THE RELATIONSHIP BETWEEN GENDER DIVERSITY ON CORPORATE BOARDS AND EARNINGS MANAGEMENT PRACTICES

A thesis submitted for the degree of

Doctor of Philosophy by

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Abstract

This thesis consists of three main aims which analyse secondary data on eight European Union countries (France, Germany, Sweden, Italy, Belgium, Netherlands, Denmark, and Finland) during the period 2010 – 2017. The first aim of this thesis focused on the risk aversion and ethical sensitivity stereotype of women on top corporate positions debate by investigating the relationship between female directors and female CEOs presence and earnings management. The second aim of this thesis concentrated on whether the proportion of female directors would play an essential role in shaping board interaction and influencing monitoring effectiveness by constraining earnings management practices. The last aim goes more in depth by looking at female directors as a bundle of attributes as it focuses on specific attributes and roles of female directors that would affect the different earnings management methods.

The results revealed that female directors and female CEOs tend to constrain earnings management practices associated with high litigation risks and allow less risky earnings management practices indicating that the common women characteristics stereotype might not be fully applicable on top corporate level. Also, the findings supported that boards consisting between 20% to 40% of female directors are more able to significantly influence the three earnings management methods, however, having too low or too high proportion of female directors might not always affect board monitoring practices.

In addition, the findings highlighted the crucial role of female members and chairwomen on audit committees as it resulted in effectively eliminating all earnings management methods. Similarly, female directors' tenure and educational level are essential in enhancing their monitoring effectiveness and reducing all earnings management methods. On the other hand, foreign female directors are less likely to detect earnings management methods.

This is a comprehensive study which contribute in better understanding the vague and inconclusive relationship between female directors and earnings management practices by looking at this relationship through different theoretical lenses: agency theory, critical mass theory and human capital theory.

Keywords: Accrual Earnings Management, Real Earnings Management, Classification Shifting, Gender Diversity, Corporate Governance, Critical Mass.

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Declaration

I declare that this thesis does not include any information that has been previously submitted, in whole or in part, for a degree in Brunel University or any other university.

I also declare that this thesis is my done by me. Moreover, I declare that all parts of this thesis are completely my effort, with exception to the previous researchers' efforts acknowledged in the thesis.

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List of abbreviations

ABM	Accrual-based earnings management
AC	Audit committee
CEO	Chief executive officer
CFO	Chief financial officer
CS	Classification shifting
EM	Earnings management
EU	European union
FE	Fixed effect
GAAP	Generally accepted accounting principles
IFRS	International financial reporting standards
IPO	Initial public offering
REM	Real earnings management
SEC	Securities and Stock Exchange Commission
SEO	Seasoned equity offering
UK	United Kingdom
US	United States

CHAPTER ONE: THESIS INTRODUCTION

Chapter introduction

This chapter provides an overview of the thesis. The background section discusses the background related to gender diversity development and earnings management issue in the corporate world. Next, the research problem is discussed and it highlights three main important gaps in the literature that need to be addressed, followed by research aims and contribution. The research methodology is briefly discussed and finally, the thesis organization is presented.

1.1. Background

Gender diversity in top corporate positions has attracted growing research and regulatory interests in recent years and its importance is increasingly recognized worldwide (World Development Report, 2012). Gender diversity is also perceived as a crucial ethical issue for firms (Institute of Business Ethics, 2011). As stated by Adams et al., (2016), it was independent directors' era but now it is the era of female directors.

Board gender diversity is one of the most important items on policymakers' agenda (Pucheta-Martínez et al., 2018) and a number of mandatory and voluntary policy reforms were done to promote gender diversity on corporate boards globally. The mandatory approach was described as a "quick fix" for gender diversity issue (Smith, 2018), while the voluntary strategy is perceived slow but the progress is significant (Terjesen et al., 2015). Due to these initiatives, a considerable progress can be clearly seen in many countries where the representation of female directors has doubled since 2010 (Seierstad, et al. 2017).

Europe has been the leader in enhancing gender diversity on corporate boards. In 2020, the European Commission approved its Gender Equality Strategy (2020-2025) and one of its main objectives is to make sure that decision-making positions including firms' boards are gender balanced (European Commission, 2020). The majority of European countries proposed gender quota ranging from 25% to 40% (Valls Martínez and Cruz Rambaud, 2019). Some European countries introduced mandatory (e.g., France, Belgium and Spain) and voluntary female board directors' quotas (e.g., UK and Sweden) and these initiatives were effective in increasing the percentage of female board members (Adams 2016; Terjesen et al., 2016).

Internationally, different countries followed the steps of European countries, for instance, California State in the United States of America endorsed a law of having at least one female directors on corporate boards by the end of 2019. Further, firms with five board members must

have at least two female directors while firms with six or more board members must have at least three female directors. It was argued that this is the first female directors' quota law in the United States of America (Carpenter and Wattles, 2018). These laws are showing impacts and not only number of female directors are increasing but in recent years many high-profile companies are appointing female CEO. For example, in 2020, Jane Fraser, was named as the first CEO of a major global bank (Citigroup).

Countries in the developing region also responded by introducing voluntary and mandatory approaches to increase the representation of female directors in corporate board. For example, India introduced gender diversity quota in 2013 which mandates having at least one female director on board, followed by Malaysia and Pakistan (Terjesen et al., 2015; Schwartz-Ziv, 2017; De Cabo et al., 2019). In the middle east, the United Arab Emirates announced that it is mandatory to have women on state-owned companies' boards in 2012. However, the percentage of female directors in the Arab Gulf region in general is still considered the lowest in the world (Issa and Fank, 2019).

