadbury report (1992) emphasizes the importance of separating the role of CEO and chairman.  Furthermore, the agency theory also supports this view and discourages that one-person should hold both positions.

According to Jensen et al. (1976), earnings management practices are controlled by separating management from control decisions, this also helps in minimizing agency costs. Similarly, the Cadbury report (1992) also strongly advises separation of these two roles. Previous studies use the CEO duality as a determinant of earnings management. They state that the combination may affect the board effectiveness in monitoring management. For example, Dechow et al. (1996) find that firms are more likely to be subject to accounting enforcement actions by the SEC for alleged violations of GAAP if the CEO also serve as the chair of the board. Peasnell et al. (2000) investigates the impact of the separation between the functions of the CEO and that of the chairman of the board on the earnings management. They find a significant negative association between these two variables; therefore, this research study aims to test the following (non-directional) hypothesis.

*Hypothesis 3: CEO duality is associated with earnings management.*

### 2.2.4.4. Number of Board Meetings (NOBM) and Earnings Management

Another important characteristic is the board activity; this function is measured by the frequency of board meetings. The Cadbury report (1992) suggests that it is important for boards to meet between four to six times a year, this frequency is considered enough to allow for the progress of the firm to be sufficiently monitored and for important and key decisions to be taken. Concerning board effectiveness, board activity is an important function. The consensus is that the more active the board, the better for the shareholders' interests because the directors are compelled to invest greater energy and time into participation of the affairs of the firm (Conger et al. 1998). However, there is an opposing view that board meetings are not necessarily useful because routine tasks absorb much of the limited time that directors and CEO's spend together to set the agenda for board meetings, and therefore, the impact of higher number of board meetings positively affects the earnings management (Lorca, et al. 2011). Gulzar and Wang (2011) and Metawee (2013) find a significant positive relationship between the board activity and the profit management. Their results indicate that the board meetings more often help to increase the earnings management. According to Jensen (1993), the impact of the number of board meetings on the earnings management is positive. Jensen states that management of a company that holds board meeting too often waste too much time in the meeting instead of overseeing management's performance. Therefore, numbers of the meeting cannot reduce earning management, whereas higher number of meetings accelerate earnings management. Therefore, this study proposes the following (non-directional) hypothesis to be tested:

*Hypothesis 4: The number of board meetings is associated with the earnings management.*

### 2.2.4.5.    Gender Diversity (GENDIV) and Earnings Management

Gender diversity is a proxy for the presentation of women directors on the board. Gender diversity is estimated by taking the women as a percentage of board size (Lakhal, et al. 2015). Moradi et al. (2012) study the impact of gender diversity on the earnings management and conclude that the impact of gender diversity on earnings management is insignificant. Whereas, according to Man and Wong (2013), the impact of gender diversity on earnings management is positive. Moreover, they state that female directors are more risk averse towards earnings management. However, Lakhal et al. (2015) investigated the impact of gender diversity on earnings management and concludes that increasing the percentage of female directors on the board of directors helps in controlling earnings management and therefore, the relationship between the percentage of female directors and earnings management is negative. Based on the above discussion, the research study proposes the following (non-directional) hypothesis to be tested.

*Hypothesis 5: The gender diversity is associated with earnings management.*

### 2.2.5.   United Kingdom (UK) Capital Market

Most of the research explaining the relationship between board characteristics and earnings management is based on the United States (US). Research conducted on United Kingdom (UK) is relatively sparse. The few studies that examine this relationship in the UK context uses older data (Peasnell et al. 2000a and 2005). Therefore, they do not cover some corporate governance mechanisms, as these were not applicable during their sample time. In addition, this research also sheds light on the effectiveness of the recent corporate governance recommendations on enhancing financial reporting quality in the UK.

Moreover, Hofstede (2001) states that although UK and US are similar in many respects, there are many corporate governance elements that are different in both systems such as differences regarding the composition of boards, executive compensation levels and audit committee functions (Monks and Minow, 2004). Moreover, UK and US follow different accounting standards. UK prepares financial statements by using international financial reporting standards (IFRS) whereas the US uses generally accepted accounting principles (GAAP). Therefore, the extent of earnings management differs between these systems. Brown and Higgins (2001) said that the extent to which US managers manages earnings are

significantly higher than that by their counterparts in the UK. It is therefore useful to extend previous empirical evidence by reference and comparison to the UK context.

An important objective of this study is to understand the effectiveness of corporate governance in controlling accounting practices such as earnings management and in enhancing financial reporting quality and transparency, which ultimately allows investors to make well-informed decisions, moreover, enhances the confidence of the investors in the capital market. Therefore, selecting a country which adheres to the Anglo-Saxon model, which is a shareholder-oriented model adds significant value to this research (Luo, 2007). As compared to most of the European countries such as Germany, Finland and Netherland which follow the stakeholder-oriented model (Palmer, 2011), UK is an Anglo-Saxon country (Maassen, 2002). UK being part of the Anglo-Saxon countries and common law countries taking its foundation from shareholder-oriented model is shareholder-oriented model makes the selection of UK is the most appropriate sample for a research that addresses the effectiveness of the corporate governance in relation to the quality of financial reporting.

The focus of this research study is to understand the association between earnings management and corporate governance attributes in listed companies. Therefore, a strong equity market adds significant value to the research study. According to Nobes and Parker, (2008), in France and Italy, banks are the major sources of financing, therefore, in these countries, debt markets are very strong. Whereas in the UK, US and Germany, equity is the major source of financing, therefore, the equity markets are stronger here. According to Nobes and Parker, there are 4.7 million, 7.9 million, 18 million and 44.4 million listed companies in Italy, Germany, US and UK respectively. Moreover, the ratio of equity market capitalization to GDP of Italy, Germany, US and UK are 0.60, 0.56, 1.57 and 1.75 respectively, which suggests that based on the number of domestic listed companies and equity market capitalization to GDP ratio, UK is the strongest equity market. Therefore, this research contributes to the existing literature by empirically investigating the relationship of the corporate governance attributes with the earnings management in Britain's market and explains which corporate governance attributes positively or negatively affect the earnings management in UK.

2.3. Data and Methodology

This research study uses the quantitative approach and secondary data obtained from various sources. It is an explanatory research examining and investigating the relationship between dependent variables (earning management) and independent variables (board characteristics).

2.3.1.  Data Sample

The sample for this research study comprised of listed companies on FTSE-350 index. FTSE-350 index is selected because it includes, by capitalization, the largest 350 companies, which are primarily listed on the London stock exchange. Moreover, FTSE 350 account for a significant portion of the UK economic output. There are a number of reasons for focusing on large companies.

Firstly, some provisions of the corporate governance code do not apply to small companies that lay outside this index. Secondly, stakeholders are more concerned regarding large firms compared to small ones. Thirdly, it is important to mention here that the research study conducted in UK on the topic of board characteristics and its impact on the earnings management is minimal. Most of the research on the above-mentioned topic is conducted in US. Therefore, conducting a research study on this topic bridges the gap and make the UK market participants able to understand the importance and significance of board characteristics in relation to earnings management in the UK.

This sample period spans from 2007 to 2018 and uses the annual data because most of the companies are preparing and publishing their financial statements annually. This period is also important because a research study conducted from 2007 to 2018 enables the research study to understand the impact of board of director's characteristics on earnings management in the post-recession period.

Moreover, a criterion is set for the firms to be included in the sample study. The first criteria are that a firm must meet the criterion of being listed on the FTSE 350 within 2007-2018 and should not be delisted within the period. The second criterion is that a firm, which is included in the data sample, must publish their director's profile. Therefore, the sample size that covers the span of this study and satisfies the criteria of having information on all the variables at the time of conducting this research are included in the data sample.

Those companies are dropped from the sample size whose board of director's information are not available or do not provide complete financial statements within the period to get the information related to accounting figures required for computation of discretionary accruals, ROA and firm size. The secondary sources used for data collection comprised of listed companies' annual reports and Bloomberg.

### 2.3.2. Measuring Earnings management

Earnings management is a proxy for discretionary accruals that is estimated by applying three models including Jones model (JM), modified Jones model (MJM) and Kothari model (KM). Finally, earnings management is measured based on the results of the above three models by applying the first principal component function (the detailed explanation of the earnings management measurement is provided in appendix 1).

$$EM_{i,t} = (DAJ_{i,t} * 0.577351) + (DAMJ_{i,t} * 0.577354) + (DAK_{i,t} * 0.577354) \quad (2.12)$$

### 2.3.3. Independent variables

#### 2.3.3.1. Board Independence (BI)

One of the most important functions of the board is to reduce as much as possible manager's discretion and opportunism. The most important factor in achieving this goal is to establish an independent board. A board is independent when the independent directors (outside directors) are higher in proportion as compared to inside directors.

Board Independence (BI)

$$BI = Number\ of\ Independent\ Directors / Board\ Size$$

#### 2.3.3.2. Board Size (BS)

Literature relating to corporate governance is largely interested in understanding the role of the board size in the effectiveness of the BOD. Beasley (1996) state that the size of the board is an important factor for the effectiveness of the board. The logarithm of the board size is used to estimate the board size.

Board Size (BS)

$$BS = Ln\ (Number\ of\ directors\ on\ the\ board)$$

### 2.3.3.3. CEO Duality (CEOD)

CEO duality is a dummy variable, which is one (1) if the CEO and board chairman are the same person, otherwise it is zero if the roles of the CEO and board Chairman are holding by two different persons.

1     =      CEO and board chairman are the same person

0     =      CEO and board chairman positions are held by different persons

### 2.3.3.4. Number of board meetings in a year (NOBM)

Board activity is the number of board meetings that take place in a year. The logarithm of the board activity is used as a proxy for the number of board meetings.

<div align="center">

Board activity (NOBM)

*NOBM = Ln (Number of board meetings during a year)*

</div>

### 2.3.3.5. Gender diversity (GENDIV)

Gender diversity refers to the percentage of women directors on the board of directors. Gender diversity is estimated by taking the number of women directors as a proportion of the board size.

<div align="center">

%Gender diversity (GENDIV)

*GENDIV = Number of Women directors / Board Size*

</div>

All variables are defined in Table 2.1.

<div align="center">

[TABLE 2.1]

</div>

### 2.3.4. Control Variables

### 2.3.4.1. Leverage (LEV)

DeFond and Jiambalvo (1994) and Sweeney (1994) report that managers use discretionary accruals to satisfy debt covenant requirements. Because highly leveraged firms are more likely to increase earnings when the management and executive's incentives are high. Trueman and Titman (1986) argue that managing earnings enables managers to reduce estimates of various claimants of the firm about the volatility of its earnings process and so lowers their assessment of the probability of bankruptcy. Consequently, this provides an opportunity to borrow at lower interest rates and decreases cost of capital. Consistent with debt hypothesis, it is believed that managers in more leveraged firms are more likely to adopt aggressive earnings management techniques to prevent violation of debt covenants (Watts and Zeimmerman, 1986). Firm financial leverage, measured as the ratio of debt to assets, is

included, as a proxy for risk, because mangers are more likely to exercise their accounting discretion when they are closer to default on debt covenants (Press and Weintrop, 1990).

<div align="center">Leverage (LEV)</div>

$$LEV = Total\ Debt\ /\ Total\ Assets$$

### 2.3.4.2. Firm Size (FS)

Firm size is used in most earnings' management studies as a control variable. Earlier studies show that firm size impact on earnings management is negative (Dechow, et al. 1995; Defond and Jiambalvo 1994). According to past literature, smaller companies are subject to less control from authority and therefore, engage in earnings management activities but some argue that earnings management activities increase as the size of a company increases (Guthrie and Sokolowsky, 2010 and Badolato et al. 2014). The empirical findings of the past research state that the relationship of a firm's size with earnings management is positive. They claim that large firms face greater scrutiny from investors, and thus are more likely to manage earnings to satisfy their forecast (Gonzalez and Meca, 2014, and Watts and Zimmerman, 1978). Whereas Lee and Vetter (2015) state that the impact of a firm's size on earnings management is not significant. However, most of the scholars and researchers hold the opinion that the firm size impact on earnings management is significant and there is a relationship between the firm size and earnings management, therefore, this research study is including the firm size as a control variable.

<div align="center">Firm Size (FS)</div>

$$FS = LN(FS_{i,t})$$

### 2.3.4.3. Return on Assets (ROA)

According to Klein (2002), Bartov, Givoly and Hayn (2002) and Ali and Zheng (2015), ROA is a control variable for earnings management. ROA gives an idea as to how efficient management is at using its assets to generate earnings. Dechow et al. (1995) suggest that firm performance is supposed to have a positive association with discretionary accruals. Without controlling for ROA, discretionary accruals may reflect changes in the sample firm performance. Dechow et al. (1995) finds that ROA has a significant positive relationship with discretionary accruals.

<div align="center">Return on Assets</div>

$$ROA_{t-1} = {Operating\ Profit_{t-1}}/{Total\ Assets_{t-1}}$$

### 2.3.4.4. Audit Quality (AQ)

Audit quality is measured by taking the natural log of the audit fees that is paid by the company to the external audit company. Higher audit fees paid suggests that the quality of the audit is high, and the company hired good audit companies for auditing their financial reporting. Theoretically, higher audit companies are in a better position to control unethical accounting practices and therefore, improves the quality of financial reporting (Becker, Defond, Jiambalvo, & Subramanyam, 1998; Zang, 2012).

### 2.3.4.5. Sales growth ratio (SG)

Sales growth ratio is added in the empirical model as a control variable. Firms with higher sales growth have more growth prospects, therefore, a possibility arises that these firms might get engaged in earnings management to meet the stakeholder's expectations (Hribar & Collins, 2002).

$$Sales\ growth\ ratios\ _{i,t} = {(Sales_{i,t} -\ Sales_{i,t-1})}\Big/{Sales_{i,t-1}}$$

### 2.3.4.6. Change in operating Cash Flow (OCF)

According to (Becker et al.1998), the impact of the operating cash flow on earnings management is negative. They state that the management engage in earnings management when the operating cash flow is lower. Operating cash flows are estimated by taking the natural log of the operating cash flows.

$$Operating\ Cash\ flow_{i,t} = LN\ (\Delta Operating\ Cash\ flow_{i,t}) / Operaitng\ Cash\ flow_{i,t-1}$$

### 2.3.4.7. Loss (LOSS)

Loss is a dummy variable that takes the value of 1 if the ROA is negative and 0 otherwise. Those companies that are making losses are highly likely to engage in earnings management and manipulate the financial information. Therefore, LOSS is included in the empirical regression model as a control variable (Burgstahler and Dichev, 1997).

$$1 = ROA\ is\ negative$$

$$0 = ROA\ is\ zero\ or\ positive$$

TOBINQ is initially included in the regression model as the control variable, however, the correlation between ROA and TOBINQ is significantly high approximately 0.79. One of the reasons for this could be that both variables i.e., TOBINQ and ROA are the firm's performance measures, therefore, the correlation is substantially high. High correlation creates

the problem of multicollinearity in the regression model. Therefore, to address the issue, variance inflation factor (VIF) test is conducted (Neter et al. 1996). According to Akinwande et al. (2015), if the VIF is equal to 1, there is no multicollinearity among the regressors, however, if the VIF is greater than 1 and is between 1 to 5, the regressors may be correlated. According to the VIF test, the VIF for TOBINQ and ROA are 3.50 and 3.19 respectively which indicates the problem of multicollinearity between the TOBINQ and ROA. To resolve the issue of multicollinearity, one of the remedies is to remove the highly correlated variable (O'Connell and Ann, 2005). Consistent with this, TOBINQ is removed from the regression model to rectify the regression model for multicollinearity and enhance the validity and efficiency of the model.

### 2.3.5. Real Earnings Management

To examine the consistency of our results, I run robustness tests to test the impact of the board characteristics on real earnings management. Dechow and Skinner (2000) said that real earnings management takes place once the management build intentionally operational selections, which as a result changes the earnings as per the desire of the management, for example, the management may reduce the price by offering higher discounts or offering easy credit terms to enhance the revenue. In addition, according to Zang (2012), management sometimes delay maintenance expenditures to increase the earnings in the current year. Cohen and Zarowin (2010) said that real earnings management do not exploit the accounting standards as discretionary accruals, however, the management takes purposeful actions to deviate from the traditional business practices and manipulate the earnings.

To measure the real earnings management, the Roychowdhury (2006) methodology is followed. In this method, the real earnings management are measured in three steps. In the first step, the normal level of production costs is estimated by applying the Roychowdhury (2006) methodology which is as follows:

$$PROD_{i,t}/TA_{i,t-1} = \beta_0 + \beta_1(1/TA_{i,t-1}) + \beta_2(Rev_{i,t}/TA_{it-1}) + \beta_3(\Delta Rev_{i,t}/TA_{it-1}) +$$
$$\beta_4(\Delta Rev_{i,t-1}/TA_{it-1}) + \varepsilon_{i,t} \qquad (2.13)$$

*Where:*

$PROD_{i,t}$      The sum of the cost of goods sold in year $t$ and the change in inventory from $t-1$ $to$ $t$ for firm $i$

$TA_{i,t-1}$      Total assets for firm $i$ in the previous year

$Rev_{i,t}$      Sales Revenue for firm $i$ in year $t$

| | |
|---|---|
| $\Delta Rev_{i,t}$ | Change in sales revenue for firm $i$ in year $t$ |
| $\Delta Rev_{i,t-1}$ | Change in Sales revenue for firm $i$ in year $t-1$ |
| $\beta_1$ to $\beta_4$ | Coefficient values for explanatory variables |
| $\beta_0$ | Intercept or Constant |
| $\varepsilon_{i,t}$ | Residual term which represents the abnormal level of production costs or more specifically the real earnings management component of the production cost $REM\_PROD_{i,t}$ |

In equation 2.13, residuals from the model represent the abnormal level of production costs (REM_$PROD_{i,t}$), which is the first component of the real earnings management. Higher residual would suggest that there is higher inventory overproduction, which as a result decreases the cost of goods sold and eventually causes higher reported earnings. In the second step, equation 2.14 is applied by using the normal level of discretionary expenditures to estimate the residuals from the model which represent the abnormal level of discretionary costs or more specifically the real earnings management component of the discretionary cost ($REM\_DISX_{i,t}$). The abnormal level of discretionary costs is then multiplied by minus one because, higher values of the abnormal level of discretionary costs show higher amounts discretionary expenditures cut by firms to increase reported earnings.

$$DISX_{i,t}/TA_{i,t-1} = \beta_0 + \beta_1(1/TA_{i,t-1}) + \beta_2(Rev_{i,t-1}/TA_{it-1}) + \varepsilon_{i,t} \qquad (2.14)$$

*Where:*

| | |
|---|---|
| $DISX_{i,t}$ | The sum of R&D, advertising, and SG&A expenditures in year $t$ |
| $TA_{i,t-1}$ | Total assets for firm $i$ in the year $t-1$ |
| $Rev_{i,t-1}$ | Sales Revenue for firm $i$ in year $t-1$ |
| $\beta_1$ to $\beta_2$ | Coefficient values for explanatory variables |
| $\beta_0$ | Intercept or Constant |
| $\varepsilon_{i,t}$ | Residual term which represents the abnormal level of discretionary costs or more specifically the real earnings management component of the discretionary cost ($REM\_DISX_{i,t}$) |

Finally, in the third step, the real earnings management are estimated by aggregating the two real activities manipulation measures into one proxy, REM, by taking the sum of the abnormal level of production costs and abnormal level of discretionary costs.

$$REM_{i,t} = REM\_PROD_{i,t} + REM\_DISX_{i,t} \qquad (2.15)$$

## 2.4. Results

This section of the research study provides analysis of the relationship between the board characteristics and earnings management. The findings and results are presented based on the results of four empirical regression models that comprise of Jones model, modified Jones model, Kothari model and earnings management model.

### 2.4.1. Descriptive Statistics

Table 2.2 presents the results of the descriptive statistics for the board characteristics, earnings management and control variables. The discretionary accruals mean is approximately zero and standard deviation is 0.89, from which it can be inferred that the discretionary accruals are highly diverse among companies. In contrast to earnings management, the standard deviation for board size, board independence and number of board meetings is lower, which suggests, that the board size, number of independent directors on the board and the frequency of the board meetings data is more centred and concentrated and do not change substantially from company to company. Women representation on the board is a about 14% on average. The average ROA is approximately 7% and the standard deviation is 13%, from which it can be inferred that that on average, the earning's risk is higher and there is higher variation in earnings in FTSE 350 companies.

[TABLE 2.2]

### 2.4.2. Correlation

It can be observed from the correlation matrix (Table 2.3) that the relationship of the earnings, management with board size, board independence, CEO duality and number of board meetings is positive, which suggests that companies with larger board size, higher board independence, both position i.e. board chairman and CEO are holding by one person and those boards in the members meet more frequently are highly likely to engage in earnings management and encourages earnings management practices. In contrast, the correlation of the gender diversity with the earnings management is negative, from which it can be inferred that the presence of the female directors on the board helps in controlling earnings management practices. Moreover, earnings management is positively correlated with financial leverage and firm size, which suggests that large companies heavily financed with debt are more likely to engage in earnings management.

[TABLE 2.3]

### 2.4.3. Empirical Model

Applying three (3) regression models that comprised of Jones model (1991), modified Jones model (1996) and Kothari model (2005) tests the impact of board characteristics on earnings management. Finally, earnings management are estimated by applying the first principal component approach, which is estimating the discretionary accruals by taking weighted average of the discretionary accruals of the three models that comprised of Jones model (1991), modified Jones model (1996) and Kothari model (2005) and tested the impact of board characteristics on earnings management by applying the following empirical model.

$$EM_{i,t} = \beta_0 + \beta_1 BS_{i,t-1} + \beta_2 BI_{i,t-1} + \beta_3 CEOD_{i,t-1} + \beta_4 NOBM_{i,t-1} + \beta_5 GENDIV_{i,t-1} +$$

$$\lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} + \lambda_7 LOSS_{i,t-1} +$$

$$\sum \lambda_j YD_j + \varepsilon_{i,t}$$

Where:

| | |
|---|---|
| $EM_{i,t}$ | Earnings management for firm $i$ in year $t$ |
| $BS_{i,t-1}$ | Board Size for firm $i$ in the previous year |
| $BI_{i,t-1}$ | Board Independence for firm $i$ in the previous year |
| $CEOD_{i,t-1}$ | CEO Duality for firm $i$ in the previous year |
| $NOBM_{i,t-1}$ | Number of Board Meeting for firm $i$ in the previous year |
| $GENDIV_{i,t-1}$ | Gender Diversity for firm $i$ in the previous year |
| $LEV_{i,t-1}$ | Leverage for firm $i$ in the previous year |
| $FS_{i,t-1}$ | Firm Size for firm $i$ in the previous year |
| $ROA_{i,t-1}$ | Return on asset firm $i$ in the previous year |
| $AQ_{i,t-1}$ | Audit Quality for firm $i$ in the previous year |
| $SG_{i,t-1}$ | Sales growth for firm $i$ in the current year |
| $\Delta OCF_{i,t}$ | Change in Operating Cash flow for firm $i$ in year $t$ |
| $LOSS_{i,t-1}$ | Dummy variable which takes the value of 1 if ROA is negative and 0 otherwise firm $i$ in the previous year |
| $\sum \lambda_j YD_j$ | Year Dummy fixed effect Variable from 2008 to 2018 represents the number of years |
| $\beta_0$ | Constant or intercept |
| $\beta_1$ To $\beta_5$ | Coefficient for independent variables |

$\lambda_1$ To $\lambda_8$            Coefficient values for control variables

$\varepsilon_{i,t}$            Residual or error term

All variables are defined in Table 2.1.

### 2.4.4. Regression Analysis – Discretionary Accruals

The coefficient value of the board size based on the results of Jones model, modified Jones model, Kothari model and earnings management model are negative and statistically significant at 1% of significance level, which suggests that there is a negative association between the board size and earnings management. The results are consistent with the previous empirical findings of the Ahmed et al. (2006), Fama et al. (1983), Defond et al. (1994), Cheng and Warfield (2005) and Xie et al. (2003) however, based on the results of all the four models, the impact is insignificant.

The impact of the board independence on earnings management is negative and statistically significant at 1% based on the results of Jones model, modified Jones model, Kothari model and earnings management model. Based on the findings, it can be inferred boards with higher percentage of independent directors are more effective in controlling earnings management practices. This is consistent with previous empirical findings of the Dechow et al. (1996) Peasnell et al. (2000), Donnelly and Lynch, (2002) and Cornett et al. (2009), which study the impact of board independence on earnings management.

The CEO duality coefficient value is positive and statistically significant at 1% based on the results of Jones model, modified Jones model, Kothari model and earnings management model. The results suggest that when both positions i.e., CEO and board chairman is held by one person, the board of directors' role in controlling earnings management is ineffective. The results are consistent with the previous empirical findings of the Jensen et al. (1976) and Dechow et al. (1996).

The results show that the NOBM and earnings management are positively related based on the results of Jones model, modified Jones model, Kothari model and earnings management model, moreover, based on the results of all the four regression models, the impact is statistically significant at 1% of significance level. Based on the results, it can be inferred that when the board meets for a higher number of times, the board loses its control over unnecessary practices such as earnings management to control. This is consistent with the previous empirical findings of the Jensen (1993), Lorca, et al. (2011), Gulzar and Wang (2011) and Metawee (2013), which study the relationship of number of board meetings and earnings management.

Based on the findings of the Jones model, modified Jones model, Kothari model and earnings management model, there is a negative association between gender diversity and earnings management, moreover, the impact is statistically significant at 1% of significance level. The results and findings suggest that when the percentage of women is higher on the board, the board role become more effective in terms of controlling earnings management. This is consistent with the previous empirical findings of the Lakhal, et al. (2015).

[TABLE 2.4]

### 2.4.5. Robustness test – Real Earnings Management

To examine the consistency of our results, I run the robustness tests by testing the impact of the board characteristics on real earnings management. The real earnings management are measured by applying the Roychowdhury (2006) model.

$$REM_{i,t} = \beta_0 + \beta_1 BS_{i,t-1} + \beta_2 BI_{i,t-1} + \beta_3 CEOD_{i,t-1} + \beta_4 NOBM_{i,t-1} + \beta_5 GENDIV_{i,t-1} +$$
$$\lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} + \lambda_7 LOSS_{i,t-1} +$$
$$\sum \lambda_j YD_j + \varepsilon_{i,t} \qquad (2.14)$$

Where:

| | |
|---|---|
| $REM_{i,t}$ | Real Earnings management for firm $i$ in year $t$ |
| $BS_{i,t-1}$ | Board Size for firm $i$ in the previous year |
| $BI_{i,t-1}$ | Board Independence for firm $i$ in the previous year |
| $CEOD_{i,t-1}$ | CEO Duality for firm $i$ in the previous year |
| $NOBM_{i,t-1}$ | Number of Board Meeting for firm $i$ in the previous year |
| $GENDIV_{i,t-1}$ | Gender Diversity for firm $i$ in the previous year |
| $LEV_{i,t-1}$ | Leverage for firm $i$ in the previous year |
| $FS_{i,t-1}$ | Firm Size for firm $i$ in the previous year |
| $ROA_{i,t-1}$ | Return on asset firm $i$ in the previous year |
| $AQ_{i,t-1}$ | Audit Quality for firm $i$ in the previous year |
| $SG_{i,t-1}$ | Sales growth for firm $i$ in the current year |
| $OCF_{i,t}$ | Operating Cash Flow for firm $i$ in year $t$ |
| $LOSS_{i,t-1}$ | Dummy variable which takes the value of 1 if ROA is negative and 0 otherwise firm $i$ in the previous year |
| $\sum \lambda_j YD_j$ | Year Dummy fixed effect Variable from 2008 to 2018 represent the number of years |

| $\beta_0$ | Constant or intercept |
|---|---|
| $\beta_1$ To $\beta_5$ | Coefficient for independent variables |
| $\lambda_1$ To $\lambda_8$ | Coefficient values for control variables |
| $\varepsilon_{i,t}$ | Residual or error term |

All variables are defined in Table 2.1.

The results and findings of the real earnings management model show that there is a positive association between the board size and real earnings management. In addition, the result is statistically significant at 5% of significance level, which suggests that the larger the board size, the more ineffective the board is in controlling real earnings management. The board independence is positively related to real earnings management, moreover, the result is statistically significant at 1%. Based on the findings, it can be inferred that boards with higher percentage of independent directors are not effective in controlling real earnings management practices. There is a positive association between the CEO duality and real earnings management. The association is statistically significant at 1%. The results suggest that when both positions i.e., CEO and board chairman is held by one person, the board of directors' role in controlling real earnings management is ineffective. The results show that the NOBM and real earnings management are negatively related, however, the result is statistically insignificant. Based on the results, it can be stated that a board role becomes more effective in controlling real earnings management when the board members meet more frequently. Based on the real earnings management model, there is a positive association between gender diversity and earnings management, however, the impact is statistically insignificant, which suggests that higher percentage of women makes the board ineffective in controlling real earnings management.

[TABLE 2.5]

2.5. Conclusion

The prime objective of this study was to investigate and study the impact of board characteristics on the earnings management. Board characteristics in this research study comprised of five characteristics that includes board independence, board size, CEO duality, number of board meetings and gender diversity. Earnings management is predicted by applying four empirical regression models that comprised of Jones model (1991), modified Jones model (1996) and Kothari model (2005) and principal component earnings management model. To test the impact of the board characteristics on earnings management, five (5) hypotheses are developed.

The association of board size and board independence with earnings management is negative, which suggests that larger boards with higher percentage of independent directors on the board are more effective in controlling earnings management practices. CEO duality and earnings management are positively related. The number of board meetings is also positively associated with earnings management. Based on the results, it can be inferred that when the board meets frequency, the board loses its control over unnecessary practices such as earnings management to control. There is a negative association between gender diversity and earnings management, from which it can be inferred that when the percentage of women on the board is higher, the board role become more effective in terms of controlling earnings management. The collective impact of all board characteristics on earnings management is statistically significant, which suggests that there is statistically significantly association between earnings management and board characteristics in FTSE 350 listed companies. In comparison to the results of the discretionary accruals models, the results of the real earnings management model show that board size, board independence, CEO duality and gender diversity are positively associated with real earnings management, however, the number of audit committee meetings are negatively related to real earnings management.

3. Chapter Three – Earnings Management and Audit Committee

3.1. Introduction

In corporate governance, the transparency and reliability of the financial information through reporting practices carries significant importance as it allows the stakeholders to make well-informed decisions, draw valid conclusions and protect their interests (Tricker, 2000; Cadbury, 2000). To improve the quality of corporate financial reporting and control unethical accounting practices such as earnings management, the role of the audit committee is integral and significantly important (Blue Ribbon Committee, 1999). The main purpose of the audit committee is to oversee and supervise the corporate financial reporting practices and improve the quality of financial reporting by closely monitoring and overseeing the accounting practices (Klein, 2002).

Earnings management is the use of management's discretion provided by the accounting standards and practices to increase, decrease or stabilize the reported earnings for various reasons and purposes, such as to convey the desired message to the market, beating the financial analysts' expectations, to avoid takeover attempts and to increase the managers compensation (Brealey et al. 2011; Drever et al. 2007). According to McKee (2005), earnings management is a technique applied by management to manipulate financial information to communicate the desired message to the market.

The primary concern is that despite the presence of audit committees, a number of cases of earnings management and financial statements manipulation have been reported. This suggests that just having an audit committee is not sufficient by itself to control and mitigate the tendencies for earnings management and the financial statement manipulation by management. Instead, the most important element is to understand what the vital attributes of an audit committee are which can help mitigate and control undesired accounting practices such as earnings management. Therefore, the research in recent times is not just concerned about the formation of an audit committee, whereas the concern and emphasis are on the attributes and effectiveness of an audit committee in improving the quality of financial information by closely monitoring and enhancing the stakeholder's confidence in financial statements. Therefore, the questions that arise are:

- Is the audit committee role effective in improving the quality of financial information by closely monitoring the financial reporting and management?
- What are the significant attributes and characteristics of an audit committee regarding?
  - Those which are helpful in controlling unethical accounting practices

- o Those which allow improvement of the quality of financial reporting and
- o Those, which are supportive in enhancing the stakeholder's confidence in financial statements.

Klein (2002) states that to better evaluate the effectiveness of the audit committee either the audit committee is effective in accomplishing its objectives, it is highly important to decompose the characteristics and attributes of the audit committee and evaluate its role in mitigating or controlling unethical accounting practices. According to Klein, the most prominent and important attributes of the audit committee which are highly associated with the effectiveness of financial reporting comprises of audit committee size, audit committee independence, audit committee members holding accounting and finance degrees, knowledge and experience, and the frequency of meetings in a year. In addition, Goodwin (2003) states that the audit committee is more effective in enhancing the quality of financial reporting when the audit committee members carry expertise in accounting and finance background and concludes that independent non-executive directors with financial and accounting expertise adds more value to the effectiveness of the audit committee.

However, recently corporate collapses and financial scandals brought the role of the audit committee under harsh criticism. One of the reasons for financial scandals and the corporate collapse of some of the multi-national corporations are the unethical accounting practices such as earnings management (Drever et al. 2007). Another major and perhaps the most prominent reason the financial scandals emerged is the ineffective role of the audit committee in monitoring and controlling the opportunistic earnings management practice. Therefore, this research study aims to decompose the features and characteristics of the audit committee, research its impact on the earnings management, and understand that up to what extent, the role of an audit committee is effective in monitoring and controlling the earnings management and in improving the quality of financial information.

This study period starts from 2007 to 2018 and uses the annual data. The reason, annual data is applied is most of the companies prepare and publish their financial statements annually. The chosen period is post-financial crisis; it, therefore, carries significant importance as this research study explains the role of the audit committee in controlling unethical accounting practices in post-financial crisis period. In addition, the chosen period provides a window to test the Smith Report's (2003) recommendations for audit committees following the issue of the UK Code and to understand the extent to which the recommended characteristics of the audit committee can help the companies improve the quality of financial reporting. The data for earnings management and audit committee attributes features is retrieved from Bloomberg.

Based on the literature, four hypotheses are developed. The null hypotheses state that the impact of the audit committee attributes on the earnings management is insignificant, whereas alternative hypotheses state that the impact of the audit committee attributes on the earnings management is significant. The attributes of audit committee that are examined in this research study comprise of audit committee size (ACS), audit committee independence (ACI), members on the audit committee with a background in accounting or finance or both (ACFEX) and the frequency of the audit committee meetings during a year (NACM). In addition, seven control variables are included in the empirical model that includes leverage (LEV), return on assets (ROA), firm size (FS), audit quality (AQ), sales growth ratio (SG), change in operating cash flow ($\Delta OCF$) and loss (LOSS).

The empirical results and findings of this research study based on the four discretionary accrual models that include Jones model (1991), modified Jones model (Dechow et al. 1996), Kothari model (2005) and earnings management model suggests that the impact of the ACS on the earnings management is negative, from which it can be inferred that those companies in FTSE 350, having large size are more effective in controlling earnings management. The impact of the ACI on the earnings management is positive, from which, it can be inferred that the audit committee role is inefficient in controlling earnings management, when the proportion of independent directors on the audit committee is higher. The impact of the ACFXP on the earnings management is negative, suggesting that those audit committees in which, the proportion of the audit committee member's financial expertise in accounting or finance is higher, are more effective in controlling earnings management practices. The impact of the NACM on the earnings management is negative, from which, it can be concluded that the audit committee is more effective in controlling earnings management, when the audit committee members meet more frequently. In a nutshell, the impact of the ACI on the earnings management is positive, whereas, the impact of the ACS, ACFXP and NACM on the earnings management is negative.

## 3.2. Literature Review

### 3.2.1. Introduction

This chapter presents the theoretical, empirical and academic view on the relationship between the earnings management and audit committee attributes. Finally, based on the analytical analysis of the literature and empirical results, the research hypotheses are developed.

### 3.2.2. Audit committee and UK Corporate Governance Code

Evidence from prior research studies on audit committees suggest that effective monitoring and overseeing of the audit committee plays a significant role in corporate governance (Smith Report, 2003), and results in improving the quality of financial reporting (Pomeroy and Thornton, 2008; Marra et al. 2011; Beasley et al. 2009). The quality of financial reporting is improved through strengthening governance, promoting conservatism and controlling or reducing opportunistic earnings management (Xie et al. 2003; Bedard et al. 2004; Leventis and Dimitropoulos, 2012). In addition, the audit committee role is significant in developing a strong internal control system (Chambers and Weight, 2008), oversight of risk management, the extent of voluntary disclosure (Ho and Wong, 2001) and ensuring the regulatory compliance (Barako et al. 2006), which results in lower error and higher financial reporting quality.

The role of the audit committee is significant for corporate governance; however, it is important to understand the possible characteristics of an ideal audit committee. The UK Corporate Governance Code (Financial Reporting Council, Guidance on Audit Committees, 2012) provides discretion as to their adoption; however, it recommends the ideal characteristics of the audit committee. According to the UK Corporate Governance Code, it is recommended that there should be at least three independent non-executive directors in the audit committee. In addition, there should be at least one member on the audit committee who holds financial experience, which is both recent and relevant. Furthermore, the number of audit committee meetings should be at least three times in a year. In addition, UK Corporate Governance Code states that firms are required to comply with or explain non-compliance (Ghafran and O'Sullivan, 2013). Rules and regulations that are concerned with audit committee scrutiny of disclosures that also includes the risk management processes are set out in only general terms of clarity and completeness (FRC, 2012; KPMG, 2013).

### 3.2.3. Theoretical framework

#### 3.2.3.1. Agency theory

Theoretical support for the formation and setting up of an audit committee can be found in agency theory. According to the agency theory, firms are financed by shareholders but are controlled by the management. Therefore, it can be stated that management works as agents of the shareholders, with shareholders acting as principals. As a result of separation between ownership and management, shareholders cannot monitor the management directly (Jensen and Meckling 1976). At the same time, as shareholders hold position as investors of the company, they are primarily concerned with obtaining maximum utility from their investments by ensuring that the management works in the best interest of the shareholders (Kalbers and Fogarty 1998). In addition, assuming economic self-interest, the possibility arises that instead the management works in the best interest of the shareholders; the agents work towards achieving their personal desired objectives, and therefore, engage in opportunistic actions. Therefore, the corporate governance system installed in the company's structure to oversee the actions of the management, ensure that the management is efficiently utilising the shareholders' funds and working in the best interest of the shareholders. In addition, to make corporate governance more effective, sub-committees that includes audit committee, nomination committee and compensation committees are established to better monitor and oversee the management activities and ensure that the management is working in the best interest of the shareholders. These corporate governance control systems aim to either align managers' and shareholders' incentives or to limit managers' opportunistic activities (Dellaportas et al. 2005). One of the examples of these corporate governance controls is the audit committee. Kalbers and Fogarty (1998) state that the audit committee is a vital component of the decision control system allowing board of directors to monitor financial reporting internally.

Bradbury (1990) states that the quality of information flowing between the stakeholders and management can be improved by employing an audit committee, whereas, in addition an audit committee can oversee the financial reporting internally, which can minimize the agency costs. In a nutshell, employing the agency theoretical framework, one can propose that the attributes of the audit committee can substantially limit accrual-based distortion of financial reporting and accounting practices such as earnings management and thus improves the quality of financial reporting (Marra et al. 2011).

### 3.2.3.2.    Earnings management

According to Bergstresser and Philippon (2006) and Kinnunen and Koskeka (2003), earnings management is the technique applied by management to manipulate the financial information by exploiting the managerial discretion provided by the accounting standards and conveys the desired message instead of the actual picture of the company through manipulated financial information to the stakeholders. In addition, Healy and Wahlen, (1999) states that the management engage in earnings management when the management is unable to meet investor's expectations during periods of volatile earnings. Moreover, they state that although, the management do not violate the accounting standards as management exploits managerial discretion, however, the standards are used in such a manner which helps management to present the financial information in a way the management wants to show to the stakeholders instead of the actual performance of the company. Furthermore, Cheng and Warfield (2010) conclude from their research on earnings management that earnings management is the opportunistic behaviour of the managers, in which, the managers manipulate the financial information to maximize their compensation. According to Iturriaga and Hoffmann (2005), earning management arises as a result of agency problems. Managers are expected to efficiently generate and invest shareholders' funds, effectively manage the company's operations and meet investor's expectation. However, there is a possibility that the management performance is not as per the investor's expectation, and to conceal the inefficiency and poor performance, the managers engage in earnings management. Additionally, Kinnunen and Koskeka (2003) state that it can be inferred from the most recent accounting scandals that the managers sometimes mislead the stakeholders on the economic performance of their company by producing financial statements that provide manipulated financial information.

In summary, earnings management is the manipulation of financial information by exploitation of the discretion in accounting policies provided by accounting standards with the intention to mislead the stakeholders and communicate the desired message to the stakeholders. In addition, as a result of earnings management, Dechow et al. (2010) state that the practices of earnings management destroy the quality of earnings and financial information, and consequently the quality of financial reporting will lose out to illusion.

### 3.2.3.3.    Earnings management and audit committee

The collapse of some of the multi-national corporations, the recent financial scandals and the financial crisis can be as a result of the unethical accounting practices and earning

management, therefore, there is ever increasing need to look up indicators of earnings reliability (DeZoort et al. 2002).

Accounting earnings of any given firm are important to all stakeholders as the entire faith in the stakeholders and consequently of its firm rely on it (Germon and Meek, 2001). Importantly, from the accounting perspective, the final product of the entire accounting process is the accounting earning (Brealey et al. 2001). Therefore, earnings and relevance of earnings is the major concern for researchers and scholars to study and research if earnings continue to maintain its relevance in the decision making of various stakeholders. In addition, Bugshan (2005) states that the relevance of accounting earnings and its reliability is reduced by unethical accounting practices such as earnings management. Therefore, to maintain the relevance of accounting earnings and enhance the reliability of earnings, there is hence the need to devise ways such as employing a strong corporate governance system through board of directors and board committees, which can be applied in relation to enhance the practices of reporting quality earnings.

Among all the board committees, the audit committee's role is significant for enhancing the relevance and reliability of financial information and earnings by closely supervising and monitoring the financial reporting process and ensuring the compliance of accounting standards and principles (Ramsay, 2001). In addition, audit committees oversee manager's tendencies to manipulate earnings. However, as a result of the most recent financial scandals such as ENRON, WorldCom, Global Crossing and Rank Xerox (Demaki, 2011; Norwani, et al. 2011), the regulators questioned the role and effectiveness of audit committees in ensuring that financial statements are fairly stated and are without earning management. A number of studies are conducted to understand the effectiveness and role of audit committee for enhancing the reliability and transparency of corporate financial reporting, however, the results are mixed and contradictory.

### 3.2.4. Earnings Management, Audit Committee and Hypothesis Development

#### 3.2.4.1. Audit committee size (ACS) and earnings management

Audit committee size (ACS) indicates the number of directors appointed as members of the audit committee (AC). According to Financial Reporting Council (FRC, 2016), the audit committee size should be at least three members, however, in case of smaller companies, its size should be at least two members consisting of independent non-executive directors. Menon and Williams (1994) state that an AC comprised of less than three members is ineffective in

performing their job. In addition, Abbott et al. (2004) and Xie et al. (2003) state that the minimum size of an AC should be between three to four members to better perform their duties and to control undesired accounting practices in the organization. The findings and results in the literature on the relationship between the earnings management and audit committee are mixed and contradictory. According to Vafeas (2005), a too small board is ineffective to exhaust and discharge their duties efficiently and therefore, the AC ability to monitor the financial reporting and internal control system diminishes. However, Jensen (1993) disagrees with Vafeas and states that too large size of the AC has an adverse impact on the performance of the AC, because the coordination and process problems intensify and therefore, AC performance results in weak monitoring. Yang and Krishnan (2005), Lin et al. (2006), Baxter and Cotter (2009), Lin and Hwang (2010) and Fodio et al. (2013) research studies conclude that the impact of the ACS on the Earnings management is significantly negative. Whereas Xie et al. (2003), Bedard et al. (2004), Abbott et al. (2004), and Soliman and Ragab (2014) research findings state that there is no impact of the ACS on the earnings management. It can be observed from the above discussion that the literature provides mixed results on the impact of the ACS on the earnings management. The intuition is that when the ACS is larger, the AC's skills, background and power increases, which as a result enhances the ability of the AC to better control the undesired practices such as earnings management in the organizations, therefore, the study hypothesizes that:

$H_1$    *The audit committee size is associated with the earnings management.*

### 3.2.4.2.    Audit committee independence (ACI) and earnings management

The Sarbanes-Oxley Act (2002) states that an independent AC is more effective in monitoring the internal control systems, the financial reporting and risk management, therefore, it strongly recommends that all the members of the AC should be independent. Klein, (2002) and Abbott et al. (2000) research studies conclude that practices such as financial misstatements and earnings management are better monitored and controlled when most of the members of the AC are independent directors. Therefore, the relationship between the board independence and earnings management is negative. In addition, past research results and literature states that a more independent AC is in a stronger and better position to protect the interest of the shareholders and better perform their monitoring role (Bedard et al. 2004; Abbott, et al. 2004; Yang and Krishnan, 2005). According to Xie et al. (2003), an independent AC is more effective in governance as compared to a less independent AC. In addition, regulations, agency theory and the governance literature present the view that a highly

independent AC is in a stronger position to control opportunistic earnings management practice in an organization and therefore, the relationship between the ACI and earnings management is negative. Whereas Lin et al. (2006) states that the impact of the AC independence on the earnings management is insignificant and there is no impact of the ACI on the earnings management. It can be observed that the research findings are contrary; therefore, this research study proposes the following hypothesis:

$H_2$    *The audit committee independence is associated with the earnings management.*

### 3.2.4.3.    Audit committee financial expertise (ACFEX) and earnings management

One of the strongest and important features of an AC that enhances the ability and efficiency of the AC to be more conversant with the financial statements and operational reports is the expertise, knowledge and experience of the AC members in accounting and audit related issues. It enables the members of the AC to better execute their oversight duties and improves the quality of the financial reporting. According to the Sarbanes-Oxley Act (2002) mandates, at least one member of the AC must be a financial expert. In addition, Bedard and Gendron (2010) state that the financial expertise of the AC members enhances its ability to ask knowledgeable questions detect and prevent undesired accounting practices and ensures high quality of financial information and reporting. Bedard et al. (2004) and Abbott et al. (2004) research shows that the presence of the financial experts on the AC improves the effectiveness of the AC in terms of controlling and discouraging earnings management practices, which suggests that the relationship between the AC having at least one member with financial expertise and earnings management is negative. In addition, Xie et al. (2003) states that those companies, in which the AC members are experts in accounting and financial matters experience less problems discretionary accruals. Moreover, research shows that the impact of the AC financial expertise on earnings management is negative and helps the organizations detect and prevent the earnings management within the organization and improve the quality of the financial information (Choi et al. 2007; Lin and Hwang, 2010; Soliman and Ragab, 2014). Based on the above discussion, this research study proposes the following hypothesis:

$H_3$    *The relationship between the ACFEX and the earnings management is negative.*

### 3.2.4.4.    Number of audit committee meetings (NACM) and earnings management

According to Menon and Williams (1994), the frequency or number of AC meetings is a proxy for diligence. In addition, they state that an AC, which does not meet frequently, is less

likely to perform their monitoring duties more effectively and therefore, results in poor diligence and is less effective in controlling opportunistic earnings management practice such as earnings management. Li et al. (2012) state that an AC, which is more active and meets more frequently, provides greater opportunities to the AC members to monitor, evaluate and discuss issues related to financial reporting processes. Xie et al. (2003) suggest that more frequent meetings of the AC members are associated with effective monitoring. Abbott et al. (2004) mention that a minimum of four AC meetings significantly helps in controlling the incidence of financial misstatement. According to Lin and Hwang (2010), Karamanou and Vafeas (2005) and Klein (2002), when the members of the AC meet more frequently, they are in a better and stronger position to monitor the financial reporting processes and are more likely to effectively detect and prevent undesired practices such as earnings management. Therefore, they state that there is a negative relationship between the number of AC meetings and earnings management. These findings are also supported by the research results of Lin and Hwang (2010) by concluding that there is a negative significant relationship between the earnings quality and number of AC meetings. Upon the critical analysis of the literature and research studies, this research study proposes the following hypothesis:

$H_4$    *The relationship between the frequency of the AC meetings and earnings management is negative.*

### 3.3. Data and Methodology

#### 3.3.1. Data Sample

The data sample for this study comprises of companies that are listed on FTSE-350 index. The reason that FTSE-350 index is selected is because it includes, by capitalization, the largest 350 companies, which are primarily listed on the London stock exchange. In addition, FTSE 350 account for a significant portion of the UK economic output. This study sample period is from 2007 to 2018 and uses the annual data because most of the companies prepare and publish their financial statements annually.

Moreover, a criterion is followed in the data collection. The first criteria is that a firm must meet the criterion of being listed on the FTSE 350 within 2007-2018 and should not be delisted within this period. The second criterion is that a firm included in the data sample must publish their audit committee's data. Therefore, the sample size that covers the span of this study and satisfies the criteria of having information on all the variables at the time of conducting this research are included in the data sample. The secondary sources which are used for data collection comprised of listed companies' annual reports, Bloomberg and Data Stream.

#### 3.3.2. Measuring earnings Management

Earnings management is a proxy for discretionary accruals that is estimated by applying three models that include Jones model (JM), modified Jones model (MJM) and Kothari model (KM). Finally, earnings management is measured based on the results of above three models by applying the first principal component function (the detailed explanation of the earnings management measurement is provided in Appendix 1).

$$EM_{i,t} = (DAJ_{i,t} * 0.577351) + (DAMJ_{i,t} * 0.577354) + (DAK_{i,t} * 0.577354) \quad (3.1)$$

Where:

$EM_{i,t}$      Average discretionary accruals estimated by applying the principal component function.

$DAJ_{i,t}$      Discretionary accruals estimated by applying the Jones model.

$DAMJ_{i,t}$      Discretionary accruals estimated by applying the Modified Jones model.

$KDA_{i,t}$      Discretionary accruals estimated by applying the Kothari Model.

### 3.3.3. Independent variables

The independent variables comprise of audit committee attributes that include the audit committee size, audit committee independence, Audit Committee members accounting and financial expertise and audit committee meetings frequency of meeting in a year.

#### 3.3.3.1.    Audit Committee Size (ACS)

Audit committee size (ACS) is the total number of the audit committee members in an audit committee. ACS is estimated by taking the natural logarithm of the total number of audit committee members in an audit committee, which is as follows:

$$\text{Audit Committee Size (ACS)}$$
$$= (Ln\,(1+ACS_{i,t}))$$

#### 3.3.3.2.    Audit Committee Independence (ACI)

Audit committee independence (ACI) is the proxy for the number of audit committee independent members in the audit committee. ACI is measured by taking the natural log of the number of independent directors.

$$\text{Audit Committee Independence (ACI)}$$
$$= (Ln\,(1+Number\ of\ independent\ directors\ on\ the\ Audit\ committee_{i,t}))$$

#### 3.3.3.3.    Audit Committee accounting and financial expertise (ACFEX)

Audit committee financial expertise is the percentage of the audit committee member's financial expertise in accounting or finance or in both.

#### 3.3.3.4.    Number of audit committee meetings in a year (NACM)

Number of Audit committee meetings is the number of audit committee meetings in a fiscal year. Number of audit committee is estimated by taking the natural logarithm of the number of audit committee meeting in a financial year.

$$\text{Number of audit committee meetings in a year (NACM)}$$
$$= Ln\,(1+NACM_{i,t})$$

### 3.3.4. Control Variables

#### 3.3.4.1. Firm Size (FS)

The first control variable is firm size that controls the empirical results for the size effect in the regression test. According to Dechow et al. (1995) and Bedard et al. (2004), larger firms are in a stronger position to establish an effective internal control system. In addition, larger firms face higher scrutiny from the external stakeholders and market. As a result, the chances of opportunistic earnings management practices are lower; therefore, it presumes that firm size is negatively associated with earnings management. Lin et al. (2009) state that small size companies are less effective as compared to large companies in cost management, because, large company's production is higher, enjoying higher economies of scale and therefore, higher ability to establish an effective and strong corporate governance system (Bedard et al. 2004). In addition, as compared to large firms, small companies' marginal cost is higher as a result of lower production and lower economies of scale compared to large firms, therefore, small firms are highly likely to engage in practices such as earnings management to communicate their desired message to the market. In addition, past research studies conclude that the relationship between the firm size and earnings management is inverse and negative (Klein 2002; Xie et al. 2003). Finally, Fodio et al. (2013) state that firm size is relevant to both i.e., dependent variable (earnings management) and independent variables (audit committee characteristics). Firm size is estimated by taking the natural logarithm of the market value of the equity at the end of financial year, whereas the market value is the product of the number of outstanding shares and market price per share.

$$\text{Firm Size (FS)} = Ln\ (FS_{i,t})$$

#### 3.3.4.2. Financial Leverage (LEV)

The second control variable that is included in the regression model is leverage. Leverage controls the empirical results for the leverage effect in the regression test. It is believed by some of the scholars that usually firms with higher financial leverage face higher financial risk, and therefore, conveys a negative signal to the market. Therefore, to overcome the impact of the negative signal, these firms are highly likely to engage in earnings management (Watts and Zimmerman, 1986; Dechow et al. 1995). In addition, Bedard et al. (2004) state that there is a positive relationship between the firm's financial leverage and earnings management. Therefore, financial leverage is included in the empirical model to

control the results for financial leverage. Leverage is estimated by taking total debt as a percentage of the total capital at the end of the financial year, in which, total debt comprises of short-term and long-term debt and total capital includes short-term debt, long-term debt and equity.

$$Financial\ leverage\ (LEV)$$
$$= Total\ Debt\ (Long\text{-}term\ and\ short\text{-}term)\ /\ Total\ Capital$$

### 3.3.4.3.    Return on Assets (ROA)

According to Klein (2002) Bartov, Givoly and Hayn (2002) and Ali and Zheng (2015), ROA is a control variable for earnings management. ROA gives an idea as to how efficient management is at using its assets to generate earnings. Dechow et al. (1995) suggest that firm performance is supposed to have a positive association with discretionary accruals. Without controlling for ROA, discretionary accruals may reflect changes in the sample firm performance. Dechow et al. (1995) finds that ROA has a significant positive relationship with discretionary accruals.

$$Return\ on\ Assets$$

$$ROA_{t-1} = {Operating\ Profit_{t-1}}/{Total\ Assets_{t-1}}$$

### 3.3.4.4.    Audit Quality (AQ)

Audit quality is measured by taking the natural log of the audit fees that is paid by the company to the external audit company. Higher audit fees paid suggests that the quality of the audit is high, and the company hired good audit companies for auditing their financial reporting. Theoretically, higher audit companies are in a better position to control unethical accounting practices and therefore, improves the quality of financial reporting (Becker, Defond, Jiambalvo, & Subramanyam, 1998; Zang, 2012).