Policy-makers generally relied on the "business case" argument in promoting for gender diversity on boards which is that the presence of female directors would result in preferable boards' outcomes. For instance, gender diversity is seen as a crucial factor for boards' effectiveness (Valls Martínez et al., 2020) and a vital corporate governance element (Terjesen et al., 2015). In fact, it was argued that gender diversity could be best indicator of board's independence and high governance quality (Ferreira, 2015; García-Izquierdo et al., 2018).

According to Lehman Sisters assumption (Van Staveren, 2014), if financial firms' board of directors consisted of more women, the 2008 financial crisis would not happen. This assumption is supported by the argument that compared to men, women have high moral values and are keen to follow high ethical standards and financial policies (Gennari, 2018), as well as avoiding risky decisions (Huang and Kisgen, 2013; Levi et al., 2014; Faccio et al., 2015; García Lara et al., 2017; Khlif and Achek, 2017).

As a result, a recent stream in the literature adopted the argument that due to the characteristics differences between men and women, the presence of female directors on boards could also reduce earnings management (EM) because it is considered as unethical issue related to reliability of financial reporting (Greenfield et al., 2007; Du et al. 2015; Zalata et al., 2019;

Belgasem-Hussain and Hussaien 2020) as the public attention about ethical issues in accounting such as EM has increased massively specially after the accounting scandals that happened in the early 2000s (Goncharov, 2005; Birnberg, 2011).

EM became an ongoing essential concern not only for academics, but practitioners and policymakers as well (Walker, 2013; Kourdoumpalou, 2017) because firms' earnings is considered as a very important figure for valuing firms (Graham et al., 2005; Dichev et al., 2013). However, previous studies were mostly interested in the impact of female directors on firms' performance (e.g., Adams and Ferreira, 2009; Ararat et al., 2015; Ahmadi et al., 2018; Bennouri et al., 2018) and less attention was paid to female directors' impact on EM in the literature.

Nevertheless, investigating female directors' impact on EM is crucial because EM would hide and distort firm's true financial performance (Fan et al., 2019) and it is considered as a suitable paradigm to assess ethical corporate issues (Heinz et al., 2013). Most importantly, the impact of female directors monitoring skills is more directly related to EM practices than firm performance because firm performance is not influenced by boards' decision alone and might be affected by external factors (Hooghiemstra et al., 2019). Therefore, it is important to pay more attention on testing the consequences of the tremendous change in board structure in terms of EM as the reliability of firms' financial reports depends on their boards (Zalata and Roberts, 2016).

1.2. Research problem

Although EM literature includes a massive number of studies compared to the other accounting literature, a limited but rising number of studies tackled the issue of gender diversity on corporate boards role in monitoring EM practices and these studies provided contradicting evidence (e.g., Ye et al., 2010; Arun et al. 2015; Lakhal et al., 2015; Panzer and Muller 2015; Guedes et al., 2018; Triki Damak, 2018; Orjinta and Okoye, 2018; Waweru et al., 2018; Zalata et al., 2019; Abdou et al., 2020; Dobija et al., 2021), hence, it does not sufficiently support the concept that female directors would lead to a reduction in EM practices. Likewise, the extant literature did not agree if the presence of women on board would lead to governance and financial reporting process enhancement (Wahid, 2019) or improve board independence (Terjesen et al., 2016).

Hence, this study identifies the gaps in the literature that could resulted in the inconclusive findings and argues that the majority of these studies depended on the prior psychological studies and gender stereotypes perception in assuming that women are more likely to be ethical and risk

averse than their male peers, which may result in higher monitoring independence and constrain unethical practices such as opportunistic EM practices and sometimes fraud (Gul et al. 2011; Liu et al. 2014; Arun et al., 2015; Palvia et al. 2015; Saona et al., 2018; Sun et al. 2019).

However, what if female directors' characteristics differ not only from male directors but also from women in the general population? Some researchers argued that the widespread assumption regarding that women attitude toward EM is always conservative might not be right (Zalata et al., 2019). Adams and Ragunathan (2015) stated this common assumption might be misleading. In fact, Deaves et al. (2009) and Sila et al. (2016) claimed that women behaviour in corporate boards differ from women in the general population. Furthermore, researchers claimed that women in top leadership positions are influenced by male-controlled environment, hence, their behavioural differences vanish (Guedes et al., 2018).

A number of researchers failed to find evidence regarding women are more risk averse in the business field claiming that women in this field differ from women in the general population and they do not differ from their male colleagues in terms of monitoring (e.g., Deaves et al., 2009; Sila et al., 2016; Sheedy and Lubojanski, 2018), while other researchers emphasized that female board directors are more risk-loving than men directors. (Adams and Funk, 2012). Although studies provided evidence that women might not be risk averse, studies are still building their hypothesis based on this argument and little is known about gender behavioural differences among board directors (Kirsch, 2018).

The perception of risk aversion behaviour of women is mostly documented by previous experimental and survey-based research (e.g., Croson and Gneezy, 2009; Charness and Gneezy, 2012) and the respondents were mostly the general public or college students and did not target women on top corporate positions. Also, women who chose to be board directors are not expected to have the same personality or behaviour as women in general population. Hence, as stressed by Adams and Funk (2012), it might be misleading to generalize the findings of the general public to top corporate positions.

It was also argued that there is no clear theoretical framework that can clarify the reason behind the assumption that women are more ethically sensitive than men (Collins, 2000). Moreover, as claimed by Zalata et al., (2019), most of the ethical behavioural studies collected their data using surveys and the response rates were low, which may raise doubts regarding the validity of their

findings. Hence, in order to have better explanation, ethical behaviour studies need to be supported by studies that use archival data (Ho et al. 2015; Palvia et al. 2015).

EM is an ethical issue regardless of the method used to influence firms' earnings and the risk level varies from one EM method to another, thus, it is expected that the response of female directors might differ from one EM to another. The majority of the EM studies focused on accrual-based method (ABM) which is a risky method that attracts high regulatory attention (e.g., Arun, 2015; Gull et al., 2018; Kyaw et al., 2015; Saona et al., 2018), hence, it might not fully explain female directors and CEOs attitude toward risky and ethical decisions in the top corporate positions. As stated by Luo et al., (2017), investigating one EM method fails to capture the overall effect of board gender diversity.

Accordingly, it is essential to include more than one EM method because a number of studies agreed that managers use different EM practices to influence firms' earnings and studies confirmed that real earnings management (REM) and classification shifting (CS) are more likely to be used as substitutes when ABM is restricted compared to the other methods (Abernathy et al., 2014; Zhu et al., 2015; Anagnostopoulou and Tsekrekos, 2016).

Therefore, focusing on one type of EM would not provide a full picture of managers' opportunistic practices toward managing firms' earnings (Abernathy et al. 2014; Fan et al. 2010; Zhu et al., 2015; Anagnostopoulou and Tsekrekos, 2016). Besides, the different initiatives to enhance the representation of female board directors has increased massively after financial crisis. Hence, this study is motivated by the trend of increased use of REM and CS besides ABM within the IFRS environment.

In addition, due to the varying gender diversity targets set by countries, studies were motivated to test if female directors' percentage or number would impact board monitoring effectiveness. Prior studies emphasized that simply measuring the percentage or number of female directors would provide biased results because women influence in a group (board) might differ based on their proportion (Kanter, 1977). Similarly, researchers highlighted the importance of examining the optimal proportion of female member in a team that could result in better outcomes (Hoogendoorn et al., 2013).

Kirsch (2018) argued that it is crucial to pay close attention to the role of female directors' threshold in influencing firms' outcome i.e., critical mass of female directors. Some studies applied critical mass concept when testing the relationship between female directors and EM and mostly relied on three or more of female directors as a critical mass level proxy. However, some researchers argued that this proxy could be irrelevant because women that reached to this position are not probably shy and differ from women in the general public (Adams, 2016). Besides, it might not be sufficient to measure critical mass level using this proxy because the influence of three female directors in a board that consist of 5 members would definitely not be the same as if the board consist of 13 members. Therefore, there is a need to further explain if the critical mass perception is applicable and would really result in a dramatic change in boards.

A limited number of studies conducted in the UK, Australia and Poland responded to measuring the proportion of female directors and the findings are conflicting (e.g., Strydom et al., 2017; Guedes et al., 2018; Dobija et al., 2021). However, there is a need to further investigate within the European context since Europe has applied substantially different approaches and regulations to increase female representation on boards and a considerable progress can be seen in Europe over the period 2010 – 2016 where the representation of women has doubled (Seierstad, et al. 2017).

In addition, the inconsistency of the prior studies' findings could be due to the fact that the majority of these studies generally assumes that the presence of female directors alone could influence the monitoring behaviour of corporate boards (Arun et al., 2015; Kyaw et al., 2015) and less attention has been paid to testing the specific female directors' characteristics that would help them in board decision making and monitoring (Gull et al., 2018) which resulted in an ongoing debate about female directors' competence.

In fact, few studies linked female directors' attributes and specific EM method which is mostly ABM method (e.g., Gull et al., 2018; Dobija et al., 2021). However, there are other EM methods that are considered more sophisticated and not easy to be detected (Zalata et al., 2019; Cai et al., 2020), hence, it requires specific capabilities other than just the gender of directors. Therefore, there is a need to go beyond simply the presence of female directors and focus on the exact characteristics that would play an influential role in enhancing their monitoring skills in terms of multiple EM practices.

Focusing on this aspect would provide broader explanation regarding which female directors succeed in influencing board dynamics and what are the unobservable aspects that they would bring to the boards (Kirsch, 2018). Khlif and Achek (2017) supported the aforementioned argument by stating that a major limitation in the accounting and gender diversity studies is focusing on female directors' dummy variables and ignored the other important characteristics of female directors such as age, education, background and experience which may strongly influence their behaviour aside from gender issue only.

Studies generally were more active in linking female directors' attributes with firm performance than EM (e.g., Bennouri et al. 2018; Moreno-Gómez et al. 2018). However, testing the role of female directors' attributes on EM is crucial as it would lead to extremely value distortion (Dechow et al., 1995; Karpoff et al., 2008; Chen et al., 2015).

Thus, if the increasing number of female directors was not based on their specific attributes that could help them in uncovering EM practices, then, EM are expected to increase significantly causing severe consequences. Hence, testing the impact of female directors' attributes on EM is important to better understand the exact characteristics that would lead to better board monitoring.