### 3.3.4.5.    Sales Growth Ratio (SG)

Sales growth ratio is added in the empirical model as a control variable. Firms with higher sales growth have more growth prospects, therefore, a possibility arises that these firms might get engaged in earnings management to meet the stakeholder's expectations (Hribar & Collins, 2002).

$$Sales\ growth\ ratios\ _{i,t} = {(Sales_{i,t} - \ Sales_{i,t-1})} \Big/ {Sales_{i,t-1}}$$

### 3.3.4.6. Change in Operating Cash Flow ($\Delta OCF$)

According to (Becker et al.1998), the impact of the operating cash flow on earnings management is negative. They state that the management engage in earnings management when the operating cash flow is lower. Operating cash flows are estimated as follows:

$$Operating\ Cash\ flow_{i,t} = \Delta Operating\ Cash\ flow_{i,t} / Operaitng\ Cash\ flow_{i,t-1}$$

### 3.3.4.7. LOSS (LOSS)

Loss is a dummy variable that takes the value of 1 if the ROA is negative and 0 otherwise. Those companies that are making losses are highly likely to engage in earnings management and manipulate the financial information. Therefore, LOSS is included in the empirical regression model as a control variable (Burgstahler and Dichev, 1997).

1 = ROA is negative

0 = ROA is zero or positive

All variables are defined in Table 3.1.

[TABLE 1]

### 3.3.5. Conclusion

Four discretionary accruals models that includes Jones model, modified Jones model, Kothari model and earnings management model are applied to test the impact of the audit committee attributes on the earnings management. Audit committee attributes comprise of ACS, ACI, ACFEX and NACM. In addition, leverage (LEV), return on assets (ROA), firm size (FS), audit quality (AQ), sales growth ratio (SG), change in operating cash flow ($\Delta OCF$) and loss (LOSS) are included in the empirical model as control variables.

3.4. Results

This chapter presents the detailed analysis of the relationship between earnings management and audit committee attributes based on the descriptive statistics, correlation matrix and regression tests.

3.4.1.   Descriptive Statistics

Table 3.2 presents the results of the descriptive statistics for the audit committee characteristics, earnings management and control variables for FTSE 350 listed companies from 2007 to 2018. The earnings management mean is 0.0002, which suggests that on average, FTSE 350 listed companies' discretionary accruals are positive. In addition, the standard deviation is 0.8923, from which it can be concluded that the discretionary accruals are highly dispersed and therefore, the variation in discretionary accruals is higher (Greene, 2008). It can also be supported by the range, in which the lowest value is -25.3088 and the highest value is 6.8399. In addition, the average audit committee size is approximately 4 in the FTSE 350 listed companies. Moreover, on average, 3 to 4 members of the audit committee are independent.

[TABLE 3.2]

3.4.2.   Correlation

Table 3.3 presents the results of the correlation coefficient matrix for the audit committee characteristics and control variables for FTSE 350 listed companies for a sample period that starts from 2007 to 2018. The correlation of the earnings management with ACS, ACFEX and NACM is negative, whereas the correlation of earnings management with ACI is positive, which suggests that higher board size, more members of the audit committee with finance and accounting background and higher number of audit committee meetings make the audit committee more effective in terms of controlling unethical accounting practices such as earnings management. These findings are also consistent with the regression results. In addition, the correlation of REM is positive with ACFEX and NACM, whereas, negative with ACS and ACI, from which it can be inferred that larger boards with higher number of independent directors are more effective in controlling real earnings management, whereas higher number of members with finance and accounting expertise and more frequent meetings exposes the financial reporting to real earnings management.

[TABLE 3.3]

### 3.4.3. Empirical Models

The empirical model that is employed in this research study is based on the concept of ordinary least square (OLS) model, which decomposes the entire model into dependent and independent variables to test the impact of the independent variables on the dependent variable (Greene, 2002). In this research study, earnings management is a dependent variable, which is a proxy for discretionary accruals, whereas independent variables comprise of audit committee attributes.

$$EM_{i,t} = \beta_0 + \beta_1 ACS_{i,t-1} + \beta_2 ACI_{i,t-1} + \beta_3 ACFEX_{i,t-1} + \beta_4 NACM_{i,t-1} + \lambda_1 LEV_{i,t-1} +$$
$$\lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} + \lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t}$$

(3.2)

Where:

| | |
|---|---|
| $EM_{i,t}$ | Earnings management for firm $i$ in year $t$ |
| $ACS_{i,t-1}$ | Number of Audit committee members for firm $i$ in the previous year |
| $ACI_{i,t-1}$ | Proportion of independent directors on audit committee for firm $i$ in the previous year |
| $ACFEX_{i,t-1}$ | Audit Committee members accounting and financial expertise for firm $i$ in the previous year |
| $NACM_{i,t-1}$ | Number of Audit committee Meeting for firm $i$ in the previous year |
| $LEV_{i,t-1}$ | Leverage for firm $i$ in the previous year |
| $FS_{i,t-1}$ | Firm Size for firm $i$ in the previous year |
| $ROA_{i,t-1}$ | Return on asset firm $i$ in the previous year |
| $AQ_{i,t-1}$ | Audit Quality for firm $i$ in the previous year |
| $SG_{i,t-1}$ | Sales growth for firm $i$ in the current year |
| $OCF_{i,t}$ | Operating Cash Flow for firm $i$ in year $t$ |
| $LOSS_{i,t-1}$ | Dummy variable which takes the value of 1 if ROA is negative and 0 otherwise for firm $i$ in the previous year. |
| $\sum \lambda_j YD_j$ | Dummy Variable from 2008 to 2018 represent the number of years |
| $\beta_0$ | Constant or intercept |
| $\beta_1$ To $\beta_4$ | Coefficient for independent variables |

$\lambda_1$ To $\lambda_8$            Coefficient values for control variables

$\varepsilon_{i,t}$            Residual or error term

All variables are defined in Table 3.1.

### 3.4.4. Regression Analysis – Discretionary Accruals

Based on the results of Jones model, modified Jones model, Kothari model and earnings management model, the impact of the ACS on the earnings management is negative and statistically significant at 1% of significance level. The findings suggest that the opportunistic earnings management practices are lower in those firms, in which the size of the audit committee is higher. In other words, large audit committees are effective in controlling earnings management. These findings are consistent with the empirical findings of the Vafeas (2005), Abbott et al. (2004) and Xie et al. (2003).

The coefficient value of the ACI is positive and statistically significant at 1%, from this it can be inferred that firms with a higher percentage of independent directors in the audit committee are ineffective in controlling the earnings management. This is consistent with the previous empirical findings of the Lin et al. (2006).

The impact of the ACFXP on the earnings management is negative and statistically significant at 1%. The results suggest that those audit committees in which, the number of the audit committee member's with financial expertise in accounting or finance is higher, are more effective in controlling earnings management This is consistent with the previous empirical findings of the Bedard et al. (2004), Abbott et al. (2004), Xie et al. (2003), Bedard and Gendron (2010), Choi et al. 2007, Lin and Hwang, 2010 and Soliman and Ragab, 2014.

The coefficient value of the number of audit committee meetings (NACM) is negative and statistically significant at 1% based on the regression results of Jones model, modified Jones model, Kothari model and earnings management model. The results and findings suggest that an audit committee is more effective in controlling earnings management, when it meets more frequently. This is consistent with the previous empirical findings of the Menon and Williams (1994), Xie et al. (2003), Li et al. (2012), Lin and Hwang (2010), Karamanou and Vafeas (2005) and Klein (2002).

[TABLE 3.4]

### 3.4.5. Robustness test – Real Earnings Management

To examine the consistency of our results, I run the robustness tests by testing the impact of the audit committee attributes on real earnings management. The real earnings management are measured by applying the Roychowdhury (2006) model.

$$REM_{i,t} = \beta_0 + \beta_1 ACS_{i,t-1} + \beta_2 ACI_{i,t-1} + \beta_3 ACFEX_{i,t-1} + \beta_4 NACM_{i,t-1} + \lambda_1 LEV_{i,t-1} +$$
$$\lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} + \lambda_7 LOSS_{i,t-1} +$$
$$\sum \lambda_j YD_j + \varepsilon_{i,t} \qquad\qquad (3.3)$$

Where:

| | |
|---|---|
| $REM_{i,t}$ | Real Earnings management for firm $i$ in year $t$ |
| $ACS_{i,t-1}$ | Number of Audit committee members for firm $i$ in the previous year |
| $ACI_{i,t-1}$ | Proportion of independent directors on audit committee for firm $i$ in the previous year |
| $ACFEX_{i,t-1}$ | Audit Committee members accounting and financial expertise for firm $i$ in the previous year |
| $NACM_{i,t-1}$ | Number of Audit committee Meeting for firm $i$ in the previous year |
| $LEV_{i,t-1}$ | Leverage for firm $i$ in the previous year |
| $FS_{i,t-1}$ | Firm Size for firm $i$ in the previous year |
| $ROA_{i,t-1}$ | Return on asset firm $i$ in the previous year |
| $AQ_{i,t-1}$ | Audit Quality for firm $i$ in the previous year |
| $SG_{i,t-1}$ | Sales growth for firm $i$ in the current year |
| $OCF_{i,t}$ | Operating Cash Flow for firm $i$ in year $t$ |
| $LOSS_{i,t-1}$ | Dummy variable which takes the value of 1 if ROA is negative and 0 otherwise for firm $i$ in the previous year. |
| $\sum \lambda_j YD_j$ | Dummy Variable from 2008 to 2018 represent the number of years |
| $\beta_0$ | Constant or intercept |
| $\beta_1$ To $\beta_4$ | Coefficient for independent variables |
| $\lambda_1$ To $\lambda_8$ | Coefficient values for control variables |
| $\varepsilon_{i,t}$ | Residual or error term |

All variables are defined in Table 3.1.

Based on the results of real earnings management model, the impact of the ACS on the earnings management is positive and statistically significant at 5% of significance level. The findings suggest that the real earnings management practices are higher in those firms, in which the size of the audit committee is higher. The coefficient value of the ACI is negative and statistically significant at 10%, which suggests that higher number of independent directors in the audit committee are effective in controlling the real earnings management. The impact of the ACFXP on the earnings management is positive, however, statistically insignificant. The results suggest that those audit committees in which, the number of the audit committee member's with financial expertise in accounting or finance is higher, are more exposed to real earnings management. The coefficient value of the number of audit committee meetings (NACM) is positive and statistically insignificant based on the regression results of real earnings management model. The results and findings suggest that an audit committee is not effective in controlling real earnings management, when it meets more frequently.

[TABLE 3.5]

### 3.4.6. Conclusion

Based on the findings and results of the four discretionary models that include Jones model, modified Jones model, Kothari model and earnings management model, the impact of the ACS, ACFXP and NACM on the earnings management is negative, whereas the impact of the ACI on the earnings management is positive. In contrast to the results of the discretionary accruals models, the results of the real earnings management model show that ACS, ACFXP and NACM are positively associated with real earnings management, whereas ACI is negatively associated with real earnings management.

## 3.5. Conclusion

This study is initiated to study the impact of the audit committee attributes on the earnings management in FTSE 350 listed companies from 2007 to 2018. Audit committee attributes comprise of audit committee size, audit committee independence, audit committee member's financial expertise and number of audit committee meeting during a year.

Earnings management is estimated by applying four multiple regression models that include Jones model, modified Jones model, Kothari model and earnings management model. Applying the first component principle on the results of Jones model modified Jones model and Kothari model the earnings management are estimated.

The empirical findings of this study based on the four discretionary models that include Jones model, modified Jones model, Kothari model and earnings management model show that ACS is negatively associated to earnings management and the result is statistically significant. The results suggest that those companies in which the audit committee size is large are more effective in controlling earnings management. The impact of the ACI on the earnings management is positive and statistically significant, from which, it can be inferred that the audit committee is role is ineffective and inefficient in controlling earnings management, when the number of the independent directors on the audit committee is higher. ACFXP and earnings management are negative related, and the results are statistically significant. The results suggest that those audit committees in which, the number of the audit committee member's with financial expertise in accounting or finance is higher, are more effective in controlling earnings management. The coefficient value of the number of audit committee meetings (NACM) is negative and statistically significant at 1% based on the regression results of Jones model, modified Jones model, Kothari model and earnings management model. The results and findings suggest that an audit committee is more effective in controlling earnings management, when it meets more frequently.

4. Chapter Four – Earnings Management and Executive's Compensation

4.1. Introduction

The structure of a company is based on the separation theorem that splits the ownership and control in a company (Demsetz, 1983). Shareholders finance the company; therefore, ownership lies in the hands of the shareholders, however this is with little or no control. The role of management on the other hand is to run, manage and take all the decisions on behalf of the company and shareholders. Given that control is in the hands of the managers, the decisions taken by the management should be in the best interest of the shareholders. The shareholders and other stakeholders are informed and updated on the operating performance of the company through financial statements. There is a possibility that instead of working in the best interest of shareholders, the management may pursue their own personal goals and objectives and convey their desired message to shareholders. Managers may manipulate the financial information by applying the managerial discretion provided in the accounting standards, which directly jeopardizes the interest of the shareholders. To overcome the consequences of the mismatch between the ownership and control between management and shareholders respectively, one of the devices employed in the corporate governance structure is the executive's compensation plan. This aims to align the interest of the management with the shareholders, and internally motivate the management to work in the best interest of the shareholders (Rappaport, 1986). In this way, the incentive to manipulate the financial information diminishes and therefore directly enhances the quality of the financial reporting and in turn the transparency of the financial reporting processes increases. However, the question arises whether is the management still working in the best interest of the shareholders?

The accounting literature documents that executive compensation has a substantial impact on the earnings manipulation, while the finance literature shows that executive compensation likewise affects the financial performance (Cornett, 2008). However, these two strands of literature, when considered together, raise another issue for study that does executive compensation arrangements affect the earnings management?

There are two contradicting viewpoints regarding compensation. On one hand in line with the agency theory (Jensen and Meckling, 1976), compensation is considered an important tool in aligning executives' incentives with shareholders' interests through a process of granting the executives an ownership stake in the company, bonuses and equity-based compensation. Another is the managerial power theory (Bebchuk et al. 2002; Bebchuk and Fried, 2004) considers bonuses and equity-based compensation to be a way through which executives can

get more compensation without causing public anger or what is referred by managerial power theorists as "outrage constraint" by employing opportunistic and unethical accounting practices such as earnings management. Therefore, the question arises that is it the cash-based executive compensation, equity-based executive compensation or are both the motivating and influencing factors towards discretionary accruals and earnings management?

The supporters of the executive compensation claim that bonuses and equity incentives are needed components of executive compensation scheme that may be effective in linking an executive's personal benefits with the shareholders interest in a way that minimizes the risk of adverse consequences. Corporate governance literature supports this argument through providing evidence that good corporate governance structure can play a significant role in setting executive compensation in a way that mitigates the misalignment of interests between managers and shareholders (Core et al. 1999; Hartzel and Stark, 2003 and Sun and Cahan, 2009). Moreover, the literature shows evidence that good corporate governance and executive compensation may help in curbing managers' actions regarding accounting manipulation (Beasley, 1996; Klein, 2002; Peasnell et al. 2005).

In addition, regulators, shareholder advocacy groups and the financial press raise concerns that bonuses and equity-based compensation offers motivations for managers to increase their personal financial benefits through manipulation of accounting results. Moreover, the academic literature provides considerable evidence for these concerns (e.g., Beneish and Vargus, 2002; Cheng and Warfield, 2005; Bergstresser and Philippon, 2006; Jiang et al. 2010).

Despite evidence of earnings manipulation, little research examined the influence of executive compensation on earnings management. Moreover, most of the research studies used executive compensation as one value or used a few components from executive compensation. However, executive compensation consists of many elements such as salary, bonuses, stock options, stocks granted, long-term incentive plans and short-term incentive plans (Burns and Kedia, 2006; Healy, 1985 and Holthausen et al. 1995; Eckles and Halek, 2010). Moreover, the entire executive compensation can be divided between the fixed and variable components of compensation. Therefore, this research study aims to decompose the entire executive compensation into fixed and variable components of executive compensation, cash-based executive compensation and equity-based executive compensation. Further to test the impact of the different components of the executive compensation on the earnings management so as to better understand what form of executive compensation significantly or insignificantly and

positively or negatively affects the discretionary accruals in listed companies on FTSE 350 during 2007 to 2018.

It is also important to mention that the successful completion of this research study contributes to a number of ways to the existing literature, which are as follows.

First, the research that addresses the impact of the executive compensation on earnings management in the UK is minimal, therefore, this research study makes a significant contribution, as this research study is among the pioneer research studies that decomposes the entire executive compensation and individually tests the impact of each component of the executive compensation on the discretionary accruals.

Second, in addition, discretionary accruals are predicted by applying four empirical regression models that comprise of Jones model (1991), modified Jones model (1996) Kothari model (2005) and Earnings management model. This is the first research study that estimate the earnings management by applying the first principal component values using the results of the Jones model (1991), modified Jones model (1996) and Kothari model (2005).

Third, the chosen period is also important because a research study conducted from 2007 to 2018 enables the research study to understand the impact of executive compensation on earnings management in the post-recession period.

The sample for this research study comprised of companies listed in the FTSE-350 index. FTSE-350 index is selected because it includes, by capitalization, the largest 350 companies, which have their primary listings on the London Stock Exchange. Moreover, FTSE 350 accounts for a significant portion of the UK economic output. Primarily, there are three reasons for focusing on large companies. Firstly, large companies usually disclose more information about executive compensation, which will help in performing the empirical tests. Secondly, some provisions of the corporate governance code may not be applied for small companies that lie outside this index. Finally, stakeholders have more concerns about large firms compared to small ones.

In addition, it is important to mention that the research study conducted on FTSE 350 on the topic of "Executive compensation and its impact on the earnings management" is the first research study that researches and investigates the impact of the components of the executive compensation on the discretionary accruals. Most of the research on the above-mentioned topic is conducted in the US. Therefore, conducting a research studies on this topic bridges the gap and makes the UK market participants able to understand the importance and significance of executive compensation in relation to earnings management in the UK.

This study covers a period starting from 2007 to 2018 and employs the annual data because most companies prepare and publishing their financial statements annually. The financial and executive compensation data is collected from Bloomberg and DataStream. The results and findings show that CEO equity-based compensation, CEO bonus, CEO equity-based compensation to total compensation ratio, executive's equity-based compensation, executive's salary and executive's equity-based compensation to total compensation ratio are positively related to earrings management, whereas, CEO total compensation, CEO salary, executive total compensation and executive's bonus are negatively related with the earnings management.

### 4.2. Literature Review

#### 4.2.1. Introduction

This chapter presents the theoretical, empirical and academic view of the scholars on the relationship between the earnings management and executive compensation. In addition, the executive compensation is decomposed in fixed and variables compensation, equity based and cash-based compensation, and CEO and executive compensation to better understand the various components of the executive's compensation. Finally, based on the findings from literature and empirical results of researchers and scholars, the research hypotheses are developed.

#### 4.2.2. CEO's and Executive Compensation

To better understand the topic of executive compensation, the entire executive compensation is decomposed primarily in four components that include base salary, annual bonus plan, stock options and additional compensation such as restricted stock, long-term incentive plans, and retirement plans. Base salary and annual bonus plan constitute cash-based compensation, whereas stock options restricted stock and long-term incentive plans comprise of equity-based compensation.

##### 4.2.2.1. Cash based Compensation of CEO's and Executive

Cash based compensation includes salary and bonuses (Guidry et al. 1999). Salary is fixed and a periodic part of the compensation, in addition, executives receive a base salary, which is generally benchmarked against peer firms. It is a fixed component of the entire compensation; therefore, base salary does not change as the operating performance of an organization changes (Conyon, 2006). In contrary bonus is a variable component of the compensation and varies as per the performance, therefore, it can be stated that bonus is a performance-based component of the compensation (Gaver, Gaver, and Austin, 1995). In addition, both salary and bonus are short-term components of the compensation. Although, both salary and bonus are cash based and short-term incentives, however, the impact of salary and bonus on the discretionary accruals is contradictory. The empirical findings suggest that those firms are less exposed to earnings management, whose management's salary is a higher proportion of the compensation, as their compensation does not change significantly as the organization's performance varies (Gao and Shrieves, 2002). Bonus is directly dependent on

the company's operating performance and arises or increases as the company's operating performance improves (Carter, et al. 2005; Healy, 1985).

### 4.2.2.2. Equity-based compensation of CEO's and Executive

Stock based executive compensation comprises of stock option grants, un-exercisable options, exercisable options, restricted stock grants, and stock ownership (Cheng and Warfield, 2005). Stock can be directly granted to top executives, whereas stock options are awarded to both executives and employees. Stock option is the right that the executives and employees can buy the company's share at a certain price in the future (Conyon, 2006). Stock options are exercised when the options are in the money (Brealey, et al. 2012). Stock options are in the money when the strike price of the share in the option is less than the market price of the share. The employees and executives exercise their options, buy the company's shares at a lower price, sell it back in the market with a higher price and generate return (Bodie, et al. 2014). There are some other special forms of executive compensation such as golden handshakes, which are paid to the CEOs and executives when they leave the company. Usually, golden handshakes are offered to executives for early retirement (Yermack, 2006).

### 4.2.3. Theoretical framework

### 4.2.3.1. Principal – Agent theory

The leading theory that has historically supported research in the area of executive compensation is the principal-agent theory (Jensen and Meckling, 1976, Jensen and Murphy, 2004; Murphy, 1999). Principal-agent theory primarily focuses on the separation theorem, according to which, the ownership and control are separated in the structure of a company. Shareholders are the owners; they finance an entity and therefore, are the principal. Management controls the company and acts as an agent of the shareholders in the company. The significance of the incentive plans and compensation contracts is to align the interests of the management with the shareholders and to influence the behaviour of management to work in the best interest of the shareholders.

According to Besley and Ghatak (2005), the underlying assumptions are that:

- Firms are profit seeking
- Agents of the principal are both rational and rent seeking and
- There is no non-monetary agent motivation

In addition, it is also assumed that the agent's utility is positively contingent on monetary incentives, whereas, with the agent effort, the agent utility is negatively contingent (Besley and Ghatak, 2005). In conclusion, it can be postulated that both agent's effort and motivation increase as the agent receives additional reward. Therefore, the Principal-agent theory gives less importance to the objective of motivating agents and places a greater emphasis on the alignment of objectives of agents (management) and principal (shareholders), which can be achieved by offering monetary incentive and compensation to agents.

### 4.2.3.2. Information asymmetry

Information asymmetry refers the inequality of information between the shareholders and management. Management runs and controls the company and therefore, knows more than the shareholders about the company. In addition, it is difficult and expensive for the principal to oversee and supervise the daily operations of the company and routine actions and decisions of the management (Eisenhardt, 1989). As management holds an internal position in the company and controls the company's operation it therefore knows more than the shareholders. For this reason, management has advantages over shareholders, and therefore, the possibility arises that management may pursue their own personal interests such as higher remuneration, compensation and reputation instead of working in the best interest of shareholders by manipulating the financial information through unethical and opportunistic accounting practices (Scott, 2003).

### 4.2.4. Earnings management, executive compensation and hypotheses

The impact of the CEO's compensation and other executive's compensation is individually studied on earnings management to better understand what group of the executives i.e. CEO other executive or both influences, to a greater or lesser extent, the financial results and engage in earnings management.

### 4.2.4.1. Total compensation and Earnings management

According to Watts and Zimmerman (1986), executives manipulate the financial information by applying managerial discretion to the accounting standards to report such a value of earnings, which maximizes the total compensation of the executives, therefore, they state that there is a positive relationship between the earnings management and total compensation. In addition, Healy (1985) states that the management or executives manage accruals downwards when the accounting profit is outside of the range eligible for

compensation, whereas, accruals are managed upwards, when the accounting profit prior to handling is inside the range eligible for compensation. In addition, Gaver et al. (1995) research study concluded that management is in a strong position to manipulate accounting numbers in order to enhance the entire compensation and maximize their wealth. Balsam (1998) also concluded that there is statistically a positive relationship between the total compensation and earnings management. In light of these empirical findings and results, it can be stated that executives are in a stronger position and are therefore, able to manipulate financial information and maximize their compensation. Therefore, the following hypotheses are presented.

$H_1$: *The CEO total compensation is associated with the earnings management.*

$H_2$: *The Executives total compensation is associated with the earnings management.*

Executive compensation comprises of cash and equity incentive; moreover, the compensation is classified based on the fixed and variable proportions such as salary, which is fixed and bonus, which is a variable component of the compensation and varies as per the operating performance and accounting income of the company. Therefore, to better understand the impact of the executive compensation on the earnings management, the entire executive compensation is decomposed into various components, and the impact of each component of the compensation is studied and researched on earnings management.