The majority of the prior studies focused on linking statutory characteristics of female directors with EM such as their audit committee membership (e.g., Zalata et al., 2018; Sudarman and Hidayat, 2019; Mardessi and Fourati, 2020), their independence (e.g., Arun et al., 2015) and board chairing (e.g., Palvia et al., 2015). Nevertheless, far too little attention has been paid to their demographic characteristics that would improve their monitoring skills such as their education and experience in order to make sure if these characteristics would impact EM practices (e.g., Harjoto et al. 2015; Gull et al., 2018; Arıoğlu, 2020). This is important as researchers highlighted those statutory and demographic characteristics complement each other in enhancing board functioning (Ben-Amar et al., 2013).

In addition, the studies that tested female directors as individuals are vital because it would provide broader explanation regarding which female directors succeed in influencing board dynamics and what are the unobservable aspects that they would bring to the boards (Kirsch, 2018). Few exceptional studies like Gull et al., (2018), Arıoğlu (2020) and Dobija et al., (2021) tested the relationship between female directors' attributes and ABM and the studies' findings were contradicting.

Additionally, the dominant theory in the previous studies to explain the association between female board directors and EM practices is agency theory which assumes that statutory diversity is enough to reduce the agency conflict between shareholders and managers (Fama and Jensen, 1983). However, Volonte´ and Gantenbein (2016) argued that agency theory ignores the fact that board of directors should have diverse skills and competences to practice their role effectively. As a result, researchers suggested for considering human capital aspects when testing the impact of female directors on board outcomes (Kirsch, 2018).

1.3. Research aims and contribution

In order to understand the different dimensions of gender diversity on corporate boards and its relationship with EM, the aim of this thesis is to uncover the ambiguous relationship between board gender diversity and EM and test the possible links that might justify this relationship including female directors' proportion and attributes. The thesis would achieve three interrelated objectives that aim at clarifying the relationship between female directors and EM. The first part of the thesis tests the association between female directors and female CEOs and EM practices to further understand if the common perception of risk preference and ethical sensitivity is applicable. The second part focuses on the role of female directors' proportion on influencing EM practices and the last part digs more in depth by examining female directors' attributes and its relationship with EM practices.

Accordingly, the **main objective** of this thesis is to investigate the relationship between gender diversity on corporate boards and EM.

In order to do that, the **sub-objectives** are as follows:

1- To examine the relationship between the proportion of female/CEO directors and EM practices.
2- To examine the extent to which the critical mass of female directors can influence EM practices.
3- To examine the relationship between female directors' attributes and EM practices.

What makes this thesis different is that it sees this relationship through different theoretical lenses which are agency theory, critical mass theory and human capital theory. Also, the study generally provides further evidence to the limited and inconclusive findings of the previous studies by

understanding what female directors bring to corporate boards and how their proportion on board, specific attributes and monitoring related positions could influence EM.

The study responds to Kirsch (2018) recent call regarding the importance of examining corporate directors' gender differences concerning ethical values and also sheds light on women attitude toward risky decisions on top corporate positions. As a matter of fact, this study is one of few studies that provides a different argument than the majority of previous studies regarding risk preference and ethical attitude of female directors toward EM practices. The study also provides an answer to the debate regarding if female directors attitude and values are different than male directors as well as women from the general public or not.

Most importantly, unlike the majority of the prior studies that focused mainly on ABM method, this study responds to the recent researchers call to the need of including multiple EM methods to improve the understanding of all the possible EM techniques used by managers. Besides, EM methods were mostly investigated separately which may not provide an exact picture of EM techniques applied, however, the current study uses the same sample for specific period of time and includes a number of EM techniques while taking into consideration a number of factors such as costs and risks associated with these techniques in order to provide a consistent comparison.

Also, the majority of the previous studies covered not very recent period which is before and slightly after the financial crisis that occurred in 2008 and IFRS adoption in the EU which is after year 2005. However, it is crucial to investigate the relationship between gender diversity and EM for a long period of years and especially after the financial crisis and IFRS adoption because different regulatory and corporate governance reforms were done in response to this crisis to make the monitoring mechanisms more effective and to avoid future crisis.

Hence, the study contributes to the literature by focusing on the period after the financial crisis since it provides an important setting for identifying the different EM practices used by managers. Also, this period is important because the number of board gender diversity policies such as quotas, disclosure requirement, and corporate governance amendments has increased tremendously worldwide since the year 2010 (Adams, 2016).

In addition, this study is one of few studies that includes a multi-country sample of European firms. Studying the relationship between gender diversity on boards and EM practices within the

European context is crucial because European countries act as gender diversity role models for other countries worldwide and many countries are interested in knowing whether Europe initiatives towards gender diversity issue has an impact on one of the most important ethical issue in the corporate world which is EM. In addition, the current study attempts to look deeper inside the black box of corporate boards to further explain the complicated effect of female directors' proportion on board governance capabilities. Also, the study provides additional evidence regarding if a critical mass logic better explains women role on board and EM relationship than conventional approaches. Furthermore, despite critical mass theory popularity, a limited number of studies applied it in empirical studies (Joecks et al., 2013), and rarely used when testing the relationship between female directors and EM and the existed studies' findings are still inconsistent, hence, the study provides a further evidence to the inconclusive literature.

The current study also adds to the literature by answering an important question related to the optimal proportion of female directors on boards that would result in preferable board monitoring mechanism. If boards dominated by male directors are perceived to negatively affect board monitoring effectiveness resulting in an increase in EM practices, then how the situation will be if boards were dominated by female directors?