### 4.2.4.2.    Equity-based compensation and Earnings Management

According to Bergstresser and Philippon (2006), there is a positive relationship between the CEO's and executive's equity incentives and earnings management. Equity incentive is a variable component of the entire executive compensation, which is more closely tied to the performance of stocks and options in the capital market. According to Meek et al. (2007), there is a positive relationship between the short-term executive incentive plans and earnings management. Short-term incentive plans comprise of stock options, which are awarded to management based on the operating performance of the company. Paulsen (2001) empirical findings conclude that the impact of the stock options awarded to the executives positively affects the firm value and therefore, the market reacts favorably as it believes that the firm performance can be improved by attaching the executive compensation to the operating performance of the company. However, Burns and Kedia (2006) state that the short-term incentive plans can attract management to engage in earnings management in order to become eligible and gain from short-term incentive plans. According to Jensen (2001), the management

and executives whose short-term incentive is closely linked to the operating performance are more likely to manage the operating results and earnings to maximize the value of their compensation. However, some of the scholars and researchers state that the impact of the stock options on the earnings management is negative as the cost of research and development is reduced by paying compensation in form of stock options instead of wages, which helps in reducing the overall cost and therefore, the earnings increase (Sun and Hovey 2012). Bergstresser and Philippon state that those firms in which, the CEO's potential total compensation primarily came from equity compensation used more discretionary accruals and engaged in earning management. These CEO's manipulate the financial performance and earnings by using discretionary components of earnings to artificially inflate the stock prices with the intention to gain from the desired change in the value of stock and options. In addition, Cheng and Warfield (2005) state that CEO's with higher equity compensation are more likely to sell their shares in the future. Therefore, to increase the share price and eventually earn more from their shares in the future, the CEO's tries to disclose as good as possible firm's operating performance, which positively affect the share price and generate demand for the company's shares in the stock market and finally put an upward pressure on the share price (Balachandran, et al. 2008). Higher demand followed by higher share price helps the CEO's to sell their shares and options at higher prices. Artificial demand and increase in share price are achieved by manipulating the firm's earnings by applying the discretionary accruals methods. Upon the findings and results of the above discussion, the first and second proposed hypotheses are as follows.

$H_3$: *The CEO equity-based compensation is associated with the earnings management.*

$H_4$: *The Executives equity-based compensation is associated with the earnings management.*

Further, two hypotheses are developed that tests the relationship between the earnings management and the equity-based compensation to total compensation ratio, which are as follows:

$H_5$: *The CEO equity-based compensation to total compensation ratio is associated with the earnings management.*

$H_6$: *The Executives equity-based compensation to total compensation ratio is associated with the earnings management.*

### 4.2.4.3. Cash-based compensation and Earnings Management

Cash remuneration comprises of salary and bonus, in which, salary is fixed, and bonus is variable and depends upon the operating performance of a firm. As it is stated that salary is a fixed part of the cash remuneration and does not change as a result of the firm's operating performance, so, there is no incentive of earnings management and, therefore, Gao and Shrieves (2002), state that the discretionary accruals are lower when the base salary is a higher proportion of the total compensation as compared to variable component of the compensation. In summary, literature generally concludes that the relationship between the CEO's and Executive salary with discretionary accruals is negative. Therefore, it is proposed that:

$H_7$: *The CEO's fixed cash remuneration incentives (salary) is associated with the earnings management.*

$H_8$: *The executives s fixed cash remuneration incentives (salary) is associated with the earnings management.*

In contrast to management salary, bonus varies as per the firm's operating performance of an entity, therefore, there is the possibility that the management engages in unethical accounting practices and opportunistic earnings management to make themselves eligible for bonuses (Guidry et al. 1999). Gao and Shrieves (2002) state that the impact of the CEO's and executive bonus on the discretionary accruals is positive. In addition, those firms are more likely to engage in opportunistic earnings management, whose management executive compensation is more closely tied to the operating performance of the company. Cheng and Warfield (2005) research study also concluded that the impact of the executive bonuses on the earning management is statistically significant and positive. However, Holthaussen et al. (1995) findings show that the relationship between the bonuses and earnings management is positive, however, the results are statistically insignificant. Based on the above discussion and findings, the seventh and eighth hypotheses are as follows:

$H_9$: *The CEO's variable cash remuneration incentives (bonus) is associated with the earnings management.*

$H_{10}$: *The Executives variable cash remuneration incentives (bonus) is associated with the earnings management.*

## 4.3. Data and Methodology

### 4.3.1. Data Sample

The sample for this research study comprised of companies listed in FTSE-350 index. FTSE-350 index is selected because it includes, by capitalization, the largest 350 companies, which have their primary listings on the London Stock Exchange. Moreover, FTSE 350 accounts for a significant portion of the UK economic output. Primarily, there are three reasons for focusing on large companies. Firstly, large companies usually disclose more information about executive compensation, which will help in performing empirical tests. Secondly, some provisions of the corporate governance code may not be applied to small companies that lie outside this index. Finally, stakeholders have more concerns about large firms compared to small ones.

This study covers a period starting from 2007 to 2018 and employs the annual data because most of the companies prepare and publish their financial statements annually. The chosen period is also important because a research study conducted from 2007 to 2018 enables the research study to understand the impact of executive compensation on earnings management in the post-recession period. The financial and executive compensation data is collected from Bloomberg and DataStream.

### 4.3.2. Dependent variable

#### 4.3.2.1. Earnings management

Earnings management is a proxy for discretionary accruals that is predicted and estimated by applying three models that includes Jones model (JM), modified Jones model (MJM) and Kothari model (KM). Finally, earnings management (EARNMGT) is measured based on the results of above three models by applying the first principal component function (the detailed explanation of the earnings management measurement is provided in appendix 1).

$$EM_{i,t} = (DAJ_{i,t} * 0.577351) + (DAMJ_{i,t} * 0.577354) + (DAK_{i,t} * 0.577354) \quad (4.1)$$

Where:

$EM_{i,t}$      Average discretionary accruals are estimated by applying the principal component function.

$DAJ_{i,t}$      Discretionary accruals estimated by applying the Jones model.

$DAMJ_{i,t}$      Discretionary accruals estimated by applying the Modified Jones model.

$KDA_{i,t}$        Discretionary accruals estimated by applying the Kothari Model.

### 4.3.3.  Independent variables

#### 4.3.3.1.   CEO's and Executives total compensation

CEO's and Executives total compensation is the total value that is received by the CEO's and executives during a fiscal year.  Total compensation is estimated by using the natural logarithm of the total compensation. The natural logarithm is used for the total compensation to reduce the dispersion in the distribution of total compensation that is paid to the CEO's and executives.

<div align="center">

CEO's and Executives Total Compensation (TC)

$Total\ Compensation = Ln\ (Total\ Compensation_{i,t})$

</div>

#### 4.3.3.2.   CEO's and Executives equity-based compensation

CEO's and Executives equity-based compensation is the difference between the total compensation and cash-based compensation that is paid to CEO's and Executives during a year. Finally, the equity-based compensation is estimated by using the natural logarithm of the equity-based compensation.

<div align="center">

CEO's and Executives equity-based compensation (EBC)

Equity based compensation = Total Compensation – Cash based compensation

$Equity\ based\ compensation = Ln\ (Equity-based\ Compensation_{i,t})$

</div>

#### 4.3.3.3.   CEO's and Executives Base Salary

CEO's and Executive salaries are the fixed components of the entire compensation and are not dependent on the operating performance of an entity. Base salary is estimated by taking the natural logarithm of the base salary.

<div align="center">

CEO's and Executives Base salary (SALARY)

$SALARY = Ln\ (Base\ Salary_{i,t})$

</div>

#### 4.3.3.4.   CEO's and Executives performance-based Bonuses

CEO's and Executives Bonuses are variable components of the total compensation and are directly proportional to the operating performance of an entity. Bonuses are estimated by taking the natural logarithm of the performance-based bonuses.

<div align="center">

CEO's and Executives Bonuses (BONUS)

</div>

$$BONUS = Ln \ (Performance - based \ Bonuses_{i,t})$$

### 4.3.3.5. CEO and Executives equity-based compensation to total compensation ratio

Equity-based compensation to total compensation is estimated by taking the Equity-based compensation as a proportion of the total compensation.

CEO's and Executives equity-based compensation to total compensation ratio

$$= Equity \ based \ compensation_{i,t-1} \Big/ Total \ Compensaiton_{i,t-1}$$

### 4.3.4. Control variables

This research study uses a variety of control variables in accordance with the specifications of prior studies (Watts and Zimmerman, 1986; Kang and Sivaramakrishnan, 1995 and Dechow et al. 1995). To better understand the relationship between the control variables and earnings management, each one is explained in detail.

### 4.3.4.1. Leverage (LEV)

DeFond and Jiambalvo (1994) and Sweeney (1994) report that managers use discretionary accruals to satisfy debt covenant requirements. Because more highly leveraged firms have greater incentives to increase earnings. Trueman and Titman (1986) argue that managing earnings enables managers to reduce estimates of various claimants of the firm about the volatility of its earnings process and so lowers their assessment of the probability of bankruptcy. Consequently, this provides an opportunity to borrow at lower interest rates and decreases cost of capital. Consistent with this debt hypothesis, it is believed that managers in more leveraged firms are more likely to adopt aggressive earnings management techniques to prevent violation of debt covenants (Watts and Zeimmerman, 1986). Firm financial leverage, measured as the ratio of debt to assets, is included, as a proxy for risk, because mangers are more likely to exercise their accounting discretion when they are closer to default on debt covenants (Press and Weintrop, 1990). Leverage is estimated by taking the total debt as a percentage of the total capital at the end of the financial year, in which, total debt comprised of short-term and long-term debt and total capital includes short-term debt, long-term debt and equity.

Financial leverage (LEV)

*LEV = Total Debt (Long-term and short-term) / Total Capital*

### 4.3.4.2. Return on Assets (ROA)

According to Klein (2002) Bartov, Givoly and Hayn (2002) and Ali and Zheng (2015), ROA is a control variable for earnings management. ROA gives an idea as to how efficient management is at using its assets to generate earnings. Dechow et al. (1995) suggest that firm performance is supposed to have a positive association with discretionary accruals. Without controlling for ROA, discretionary accruals may reflect changes in the sample firm performance. Dechow et al. (1995) finds that ROA has a significant positive relationship with discretionary accruals. Return on assets is the profitability ratio of Earnings before Interest and Taxes (EBIT) and total assets at the end of the financial year.

*Return on Assets*

$$ROA_{t-1} = {Operating\ Profit_{t-1}}/{Total\ Assets_{t-1}}$$

### 4.3.4.3. Firm Size (FS)

Firm size is used in most Earnings Management studies as a control variable. Earlier studies found that firm size impact on Earnings Management is negative (Dechow, et al. 1995 and Defond and Jiambalvo 1994). Therefore, firm size impact is negative on the discretionary accruals. According to academics and past literature, smaller companies are subject to less control from authority and therefore, engage in Earnings Management activities but some argue that earnings management activities increase as the size of a company increases (Guthrie and Sokolowsky, 2010 and Badolato et al. 2014). The empirical findings of the past research found that firm size has a significant positive relationship with Earnings Management. They claim that large firms face greater scrutiny from investors and are thus more likely to manage earnings to satisfy their forecast (Gonzalez and Meca, 2014; Watts and Zimmerman, 1978). In contrast, Lee and Vetter (2015) in their study, "the influence of corporate governance on earnings quality", find that firm size does not have a significant impact on Earnings Management. However, most of the scholars and researchers have the opinion that firm size has an impact on earnings management and there is a relationship between the firm size and earnings management, therefore, this research study includes the firm size as a control variable. Firm size is estimated by using the natural logarithm of the market value of the equity of an entity at

the end of financial year ($LNFS_{i,t}$). Taking the product of the number of shares outstanding and share market price estimate market value at the end of the financial year.

$$\text{Firm Size (FS)}$$
$$Firm\ Size = Ln\ (Firm\ Size_{i,t})$$

### 4.3.4.4. Audit Quality (AQ)

Audit quality is measured by taking the natural log of the audit fees that is paid by the company to the external audit company. Higher audit fees paid suggests that the quality of the audit is high, and the company hired good audit companies for auditing their financial reporting. Theoretically, higher audit companies are in a better position to control unethical accounting practices and therefore, improves the quality of financial reporting (Becker, Defond, Jiambalvo, & Subramanyam, 1998; Zang, 2012).

### 4.3.4.5. Sales Growth Ratio (SG)

Sales growth ratio is added in the empirical model as a control variable. Firms with higher sales growth have more growth prospects, therefore, a possibility arises that these firms might get engaged in earnings management to meet the stakeholder's expectations (Hribar & Collins, 2002).

$$Sales\ growth\ ratios\ _{i,t} = \frac{(Sales_{i,t} - Sales_{i,t-1})}{Sales_{i,t-1}}$$

### 4.3.4.6. Change in Operating Cash Flow (ΔOCF)

According to (Becker et al. 1998), the impact of the operating cash flow on earnings management is negative. They state that the management engage in earnings management when the operating cash flow is lower. Operating cash flows are estimated as follows:

$$Operating\ Cash\ flow_{i,t} = \Delta Operating\ Cash\ flow_{i,t}/\ Operaitng\ Cash\ flow_{i,t-1}$$

### 4.3.4.7. LOSS (LOSS)

Loss is a dummy variable that takes the value of 1 if the ROA is negative and 0 otherwise. Those companies that are making losses are highly likely to engage in earnings management and manipulate the financial information. Therefore, LOSS is included in the empirical regression model as a control variable (Burgstahler and Dichev, 1997).

1 = ROA is negative

0 = ROA is zero or positive

All variables are defined in Table 4.1.

[TABLE 1]

### 4.3.5. Conclusion

To test the impact of the components of the executive compensation on the discretionary accruals, a sample comprising of all listed companies on the FTSE 350 from 2007 to 2018. Moreover, to test the impact of the components of the executive compensation on the discretionary accruals, regression model is applied that tests the impact of the independent variables on the dependent variables. In this research study, discretionary accruals are a dependent variable, whereas, independent variables comprise of CEO total compensation, executive's total compensation, CEO equity-based compensation, executives' equity-based compensation, CEO salary, executive's salary, CEO bonus and executives' bonus. Discretionary accruals are predicted by applying four empirical regression models that comprise of Jones model (1991), modified Jones model (1996) and Kothari model (2005) and finally, earnings management model that is estimated by applying the results of the Jones model (1991), modified Jones model (1996) and Kothari model (2005) and the first principal component values.

4.4. Results

This chapter presents the analysis of the relationship between the components of executive compensation and earnings management based on the empirical findings and results of this research study. In addition, to understand the data distribution, features of the data and to better understand the relationship between the components of executive compensation and earnings management, the descriptive statistics and correlation matrix are presented.

### 4.4.1. Descriptive Statistics

Table 4.2 presents the descriptive statistics for the components of executive compensation, earnings management and control variables for FTSE 350 from 2007 to 2018. The discretionary accruals mean is approximately the same and lower based on the Jones model, modified Jones mode, Kothari model and EARNMGT model, however, the standard deviation is significantly higher, which suggests that the data for the discretionary accruals is highly dispersed in listed companies on FTSE 350. These findings can also be supported with the minimum and maximum values, as the range is substantially higher. The mean values of the CEO total compensation and Executive total compensation are very similar. Likewise, the mean of CEO and executive's equity-based compensation are approximately equal, which suggests that on average, the total compensation and equity-based compensation of the CEO and Executives are the same, however, the standard deviation is substantially lower, which suggests that companies listed on FTSE 350 are paying similar total compensation and equity-based compensation to CEO's and executives. It can also be observed from the salary and bonuses data that the CEO's and executives are paid approximately equal pay, in addition, standard deviation is lower, which suggests that the bonuses paid to CEO's and executives do not change in the listed companies on FTSE 350.

[TABLE 4.2]

### 4.4.2. Correlation

It can be observed from the table 4.3 that the correlation of all the components of the executive compensation i.e. CEO total compensation, executives total compensation, CEO equity-based compensation, executives equity-based compensation, CEO salary, executives salary, CEO bonus, executives bonus, CEO equity-based compensation to total compensation and executives equity-based compensation to total compensation with earnings management is

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positive, which suggests, that the earnings management increases when the components of the CEO's and executive's compensation are increasing. This is the primary hypothesis of this research study that CEO's or executive's compensation is an influencing factor for management to engage in opportunistic accounting practices with the intention to maximize their personal benefit and gain. The positive correlation of each components of the executive compensation with the earnings management supports the primary hypothesis of this research study. In contrast to earnings management, there is a negative correlation of CEO total compensation, executive's total compensation, CEO equity-based compensation, CEO equity-based compensation to total compensation and executive's equity-based compensation to total compensation with real earnings management. There is a higher correlation between the CEO total compensation and executive's total compensation, which suggests that both compensations are moving in the same direction. Earnings management correlation with leverage and firm size, sales growth ratio and change in operating cash flows is positive, whereas the correlation of earnings management with ROA, audit quality and loss are negative.

[TABLE 4.3]

### 4.4.3. Empirical Models

Ordinary Least Square (OLS) model is applied to test the impact of the components of the executive compensation on the discretionary accruals. OLS is a regression model that tests the impact of the independent variables on the dependent variable (Greene, 2008). To test the association of the CEO's and executive's compensation with earnings management, fixed effects regression model is applied. In this research study, discretionary accrual is dependent variable, which is estimated by applying three models that includes Jones model (JM), modified Jones model (MJM) and Kothari model (KM). Finally, earnings management (EARNMGT) is measured based on the results of above three models by applying the first principal component function. Whereas, CEO total compensation, executive's total compensation, CEO equity-based compensation, executive's equity-based compensation, CEO salary, executive's salary, CEO bonus and executive's bonus. In addition, leverage (LEV), return on assets (ROA), firm size (FS), audit quality (AQ), sales growth ratio (SG), change in operating cash flow ($\Delta OCF$) and loss (LOSS) are included in the empirical model as control variables. Finally, time dummy variable is included in the model to control time specific effect in each year. To better understand the relationship between the CEO's and executive's compensation with earnings management, two regression models are applied. In the first regression model, CEO

compensation components are regressed against the earnings management by applying equation 4.2, whereas, in the second regression model, executive's compensation components are regressed against the earnings management by applying the equation 4.2, which are as follows:

$$EM_{i,t} = \beta_0 + \beta_1 CEOTC_{i,t-1} + \beta_2 CEOEBC_{i,t-1} + \beta_3 CEOSALARY_{i,t-1} + \beta_4 CEOBONUS_{i,t-1}$$
$$+ \beta_5 CEOECR_{i,t-1} + \lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t}$$
$$+ \lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t} \qquad (4.2)$$

$$EM_{i,t} = \beta_0 + \beta_1 EXTC_{i,t-1} + \beta_2 EXEBC_{i,t-1} + \beta_3 EXSALARY_{i,t-1} + \beta_4 EXBONUS_{i,t-1} +$$
$$\beta_5 CEOECR_{i,t-1} + \lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} +$$
$$\lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t} \qquad (4.3)$$

Where:

| | |
|---|---|
| $EM_{i,t}$ | Discretionary accruals for firm $i$ in year $t$ |
| $REM_{i,t}$ | Real Earnings Management for firm $i$ in year $t$ |
| $CEOTC_{i,t-1}$ | CEO's total compensation for firm $i$ in the previous year |
| $EXTC_{i,t-1}$ | Executive's total compensation for firm $i$ in the previous year |
| $CEOEBC_{i,t-1}$ | CEO's Equity-based compensation for firm $i$ in the previous year |
| $EXEBC_{i,t-1}$ | Executive's equity-based compensation for firm $i$ in the previous year |
| $CEOSALARY_{i,t-1}$ | Salary received by the CEO for firm $i$ in the previous year |
| $EXSALARY_{i,t-1}$ | Salary received by the Executives for firm $i$ in the previous year |
| $CEOBONUS_{i,t-1}$ | Bonus received by the CEO for firm $i$ in the previous year |
| $EXBONUS_{i,t-1}$ | Bonus received by the Executives for firm $i$ in the previous year |
| $CEOECR_{i,t-1}$ | CEO's equity-based compensation to total compensation ratio for firm $i$ in the previous year |
| $EXECR_{i,t-1}$ | Executive Equity-based compensation to total compensation ratio for firm $i$ in the previous year |
| $LEV_{i,t-1}$ | Leverage for firm $i$ in the previous year |
| $FS_{i,t-1}$ | Firm Size for firm $i$ in the previous year |
| $ROA_{i,t-1}$ | Return on asset firm $i$ in the previous year |
| $AQ_{i,t-1}$ | Audit Quality for firm $i$ in the previous year |

| $SG_{i,t}$ | Sales growth for firm $i$ in the current year |
| --- | --- |
| $OCF_{i,t}$ | Operating Cash Flow for firm $i$ in year $t$ |
| $LOSS_{i,t-1}$ | Dummy variable which takes the value of 1 if ROA is negative and 0 otherwise for firm $i$ in the previous year. |
| $\sum \lambda_j YD_j$ | Year Dummy fixed effect Variable from 2008 to 2018 represents the number of years to control time specific effect in each year |
| $\beta_0$ | Constant or intercept |
| $\beta_1$ To $\beta_{10}$ | Coefficients for independent variables |
| $\lambda_1$ To $\lambda_8$ | Coefficient values for control variables |
| $\varepsilon_{i,t}$ | Residual or error term |

All variables are defined in Table 4.1.

### 4.4.4. Regression Analysis – Discretionary Accruals

The impact of the components of the executive compensation is tested on the discretionary accruals by employing a sample of companies comprising of FTSE 350 listed companies. Discretionary accrual is a dependent variable, whereas, five independent variables are employed that includes CEO total compensation, CEO equity-based compensation, CEO salary, CEO bonus and CEO's equity-based compensation to total compensation ratio. Earnings management is predicted by applying three empirical regression models that comprise of Jones model (1991), modified Jones model (1996) and Kothari model (2005) and finally, earnings management model that is estimated by applying the results of the Jones model (1991), modified Jones model (1996) and Kothari model (2005) and the first principal component values.

Based on the results and findings of the discretionary accruals Jones model (DJM), modified Jones model (DMJM), Kothari Model (DKM) and Earnings Management model (EARNMGT), CEO total compensation is negatively related to the discretionary accruals, in addition, the results are significant at 1% of significance level. The results suggest that when the CEO total compensation is higher, there are less or no earnings management and therefore, the financial reporting quality is higher.

CEO equity-based compensation is positively associated with earnings management and the result is statistically significant at 1% of significance level. It can be inferred from the results that higher CEO equity-based compensation cause an increase in the earnings

management in companies that are listed on FTSE 350 during 2007 to 2018. The results of this research study are consistent with the empirical findings of the Bergstresser and Philippon (2006), Meek et al. (2007), Paulsen (2001), Cheng and Warfield (2005), Jensen (2001) and Sun and Hovey (2012).

The CEO Bonus is positively related with earnings management; however, the result is statistically insignificant. The finding of this research study, which states that the CEO Bonus is positively related with earnings management, lends support to Gao and Shrieves (2002), Cheng and Warfield (2005) and Holthaussen et al. (1995).

CEO Salary is negatively related with earnings management; however, the result is statistically insignificant. It can be inferred from the empirical findings of this research study that the CEO's fixed component of the total compensation i.e., CEO salary is helping in mitigating and controlling earnings management and discourages the management to engage in earnings management. The findings and results of this empirical study are consistent with the results and findings of Gao and Shrieves (2002).

CEO equity-based compensation to total compensation ratio is positively associated with earnings management and the result is statistically significant at 1% of significance level. The findings suggest that higher CEO equity-based compensation to total compensation ratio cause an increase in the earnings management. The results of this research study are consistent with the empirical findings of the Bergstresser and Philippon (2006), Meek et al. (2007), Paulsen (2001), Jensen (2001) and Sun and Hovey (2012).


[TABLE 4.4]


Based on the results and findings of the discretionary accruals Jones model (DJM), modified Jones model (DMJM), Kothari Model (DKM) and Earnings Management model (EARNMGT), the executive's total compensation is negatively related with the earnings management, moreover, the results are statistically significant at 1% of significance level. From the findings, it can be inferred that the total compensation paid to executives can negatively affect the behaviour of the executives in manipulating the accounting earnings and engage in opportunistic earnings management practices. The empirical findings of this research study are in contradiction with the empirical findings of the Watts and Zimmerman (1986), Healy (1985), Gaver et al. (1995) and Balsam (1998).

Executives equity-based compensation is positively associated with the earnings management; however, the result is statistically insignificant, which suggests that equity-based

compensation does not help in mitigating and controlling the unethical accounting practices such as earnings management in companies listed on FTSE 350 during 2007 to 2018. The results of this research study are consistent to the empirical findings of the Bergstresser and Philippon (2006), Meek et al. (2007), Paulsen (2001), Cheng and Warfield (2005), Jensen (2001) and Sun and Hovey (2012).

Executives bonus is negatively associated with earnings management at a significance level of 1%, which suggests that bonus helps in mitigating and controlling the unethical accounting practices and helps in improving the quality of financial reporting in companies listed on FTSE 350 during 2007 to 2018. The finding of this research study, which states that the executive's bonus is negatively associated with earnings management are in contradiction with the empirical findings of Gao and Shrieves (2002), Cheng and Warfield (2005) and Holthaussen et al. (1995).

The executive's salary is positively related with earnings management at a significant level of 1%. The findings of this research study are contrary to the empirical findings of Gao and Shrieves (2002).

Executive's equity-based compensation to total compensation ratio is positively associated with earnings management, however, the results are insignificant. It can be inferred from the findings that higher executive's equity-based compensation to total compensation ratio cause an increase in the earnings management. The results of this research study are consistent with the empirical findings of the Bergstresser and Philippon (2006), Meek et al. (2007), Paulsen (2001), Jensen (2001) and Sun and Hovey (2012).