Most importantly, understanding the effects of the critical mass of female board directors on EM is important given the European Commission proposal to increase the presence of female non-executive directors to at least 40% (European Commission, 2012b). although it is not applied yet, the Commission still committed to this proposal (European Commission, 2021). This percentage represents balanced proportion as suggested by Kanter (1977) and the previous studies provided mixed results with regards to the gender balanced boards and EM. As stated by Kirsch (2018) the literature still does not answer the important question of what are the expected economic consequences of a gender balanced board. Hence, the study finding would reveal the consequences of suggested EU proposal of having gender balanced board on EM.

Internationally, the average percentage of women directors in sixty-seven countries is 10.3% (Terjesen et al, 2015), indicating that tokenism could be a real issue on boards and the board gender diversity consequences might be still vague. Hence, the study findings are beneficial for firms, regulators and policy makers who are interested in knowing the optimal proportion of female directors when setting their gender diversity voluntary target or quota. Furthermore, the current

study is crucial for countries worldwide especially those who introduced a target of at least one woman on corporate boards which may only a token appointment.

The study also contributes to the existing literature by further understanding what female board directors bring to corporate boards and how their specific attributes influence EM practices. Hence, this study extends previous studies by going beyond just simply measuring the impact of female directors' presence by including broader dimensions of gender diversity when testing the relationship between female directors and EM practices.

This study responds to recent call for considering human capital elements when testing the impact of female directors on board outcomes (Kirsch, 2018). The previous studies investigated the association between board statutory and demographic attributes and EM (e.g., Bzeouich et al., 2019; Orazalin et al., 2019; Bouaziz et al., 2020) but a very limited number of studies tested female directors' attributes and EM practices. Therefore, the study goes more in depth as it provides exact details about the relationship between gender diversity and EM practices rather than testing only the presence or the number of female directors.

Additionally, interested parties about the consequence of gender diversity on boards and more specifically female directors' competence are keen to know exactly how female directors' specific attributes could contribute in eliminating EM as it requires advanced specific skills. Also, the findings of the study would reveal the role of women directors as a board member, chairperson, and member of sub-board committees. This gives more details about the influential role of female directors when wearing multiple hats within the same board because each position might need different characteristics and most importantly, the study findings highlight the role of audit committee membership in eliminating different types of EM practices as it attracted less attention by the extant literature compared to ABM.

More importantly, in order to uncover complex EM practices, female directors are expected to have specific observable and unobservable competences that would contribute in enhancing board monitoring and demanding high-quality financial reporting (Lai et al. 2017), therefore, this study uncovers these characteristics of women in order to have better understanding specially that it is commonly claimed that there is a great difference between female board directors' characteristics and their male peers (Ahern and Dittmar, 2012; Le Dang et al., 2014).

Finally, Sila et al. (2016) highlighted that the economic consequences of the presence of female board directors is still vague and not well understood. Regulators, investors, creditors and other stakeholders are keen to assess the influential role of gender diverse boards on board monitoring function, thus, this study would provide a clear evidence regarding this critical issue. In fact, understanding the effect of more diverse boards on EM would provide regulators worldwide with deeper knowledge to determine whether appointing more women on the board would be beneficial for improving board monitoring effectiveness or not. Also, board gender diversity quota generally does not mention specifically any preferable female directors' characteristics (Gull et al., 2020), hence, the finding of this study is essential for policymakers as it highlights that the appointment of female directors should not be based only on their gender but it is important to promote women directors' characteristics and skills when setting gender diversity quota or targets.

1.4. Methodology

Since the current study's main objective is to test the relationship between gender diversity on corporate boards and EM and it applies a quantitative research approach, this research adopts the positivism research philosophy method. Moreover, the approach to theory development is deductive approach because it develops hypotheses based on an existed theory (Saunders et al., 2016). Also, this research employed secondary data for corporate governance, EM, and other firm related variables. The study data were collected for each year cross-sectionally. The data were mainly gathered from Bloomberg, Osiris, Thomson One and BoardEx databases. Data were also gathered manually from firms' websites.

The study sample includes eight European Union countries (France, Germany, Sweden, Italy, Belgium, Netherlands, Denmark, and Finland) during the period 2010 – 2017. In order to investigate the association between gender diversity variables and ABM, REM and CS practices, the dependent ABM was measured using modified Jones model Dechow et al., (1995), while REM was estimated using Roychowdhury (2006) and CS was measured using McVay (2006) model. In addition, following Kyaw et al., (2015) and Saona et al., (2018), panel data analysis using fixed effects (FE) is applied in all study models. Alternative methodological approaches were also used in the robustness tests section in order to check if the FE model provided a reliable estimation.

1.5. Organization of the thesis

This thesis includes seven chapters and are organized as follows: chapter two reviews in depth the previous literature related to multiple types of EM and presents the studies that tested EM and various gender diversity aspects. Also, the chapter mentions the incentives behind engaging in EM practices, provides a comparison of EM methods, discusses the positive and negative impact of gender diversity on corporate boards and reviews the studies that linked EM with gender diversity based on regions. Next, chapter three reviews the relevant theories related to the study and the conceptual framework and study hypotheses are developed. Chapter four includes describing the study sample, discussing the research philosophy and study variables, providing a full description of the models used to estimate EM practices, independent variables and control variables. Also, the last part of this chapter provides a detailed description of the steps taken to assess the validity and reliability of the study data and model.