[TABLE 4.5]

### 4.4.5. Robustness Test – Real Earnings Management

To examine the consistency of our results, I run the robustness tests by testing the impact of the CEO's and executive's compensation on real earnings management. The real earnings management are measured by applying the Roychowdhury (2006) model.

$$REM_{i,t} = \beta_0 + \beta_1 CEOTC_{i,t-1} + \beta_2 CEOEBC_{i,t-1} + \beta_3 CEOSALARY_{i,t-1} +$$
$$\beta_4 CEOBONUS_{i,t-1} + \beta_5 CEOECR_{i,t-1} + \lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} +$$
$$\lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} + \lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t} \qquad (4.4)$$

$$REM_{i,t} = \beta_0 + \beta_1 EXTC_{i,t-1} + \beta_2 EXEBC_{i,t-1} + \beta_3 EXSALARY_{i,t-1} + \beta_4 EXBONUS_{i,t-1} +$$

$$\beta_5 CEOECR_{i,t-1} + \lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} +$$

$$\lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t} \qquad (4.5)$$

Where:

| | |
|---|---|
| $EM_{i,t}$ | Discretionary accruals for firm $i$ in year $t$ |
| $REM_{i,t}$ | Real Earnings Management for firm $i$ in year $t$ |
| $CEOTC_{i,t-1}$ | CEO's total compensation for firm $i$ in the previous year |
| $EXTC_{i,t-1}$ | Executive's total compensation for firm $i$ in the previous year |
| $CEOEBC_{i,t-1}$ | CEO's Equity-based compensation for firm $i$ in the previous year |
| $EXEBC_{i,t-1}$ | Executive's equity-based compensation for firm $i$ in the previous year |
| $CEOSALARY_{i,t-1}$ | Salary received by the CEO for firm $i$ in the previous year |
| $EXSALARY_{i,t-1}$ | Salary received by the Executives for firm $i$ in the previous year |
| $CEOBONUS_{i,t-1}$ | Bonus received by the CEO for firm $i$ in the previous year |
| $EXBONUS_{i,t-1}$ | Bonus received by the Executives for firm $i$ in the previous year |
| $CEOECR_{i,t-1}$ | CEO's equity-based compensation to total compensation ratio for firm $i$ in the previous year |
| $EXECR_{i,t-1}$ | Executive Equity-based compensation to total compensation ratio for firm $i$ in the previous year |
| $LEV_{i,t-1}$ | Leverage for firm $i$ in the previous year |
| $FS_{i,t-1}$ | Firm Size for firm $i$ in the previous year |
| $ROA_{i,t-1}$ | Return on asset firm $i$ in the previous year |
| $AQ_{i,t-1}$ | Audit Quality for firm $i$ in the previous year |
| $SG_{i,t-1}$ | Sales growth for firm $i$ in the current year |
| $OCF_{i,t}$ | Operating Cash Flow for firm $i$ in year $t$ |
| $LOSS_{i,t-1}$ | Dummy variable which takes the value of 1 if ROA is negative and 0 otherwise for firm $i$ in the previous year. |
| $\sum \lambda_j YD_j$ | Year Dummy fixed effect Variable from 2008 to 2018 represents the number of years to control time specific effect in each year |
| $\beta_0$ | Constant or intercept |
| $\beta_1$ To $\beta_{10}$ | Coefficients for independent variables |
| $\lambda_1$ To $\lambda_8$ | Coefficient values for control variables |

$\varepsilon_{i,t}$ Residual or error term

All variables are defined in Table 4.1.

The relationship of the components of the CEO's compensation is tested on the real earnings management by employing a sample of companies comprising of FTSE 350 listed companies. Real earnings management is a dependent variable, whereas, five independent variables are employed that includes CEO total compensation, executive's total compensation, CEO equity-based compensation, executives' equity-based compensation, CEO salary, executive's salary, CEO bonus and executives' bonus. Real earnings management is predicted by applying Roychowdhury (2006) model.

Based on the results and findings of the real earnings management model (REM), CEO total compensation is negatively related to the discretionary accruals, however, the results are insignificant. The real earnings management results are consistent with the earnings management model, however, the real earnings management relationship with CEO total compensation are statistically insignificant.

CEO equity-based compensation is negatively associated with real earnings management and the result is statistically insignificant. It can be inferred from the results that the real earnings management association with CEO equity-based compensation is in contrary to the result of earnings management.

The CEO bonus is negatively related with real earnings management and the results are statistically insignificant, which suggests that the association between real earnings management with CEO bonus is in contradiction with the association between earnings management with CEO bonus.

CEO Salary is positively related with real earnings management; however, the result is statistically insignificant. The results are in contradiction to the results of earnings management.

CEO equity-based compensation to total compensation ratio is negatively associated with real earnings management and the result is statistically insignificant. It can be observed from the results that the association between CEO equity-based compensation to total compensation ratio is positive with earnings management and negative with real earnings management, which suggests that the results are not consistent.

[TABLE 4.6]

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Based on the results and findings of the real earnings management model (REM), the executive's total compensation is negatively related with the real earnings management, however, the results are statistically insignificant. The results show that the findings of the earnings management model and real earnings management model are consistent.

Executives equity-based compensation is negatively associated with the real earnings management; however, the results are statistically insignificant. It can be inferred from the results that the real earnings management association with executive's equity-based compensation is in contrary to the result of earnings management.

There is a negative association between executive's bonus and real earnings management, in addition, the results are statistically insignificant. The real earnings management results are consistent with the earnings management model, however, the real earnings management relationship with executive's bonus is statistically insignificant.

The executive's salary is positively related with real earnings management; however, the results are statistically insignificant. The findings of the real earnings management model are consistent with the earnings management model and in both models, the association of executive's salary is positive, however, the findings of the real earnings management model are statistically insignificant.

The association between executive's compensation to total compensation ratio and the real earnings management is negative, moreover, the results are statistically insignificant. The results and findings show that the real earnings management association with executive's equity-based compensation to total compensation ratio is in contrary to the result of earnings management model.

[TABLE 4.7]

4.4.6. Conclusion

The impact of the components of the executive compensation is tested on the discretionary accruals by employing a sample of companies comprising of FTSE 350 listed companies. Earnings management proxy for discretionary accruals is the dependent variable, whereas, ten (10) independent variables are employed that includes CEO's total compensation, executive's total compensation, CEO's equity-based compensation, executives' equity-based compensation, CEO's salary, executive's salary, CEO's bonus, executives' bonus, CEO's equity-based compensation to total compensation ratio and executive's equity-based compensation to total compensation ratio. CEO equity-based compensation, CEO bonus, CEO

equity-based compensation to total compensation ratio, executive's equity-based compensation, executive's salary and executive's equity-based compensation to total compensation ratio are positively related to earrings management, whereas, CEO total compensation, CEO salary, executive total compensation and executive's bonus are negatively related with the earnings management.

In contrast to the results of the discretionary accruals models, the results of the real earnings management model show that CEO total compensation, CEO equity-based compensation, CEO bonus, CEO equity-based compensation to total compensation ratio, executive's total compensation, executive's equity-based compensation, executive's bonus, and executive's equity-based compensation to total compensation ratio are negatively associated with real earnings management, whereas, CEO salary and executive's salary are positively associated with real earnings management.

4.5. Conclusion

This research study is initiated to study the impact of the components of the CEO and executive compensation on the discretionary accruals in companies listed on FTSE 350. The sample period starts from 2007 to 2018 and employs the annual data because most of the companies are preparing and publishing their financial statements annually. The chosen period is also important because a research study conducted from 2007 to 2018 enables the research study to understand and explain the impact of executive compensation on earnings management in the post-recession period. The financial and executive compensation data is collected from Bloomberg and DataStream.

To study the impact of the components of the CEO and executive compensation on the discretionary accruals, Ordinary Least Square (OLS) model is applied. For this research study, discretionary accrual is a dependent variable, whereas, independent variables comprise of CEO total compensation, executive's total compensation, CEO equity-based compensation, executives' equity-based compensation, CEO salary, executive's salary, CEO bonus and executives' bonus. In addition, leverage (LEV), return on assets (ROA), firm size (FS), audit quality (AQ), sales growth ratio (SG), change in operating cash flow ($\Delta OCF$) and loss (LOSS) are included in the empirical model as control variables. Finally, time dummy variable is included in the model to control time specific effect in each year. Discretionary accruals are predicted by applying three models that includes Jones model (JM), modified Jones model (MJM) and Kothari model (KM). Finally, earnings management (EARNMGT) discretionary accruals model is measured based on the results of above three models by applying the first principal component function

CEO equity-based compensation, CEO bonus, CEO equity-based compensation to total compensation ratio, executive's equity-based compensation, executive's salary and executive's equity-based compensation to total compensation ratio are positively related to earrings management, whereas, CEO total compensation, CEO salary, executive total compensation and executive's bonus are negatively related with the earnings management.

5.  Chapter Five – Conclusion

    5.1. Findings

    This research study is initiated to understand the role of corporate governance in controlling unethical accounting practices such as earnings management and in enhancing the quality of financing reporting. To better understand the role and effectiveness of corporate governance in relation to earnings management, the corporate governance is decomposed in three (3) parts that comprise of board of directors, audit committee and compensation committee. In this research study, earnings management a proxy for the discretionary accruals is the dependent variable, whereas, board of directors' characteristics, audit committee attributes and executive's compensation components are independent variables. For this research study, a sample comprising of all listed companies on FTSE 350 is used. The sample period is from 2007 to 2018 and employs the annual data because most of the companies prepare and publish their financial statements annually.

    Earnings management is the dependent variable in all the three essays. In relation to predicting the earnings management, there is not even a single discretionary accruals model on which the scholars agree for predicting the discretionary accruals; moreover, each model carries its own drawbacks. Therefore, to overcome the existing concerns in the literature and minimize the error possibility, the first principal component rule is applied on the results of the three discretionary accrual models that comprises of Jones model (JM), modified Jones model (MJM) and Kothari model (KM) to measure the earnings management. The application of the first principal component rule is highly significant because, this model carries the components of more than one model and is more inclusive of other methods. In addition, it can be evidenced from the results that the earnings management model has the highest R-Square as compare to other three models that comprise of Jones model (JM), modified Jones model (MJM) and Kothari model (KM), which suggests that earnings management model explanatory power is comparatively higher and better reflect the relationship between the corporate governance characteristics and earnings management. Therefore, it can be stated that the new earnings management model being higher R-Square better reflect the relationship between the corporate governance characteristics and earnings management and enhances the validity and explanatory power of the model.

    Earnings management and board characteristics investigate and study the association of the earnings management and board characteristics. Board characteristics in this research

study comprised of five characteristics that includes board independence, board size, CEO duality, number of board meetings and gender diversity. To test the association of the board characteristics and earnings management, five (5) hypotheses are developed. The findings show that board size and board independence are negatively associated with earnings management and the relationship is statistically significant, which suggests that larger boards with higher percentage of independent directors on the board are more effective in controlling earnings management practices. CEO duality and earnings management are positively related. The impact of the number of board meetings on earnings management is positive and is statistically significant. Based on the results, it can be inferred that when the board meets more frequency, the board loses its control over unnecessary practices such as earnings management. There is a negative and statistically significant association between gender diversity and earnings management, from which it can be inferred that when the percentage of women on the board is higher, the board role becomes more effective in terms of controlling earnings management. The collective impact of all board characteristics on earnings management is statistically significant, which suggests that there is a statistically significantly association between earnings management and board characteristics in FTSE 350 listed companies. In comparison to the results of the discretionary accruals models, the results of the real earnings management model show that board size, board independence, CEO duality and gender diversity are positively associated with real earnings management, however, the number of audit committee meetings are negatively related to real earnings management.

Earnings management and audit committee investigate and study the association of the earnings management and audit committee characteristics in the companies listed on FTSE 350 from 2007 to 2018. The empirical findings show that the audit committee size (ACS) is negatively associated to earnings management and the result is statistically significant. The results suggest that those companies in which the audit committee size is large are more effective in controlling earnings management. Audit committee independence (ACI) is positively related to earnings management and the relationship is statistically significant, from which, it can be inferred that when the number of the independent directors on the audit committee is higher, the audit committee role is ineffective and inefficient in controlling earnings management. Number of audit committee members with financial expertise (ACFXP) and earnings management are negative related, and the results are statistically significant. The results suggest that those audit committees in which, the number of the audit committee member's with financial expertise in accounting or finance is higher, are more effective in

controlling earnings management. The coefficient value of the number of audit committee meetings (NACM) is negative and statistically significant based on the regression results of Jones model, modified Jones model, Kothari model and earnings management model. The results and findings suggest that an audit committee is more effective in controlling earnings management, when it meets more frequently. In comparison to the results of the discretionary accruals models, the results of the real earnings management model show that ACS, ACFXP and NACM are positively associated with real earnings management, whereas ACI is negatively associated with real earnings management.

Earnings management and executive's compensation studies the relationship of the earnings management and executive's compensation in the companies listed on FTSE 350 from 2007 to 2018. It is stated that most of the research conducted uses the entire executive compensation as one value or tests a few components of the executive compensation. This research study decomposed the entire executive compensation into fixed and variable components (salary and bonus), in cash and equity based compensation, and in short-term and long-term compensation and examined the impact of the each compensation components on the earnings management to better understand what form of executive compensation significantly or insignificantly, and positively or negatively affects the discretionary accruals in the listed companies on FTSE 350 during 2007 to 2018. The empirical results and findings of this research study show that CEO equity-based compensation, CEO bonus, CEO equity-based compensation to total compensation ratio, executive's equity-based compensation, executive's salary and executive's equity-based compensation to total compensation ratio are positively related to earnings management, whereas, CEO total compensation, CEO salary, executive total compensation and executive's bonus are negatively related with the earnings management. As compare to the results of the discretionary accruals models, the results of the real earnings management model show that CEO total compensation, CEO equity-based compensation, CEO bonus, CEO equity-based compensation to total compensation ratio, executive's total compensation, executive's equity-based compensation, executive's bonus, and executive's equity-based compensation to total compensation ratio are negatively associated with real earnings management, whereas, CEO salary and executive's salary are positively associated with real earnings management.

## 5.2. Limitations

To study and research the association of the corporate governance and earnings management, the financial and corporate governance data is collected from Bloomberg for all

listed companies on the FTSE 350 from 2007 to 2018. One of the major limitations that is faced in collecting data was the missing data problem. For some of the companies, the financial and corporate governance data were missing.

## 5.3. Suggestions for future research

This research study is conducted by only including the listed companies that are listed on the FTSE 350. In future, to expand the scale of the research study, the unlisted companies can be included in the sample study. Moreover, the relationship between the board characteristics and earnings management is studied by using five board characteristics that comprised of board size, board independence, CEO duality, number of board meetings and gender diversity. In future, the study can be expanded by including more board characteristics. In the research study of earnings management and audit committee attributes, the relationship of four audit committee attributes that include audit committee size, audit committee independence, audit committee member's financial expertise and number of audit committee during a year are tested on the earnings management. In future, this research study can be conducted by adding more audit committee attributes. In the research study of earnings management and executive's compensation, the components of the executive compensation are measured by using the natural logarithm, however, in future; the components of the executive compensation can be measured by the ratio of each component of compensation to total compensation.

To better understand the UK stock market in comparison to other stock markets in relation to the association between the corporate governance attributes and earnings management, this research study can be conducted by conducting comparative analysis of the UK Stock market with other stock markets. In addition, this research study is conducted by employing a data sample comprised of all listed companies on the FTSE 350. To better understand the relationship between corporate governance attributes and earnings management, in future, this research study can be conducted as a comparative analysis of different sectors in FTSE 350. This can enable the research study to understand more specifically the relationship between corporate governance attributes and earnings management in each sector and conduct a comparative analysis.

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**Tables**

**Table 2.1**
Variable Definition

| Variable | Definition | Symbol |
|---|---|---|
| Earnings management | Earnings management is a proxy for discretionary accruals that is estimated by applying three models that includes Jones Model (JM), Modified Jones Model (MJM) and Kothari Model (KM). Finally, earnings management is estimated based on the results of above three models by applying the principal component function.<br><br>$EM_{i,t} = (0.577*DAJ_{i,t})+(0.577*DAMJ_{i,t})+(0.577*KDA_{i,t})$ | $EM_{i,t}$ |
| Board Size | Total Number of Directors serving on the board to participate in the decision making of the firm. Board size is the natural logarithm of the total number of board members in a board ($LNBS_{i,t}$). | $BS_{i,t}$ |
| Board Independence | Board Independence is estimated by taking the number of independent directors as a proportion of the board size. | $BI_{i,t}$ |
| CEO Duality | CEO Duality is a dummy variable being 1 for firms with CEO-Chairman Duality and 0 otherwise. | $CEOD_{i,t}$ |
| Number of Board meeting | Number of Board Meeting is proxy for the board activity, which is the total number of meetings held during a particular financial year. Board activity is the natural logarithm of the number of board meeting in a financial year ($LN(NBM_{i,t})$). | $NOBM_{i,t}$ |
| Percentage of women on the board | Gender Diversity is proxy for the percentage of women on the board. It is estimated by taking the number of independent directors as a percentage of the total number of directors in a board. | $GENDIV_{i,t}$ |
| Leverage | Leverage is estimated by taking total debt as a percentage of the total capital at the end of the financial year, in which, total debt comprised of short term and long-term debt and total capital includes short term debt, long term debt and equity | $LEV_{i,t}$ |
| Firm Size | The natural logarithm of market value of the equity at the end of financial year ($LNFS_{i,t}$). The number of outstanding shares and market price per share estimates market value of equity at the end of the financial year. | $FS_{i,t}$ |
| Return on assets | Return on asset is estimated by dividing operating profit by total assets. | $ROA_{i,t}$ |
| Audit Quality | Audit quality is measured by taking the natural log of the audit fees in the previous year | $AQ_{i,t}$ |
| Sales Growth | Sales growth is estimated by taking the percentage change in sales in the current year. | $SG_{i,t}$ |

| LOSS | Dummy variable which takes the value of 1if the ROA is negative and 0 otherwise. | $LOSS_{i,t}$ |
| Change in Operating Cash Flow | Operating cash flow is estimated by taking the change in Operating cash flow and dividend by the previous year operating cash flow. | $OCF_{i,t}$ |
| Year Dummy | Year Dummy represent the number of years | $YD_i$ |

Notes: The table presents the definition and estimation methodology for dependent and independent variables used in the research study of analysing the impact of board characteristics on the discretionary accruals during the period of 2007 – 2018.

**Table – 2.2 Descriptive Statistics – Earnings Management and Board Characteristics**

|  | Mean | Median | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| REM | 0.0063 | -0.1255 | 0.4823 | -1.7086 | 3.4519 |
| DAJ | 0.0007 | 0.0302 | 0.5152 | -14.6121 | 3.9252 |
| DAMJ | 0.0002 | 0.0301 | 0.5152 | -14.6125 | 3.9579 |
| DAK | 0.0003 | 0.0297 | 0.5151 | -14.6113 | 3.9639 |
| EM | 0.0002 | 0.0522 | 0.8923 | -25.3088 | 6.8399 |
| BS | 1.9881 | 2.1972 | 0.6854 | 0.0000 | 3.0910 |
| BI | 1.4959 | 1.6094 | 0.6152 | 0.0000 | 2.7726 |
| CEOD | 0.0264 | 0.0000 | 0.5192 | 0.0000 | 1.0000 |
| NOBM | 1.9527 | 2.0794 | 0.6154 | 0.0000 | 4.3694 |
| GENDIV | 0.1432 | 0.1250 | 0.1293 | 0.0000 | 0.3333 |
| LEV | 0.2280 | 0.2115 | 0.2048 | 0.0000 | 2.6667 |
| FS | 7.6470 | 7.5559 | 2.4865 | 0.0000 | 14.8060 |
| ROA | 0.0726 | 0.0555 | 0.1331 | -0.5724 | 2.3546 |
| AQ | -0.1142 | 0.0000 | 1.3224 | -5.2983 | 6.3759 |
| SG | 0.2964 | 0.0522 | 10.6208 | -8.7897 | 59.6071 |
| ΔOCF | 0.0104 | 0.0042 | 0.0715 | -1.3697 | 1.3744 |
| LOSS | 0.8871 | 1.0000 | 0.3165 | 0.0000 | 1.0000 |

Notes: The table presents summary statistics of dependent and independent variables used in the research study of analysing the impact of board characteristics on the discretionary accruals and real earnings management during the period of 2007 – 2018. All variables are defined in Table 2.1.

**Table – 2.3 Correlation Matrix – Earnings Management and Board Characteristics**

|    |        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|----|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1  | EM     | 1.00 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 2  | REM    | 0.00 | 1.00 |      |      |      |      |      |      |      |      |      |      |      |      |
| 3  | BS     | 0.02 | 0.02 | 1.00 |      |      |      |      |      |      |      |      |      |      |      |
| 4  | BI     | 0.10 | 0.04 | -0.56 | 1.00 |      |      |      |      |      |      |      |      |      |      |
| 5  | CEOD   | -0.54 | 0.01 | 0.00 | -0.09 | 1.00 |      |      |      |      |      |      |      |      |      |
| 6  | NOBM   | 0.11 | 0.00 | 0.32 | -0.25 | -0.09 | 1.00 |      |      |      |      |      |      |      |      |
| 7  | GENDIV | -0.20 | 0.01 | 0.31 | 0.06 | 0.12 | 0.21 | 1.00 |      |      |      |      |      |      |      |
| 8  | LEV    | 0.06 | 0.05 | 0.07 | -0.05 | -0.04 | 0.07 | 0.08 | 1.00 |      |      |      |      |      |      |
| 9  | FS     | 0.01 | 0.00 | 0.40 | -0.05 | 0.00 | 0.44 | 0.28 | 0.19 | 1.00 |      |      |      |      |      |
| 10 | ROA    | -0.01 | 0.02 | 0.06 | -0.09 | 0.01 | 0.07 | 0.04 | -0.18 | -0.14 | 1.00 |      |      |      |      |
| 11 | AQ     | -0.09 | 0.04 | 0.22 | 0.19 | 0.03 | 0.05 | 0.17 | 0.02 | 0.48 | -0.14 | 1.00 |      |      |      |
| 12 | SG     | 0.00 | -0.01 | -0.01 | -0.02 | 0.02 | -0.01 | 0.01 | -0.02 | -0.01 | 0.01 | 0.00 | 1.00 |      |      |
| 13 | ΔOCF   | 0.01 | 0.02 | -0.01 | -0.04 | 0.00 | 0.00 | -0.02 | 0.00 | -0.08 | 0.19 | -0.08 | -0.02 | 1.00 |      |
| 14 | LOSS   | -0.01 | 0.00 | 0.02 | -0.07 | 0.01 | 0.01 | -0.01 | -0.20 | -0.08 | 0.36 | -0.01 | 0.01 | 0.00 | 1.00 |

Note: This table presents the correlation among the variables used in this research study of analysing the impact of the board characteristics on earnings management during the period of 2007 – 2018. All variables are defined in Table 2.1.

**Table 2.4 Earnings Management and Board Characteristics**

$$EM_{i,t} = \beta_0 + \beta_1 BS_{i,t-1} + \beta_2 BI_{i,t-1} + \beta_3 CEOD_{i,t-1} + \beta_4 NOBM_{i,t-1} + \beta_5 GENDIV_{i,t-1} + \lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} + \lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t}$$

| | Dependent Variables | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| VARIABLES | DAJ | DAMJ | DAK | EM |
| Constant | -0.5620*** | -0.561*** | -0.5680*** | -0.9760*** |
| BS | -0.1870*** | -0.1870*** | -0.1870*** | -0.3240*** |
| BI | -0.6720*** | -0.6720*** | -0.6720*** | -1.1640*** |
| CEOD | 0.2490*** | 0.2490*** | 0.2490*** | 0.4320*** |
| NOBM | 0.0390** | 0.0397** | 0.0398** | 0.0686** |
| GENDIV | -1.0520*** | -1.0510*** | -1.0510*** | -1.820*** |
| LEV | 0.1230** | 0.1280** | 0.1270** | 0.2180** |
| FS | -0.0334*** | -0.0338*** | -0.0337*** | -0.0582*** |
| ROA | -0.0840 | -0.0819 | -0.0111 | -0.1020 |
| AQ | -0.0527*** | -0.0527*** | -0.0525*** | -0.0912*** |
| SGR | 0.0008 | 0.0008 | 0.0008 | 0.0014 |
| OCF | 0.0167 | 0.0200 | 0.0211 | 0.0334 |
| LOSS | 0.0248 | 0.0250 | 0.0255 | 0.0435 |
| Year Dummy | Yes | Yes | Yes | Yes |
| F-Statistics | 31.47*** | 31.51*** | 31.41*** | 31.45*** |
| R-squared | 0.4628 | 0.4613 | 0.4594 | 0.4612 |
| Observations | 3,109 | 3,109 | 3,109 | 3,109 |

Note: This table summarizes and presents the regression test results that estimate the impact of board size, board independence, CEO Duality, Number of board meetings and Gender diversity on discretionary accruals during the period of 2007 – 2018 for FTSE 350 Listed companies. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 2.1.

**Table – 2.5 – Real Earning Management and Board Characteristics**

$$REM_{i,t} = \beta_0 + \beta_1 BS_{i,t-1} + \beta_2 BI_{i,t-1} + \beta_3 CEOD_{i,t-1} + \beta_4 NOBM_{i,t-1} + \beta_5 GENDIV_{i,t-1} + \lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} + \lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t}$$

| VARIABLES | Dependent Variables |
|---|---|
| | Real Earnings Management (REM) |
| Constant | -0.0995 |
| BS | 0.0597** |
| BI | 0.1700*** |
| CEOD | 0.0274** |
| NOBM | -0.0117 |
| GENDIV | 0.0067 |
| LEV | 0.0799* |
| FS | -0.0067 |
| ROA | 0.1420** |
| AQ | 0.0048 |
| SGR | 0.0001 |
| OCF | -0.0393 |
| LOSS | -0.0281 |
| Year Dummy | Yes |
| F-Statistics | 3.2800*** |
| R-squared | 0.0100 |
| Observations | 3109.0 |

Note: This table summarizes and presents the regression test results that estimate the impact of board size, board independence, CEO Duality, Number of board meetings and Gender diversity on the real earnings management during the period of 2007 – 2018 for FTSE 350 Listed companies. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 2.

**Table 3.1**
Variable Definition

| Variable | Definition | Symbol |
|---|---|---|
| Earnings management | Earnings management is a proxy for discretionary accruals that is estimated by applying three models that includes Jones Model (JM), Modified Jones Model (MJM) and Kothari Model (KM). Finally, earnings management is estimated based on the results of above three models by applying the first principal component function. $EM_{i,t} = (0.578*DAJ_{i,t})+(0.578*DAMJ_{i,t})+(0.576*KDA_{i,t})$ | $EM_{i,t}$ |
| Audit Committee Size | Total number of the audit committee members in an audit committee. Audit committee size is the natural logarithm of the total number of audit committee members in an audit committee ($Ln (1+ACS_{i,t})$). | $ACS_{i,t}$ |
| Audit Committee Independence | Audit Committee Independence is measured by taking the natural log of the number of independent directors on the board of directors. | $ACI_{i,t}$ |
| Audit Committee Financial Expertise | Audit committee financial expertise is estimated by taking the number of audit committee member's with financial expertise as a percentage of the audit committee size. | $ACFEX_{i,t}$ |
| Number of Audit Committee meetings in a year | Number of Audit committee meetings is the number of audit committee meetings in a fiscal year. Number of audit committee is estimated by taking the natural logarithm of the number of audit committee meeting in a financial year. | $NACM_{i,t-1}$ |
| Leverage | Leverage is estimated by taking total debt as a percentage of the total capital at the end of the financial year, in which, total debt comprised of short term and long-term debt and total capital includes short term debt, long term debt and equity. | $LEV_{i,t}$ |
| Firm Size | The natural logarithm of market value of the equity at the end of financial year ($LNFS_{i,t}$). The number of outstanding shares and market price per share estimates market value of equity at the end of the financial year. | $FS_{i,t}$ |
| Return on assets | Return on asset is estimated by dividing operating profit by total assets. | $ROA_{i,t}$ |
| Audit Quality | Audit quality is measured by taking the natural log of the audit fees in the previous year | $AQ_{i,t}$ |
| Sales Growth | Sales growth is estimated by taking the percentage change in sales in the current year. | $SG_{i,t}$ |
| LOSS | Dummy variable which takes the value of 1if the ROA is negative and 0 otherwise. | $LOSS_{i,t}$ |
| Change in Operating Cash Flow | Operating cash flow is estimated by taking the change in Operating cash flow and dividend by the previous year operating cash flow. | $OCF_{i,t}$ |

| Year Dummy | Year Dummy represent the number of years | $YD_i$ |
|---|---|---|

Notes: The table presents the definition and estimation methodology for dependent and independent variables used in the research study of analysing the impact of audit committee attributes on the discretionary accruals during the period of 2007 – 2018.

**Table – 3.2 Descriptive Statistics - Earnings management and Audit Committee**

|  | Mean | Median | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| REM | 0.0063 | -0.1255 | 0.4823 | -1.7086 | 3.4519 |
| DAJ | 0.0007 | 0.0302 | 0.5152 | -14.6121 | 3.9252 |
| DAMJ | 0.0002 | 0.0301 | 0.5152 | -14.6125 | 3.9579 |
| DAK | 0.0003 | 0.0297 | 0.5151 | -14.6113 | 3.9639 |
| EM | 0.0002 | 0.0522 | 0.8923 | -25.3088 | 6.8399 |
| ACS | 1.3730 | 1.3863 | 0.5304 | 0.0000 | 2.3979 |
| ACI | 1.3693 | 1.3863 | 0.5141 | 0.0000 | 2.1972 |
| ACFEX | 0.9707 | 1.0000 | 0.2804 | 0.0000 | 9.0000 |
| NACM | 1.4872 | 1.6094 | 0.8189 | 0.0000 | 14.6780 |
| LEV | 0.2280 | 0.2115 | 0.2048 | 0.0000 | 2.6667 |
| FS | 7.6470 | 7.5559 | 2.4865 | 0.0000 | 14.8060 |
| ROA | 0.0726 | 0.0555 | 0.1331 | -0.5724 | 2.3546 |
| AQ | -0.1142 | 0.0000 | 1.3224 | -5.2983 | 6.3759 |
| SG | 0.2964 | 0.0522 | 10.6208 | -8.7897 | 59.6071 |
| ΔOCF | 0.0104 | 0.0042 | 0.0715 | -1.3697 | 1.3744 |
| LOSS | 0.8871 | 1.0000 | 0.3165 | 0.0000 | 1.0000 |

Notes: The table presents summary statistics of dependent and independent variables used in the research study of analysing the impact of Audit committee characteristics on the discretionary accruals during the period of 2007 – 2018. All variables are defined in Table 3.1.

**Table – 3.3 Correlation Matrix - Earnings management and Audit Committee**

|  |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | EM | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | REM | 0.00 | 1.00 |  |  |  |  |  |  |  |  |  |  |  |
| 3 | ACS | -0.03 | -0.02 | 1.00 |  |  |  |  |  |  |  |  |  |  |
| 4 | ACI | 0.05 | -0.02 | 0.51 | 1.00 |  |  |  |  |  |  |  |  |  |
| 5 | ACFEX | -0.42 | 0.01 | -0.02 | -0.07 | 1.00 |  |  |  |  |  |  |  |  |
| 6 | NACM | -0.41 | 0.02 | 0.38 | 0.37 | 0.38 | 1.00 |  |  |  |  |  |  |  |
| 7 | LEV | 0.06 | 0.05 | 0.02 | 0.02 | 0.00 | 0.00 | 1.00 |  |  |  |  |  |  |
| 8 | FS | 0.01 | 0.00 | 0.40 | 0.44 | -0.01 | 0.44 | 0.19 | 1.00 |  |  |  |  |  |
| 9 | ROA | -0.01 | 0.02 | 0.07 | 0.07 | -0.03 | 0.04 | -0.18 | -0.14 | 1.00 |  |  |  |  |
| 10 | AQ | -0.09 | 0.04 | 0.14 | 0.16 | 0.08 | 0.25 | 0.02 | 0.48 | -0.14 | 1.00 |  |  |  |
| 11 | SG | 0.00 | -0.01 | 0.00 | 0.00 | 0.02 | 0.01 | -0.02 | -0.01 | 0.01 | 0.00 | 1.00 |  |  |
| 12 | ΔOCF | 0.01 | 0.02 | -0.02 | 0.00 | -0.01 | -0.01 | 0.00 | -0.08 | 0.19 | -0.08 | -0.02 | 1.00 |  |
| 13 | LOSS | -0.01 | 0.00 | 0.03 | 0.05 | 0.01 | 0.03 | -0.20 | -0.08 | 0.36 | -0.01 | 0.01 | 0.00 | 1.00 |

Note: This table presents correlation matrix between the dependent and independent variables used in this research study of analysing the impact of the audit committee characteristics on earnings management during a period of 2007 – 2018. All variables are defined in Table 3.1.

**Table – 3.4 – Earnings Management and Audit Committee**

$$EM_{i,t} = \beta_0 + \beta_1 ACS_{i,t-1} + \beta_2 ACI_{i,t-1} + \beta_3 ACFEX_{i,t-1} + \beta_4 NACM_{i,t-1} + \lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} + \lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t}$$

| VARIABLES | Dependent Variables | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| | DAJ | DAMJ | DAK | EM |
| Constant | 0.4060*** | 0.4070*** | 0.4010*** | 0.7010*** |
| | | | | |
| ACS | -0.2650*** | -0.2650*** | -0.2650*** | -0.4590*** |
| ACI | 0.2850*** | 0.2850*** | 0.2860*** | 0.4940*** |
| ACFEX | -0.2170*** | -0.2170*** | -0.2170*** | -0.3760*** |
| NACM | -0.2100*** | -0.2100*** | -0.2100*** | -0.3630*** |
| | | | | |
| LEV | 0.0598 | 0.0647 | 0.0638 | 0.1090 |
| FS | -0.0036 | -0.0040 | -0.0039 | -0.0066 |
| ROA | -0.0947 | -0.0925 | -0.0218 | -0.1210 |
| AQ | -0.0420*** | -0.0420*** | -0.0418*** | -0.0727*** |
| SGR | 0.0007 | 0.0008 | 0.0007 | 0.0013 |
| OCF | 0.0528 | 0.0562 | 0.0572 | 0.0960 |
| LOSS | 0.0233 | 0.0234 | 0.0240 | 0.0408 |
| | | | | |
| Year Dummy | Yes | Yes | Yes | Yes |
| F-Statistics | 32.6200*** | 32.6500*** | 32.5200*** | 32.5900*** |
| R-squared | 0.2733 | 0.2722 | 0.2713 | 0.2722 |
| Observations | 3,109 | 3,109 | 3,109 | 3,109 |

Note: This table summarizes and presents the regression test results that estimate the impact of audit committee size, audit committee independence, audit committee member's financial expertise and number of audit committee meetings on discretionary accruals during the period of 2007 – 2018 for FTSE 350 Listed companies. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 3.1.

**Table – 3.5 – Real Earnings Management and Audit Committee**

$$REM_{i,t} = \beta_0 + \beta_1 ACS_{i,t-1} + \beta_2 ACI_{i,t-1} + \beta_3 ACFEX_{i,t-1} + \beta_4 NACM_{i,t-1} + \lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} + \lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t}$$

|  | Dependent Variables |
| --- | --- |
| VARIABLES | Real Earnings Management (REM) |
| Constant | 0.0219 |
| ACS | 0.0703** |
| ACI | -0.0618* |
| ACFEX | 0.0374 |
| NACM | 0.00483 |
| LEV | 0.0742 |
| FS | -0.0027 |
| ROA | 0.1420** |
| AQ | 0.0062 |
| SGR | 0.0001 |
| OCF | -0.0413 |
| LOSS | -0.0313 |
| Year Dummy | Yes |
| F-Statistics | 3.1700*** |
| R-squared | 0.0003 |
| Observations | 3,109.0 |

Note: This table summarizes and presents the regression test results that estimate the impact of audit committee size, audit committee independence, audit committee member's financial expertise and number of audit committee meetings on real earnings management during the period of 2007 – 2018 for FTSE 350 Listed companies. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 3.1.

**Table 4.1**

Variable Definition

| Variable | Definition | Symbol |
|---|---|---|
| Earnings management | Earnings management is a proxy for discretionary accruals that is estimated by applying three models that includes Jones Model (JM), Modified Jones Model (MJM) and Kothari Model (KM). Finally, earnings management is estimated based on the results of above three models by applying the first principal component function. $EM_{i,t} = (0.578*DAJ_{i,t})+(0.578*DAMJ_{i,t})+(0.576*KDA_{i,t})$ | $EARNMGT_{i,t}$ |
| CEO's and Executives total compensation | CEO's and Executives total compensation is estimated by using the natural logarithm of the total compensation that is paid to CEO's and Executives. (Ln (Total compensation$_{i,t}$)) | $TC_{i,t}$ |
| CEO's and Executives Equity Based Compensation | CEO's and Executive equity-based compensation is the difference between the total compensation and cash-based compensation. Finally, the equity-based compensation is estimated by using the natural logarithm of the Equity-based compensation that is paid to CEO's and Executives. (Ln (Equity − based compensation$_{i,t}$)) | $EBC_{i,t}$ |
| CEO's and Executives Base Salary | CEO's and Executive Salaries are estimated by taking the natural logarithm of the base salary that is paid to CEO's and Executives. (Ln (Base Salary$_{i,t}$)) | $SALARY_{i,t}$ |
| CEO's and Executives Bonuses | CEO's and Executive Bonuses are estimated by using the natural logarithm of the performance-based bonuses that is paid to CEO's and executives. (Ln (Bonuses$_{i,t}$)) | $BONUS_{i,t}$ |
| CEO's and Executive's equity-based compensation ratio | CEO's and Executive's Equity-based compensation to total compensation ratio is estimated by taking the Equity-based compensation as a proportion of the total compensation. | $EXECR_{i,t-1}$ |
| Leverage | Leverage is estimated by taking total debt as a percentage of the total capital at the end of the financial year, in which, total debt comprised of short term and long-term debt and total capital includes short term debt, long term debt and equity | $LEV_{i,t}$ |
| Firm Size | The natural logarithm of market value of the equity at the end of financial year ($LNFS_{i,t}$). The number of | $FS_{i,t}$ |

| | | |
|---|---|---|
| | outstanding shares and market price per share estimates market value of equity at the end of the financial year. | |
| Return on assets | Return on asset is estimated by dividing operating profit by total assets. | $ROA_{i,t}$ |
| Audit Quality | Audit quality is measured by taking the natural log of the audit fees in the previous year | $AQ_{i,t}$ |
| Sales Growth | Sales growth is estimated by taking the percentage change in sales in the current year. | $SG_{i,t}$ |
| LOSS | Dummy variable which takes the value of 1if the ROA is negative and 0 otherwise. | $LOSS_{i,t}$ |
| Change in Operating Cash Flow | Operating cash flow is estimated by taking the change in Operating cash flow and dividend by the previous year operating cash flow. | $OCF_{i,t}$ |
| Year Dummy | Year Dummy represent the number of years | $YD_i$ |

Notes: The table presents the definition and estimation methodology for dependent and independent variables used in the research study of analysing the impact of the component of the executive compensation on the discretionary accruals during the period of 2007 – 2018.

**Table – 4.2 Descriptive Statistics – Earnings Management and Executive Compensation**

| | Mean | Median | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| REM | 0.0063 | -0.1255 | 0.4823 | -1.7086 | 3.4519 |
| DAJ | 0.0007 | 0.0302 | 0.5152 | -14.6121 | 3.9252 |
| DAMJ | 0.0002 | 0.0301 | 0.5152 | -14.6125 | 3.9579 |
| DAK | 0.0003 | 0.0297 | 0.5151 | -14.6113 | 3.9639 |
| EM | 0.0002 | 0.0522 | 0.8923 | -25.3088 | 6.8399 |
| CEOTC | 10.7666 | 13.9868 | 6.2775 | 0.0000 | 20.6866 |
| CEOEBC | 9.0567 | 11.6451 | 5.8836 | 0.0000 | 17.9855 |
| CEOBONUS | 9.4465 | 12.8022 | 5.9988 | 0.0000 | 16.1181 |
| CEOSALARY | 10.7181 | 13.1480 | 5.2717 | 0.0000 | 20.6453 |
| CEOECR | 0.1627 | 0.1118 | 1.1089 | -33.3333 | 0.9789 |
| EXTC | 11.6242 | 14.7091 | 6.3851 | 0.0000 | 21.8527 |
| EXEBC | 9.9099 | 12.6115 | 6.0721 | -3.5066 | 20.6452 |
| EXBONUS | 10.4616 | 13.4814 | 5.9802 | 0.0000 | 21.0597 |
| EXSALARY | 11.6336 | 13.8785 | 5.3384 | -0.8749 | 21.2088 |
| EXECR | -0.2790 | 0.1263 | 9.3199 | -224.9528 | 0.9849 |
| LEV | 0.2280 | 0.2115 | 0.2048 | 0.0000 | 2.6667 |
| FS | 7.6470 | 7.5559 | 2.4865 | 0.0000 | 14.8060 |
| ROA | 0.0726 | 0.0555 | 0.1331 | -0.5724 | 2.3546 |
| AQ | -0.1142 | 0.0000 | 1.3224 | -5.2983 | 6.3759 |
| SG | 0.2964 | 0.0522 | 10.6208 | -8.7897 | 590.6071 |
| $\Delta$OCF | 0.0104 | 0.0042 | 0.0715 | -1.3697 | 1.3744 |
| LOSS | 0.8871 | 1.0000 | 0.3165 | 0.0000 | 1.0000 |

Notes: The table presents summary statistics of dependent and independent variables used in the research study of analysing the impact of the component of the executive compensation on the discretionary accruals for FTSE 350 Listed companies during the period of 2007 – 2018. All variables are defined in Table 4.1.

**Table – 4.3 Correlation Matrix - Earnings Management and Executive Compensation**

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | EM | 1.00 | | | | | | | | | | | | | | | | | | |
| 2 | REM | 0.00 | 1.00 | | | | | | | | | | | | | | | | | |
| 3 | CEOTC | 0.01 | -0.02 | 1.00 | | | | | | | | | | | | | | | | |
| 4 | CEOEBC | 0.06 | -0.01 | 0.52 | 1.00 | | | | | | | | | | | | | | | |
| 5 | CEOBONUS | 0.01 | 0.00 | 0.49 | 0.46 | 1.00 | | | | | | | | | | | | | | |
| 6 | CEOSALARY | 0.01 | 0.01 | 0.45 | 0.37 | 0.38 | 1.00 | | | | | | | | | | | | | |
| 7 | CEOECR | 0.10 | -0.01 | 0.11 | 0.23 | 0.05 | 0.08 | 1.00 | | | | | | | | | | | | |
| 8 | EXTC | 0.02 | -0.01 | 0.80 | 0.08 | 0.35 | 0.41 | 0.11 | 1.00 | | | | | | | | | | | |
| 9 | EXEBC | 0.03 | 0.00 | 0.49 | 0.32 | 0.42 | 0.36 | 0.20 | 0.42 | 1.00 | | | | | | | | | | |
| 10 | EXBONUS | 0.02 | 0.00 | 0.39 | 0.35 | 0.49 | 0.37 | 0.08 | 0.32 | 0.38 | 1.00 | | | | | | | | | |
| 11 | EXSALARY | 0.10 | 0.01 | 0.38 | 0.32 | 0.31 | 0.52 | 0.09 | 0.43 | 0.45 | 0.42 | 1.00 | | | | | | | | |
| 12 | EXECR | 0.00 | -0.01 | 0.07 | 0.08 | -0.01 | 0.02 | 0.06 | 0.01 | 0.11 | -0.03 | -0.03 | 1.00 | | | | | | | |
| 13 | LEV | 0.06 | 0.05 | 0.03 | 0.03 | 0.01 | 0.05 | 0.00 | 0.03 | 0.03 | 0.03 | 0.06 | -0.04 | 1.00 | | | | | | |
| 14 | FS | 0.01 | 0.00 | 0.42 | 0.43 | 0.32 | 0.41 | 0.07 | 0.43 | 0.43 | 0.35 | 0.41 | 0.00 | 0.19 | 1.00 | | | | | |
| 15 | ROA | -0.01 | 0.02 | 0.06 | 0.07 | 0.09 | 0.05 | 0.02 | 0.09 | 0.08 | 0.12 | 0.08 | 0.02 | -0.18 | -0.14 | 1.00 | | | | |
| 16 | AQ | -0.09 | 0.04 | 0.20 | 0.21 | 0.13 | 0.17 | 0.02 | 0.18 | 0.20 | 0.15 | 0.14 | -0.01 | 0.02 | 0.48 | -0.14 | 1.00 | | | |
| 17 | SG | 0.00 | -0.01 | -0.03 | -0.03 | 0.01 | 0.01 | 0.00 | -0.03 | -0.03 | 0.01 | 0.00 | 0.00 | -0.02 | -0.01 | 0.01 | 0.00 | 1.00 | | |
| 18 | ΔOCF | 0.01 | 0.02 | -0.01 | -0.01 | -0.01 | -0.01 | 0.01 | 0.00 | -0.01 | 0.00 | 0.00 | 0.02 | 0.00 | -0.08 | 0.19 | -0.08 | -0.02 | 1.00 | |
| 19 | LOSS | -0.01 | 0.00 | 0.09 | 0.10 | 0.15 | 0.06 | 0.01 | 0.09 | 0.10 | 0.14 | 0.07 | 0.04 | -0.20 | -0.08 | 0.36 | -0.01 | 0.01 | 0.00 | 1.00 |

Note: This table present the correlation matrix between variable used in this research study of analysing the impact of the CEO's and Executives compensation on earnings management during the period of 2007 – 2018. All variables are defined in Table 4.1.

**Table – 4.4 – Earnings Management and CEO's Compensation**

$$EM_{i,t} = \beta_0 + \beta_1 CEOTC_{i,t-1} + \beta_2 CEOEBC_{i,t-1} + \beta_3 CEOSALARY_{i,t-1} + \beta_4 CEOBONUS_{i,t-1} + \beta_5 CEOECR_{i,t-1} + \lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} + \lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t}$$

| VARIABLES | Dependent Variables | | | |
| --- | --- | --- | --- | --- |
| | 1 | 2 | 3 | 4 |
| | DAJ | DAMJ | DAK | EM |
| Constant | 0.1710*** | 0.1730*** | 0.1670*** | 0.2950*** |
| CEOTC | -0.0150*** | -0.0149*** | -0.0149*** | -0.0258*** |
| CEOEBC | 0.0246*** | 0.0246*** | 0.0246*** | 0.0426*** |
| CEOBONUS | 0.0008 | 0.0008 | 0.0008 | 0.0014 |
| CEOSALARY | -0.0012 | -0.0012 | -0.0012 | -0.0021 |
| CEOECR | 0.0203*** | 0.0203*** | 0.0203*** | 0.0351*** |
| LEV | 0.1550*** | 0.1600*** | 0.1590*** | 0.2730*** |
| FS | -0.0293*** | -0.0297*** | -0.0296*** | -0.0511*** |
| ROA | -0.1630** | -0.1610** | -0.0902 | -0.2390* |
| AQ | -0.0598*** | -0.0598*** | -0.0596*** | -0.1030*** |
| SGR | 0.0005 | 0.0005 | 0.0005 | 0.0008 |
| OCF | 0.0196 | 0.0229 | 0.0238 | 0.0383 |
| LOSS | 0.0020 | 0.0022 | 0.0027 | 0.0039 |
| Year Dummy | Yes | Yes | Yes | Yes |
| F-Statistics | 6.1800*** | 6.2100*** | 6.1300*** | 6.1600*** |
| R-squared | 0.1011 | 0.1004 | 0.1001 | 0.1013 |
| Observations | 3,109.0 | 3,109.0 | 3,109.0 | 3,109.0 |

Notes: This table summarizes and presents the regression test results that estimate the impact of the CEO total compensation, CEO equity-based compensation, CEO Salary, CEO Bonus and CEO's equity-based compensation to total compensation ratio on discretionary accruals during the period of 2007 – 2018 for FTSE 350 Listed companies. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 4.1.

**Table – 4.5 – Real Earnings Management and CEO's Compensation**

$$REM_{i,t} = \beta_0 + \beta_1 CEOTC_{i,t-1} + \beta_2 CEOEBC_{i,t-1} + \beta_3 CEOSALARY_{i,t-1} + \beta_4 CEOBONUS_{i,t-1}$$
$$+ \beta_5 CEOECR_{i,t-1} + \lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t}$$
$$+ \lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t}$$

|  | Dependent Variables |
| --- | --- |
| VARIABLES | Real Earnings Management (REM) |
| Constant | 0.0552 |
| CEOTC | -0.0043 |
| CEOEBC | -0.0036 |
| CEOBONUS | -0.0009 |
| CEOSALARY | 0.0042 |
| CEOECR | -0.0007 |
| LEV | 0.0611 |
| FS | -0.0002 |
| ROA | 0.1540** |
| AQ | 0.0083 |
| SGR | 0.0000 |
| OCF | -0.0366 |
| LOSS | -0.0232 |
| Year Dummy | Yes |
| F-Statistics | 3.2000*** |
| R-squared | 0.02600 |
| Observations | 3,109.0 |

Notes: This table summarizes and presents the regression test results that estimate the impact of the CEO total compensation, CEO equity-based compensation, CEO Salary, CEO Bonus and CEO's equity-based compensation to total compensation ratio on real earnings management during the period of 2007 – 2018 for FTSE 350 Listed companies. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 4.1.

**Table – 4.6 – Earnings Management and Executives Compensation**

$$EM_{i,t} = \beta_0 + \beta_1 EXTC_{i,t-1} + \beta_2 EXEBC_{i,t-1} + \beta_3 EXSALARY_{i,t-1} + \beta_4 EXBONUS_{i,t-1} + \beta_5 EXECR_{i,t-1} + \lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} + \lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t}$$

| VARIABLES | Dependent Variables | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| | DAJ | DAMJ | DAK | EM |
| Constant | 0.2010*** | 0.2020*** | 0.1960*** | 0.3460*** |
| EXTC | -0.0114*** | -0.0113*** | -0.0113*** | -0.0197*** |
| EXEBC | 0.0049 | 0.0049 | 0.0049 | 0.0085 |
| EXBONUS | -0.0065*** | -0.0065*** | -0.0065*** | -0.0113*** |
| EXSALARY | 0.0296*** | 0.0296*** | 0.0296*** | 0.0513*** |
| EXECR | 0.0003 | 0.0003 | 0.0003 | 0.0005 |
| LEV | 0.1250** | 0.1300** | 0.1290** | 0.2220** |
| FS | -0.0378*** | -0.0381*** | -0.0381*** | -0.0658*** |
| ROA | -0.1590** | -0.1570* | -0.0860 | -0.2320* |
| AQ | -0.0590*** | -0.0589*** | -0.0587*** | -0.1020*** |
| SGR | 0.0001 | 0.0001 | 0.0001 | 0.0002 |
| OCF | -0.0238 | -0.0206 | -0.0197 | -0.0370 |
| LOSS | 0.0198 | 0.0199 | 0.0204 | 0.0347 |
| Year Dummy | Yes | Yes | Yes | Yes |
| F-Statistics | 6.2500*** | 6.2900*** | 6.2200*** | 6.2400*** |
| R-squared | 0.1296 | 0.1281 | 0.1295 | 0.1487 |
| Observations | 3,109.0 | 3,109.0 | 3,109.0 | 3,109.0 |

Notes: This table summarizes and presents the regression test results that estimate the impact of the Executives total compensation, Executive's equity-based compensation, Executives Salary, Executives Bonus and Equity-based compensation to total ratio on discretionary accruals during the period of 2007 – 2018 for FTSE 350 Listed companies. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 4.1.

**Table – 4.7 – Earnings Management and Executive Compensation**

$$REM_{i,t} = \beta_0 + \beta_1 EXTC_{i,t-1} + \beta_2 EXEBC_{i,t-1} + \beta_3 EXSALARY_{i,t-1} + \beta_4 EXBONUS_{i,t-1} + \beta_5 EXECR_{i,t-1} + \lambda_1 LEV_{i,t-1} + \lambda_2 FS_{i,t-1} + \lambda_3 ROA_{i,t-1} + \lambda_4 AQ_{i,t-1} + \lambda_5 SG_{i,t} + \lambda_6 \Delta OCF_{i,t} + \lambda_7 LOSS_{i,t-1} + \sum \lambda_j YD_j + \varepsilon_{i,t}$$

|  | Dependent Variables |
|---|---|
| VARIABLES | REM |
| Constant | 0.0531 |
| EXTC | -0.0040 |
| EXEBC | -0.0017 |
| EXBONUS | -0.0005 |
| EXSALARY | 0.0018 |
| EXECR | -0.0005 |
| LEV | 0.0625 |
| FS | 0.0003 |
| ROA | 0.1490** |
| AQ | 0.0080 |
| SGR | 0.0000 |
| OCF | -0.0357 |
| LOSS | -0.0237 |
| Year Dummy | Yes |
| F-Statistics | 3.0800*** |
| R-squared | 0.0250 |
| Observations | 3,109.0 |

Notes: This table summarizes and presents the regression test results that estimate the impact of the Executives total compensation, Executive's equity-based compensation, Executives Salary, Executives Bonus and Equity-based compensation to total ratio on real earnings management during the period of 2007 – 2018 for FTSE 350 Listed companies. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 4.1.