Chapter five presents general descriptive statistics for the study variables; univariate analysis is also applied to compare the relationships and the significant difference between the means in different groups. In addition, a descriptive comparison according to each country, year and sector are discussed with regards to female director's variables. Furthermore, regression analyses results are presented and finally, a number of robustness tests were used to check if the results of the main analyses are reliable. Chapter six discusses and provides an interpretation of the results found in chapter five. Finally, chapter seven is the thesis conclusion. The chapter summarises the overall findings, addresses the research limitation and suggests future studies.

CHAPTER TWO: LITERATURE REVIEW

Chapter introduction

This chapter reviews in depth the previous studies related to the commonly discussed EM methods. Also, the chapter mentions the incentives related to EM and provides a comparison of EM methods. The chapter then moves to board gender diversity and it discusses the positive and negative impact of gender diversity on corporate boards. Finally, it reviews the studies that linked EM with gender diversity based on regions.

2.1. Earnings management (EM)

At the very beginning, EM term was not commonly used in the literature and instead, most of the early studies referred to it as income smoothing (e.g., Gordon, 1964; Gordon, et al. 1966; Archibald, 1967). However, few years later, EM term has been widely used. The origin of EM comes from the flexibility of accounting practices which facilitate managers to take decisions based on their knowledge to improve the valuableness of financial statements (Subramanyam and Wild 2009). This gives an indication that EM is needed and beneficial for financial reporting.

However, there has been much debate about the role of EM practices, some researchers argued that EM practices can be efficient and others claimed that EM can be opportunistic (Raman and Shahrur, 2008; Siregar and Utama, 2008), but most of EM studies are driven by the negative perception of opportunistic EM practices especially after the different accounting scandals like Enron as it is seen as it would reduce the quality of financial statements (Hooghiemstra et al., 2019).

Many researchers tried to provide a general definition of EM, however, as noted by Grimaldi et al., (2020), due to EM complexity, it is difficult to provide a comprehensive definition. Schipper's (1989) definition, which many researchers have referred to, is managers' intervention in the reported earnings for achieving personal gain. Many researchers provided similar definition that focus on the opportunistic purpose of EM practices only and see it as a problematic practice (e.g., Dechow and Skinner, 2000; Lin et al., 2010; Bajra and Cadez, 2018) which most probably will result in a distortion of companies' true financial performance (Fan et al., 2019). Zhou et al., (2020) highlighted that EM is a" grey rule" that can result in having "beautiful" financial statements without going beyond accounting standards.

Healy and Wahlen (1999) provided a broader explanation of EM. The authors stated "EM occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers". In addition, Walker (2013) offered a much wider explanation of EM by addressing different EM methods and it did not emphasize only on the negative side of EM practices only which is "the use of managerial discretion over (within GAAP) accounting choices, earnings reporting choices, and real economic decisions to influence how underlying economic events are reflected in one or more measures of earnings".

2.1.1. Earnings management methods

EM literature mainly categorized EM techniques into three: ABM, REM and CS (Walker, 2013; Malikov et al., 2018). Regardless of the technique applied to effect firms' earnings, studies concurred that all techniques could lead to an increase in the information asymmetry between managers and interested parties and conceal firm's actual performance, thus, lowering financial reporting reliability (Zalata et al., 2019). Each technique has its own characteristics, factors and consequences which are discussed in details next.

2.1.1.1. Accrual-Based Earnings Management (ABM)

Accruals is an important concept in accounting because it reflects the effects of transitory cashflows and this would improve earnings' ability to measure firm actual performance (Dechow and Dichev 2002; Francis et al. 2004). Subramanyam and Wild (2009) explained accruals as total of accounting adjustments that cause a change between net income and net cashflow. Kothari et al., (2012) argued that ABM occur when managers use their judgment in the financial reports to affect firms' earnings without resulting in cashflow consequences.

Managers prefer to engage in managing accruals for different reasons such as enhancing the current firms' earnings as this method borrows earnings from future periods through accelerating firms' revenues or decelerating firms' expenses (McVay, 2006). Besides, since accruals deal with only firms' future cash, it more likely to be subjective and provides flexibility for managers to manage firms' earnings (Palepu et al., 2003). Moreover, due to the fact that firms vary in terms of size, ownership, operations, etc, managers are responsible for taking rational decisions when choosing among different accounting choices available and make sure that they are most suitable for firms.

Fields et al. (2001) mentioned that accounting choice can be any influencing decision that could affect the accounting system. For example, managers can create accruals when they recognize revenues before they are earned or postpone expenses recognition that have been already incurred to enhance the current earnings, however, future earnings would be lowered (Healy and Wahlen, 1999; McVay 2006).

The literature documented a number of ABM techniques that managers usually use. For example, delaying or accelerating asset write-offs, changing fixed asset depreciation methods, loan loss provision, and underestimating the expected bad debts amounts (Wahlen 1994; DeFond and Park 2001; Dechow and Schrand 2002; Trejo-Pech et al., 2016). Since last three decades, ABM studies were actively focusing on developing models to estimate the level of abnormal accruals, more precisely, the ABM literature can be categorized into two streams: studies tested specific accrual account and studies that estimated total accruals. Prior researchers emphasized on the importance of investigating accruals accounts separately to know the exact effect of each account on EM level (e.g., Healy and Wahlen, 1999; Beneish, 2001; Marquardt and Wiedman, 2004), as stated by Marquardt and Wiedman (2004), estimating total accruals does not show the specific effect on EM.