**Appendix 1 – Measuring Earnings management**

**Discretionary accruals – Jones model (1991)**

DAJ is the value of discretionary accruals measured based on the Jones model (1991). First, firm specific total accruals (TACC) are measured as:

$$TACC_i = (\Delta Current\ assets - \Delta Cash - \Delta Current\ liabilities) - Dep\ and\ Amort \quad (1)$$

Second, discretionary accruals are estimated as the residuals of the regression model by applying the following equation.

$$TAJ_{i,t}/TA_{i,t-1} = \beta_1(1/TA_{i,t-1}) + \beta_2(\Delta Rev_{i,t}/TA_{it-1}) + \beta_3(PPE_{it}/TA_{it-1}) + \varepsilon_t \quad (2)$$

Where:

| | |
|---|---|
| $TA_{i,t}$ | Total accruals for firm $i$ at period $t$ |
| $A_{i,t-1}$ | Total assets for firm $i$ at period $t$ |
| $\Delta Rev_{i,t}$ | Change in revenue for firm $i$ at period $t$ |
| $PPE_{i,t}$ | Property plant and equipment for firm $i$ at period $t$ |
| $\beta_1$ to $\beta_3$ | Coefficients estimates for independent variables |
| $\varepsilon_t$ | Error term |

Third, to estimate the Non-discretionary accruals (NDA), the coefficients from equation (2) are ploughed back into equation (3) to measure the firm specific non-discretionary accruals.

$$NDAJ_{i,t}/TA_{i,t-1} = \beta_1(1/TA_{i,t-1}) + \beta_2(\Delta Rev_{i,t}/TAS_{it-1}) + \beta_3(PPE_{it}/TA_{it-1}) \quad (3)$$

Where:

| | |
|---|---|
| $NDA_{it}$ | The Non-discretionary accruals for firm $i$ for year t |
| $\beta_0 - \beta_3$ | The industry specific estimated coefficient that are estimated from the first equation |

Once the total accruals and non-discretionary accruals are estimated, the discretionary accruals are estimated by taking the difference of the total accruals and non-discretionary accruals. The residual term from the total accruals model represents the discretionary accruals (DA).

$$DAJ_{i,t} = TAJ_{it}/A_{i,t-1} - NDAJ_{i,t} \qquad\qquad (4)$$

Where:

$DA_{it}$        Discretionary Accruals

$TA_{it}/A_{it-1}$     Total accruals scaled by total assets at beginning of the year

$NDA_{it}$      Non-discretionary accruals for firm $i$ for year $t$

**Discretionary accruals – Modified Jones Model (1995)**

DAMJ is the value of discretionary accruals estimated based on the modified Jones model (1995). First, firm specific total accruals (TACC) are measured as:

$$TACC_i = (\Delta Current\ assets - \Delta Cash - \Delta Current\ liabilities) - DepandAmort \quad (5)$$

One of the major limitations of the Jones model is its assumption that the total revenue is non-discretionary (Dechow et al. 1995). Dechow et al. (1995) model is primarily based on the assumption that total revenue is not non-discretionary whereas, a certain part of the entire revenue is discretionary, where managers exercise discretionary power over revenues manipulate the revenue. Based on this new development, Dechow et al. (1995) modifies the Jones model by adjusting the change in revenue for change in receivables and presents the evidence that their model is more powerful as compare to Jones model because their model is good at detecting cases of revenue manipulations. DAMJ estimates the coefficients of the total accruals by applying the following model.

$$TAMJ_{i,t}/TA_{i,t-1} = \beta_1(1/TA_{i,t-1}) + \beta_2(\Delta Rev_{i,t} - \Delta Rec_{i,t}/TA_{i,t-1}) +$$
$$\beta_3(PPE_{it}/TA_{it-1}) + \varepsilon_t \qquad\qquad (6)$$

Where:

$TA_{i,t}$       Total accruals for firm $i$ at period $t$

$A_{i,t-1}$      Total assets for firm $i$ at period $t$

$\Delta Rev_{i,t}$     Change in revenue for firm $i$ at period $t$

$\Delta Rec_{i,t}$     Change in trade receivables for firm $i$ at period $t$

$PPE_{i,t}$      Property plant and equipment for firm $i$ at period $t$

$\beta_1$ - $\beta_3$      Coefficients estimates

$\varepsilon_t$        Error term

Next, to estimate the Non-discretionary accruals (NDA), the coefficients from equation (6) are ploughed back in equation (7) to measure the firm specific non-discretionary accruals.

$$NDAMJ_{i,t}/TA_{i,t-1} = \beta_1(I/TA_{i,t-1}) + \beta_2(\Delta Rev_{i,t} - \Delta Rec_{i,t} /TAS_{it-1}) +$$
$$\beta_3 PPE_{it} /TA_{it-1}) \tag{7}$$

Where:

$NDA_{it}$         The Non-discretionary accruals for firm $i$ for year t

$\beta_0 - \beta_3$         The industry specific estimated coefficient that are estimated from the first equation

Once the total accruals and non-discretionary accruals are estimated, the discretionary accruals are estimated by taking a difference of the total accruals and non-discretionary accruals. The residual term from the total accruals model represents the discretionary accruals (DA)

$$DAMJ_{i,t} = TAMJ_{it}/A_{i,t-1} - NDAMJ_{i,t} \tag{8}$$

Where:

$DAMJ_{it}$         Discretionary accruals estimated based on modified Jones model

$TAMJ_{it}/A_{it-1}$         Total accruals scaled by total assets at beginning of the year, estimated by modified Jones model

$NDAMJ_{it}$         Non-discretionary accruals estimated by modified Jones model for firm $i$ for year $t$

**Discretionary accruals Kothari Model (1991)**

DAK is the value of discretionary accruals measured based on the Kothari model (2005). First, firm specific total accruals (TAK) are measured as follows:

$$TAK_i = (\Delta Current\ assets - \Delta Cash - \Delta Current\ liabilities) - DepandAmort \quad (9)$$

According to DechSow et al. (1995) and Kasznik (1999), there is a positive statistically significant relationship between the discretionary accruals and return on assets (ROA), which cause miss-specification in the model. Therefore, Kothari adjusted the modified Jones model by adding ROA and estimated the coefficients of the total accruals by applying the following model.

$$TAK_{i,t}/TA_{i,t-1} = \beta_1(1/TA_{i,t-1}) + \beta_2(\Delta Rev_{i,t} - \Delta Rec_{i,t}/TA_{it-1}) +$$
$$\beta_3(PPE_{it}/TA_{it-1}) + \beta_4 ROA_{it-1} + \varepsilon_t \quad (10)$$

Where:

$TA_{i,t}$          Total accruals for firm $i$ at period $t$

$A_{i,t-1}$         Total assets for firm $i$ at period $t$

$\Delta Rev_{i,t}$       Change in revenue for firm $i$ at period $t$

$\Delta Rec_{i,t}$       Change in trade receivables for firm $i$ at period $t$

$PPE_{i,t}$        Property plant and equipment for firm $i$ at period $t$

$ROA_{it-1}$      Return on assets of the previous year for firm $i$ at period $t$

$\beta_1 - \beta_4$        Coefficients estimates

$\varepsilon_t$           Error term

Next, to estimate the non-discretionary accruals (NDAK), the coefficients from equation (10) are ploughed back into equation (11) to measure the firm specific non-discretionary accruals.

$$NDAMK_{i,t}/TA_{i,t-1} = \beta_1(1/TA_{i,t-1}) + \beta_2(\Delta Rev_{i,t} - \Delta Rec_{i,t}/TAS_{it-1}) +$$
$$\beta_3(PPE_{it}/TA_{it-1}) + \beta_4 ROA_{it-1} \quad (11)$$

Where:

$NDAK_{it}$           The non-discretionary accruals for firm $i$ for year t

$\beta_0 - \beta_3$            The industry specific estimated coefficient that are estimated from the first equation

Finally, the discretionary accruals are estimated by taking the difference of the total accruals and non-discretionary accruals. The residual term from the total accruals model represents the discretionary accruals (DA).

$$DAK_{i,t} = TAK_{it}/A_{i,t-1} - NDAK_{i,t} \qquad (12)$$

Where:

$DAK_{it}$            Discretionary accruals estimated based on Kothari model

$TAK_{it}/A_{it-1}$       Total accruals scaled by total assets at beginning of the year, estimated by Kothari model

$NDAK_{it}$         Non-discretionary accruals estimated by Kothari model for firm $i$ for year t

Finally, Earnings management (EARNMGT) is measured at the first principal component of DAJ, DAMJ and DAK.

$$EARNMGT_{i,t} = (DAJ_{i,t} * 0.577351) + (DAMJ_{i,t} * 0.577354) + (DAK_{i,t} * 0.577354) \quad (13)$$

**Appendix 2 – Old Results and Analysis**

**Earnings Management and Board Characteristics**

**Descriptive Statistics**

Table 2 presents the results of the descriptive statistics for the board characteristics, earnings management and control variables for all FTSE 350 listed companies. The mean value for discretionary accruals based on all four models of earnings management is zero and standard deviation is approximately 301. In addition, the inter quartile range is approximately 28. Higher standard deviation and interquartile range suggests that the discretionary accruals among companies are highly diverse. The average of the board size and number of board meetings are 1.86 and 1.76 respectively. On average, 50% of the board comprised of independent directors, whereas approximately 12% of the board comprised of women directors. In addition, board independence and gender diversity interquartile range are highest, which shows that in FTSE 350 companies, there is substantial difference in terms of number of independent directors and number of women directors on the board.

[TABLE 2]

Table 3 presents the t-test and Wilcoxon Signed-Rank Test results. Mean difference T-Test is applied to test the difference of highest and lowest mean values in relation to earnings management. The results show that the board size, board independence, number of board meetings and gender diversity are statistically significant at 5% of significance level. Whereas, based on Wilcoxon Signed-Rank test results, the median difference between the highest and lowest values is insignificant for all the board characteristics.

[TABLE 3]

**Correlation**

It can be observed from correlation matrix (Table 4), that the relationship of the earnings, management with total assets, property, plant and equipment, board size, board independence, number of board meetings, gender diversity and firm size is negative. Whereas the earnings management correlation with return on assets, CEO duality and leverage are positive. Negative correlation suggests that the strong presence of the above explanatory variables helps in controlling earnings management practices. Whereas those variables that

exhibit positive correlation with earnings management encourages earnings management practices. In addition, the strongest positive correlation exists between board size and board independence, board size and number of board meeting, and board independence and number of board meetings, from which, it can be inferred that the number of independent directors is increasing as the board size is increasing and as a result of large board size, the board activity is increasing in FTSE 350 companies.

[TABLE 4]

**Empirical Models**

Applying three (3) regression models that comprised of Jones model (1991), modified Jones model (1996) and Kothari model (2005) tests the impact of board characteristics on earnings management. Finally, earnings management are estimated by applying the first principal component approach, which is estimating the discretionary accruals by taking weighted average of the discretionary accruals of the three models that comprised of Jones model (1991), modified Jones model (1996) and Kothari model (2005) and tested the impact of board characteristics on earnings management by applying the following empirical model.

$$EARNMGT_{i,t} = \beta_0 + \beta_1 BS_{i,t} + \beta_2 BI_{i,t} + \beta_3 CEOD_{i,t} + \beta_4 NOBM_{i,t} + \beta_5 GENDIV_{i,t} + \beta_6 LEV_{i,t} +$$

$$\beta_7 FS_{i,t} + YD_j + \varepsilon_{i,t}$$

Where:

| | |
|---|---|
| $EARNMGT_{i,t}$ | Earnings management for firm $i$ in year $t$ |
| $BS_{i,t}$ | Board Size for firm $i$ in year $t$ |
| $BI_{i,t}$ | Board Independence for firm $i$ in year $t$ |
| $CEOD_{i,t}$ | CEO Duality for firm $i$ in year $t$ |
| $NOBM_{i,t}$ | Number of Board Meeting for firm $i$ in year $t$ |
| $GENDIV_{i,t}$ | Gender Diversity for firm $i$ in year $t$ |
| $LEV_{i,t}$ | Leverage for firm $i$ in year $t$ |
| $FS_{i,t}$ | Firm Size for firm $i$ in year $t$ |
| $YD_j$ | Dummy Variable from 2007 to 2017 represent the number of years |
| $\beta_0$ | Constant or intercept |
| $\beta_1$ To $\beta_7$ | Coefficient for independent variables |

$\varepsilon_{i,t}$                         Residual or error term

All variables are defined in Table 1.

**Regression Analysis**

The impact of board independence on earnings management is negative and statistically significant at 1% based on the results of Jones model, modified Jones model, Kothari model and earnings management model. It can be inferred from the negative impact of board independence that when the percentage of independent directors is higher on the board, the board is more effective in controlling earnings management practices. This is consistent with previous empirical findings of the Dechow et al. (1996) Peasnell et al. (2000), Donnelly and Lynch, (2002) and Cornett et al. (2009), which study the impact of board independence on earnings management.

The coefficient value for the board size based on the results of Jones model, modified Jones model, Kothari model and earnings management model are negative, which suggests that the impact of the board size on the earnings management is negative. The results are consistent with the previous empirical findings of the Ahmed et al. (2006), Fama et al. (1983), Defond et al. (1994), Cheng and Warfield (2005) and Xie et al. (2003) however, based on the results of all the four models, the impact is insignificant.

The coefficient value for the CEO duality based on the results of Jones model, modified Jones model, Kothari model and earnings management model are positive, which suggests that when both positions i.e., CEO and board chairman is held by one person, the board of directors' role in controlling earnings management is ineffective. The results are consistent with the previous empirical findings of the Jensen et al. (1976) and Dechow et al. (1996), however the impact is insignificant.

The impact of the NOBM is positive on earnings management based on the results of Jones model, modified Jones model, Kothari model and earnings management model as the coefficient of the NOBM is positive, moreover, based on the results of all the four regression models, the impact is statistically significant at 1% of significance level. Based on the results, it can be inferred that when the board meets for a higher number of times, the board loses its control over unnecessary practices such as earnings management to control. This is consistent with the previous empirical findings of the Jensen (1993), Lorca, et al. (2011), Gulzar and

Wang (2011) and Metawee (2013), which study the relationship of number of board meetings and earnings management.

Based on the findings of the Jones model, modified Jones model, Kothari model and earnings management model, the impact of the gender diversity on earnings management is negative, moreover, the impact is statistically significant at 10% of significance level. The results and findings suggest that when the percentage of women is higher on the board, the board role become more effective in terms of controlling earnings management. This is consistent with the previous empirical findings of the Lakhal, et al. (2015).

[TABLE 5]

**Table 1**
Variable Definition

| Variable | Definition | Symbol |
|---|---|---|
| Earnings management | Earnings management is a proxy for discretionary accruals that is estimated by applying three models that includes Jones Model (JM), Modified Jones Model (MJM) and Kothari Model (KM). Finally, earnings management is estimated based on the results of above three models by applying the principal component function.<br><br>$EM_{i,t} = (0.577*DAJ_{i,t})+(0.577*DAMJ_{i,t})+(0.577*KDA_{i,t})$ | $EARNMGT_{i,t}$ |
| Board Size | Total Number of Directors serving on the board to participate in the decision making of the firm. Board size is the natural logarithm of the total number of board members in a board ($LNBS_{i,t}$). | $BS_{i,t}$ |
| Board Independence | Board Independence is the percentage of the independent directors on the board. Board independence is estimated by taking the number of independent directors as a percentage of the total number of directors in a board. | $BI_{i,t}$ |
| CEO Duality | CEO Duality is a dummy variable being 1 for firms with CEO-Chairman Duality and 0 otherwise. | $CEOD_{i,t}$ |
| Number of Board meeting | Number of Board Meeting is proxy for the board activity, which is the total number of meetings held during a particular financial year. Board activity is the natural logarithm of the number of board meeting in a financial year ($LNNBM_{i,t}$). | $NOBM_{i,t}$ |
| Percentage of women on the board | Gender Diversity is proxy for the percentage of women on the board. It is estimated by taking the number of independent directors as a percentage of the total number of directors in a board. | $GENDIV_{i,t}$ |
| Leverage | Leverage is estimated by taking total debt as a percentage of the total capital at the end of the financial year, in which, total debt comprised of short term and long-term debt and total capital includes short term debt, long term debt and equity | $LEV_{i,t}$ |
| Firm Size | The natural logarithm of market value of the equity at the end of financial year ($LNFS_{i,t}$). The number of outstanding shares and market price per share estimates market value of equity at the end of the financial year. | $FS_{i,t}$ |
| Year Dummy | Year Dummy represent the number of years | $YD_j$ |

Notes: The table presents the definition and estimation methodology for dependent and independent variables used in the research study of analysing the impact of board characteristics on the discretionary accruals during the period of 2006 – 2017.

**Table 2**
Descriptive Statistics

| | Mean | Q1 | Median | Q3 | Maximum | Minimum | ST DEV | Range | IQ Range |
|---|---|---|---|---|---|---|---|---|---|
| DAJ | 0.00 | 26.82 | 42.94 | 55.51 | 2833.95 | -5225.49 | 301.16 | 8059.45 | 28.69 |
| DAJM | 0.00 | 26.79 | 42.97 | 55.53 | 2833.68 | -5226.57 | 301.15 | 8060.25 | 28.74 |
| DAK | 0.00 | 26.97 | 42.90 | 55.91 | 2834.51 | -5225.85 | 301.14 | 8060.36 | 28.95 |
| EARNMGT | 0.00 | 46.57 | 74.36 | 96.46 | 4908.71 | -9051.64 | 521.60 | 13960.35 | 49.89 |
| TASSETS | 7.23 | 6.29 | 7.44 | 8.80 | 14.81 | -0.91 | 2.98 | 15.72 | 2.50 |
| PPE | 5.05 | 3.01 | 5.38 | 7.09 | 12.37 | -7.60 | 2.95 | 19.97 | 4.08 |
| ROA | 6.61 | 0.42 | 4.75 | 9.59 | 235.46 | -120.04 | 13.58 | 355.51 | 9.17 |
| BS | 1.86 | 1.95 | 2.08 | 2.30 | 3.04 | 0.00 | 0.83 | 3.04 | 0.36 |
| BI | 49.50 | 42.86 | 55.56 | 66.67 | 100.00 | 0.00 | 25.01 | 100.00 | 23.81 |
| CEOD | 0.02 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.14 | 1.00 | 0.00 |
| NOBM | 1.76 | 1.79 | 2.08 | 2.30 | 4.56 | 0.00 | 0.84 | 4.56 | 0.51 |
| ECOMP | 7.42 | 0.00 | 0.45 | 2.36 | 5082.24 | 0.00 | 101.46 | 5082.24 | 2.36 |
| GENDIV | 12.03 | 0.00 | 11.11 | 20.00 | 70.00 | 0.00 | 11.52 | 70.00 | 20.00 |
| LEV | 0.22 | 0.02 | 0.19 | 0.32 | 2.67 | 0.00 | 0.22 | 2.67 | 0.30 |
| FS | 6.55 | 6.06 | 7.24 | 8.41 | 12.54 | 0.00 | 3.20 | 12.54 | 2.35 |

Notes: The table presents summary statistics of dependent and independent variables used in the research study of analysing the impact of board characteristics on the discretionary accruals during the period of 2008 – 2018. All variables are defined in Table 1.

**Table 3**

T-Test for the difference of highest and lowest mean values

| | MEAN | | |
| | Highest | Lowest | T-Test |
|---|---|---|---|
| BS | 2.2817 | 2.0467 | -5.3408** |
| BI | 62.2047 | 53.9961 | 5.8368** |
| CEOD | 0.0178 | 0.02 | -0.2446 |
| NOBM | 2.0191 | 1.8941 | 2.8519** |
| ECOMP | 8.1676 | 10.5853 | -0.40614 |
| GENDIV | 16.6904 | 14.7077 | 2.6664** |

Wilcoxon Signed-Rank Test for the difference of highest and lowest median values

| | MEDIAN | | |
| | Highest | Lowest | T-Test |
|---|---|---|---|
| BS | 2.3979 | 2.1972 | -1.5749 |
| BI | 66.667 | 58.333 | -0.0251 |
| CEOD | 0 | 0 | -0.5606 |
| NOBM | 2.0794 | 2.0794 | -0.8628 |
| ECOMP | 0.5834 | 0.4227 | -0.1383 |
| GENDIV | 15.385 | 12.5 | -0.7576 |

Notes: The table presents the results of the T-statistics for mean differential and Wilcoxon Signed-Rank Test for median differential. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 1.

**Table 4**
Correlation Matrix

|   |        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|--------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1 | DAJ | 1.000 | | | | | | | | | | | | | |
| 2 | DAJM | 1.000 | 1.000 | | | | | | | | | | | | |
| 3 | DAK | 1.000 | 1.000 | 1.000 | | | | | | | | | | | |
| 4 | EARNMGT | 1.000 | 1.000 | 1.000 | 1.000 | | | | | | | | | | |
| 5 | TASSETS | -0.101 | -0.101 | -0.102 | -0.102 | 1.000 | | | | | | | | | |
| 6 | PPE | -0.044 | -0.044 | -0.045 | -0.045 | 0.760 | 1.000 | | | | | | | | |
| 7 | ROA | 0.015 | 0.015 | 0.015 | 0.015 | -0.025 | -0.031 | 1.000 | | | | | | | |
| 8 | BS | -0.106 | -0.106 | -0.106 | -0.106 | 0.101 | 0.114 | 0.022 | 1.000 | | | | | | |
| 9 | BI | -0.128 | -0.127 | -0.128 | -0.128 | 0.109 | 0.134 | 0.001 | 0.832 | 1.000 | | | | | |
| 10 | CEOD | 0.017 | 0.017 | 0.017 | 0.017 | 0.021 | 0.036 | 0.050 | 0.039 | 0.013 | 1.000 | | | | |
| 11 | NOBM | -0.074 | -0.074 | -0.074 | -0.074 | 0.034 | 0.077 | 0.006 | 0.853 | 0.806 | 0.046 | 1.000 | | | |
| 12 | GENDIV | -0.086 | -0.086 | -0.087 | -0.086 | 0.136 | 0.113 | 0.017 | 0.338 | 0.390 | -0.056 | 0.282 | 1.000 | | |
| 13 | LEV | 0.038 | 0.038 | 0.038 | 0.038 | 0.273 | 0.358 | -0.120 | -0.013 | -0.021 | -0.027 | -0.010 | 0.010 | 1.000 | |
| 14 | FS | -0.076 | -0.076 | -0.077 | -0.076 | 0.780 | 0.673 | 0.157 | 0.117 | 0.130 | 0.026 | 0.067 | 0.128 | 0.090 | 1.000 |

Notes: The table presents Spearman's rank correlation between the dependent and independent variables used in the research study of analysing the impact of board characteristics on the discretionary accruals during the period of 2008 – 2018. All variables are defined in Table 1.

**Table 5**

Regression analyses on earnings management – Dependent variable is discretionary accruals

| | Dependent Variables | | | |
|---|---|---|---|---|
| Variables | 1 | 2 | 3 | 4 |
| | DAJ | DAJM | DAK | EARNMGT |
| Intercept | 98.76*** | 98.67*** | 99.06*** | 171.18*** |
| BI | -1.65*** | -1.65*** | -1.65*** | -2.86*** |
| BS | -21.18 | -21.28 | -21.16 | -36.73 |
| CEOD | 35.52 | 35.54 | 35.19 | 61.35 |
| NOBM | 35.96*** | 35.99*** | 36.10*** | 62.38*** |
| GENDIV | -0.88* | -0.88* | -0.89* | -1.53* |
| LEV | 58.12** | 58.11** | 58.33** | 100.78** |
| FS | -6.27*** | -6.27*** | -6.36*** | -10.91*** |
| TD | YES | YES | YES | YES |
| F-Statistics | 5.70*** | 5.70*** | 5.75*** | 5.72*** |
| R-Squared | 0.0293 | 0.0293 | 0.0295 | 0.0294 |
| Adjusted R-Squared | 0.0242 | 0.0242 | 0.0244 | 0.0242 |
| OBS | 3419 | 3419 | 3419 | 3419 |

This table summarizes and presents the regression test results that estimate the impact of Board independence, board size, CEO Duality, Number of board meetings and Gender diversity on discretionary accruals during the period of 2008 – 2018 for FTSE 350 Listed companies. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 1.

**Earnings Management and Audit Committee Characteristics**

**Descriptive Statistics**

Table 2 presents the results of the descriptive statistics for the audit committee characteristics, earnings management and control variables for FTSE 350 listed companies for a period of eleven years that starts from 2008 to 2019. The earnings management mean is -2.7377, which suggests that on average, FTSE 350 listed companies' discretionary accruals are negative. In addition, the standard deviation is 3.8305, from which it can be concluded that the discretionary accruals are highly dispersed and therefore, the variation in discretionary accruals is higher (Greene, 2008). It can also be supported by the range, in which the lowest value is -97 and the highest value is 223. In addition, the average audit committee size is approximately one, which shows that on average, the audit committee size is lower in the FTSE 350 listed companies. Moreover, on average, 54% members of the audit committee are independent, however, the standard deviation is 37, which suggests that there is significantly higher variation in the percentage of independent members on the audit committees of FTSE 350 listed companies. Audit committee member's financial expertise on audit committee is 47% on average, from which, it can in inferred that approximately half of the audit committee member's background is in accounting and finance.

[TABLE 2]

**Correlation**

Table 3 presents the results of the correlation coefficient matrix for the audit committee characteristics and control variables for FTSE 350 listed companies for a period of eleven years that starts from 2008 to 2019. The correlation between the audit committee independence and audit committee member's financial expertise is 0.77 significant at 1%, which suggests that the relationship between the audit committee independence and audit committee member's financial expertise is highly positive. The second highest correlation is 0.59 that is significant at 1% of significance level and exists between the audit committee size and number of audit committee meeting in a year. From the correlation between the audit committee size and number of audit committee meetings, it can be inferred that audit committee members meet more frequently when the committee size is higher. However, the lowest correlation exists between the firm size and financial leverage, which is 0.22 and significant at 1%. From lower

correlation between the firm size and financial leverage, it can be concluded that on average, large firms are less dependent on debt financing in FTSE 350 listed companies.

[TABLE 3]

**Empirical Models**

The empirical model that is employed in this research study is based on the concept of ordinary least square (OLS) model, which decomposes the entire model into dependent and independent variables to test the impact of the independent variables on the dependent variable (Greene, 2002). In this research study, earnings management is a dependent variable, which is a proxy for discretionary accruals, whereas independent variables comprise of audit committee attributes.

$$EARNMGT_{i,t} \quad = \quad \beta_0 + \beta_1 ACS_{i,t} + \beta_2 ACI_{i,t} + \beta_3 ACFEX_{i,t} + \beta_4 NACM_{i,t} + \beta_5 FS_{i,t} + \beta_6 LEV_{i,t} + YD_j + \varepsilon_{i,t}$$

Where:

| | |
|---|---|
| $EARNMGT_{i,t}$ | Earnings management for firm $i$ in year $t$ |
| $ACS_{i,t}$ | Number of Audit committee members for firm $i$ in year $t$ |
| $ACI_{i,t}$ | Proportion of independent directors on audit committee for firm $i$ in year $t$ |
| $ACFEX_{i,t}$ | Audit Committee members accounting and financial expertise for firm $i$ in year $t$ |
| $NACM_{i,t}$ | Number of Audit committee Meeting for firm $i$ in year $t$ |
| $FS_{i,t}$ | Firm Size for firm $i$ in year $t$ |
| $LEV_{i,t}$ | Leverage for firm $i$ in year $t$ |
| $YD_j$ | Dummy Variable from 2008 to 2018 represent the number of years |
| $\beta_0$ | Constant or intercept |
| $\beta_1$ To $\beta_7$ | Coefficient for independent variables |
| $\varepsilon_{i,t}$ | Residual or error term |

All variables are defined in Table 1.

## Regression Analysis

Based on the results of Jones model, modified Jones model, Kothari model and earnings management model, the impact of the ACS on the earnings management is positive and statistically significant at 10% of significance level. The findings suggest that the opportunistic earnings management practices are higher in those firms, in which the size of the audit committee is higher. In other words, large audit committees are ineffective in controlling earnings management. These findings are consistent with the empirical findings of the Jensen (1993).

The coefficient value of the ACI is negative, from this we can infer that firms with a higher percentage of independent directors in the audit committee are more effective in controlling the earnings management, however, the results are insignificant. This is consistent with the previous empirical findings of the Klein, (2002), Abbott et al. (2000), Xie et al. (2003), Bedard et al. (2004), Abbott, et al. (2004), and Yang and Krishnan, (2005).

The impact of the ACFXP on the earnings management is positive, however, insignificant. The results suggest that those audit committees in which, the proportion of the audit committee member's financial expertise in accounting or finance is higher, are more exposed to earnings management practices.

The coefficient value of the number of audit committee meetings (NACM) is negative, however, based on the Jones model, modified Jones model, Kothari model and earnings management model are insignificant, which suggests that an audit committee is more effective in controlling earnings management, when it meets more frequently. This is consistent with the previous empirical findings of the Menon & Williams (1994), Xie et al. (2003), Li et al. (2012), Lin and Hwang (2010), Karamanou and Vafeas (2005) and Klein (2002).

The impact of the firm size (FS) and financial leverage (LEV) on the earnings management is positive, however, both variables impact on the earnings management is insignificant. From the results and findings of the four discretionary models, it can be stated that large leveraged firms in FTSE 350 are not effective in controlling the earnings management.

**Table 1**
Variable Definition

| Variable | Definition | Symbol |
|---|---|---|
| Earnings management | Earnings management is a proxy for discretionary accruals that is estimated by applying three models that includes Jones Model (JM), Modified Jones Model (MJM) and Kothari Model (KM). Finally, earnings management is estimated based on the results of above three models by applying the first principal component function. $$EM_{i,t} = (0.578*DAJ_{i,t})+(0.578*DAMJ_{i,t})+(0.576*KDA_{i,t})$$ | $EARNMGT_{i,t}$ |
| Audit Committee Size | Total number of the audit committee members in an audit committee. Audit committee size is the natural logarithm of the total number of audit committee members in an audit committee ($Ln\,(1+ACS_{i,t})$). | $ACS_{i,t}$ |
| Audit Committee Independence | Audit committee independence is the percentage of the independent directors on the audit committee. Audit committee independence is estimated by taking the number of independent members as a percentage of the audit committee size. | $ACI_{i,t}$ |
| Audit Committee Financial Expertise | Audit committee financial expertise is the percentage of the audit committee member's financial expertise in accounting or finance or in both. Audit committee financial expertise is estimated by taking the number of audit committee member's with financial expertise as a percentage of the audit committee size. | $ACFEX_{i,t}$ |
| Number of Audit Committee meeting | Number of Audit committee meeting is the number of audit committee meetings in a fiscal year. Number of audit committee is estimated by taking the natural logarithm of the number of audit committee meeting in a financial year ($Ln\,(1+NACM_{i,t})$). | $NACM_{i,t}$ |
| Leverage | Leverage is estimated by taking total debt as a percentage of the total capital at the end of the financial year, in which, total debt comprised of short term and long-term debt and total capital includes short-term debt, long-term debt and equity. | $LEV_{i,t}$ |
| Firm Size | The natural logarithm of market value of the equity at the end of financial year ($LNFS_{i,t}$). The number of outstanding shares and market price per share estimates market value of equity at the end of the financial year. | $FS_{i,t}$ |
| Year Dummy | Year Dummy represent the number of years | $YD_j$ |

Notes: The table presents the definition and estimation methodology for dependent and independent variables used in the research study of analysing the impact of audit committee attributes on the discretionary accruals during the period of 2008 – 2019.

**Table 2**
Descriptive Statistics

|  | Mean | Median | Standard Deviation | Maximum | Minimum |
|---|---|---|---|---|---|
| DAJ | -1.1585 | 0.2615 | 3.8305 | 129.0991 | -56.4519 |
| DAMJ | -1.0257 | 0.2615 | 3.8305 | 129.0994 | -56.4520 |
| DAK | -1.2789 | 0.2443 | 3.8002 | 129.6156 | -56.2274 |
| EARNMGT | -2.7377 | 0.4525 | 6.6055 | 223.9038 | -97.6481 |
| ACS | 1.0899 | 1.3863 | 0.7284 | 2.484900 | 0.00000 |
| ACI | 0.5398 | 1.0000 | 37.5621 | 1129.270 | -1051.28 |
| ACFXP | 0.4658 | 0.7114 | 0.3484 | 1.00000 | 0.00000 |
| NACM | 1.1843 | 1.6094 | 0.7908 | 2.89040 | 0.00000 |
| FS | 7.1640 | 7.2388 | 2.2723 | 14.7449 | 0.00000 |
| LEV | 1.8202 | 0.2594 | 61.070 | 2488.33 | -30.6690 |

Notes: The table presents summary statistics of dependent and independent variables used in the research study of analysing the impact of Audit committee characteristics on the discretionary accruals during the period of 2008 – 2019. All variables are defined in Table 1.

**Table 3**
Panel – 3A
Correlation Matrix – Pearson

|   |       | 1 | 2 | 3 | 4 | 5 | 6 |
|---|-------|---|---|---|---|---|---|
| 1 | ACS   | 1.000 | 0.008 | 0.320*** | 0.780*** | 0.211*** | -0.036** |
| 2 | ACI   | 0.008 | 1.000 | 0.014 | 0.008 | 0.005 | 0.0000 |
| 3 | ACFXP | 0.320*** | 0.014** | 1.000 | 0.303*** | 0.385*** | -0.032* |
| 4 | NACM  | 0.780*** | 0.008 | 0.303*** | 1.000 | 0.262*** | -0.036** |
| 5 | FS    | 0.211*** | 0.005 | 0.385*** | 0.262*** | 1.000 | -0.077*** |
| 6 | LEV   | -0.036** | 0.000 | -0.032* | -0.036** | -0.077*** | 1.000 |

Notes: The table presents Pearson's rank correlation between the dependent and independent variables used in the research study of analysing the impact of Audit committee characteristics on the discretionary accruals during the period of 2008 – 2019. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 1.

Panel – 3B
Correlation Matrix – Spearman

|   |       | 1 | 2 | 3 | 4 | 5 | 6 |
|---|-------|---|---|---|---|---|---|
| 1 | ACS   | 1.000 | 0.277*** | 0.279*** | 0.593*** | 0.266*** | 0.224*** |
| 2 | ACI   | 0.277*** | 1.000 | 0.773*** | 0.258*** | 0.325*** | 0.273*** |
| 3 | ACFXP | 0.279*** | 0.773*** | 1.000 | 0.257*** | 0.322*** | 0.268*** |
| 4 | NACM  | 0.593*** | 0.258*** | 0.257*** | 1.000 | 0.338*** | 0.233*** |
| 5 | FS    | 0.266*** | 0.325*** | 0.322*** | 0.338*** | 1.000 | 0.227*** |
| 6 | LEV   | 0.224*** | 0.273*** | 0.268*** | 0.233*** | 0.227*** | 1.000 |

Notes: The table presents Spearman's rank correlation between the dependent and independent variables used in the research study of analysing the impact of Audit committee characteristics on the discretionary accruals during the period of 2008 – 2019. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 1.

**Table 4**

Regression analyses on earnings management – Dependent variable is discretionary accruals

| Variables | Dependent Variables | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| | DAJ | DAJM | DAK | EARNMGT |
| Intercept | 0.0144 | 0.0146 | -0.1399 | -0.0639 |
| ACS | 0.1934* | 0.1934* | 0.2205* | 0.3506* |
| ACI | -0.0001 | -0.0001 | -0.0001 | -0.0002 |
| ACFXP | 0.0963 | 0.0962 | 0.1534 | 0.1997 |
| NACM | -0.0571 | -0.0572 | -0.0988 | -0.1230 |
| FS | 0.0367 | 0.0367 | 0.0473 | 0.0697 |
| LEV | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| DT | YES | YES | YES | YES |
| F-Statistics | 1.2000 | 1.2000 | 1.2600 | 1.2100 |
| R-Squared | 0.0062 | 0.0062 | 0.0065 | 0.0062 |
| Adjusted R-Squared | 0.0010 | 0.0010 | 0.0013 | 0.0011 |
| OBS | 3307.00 | 3307.00 | 3307.00 | 3307.00 |

This table summarizes and presents the regression test results that estimate the impact of audit committee size, audit committee independence, audit committee member's financial expertise and number of audit committee meetings on discretionary accruals during the period of 2008 – 2019 for FTSE 350 Listed companies. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 1.

**Earnings Management and Executives Compensation**

**Descriptive Statistics**

Table 2 presents the descriptive statistics for the components of executive compensation, earnings management and control variables for FTSE 350 listed companies for a period of eleven years that starts from 2008 to 2018. The discretionary accruals mean is approximately the same and lower based on the Jones model, modified Jones mode, Kothari model and EARNMGT model, however, the standard deviation is significantly higher, which suggests that the data for the discretionary accruals is highly dispersed in listed companies on FTSE 350. These findings can also be supported with the minimum and maximum values, as the range is substantially higher. The mean values of the CEO total compensation and Executive total compensation are very similar. Likewise, the mean of CEO and executive's equity-based compensation are approximately equal, which suggests that on average, the total compensation and equity-based compensation of the CEO and Executives are the same, however, the standard deviation is substantially lower, which suggests that companies listed on FTSE 350 are paying similar total compensation and equity-based compensation to CEO's and executives. It can also be observed from the salary and bonuses data that the CEO's and executives are paid approximately equal pay, however, the bonuses paid to executive's are highly dispersed which suggests that the bonuses paid to executives in the listed companies on FTSE 350 differs significantly different across the companies. Moreover, it can be observed from table 2 that the dispersion in the leverage data is substantially higher, from which, it can be inferred that there is high variation in the debt to capital ratio among the listed companies on FTSE 350.

[TABLE 2]

**Correlation**

It can be observed from the table 3 that the correlation of all the components of the executive compensation i.e., CEO total compensation, executive's total compensation, CEO equity-based compensation, executives' equity-based compensation, CEO salary, executive's salary, CEO bonus and executives' bonus with earnings management is positive, which suggests, that the earnings management increases when the components of the executive compensation are increasing. This is

the primary hypothesis of this research study that CEO's or executive's compensation is an influencing factor for management to engage in opportunistic accounting practices with the intention to maximize their personal benefit and gain. The positive correlation of each components of the executive compensation with the earnings management supports the primary hypothesis of this research study. In addition, the highest positive correlation exists between the CEO's total compensation and CEO's equity-based compensation, moreover, the correlation is also substantially higher between the total executive's compensation and executive's equity-based compensation, which suggests that the total compensation of the CEO and executives is increasing when the equity-based compensation of the CEO and executives are increasing. The correlation between the earnings management and leverage, and earnings management and firm size is negative, which illustrates that companies with higher debt or larger size are more effective in controlling the earning management and improving the quality of financial information.

[TABLE 3]

**Empirical Models**

Ordinary Least Square (OLS) model is applied to test the impact of the components of the executive compensation on the discretionary accruals. OLS is a regression model that tests the impact of the independent variables on the dependent variable (Greene, 2008). In this research study, discretionary accrual is dependent variable, which is estimated by applying three models that includes Jones model (JM), modified Jones model (MJM) and Kothari model (KM). Finally, earnings management (EARNMGT) is measured based on the results of above three models by applying the first principal component function. Whereas, CEO total compensation, executive's total compensation, CEO equity-based compensation, executives' equity-based compensation, CEO salary, executive's salary, CEO bonus and executives' bonus. In addition, leverage (LEV), return on assets (ROA) and firm size (FS) are included in the empirical model as control variables. Finally, time dummy variable is included in the model to control time specific effect in each year.

$$EARNMGT_{i,t} = \beta_0 + \beta_1 CEOTC_{i,t} + \beta_2 EXTC_{i,t} + \beta_3 CEOEBC_{i,t} + \beta_4 EXEBC_{i,t} +$$
$$\beta_5 CEOSALARY_{i,t} + \beta_6 EXSALARY_{i,t} + \beta_7 CEOBONUS_{i,t} +$$
$$\beta_8 EXBONUS_{i,t} + \gamma_1 LEV_{i,t} + \gamma_2 ROA_{i,t} + \gamma_3 FS_{i,t} + YD_j + \varepsilon_{i,t}$$

Where:

| | |
|---|---|
| $EARNMGT_{i,t}$ | Discretionary accruals for firm $i$ in year $t$ |
| $CEOTC_{i,t}$ | Total compensation received by CEO's for firm $i$ in year $t$ |
| $EXTC_{i,t}$ | Total compensation received by Executives for firm $i$ in year $t$ |
| $CEOEBC_{i,t}$ | Equity-based compensation received by CEO's for firm $i$ in year $t$ |
| $EXEBC_{i,t}$ | Equity-based compensation received by Executives for firm $i$ in year $t$ |
| $CEOSALARY_{i,t}$ | Salary received by the CEO for firm $i$ in year $t$ |
| $EXSALARY_{i,t}$ | Salary received by the Executives for firm $i$ in year $t$ |
| $CEOBONUS_{i,t}$ | Bonus received by the CEO for firm $i$ in year $t$ |
| $EXBONUS_{i,t}$ | Bonus received by the Executives for firm $i$ in year $t$ |
| $LEV_{i,t}$ | Leverage is debt to capital ratio for firm $i$ in year $t$ |
| $ROA_{i,t}$ | Return on assets for firm $i$ in year $t$ |
| $FS_{i,t}$ | Firm size for firm $i$ in year $t$ |
| $YD_j$ | Dummy Variable from 2008 to 2018 represent the number of years to control time specific effect in each year |
| $\beta_0$ | Constant or intercept |
| $\beta_1$ To $\beta_8$ | Coefficients for independent variables |
| $\gamma_1$ To $\gamma_3$ | Coefficients for control variables |
| $\varepsilon_{i,t}$ | Residual or error term |

All variables are defined in Table 1.

**Regression Analysis**

The impact of the components of the executive compensation is tested on the discretionary accruals by employing a sample of companies comprising of FTSE 350 listed companies. Discretionary accrual is a dependent variable, whereas, eight (8) independent variables are employed that includes CEO total compensation, executive's total compensation, CEO equity-based compensation, executives' equity-based

compensation, CEO salary, executive's salary, CEO bonus and executives' bonus. Earnings management is predicted by applying four empirical regression models that comprise of Jones model (1991), modified Jones model (1996) and Kothari model (2005) and finally, earnings management model that is estimated by applying the results of the Jones model (1991), modified Jones model (1996) and Kothari model (2005) and the first principal component values.

Based on the results and findings of the discretionary accruals Jones model (DJM), modified Jones model (DMJM), Kothari Model (DKM) and Earnings Management model (EARNMGT), the impact of the CEOTC on the discretionary accruals is negative, however, the impact is insignificant. Whereas the impact of the EXTC on the discretionary accruals is positive and statistically significant at 1%. From the findings, it can be inferred that the total compensation paid to executives can positively affect the behaviour of the executives in manipulating the accounting earnings and engage in opportunistic earnings management practices. The empirical findings of this research study are consistent with the empirical findings of the Watts and Zimmerman (1986), Healy (1985), Gaver et al. (1995) and Balsam (1998).

Based on the findings of the four discretionary accruals models, the impact of both CEO equity-based compensation and Executives equity-based compensation on the discretionary accruals is negative, however, the relationship of the CEO equity-based compensation and executives equity-based compensation with earnings management is insignificant, which suggests that equity-based compensation helps in mitigating and controlling the unethical accounting practices and helps in improving the quality of financial reporting in companies listed on FTSE 350 during 2008 to 2018. The results of this research study are contrary to the empirical findings of the Bergstresser and Philippon (2006), Meek et al. (2007), Paulsen (2001), Jensen (2001) and Sun and Hovey (2012).

According the results of DJM, DMJM, DKM and EARNMGT models, the impact of the CEOSALARY on the earnings management is positive and statistically significant at 1%; however, the impact of the EXSALARY on the earnings management is negative and statistically significant at 1%. It can be inferred from the empirical findings of this research study that the CEO's fixed component of the total compensation i.e., CEO salary is influencing the CEO's to engage in earnings

management. The result of this research study, which concludes that the impact of the EXSALARY on the earnings management is negative, is consistent with the results and findings of Gao and Shrieves (2002).

The results of the DJM, DMJM, DKM and EARNMGT models illustrate that CEOBONUS negatively affect the discretionary accruals, whereas EXBONUS impact is positive on the discretionary accruals, however, the impact of the CEOBONUS is insignificant and EXBONUS impact is statistically significant at 5%. The finding of this research study, which states that the EXBONUS impact on the discretionary accruals is positive, lends support to Gao and Shrieves (2002), Cheng and Warfield (2005) and Holthaussen et al. (1995).

[TABLE 4]

**Table 1**
Variable Definition

| Variable | Definition | Symbol |
|---|---|---|
| Earnings management | Earnings management is a proxy for discretionary accruals that is estimated by applying three models that includes Jones Model (JM), Modified Jones Model (MJM) and Kothari Model (KM). Finally, earnings management is estimated based on the results of above three models by applying the first principal component function. $EM_{i,t} = (0.578*DAJ_{i,t})+(0.578*DAMJ_{i,t})+(0.576*KDA_{i,t})$ | $EARNMGT_{i,t}$ |
| CEO's and Executives total compensation | CEO's and Executives total compensation is estimated by using the natural logarithm of the total compensation that is paid to CEO's and Executives. *(Ln (Total compensation$_{i,t}$))* | $TC_{i,t}$ |
| CEO's and Executives Equity Based Compensation | CEO's and Executive equity-based compensation is the difference between the total compensation and cash-based compensation. Finally, the equity-based compensation is estimated by using the natural logarithm of the Equity-based compensation that is paid to CEO's and Executives. *(Ln (Equity − based compensation$_{i,t}$))* | $EBC_{i,t}$ |
| CEO's and Executives Base Salary | CEO's and Executive Salaries are estimated by taking the natural logarithm of the base salary that is paid to CEO's and Executives. *(Ln (Base Salary$_{i,t}$))* | $SALARY_{i,t}$ |
| CEO's and Executives Bonuses | CEO's and Executive Bonuses are estimated by using the natural logarithm of the performance-based bonuses that is paid to CEO's and executives. *(Ln (Bonuses$_{i,t}$))* | $BONUS_{i,t}$ |
| Leverage | Leverage is estimated by taking total debt as a percentage of the total capital at the end of the financial year, in which, total debt comprised of short-term and long-term debt and total capital includes short-term debt, long-term debt and equity. | $LEV_{i,t}$ |
| Return on Assets | Return on assets is the ratio of Earnings Before Interest and Taxes (EBIT) and total assets at the end of the financial year. | $ROA_{i,t}$ |
| Firm Size | The natural logarithm of market value of the equity at the end of financial year ($LNFS_{i,t}$). The number of outstanding shares and market price per share estimates market value of equity at the end of the financial year. *(Ln (Firm Size$_{i,t}$))* | $FS_{i,t}$ |
| Year Dummy | Year Dummy represents the number of years. | $YD_j$ |

Notes: The table presents the definition and estimation methodology for dependent and independent variables used in the research study of analysing the impact of the component of the executive compensation on the discretionary accruals during the period of 2008 – 2018.

**Table – 2**
Descriptive Statistics

| | Mean | Median | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| DJM | 0.0003 | 494.0364 | 4604.7072 | -80549.212 | 41201.9920 |
| DMJM | 0.0005 | 495.4934 | 4605.6615 | -80546.024 | 41205.0974 |
| DKM | 0.0006 | 490.0033 | 4603.4959 | -80474.366 | 41278.1926 |
| EARNMGT | 0.0007 | 853.7730 | 7974.6674 | -139474.241 | 71411.7540 |
| CEO.TC | 14.3799 | 14.3265 | 0.8887 | 9.9035 | 20.6866 |
| Ex.TC | 15.0586 | 15.0211 | 0.9393 | 10.0858 | 21.8527 |
| CEO.EBC | 12.6486 | 12.8391 | 1.9728 | 5.8377 | 17.9273 |
| EX. EBC | 13.4539 | 13.5773 | 1.8097 | 6.9078 | 18.9361 |
| CEO Salary | 13.2762 | 13.2516 | 0.6001 | 5.9269 | 20.6453 |
| Ex. Salary | 14.0265 | 13.9886 | 0.7101 | 9.5468 | 21.2088 |
| CEO Bonus | 13.1689 | 13.1994 | 0.9949 | 5.7236 | 16.1181 |
| Ex. Bonus | 13.7770 | 13.8141 | 1.0697 | 9.3927 | 21.0597 |
| LEV | 43.7580 | 38.0690 | 38.9109 | 0.0054 | 609.5952 |
| ROA | 7.4641 | 5.4813 | 15.3156 | -120.0436 | 236.7815 |
| FS | 8.2243 | 7.9652 | 1.8075 | 1.0656 | 14.6511 |

Notes: The table presents summary statistics of dependent and independent variables used in the research study of analysing the impact of the component of the executive compensation on the discretionary accruals for FTSE 350 Listed companies during the period of 2008 – 2018. All variables are defined in Table 1.

**Table 3**
Correlation Matrix – Pearson

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | EARNMGT | 1.0000 | 0.0315 | 0.0310 | 0.0181 | 0.0226 | 0.0217 | 0.0031 | 0.0238 | 0.0289 | -0.0343 | 0.0190 | -0.2024 |
| 2 | CEO.TC | 0.0315 | 1.0000 | 0.9489 | 0.9254 | 0.8886 | 0.8667 | 0.7939 | 0.6684 | 0.6808 | 0.0037 | 0.0341 | 0.0663 |
| 3 | Ex.TC | 0.0310 | 0.9489 | 1.0000 | 0.8768 | 0.9096 | 0.8154 | 0.8417 | 0.6265 | 0.6798 | 0.0096 | 0.0235 | 0.0678 |
| 4 | CEO.EBC | 0.0181 | 0.9254 | 0.8768 | 1.0000 | 0.9250 | 0.7853 | 0.7194 | 0.6191 | 0.6278 | 0.0029 | 0.0320 | 0.0481 |
| 5 | EX. EBC | 0.0226 | 0.8886 | 0.9096 | 0.9250 | 1.0000 | 0.7483 | 0.7446 | 0.5814 | 0.6231 | 0.0075 | 0.0221 | 0.0406 |
| 6 | CEO Salary | 0.0217 | 0.8667 | 0.8154 | 0.7853 | 0.7483 | 1.0000 | 0.9202 | 0.7310 | 0.7494 | 0.0100 | 0.0290 | 0.0722 |
| 7 | Ex. Salary | 0.0031 | 0.7939 | 0.8417 | 0.7194 | 0.7446 | 0.9202 | 1.0000 | 0.6707 | 0.7479 | 0.0098 | 0.0149 | 0.0863 |
| 8 | CEO Bonus | 0.0238 | 0.6684 | 0.6265 | 0.6191 | 0.5814 | 0.7310 | 0.6707 | 1.0000 | 0.9025 | 0.0078 | -0.0390 | 0.0287 |
| 9 | Ex. Bonus | 0.0289 | 0.6808 | 0.6798 | 0.6278 | 0.6231 | 0.7494 | 0.7479 | 0.9025 | 1.0000 | 0.0077 | -0.0319 | 0.0518 |
| 10 | LEV | -0.0343 | 0.0037 | 0.0096 | 0.0029 | 0.0075 | 0.0100 | 0.0098 | 0.0078 | 0.0077 | 1.0000 | -0.2039 | -0.0141 |
| 11 | ROA | 0.0190 | 0.0341 | 0.0235 | 0.0320 | 0.0221 | 0.0290 | 0.0149 | -0.0390 | -0.0319 | -0.2039 | 1.0000 | -0.0109 |
| 12 | FS | -0.2024 | 0.0663 | 0.0678 | 0.0481 | 0.0406 | 0.0722 | 0.0863 | 0.0287 | 0.0518 | -0.0141 | -0.0109 | 1.0000 |

Notes: The table presents the correlation coefficient between the dependent and independent variables used in the research study, which is analysing the impact of the components of the executive compensation on the discretionary accruals during the period of 2008 – 2018. All variables are defined in Table 1.

**Table 4**

Regression analyses on earnings management – Dependent variable is discretionary accruals.

| | Dependent variables | | | |
|---|---|---|---|---|
| Variables | 1 | 2 | 3 | 4 |
| | DAJ | DAJM | DAK | EARNMGT |
| Intercept | 1945.4340*** | 1984.3820*** | 2069.2960*** | 3463.6800*** |
| CEOTC | -81.3224 | -84.1268 | -85.2899 | -144.7682 |
| EXTC | 199.0868*** | 202.2365*** | 203.3800*** | 349.1353*** |
| CEOEBC | -58.3987 | -58.2068 | -57.9779 | -100.7987 |
| EXEBC | -23.6488 | -23.8404 | -24.0018 | -41.2765 |
| CEOSALARY | 209.0119*** | 208.5957*** | 208.6136*** | 361.5593*** |
| EXSALARY | -254.5939*** | -254.6812*** | -254.8206*** | -441.1634*** |
| CEOBONUS | -56.1309 | -55.9554 | -55.9177 | -97.0000 |
| EXBONUS | 80.6313** | 80.3921** | 80.3116** | 139.3388** |
| LEV | -4.1929* | -4.2687* | -4.2640* | -7.3473* |
| ROA | 4.4722 | 5.3024 | -3.9958 | 3.3371 |
| FS | -365.5816*** | -368.5860*** | -369.7813*** | -637.3831*** |
| DT | Yes | Yes | Yes | Yes |
| F-Statistics | 7.6300*** | 7.7500*** | 7.6600*** | 7.6600*** |
| R-Squared | 0.0541 | 0.0549 | 0.0543 | 0.0543 |
| Adjusted R-Squared | 0.0470 | 0.0478 | 0.0472 | 0.0472 |
| OBS | 2,824 | 2,824 | 2,824 | 2,824 |

Notes: This table summarizes and presents the regression test results that estimate the impact of the CEO total compensation, CEO equity-based compensation, CEO Salary, CEO Bonus, Executives total compensation, Executives equity-based compensation, Executives Salary and Executives Bonus on discretionary accruals during the period of 2008 – 2018 for FTSE 350 Listed companies. The steric sign ***, **, and * indicate two-tailed significance at 1%, 5% and 10% level respectively. All variables are defined in Table 1.