In 1988, McNichols and Wilsons' (1988) study focused on a specific accrual account which is the provision for bad debt, while Teoh et al., (1998) concentrated on current working capital accruals. Also, previous studies have closely related EM practices with tax avoidance activities (e.g., Schrand and Wong 2003; Dhaliwal et al., 2004; Christensen et al., 2015; Yorke et al., 2016; Gleason et al., 2017; Beardsley et al., 2019). According to Scott (2003), the most obvious reason for EM is tax minimisation.

Although testing each accrual account gives a precise picture of its role in managing earnings, most of the EM studies preferred estimating total accruals. One of the reasons might be that specific accruals reflect a small portion of discretionary income which might not be sufficient to represent EM level at particular cases, whereas total accruals provide more comprehensive ABM measurement since managers can manage different discretionary accruals accounts at the same period (McNichols and Wilson, 1988).

Accordingly, researchers tried to develop an aggregate ABM model to estimate the overall abnormal accruals. The early models were basic which measure discretionary accruals using total accruals (e.g., DeAngelo, 1986). But then authors developed more advanced models which can classify the total accruals into discretionary accruals and nondiscretionary accruals (e.g., Jones,1991), and added other significant factors such as the firms' performance to increase the ABM model power (e.g., Kothari et al., 2005).

Healy (1985) argued that previous studies expect that compensation schemes encourage managers to choose accounting procedures that only increase the firms' income. However, big bath technique is used which means that when firms' earnings are below the targeted earnings, managers sometimes are motivated to reduce the current earnings more in order to achieve better future earnings. Accordingly, Healy (1985) study took into consideration testing both income increasing and decreasing scenarios and total accruals were used as a proxy for discretionary accruals.

Similar to Healy (1985) study, DeAngelo (1986) used total accruals as a proxy for estimating discretionary accruals. Healy (1985) and DeAngelo (1986) used total accruals as a proxy to estimate discretionary accruals because they assumed that nondiscretionary accruals are constant. However, nondiscretionary accruals may change in response to economic circumstances (Kaplan, 1985). Bartov et al., (2002) explained that discretionary accruals consist of accruals associated with managers' discretional power such as allowance for doubtful receivables, changes in accounting estimations and accrued expenditures. Different terms were used to describe discretionary accruals such as abnormal accruals and unexpected accruals. While nondiscretionary accruals are accruals that are associated with firms' routine operations and required by accounting standard-setting bodies and it is also called normal accruals (Healy, 1985).

Unlike Healy (1985) and DeAngelo (1986) models, an influential study by Jones (1991) did not assume that nondiscretionary accruals are constant and proposed a model that took into consideration firm's economic circumstances. A few years later, Dechow et al. (1995) declared that Jones (1991) is considered as the most powerful model in detecting ABM. The authors argued that this model assumed that revenues are categorized as nondiscretionary accruals, however, part of the revenues can also be considered as discretionary. Accordingly, Dechow et al. (1995) proposed a modified Jones (1991) model by adjusting the change in revenues for the change in

receivables assuming that managers can manage credit sales by exercising discretion. It is worth mentioning that until now, a substantial number of studies are using the modified Jones version developed by Dechow et al. (1995).

Years later, different researchers tried to improve the modified Jones model. For example, Larcker and Richardson (2004) claimed that large accruals are expected from firms with growth opportunities and it does not have to be related to opportunistic EM practices. The researchers suggested to include the book-to-market ratio as an independent variable. They also included operating cashflows in order to control the current operating performance because it was argued that discretionary accruals may incorrectly be estimated for firms with extreme performance. Kothari et al. (2005) raised similar concern regarding the misspecification of the discretionary accrual models' measurement when a study sample include firms with extreme performance. However, Kothari et al. (2005) developed Dechow et al. (1995) model by considering the control effect of past firms' performance which is ROA instead of operating cashflow when estimating discretionary accruals.

A major criticism of Kothari et al. (2005) model is that it might be used in situations for which it is inappropriate resulting in underestimating discretionary accruals when firms' performance is normal because it works better for firms with abnormal performance (Kenug and Shih, 2014). Ayers et al. (2006) and Dechow et al. (2012) agreed that this model can increase the noise when estimating the discretionary accruals. Moreover, Raman and Shahrur (2008) developed the modified Jones Model by including ROA to control for firms' performance (Kothari et al. 2005) and book to market ratio to control for firm's growth (McNichols 2002). Many recent studies have adopted this model to estimate the level of discretionary accruals (e.g., Lakhal et al, 2015; Triki Damak, 2018; Bouaziz et al, 2020).

Although earnings composed of two parts, accruals and cashflows, the majority of the previous studies focused on ABM and assumed that cashflows are not possibly manipulated by managers (Li et al., 2019). Studies provided evidence that this is not always the case when it comes to REM practices (e.g., Graham et al., 2005; Roychowdhury, 2006; Cohen et al., 2008; Gunny, 2010; Kuo et al., 2014; Li et al., 2019). This brings us to the second type of EM which is discussed next.

2.1.1.2. Real Earnings Management (REM)

Although the bulk of EM literature focused on ABM technique, the last decades revealed an obvious transformation in favour of REM (Vladu and Cuzdriorean, 2014). REM as an EM tool was not well understood due to its vagueness (Commerford et al. 2016). Therefore, the number of studies that investigated REM was much less. REM is different than ABM as it is more associated with business decisions rather than accounting choices, and it directly affects firms' cashflow (Chi et al., 2011; Galdi et al., 2019), thus, distinguishing between REM and regular business choices is not easy (Commerford et al., 2019).

Roychowdhury (2006) described REM as "departures from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing certain financial goals have been met in the normal course of operations". Xu, et al. (2007) stressed that REM involves the manipulation of earnings through business activities. Abernathy et al. (2014) defined REM as the deviation from optimal business decisions using real activities to meet firms' expected earnings targets. Bereskin et al. (2018) stated that REM is managerial decisions that affect firms' business operations in order to reach a desired earning. A more recent definition was provided by Huang et al., (2020) who stated that REM is the overstatement of firms' earnings using business actions that deviate the normal operational decisions.

REM can be done using different forms, similar to ABM, the early studies focused on particular type of REM which is managing research and development (R&D) expenditures (e.g., Baber et al., 1991; Dechow and Sloan, 1991; Bushee, 1998). Researchers concurred that managers are most likely to reduce the R&D expenditures in order to reach a preferable earnings target (Baber et al., 1991; Dechow and Sloan, 1991; Hsiao et al., 2017). However, Bereskin et al. (2018) argued that this can result in a low innovation level and blocks the technological advancement of firms.

Studies discussed other types of discretionary expenses such as reduction of advertising expenses (e.g., Mizik and Jacobson, 2007; Cohen et al., 2010), defer maintenance costs (Fudenberg and Tirole, 1995), and reduction of total discretionary expenses (i.e., R&D expenditure, selling, general and administrative and advertising expenses) to achieve their desired targets (Roychowdhury 2006; Gunny 2010; Badertscher 2011; Chi et al., 2011; Zang 2012). Roychowdhury (2006) highlighted that lowering these expenses can result in cash outflow reduction and affect operating cashflows in the current period. According to Graham et al. (2005) survey findings, the abnormal reduction of discretionary expenditures is considered the most

preferable form of REM to inflate firms' earnings. Roychowdhury (2006) explained that managers can reduce different discretionary expenditures in order to increase firm's earnings and if managers did so, the discretionary expenses for the period are expected to be unusually low and accordingly, the current cashflow is expected to increase.

Other type of REM includes acceleration of sales which is a technique that aims at increasing the volume of sales for the current period, by introducing greater discounts and/or favourable payment terms (Roychowdhury, 2006). One way of accelerating sales can be by announcing that the current prices will increase in the coming period, hence, boosting the current sales (Graham et al. 2005). Although the sales volume might increase currently, the sales will go down again when the firm return to the old prices, or when prices have actually increased in the coming period, resulting in lowering down the operating cashflow in the future (Roychowdhury 2006).

In addition, the current operating cashflow is more likely to be reduced in the current period because the sales margin from additional sales becomes lower after giving the discount (Graham et al. 2005; Roychowdury 2006). Huang et al., (2020) provided another example related to the acceleration of sales techniques such as when managers intentionally send excessive shipments to dealers and justify it as due to high demand (channel stuffing). Well-known companies were involved in such practices as Coca Cola Inc. who intentionally boosted sales to increase its stock price in year 1999 and 2005 (Coca Cola Settlement Agreement, 2008). Also, General Motors in 2012 recorded sales when shipping the vehicles to the dealers and not when it is sold to buyers (General Motors Class Action, 2012).

In order to report higher earnings, another REM method is used which is lowering cost of goods sold by using overproduction technique, which is basically done by producing more units than necessary, fixed costs are spread over a larger number of units, and accordingly, the total cost per unit is decreased (Zang 2012). As a result, cost of goods sold decreases automatically generating a greater operating margin (Roychowdhury, 2006). Similar to sales manipulation technique, this EM method might lower the costs in the short run, however, it might have an adverse effect because producing more than the needed number of units could increase the expenses in the long run (Zang 2012).

Tabassum et al., (2014) claimed that firms that engage in overproduction EM technique are more likely to have a lower financial performance in the following years. However, Galdi et al., (2019)

argued that firms are avoiding overproduction recently due to the high costs associated with it. REM can also appear in many other forms (Li et al., 2019) such as managing earnings upwards or downwards by selling marketable securities and fixed assets at any desirable time to meet forecasters' expectations (Bartov, 1993; Herrmann et al., 2003). Graham et al. (2005) mentioned that postponing or eliminating capital investments to avoid depreciation charges is another method of REM.

The attention on REM practices has increased especially after Graham et al. (2005) survey which recommended paying more attention to REM since mangers prefer to engage in it more than ABM. Moreover, the literature provided evidence regarding tightened regulations could result in lowering managers' preference to engage in ABM and engage more in REM (Evans et al., 2015). Cohen et al., (2008) for instance, showed that the degree of managing accruals has decreased after the introduction of SOX Act (2002), whereas the preference of managing REM has increased.

REM as a technique to achieve earnings benchmarks has become more attractive to managers following the increasing regulatory scrutiny (Bartov and Cohen, 2009; Osma and Young, 2009). Using an international sample, Francis et al. (2016) study revealed that firms are more likely to depend on REM rather than ABM in countries with strong legal institutions. A more recent study by Cunningham et al. (2020) showed that when there is a high regulatory attention on aggressive accounting estimates, REM level becomes higher. Likewise, Ipino and Parbonetti (2017) confirmed that firms located in countries with strict enforcement shifted from ABM to REM after the mandatory IFRS adoption.

Compared to ABM, empirical models to test REM are more recent (Trejo-Pech et al., 2016). Similar to Jones (1991), Roychowdhury (2006) represented a turning point in the REM literature, it is considered a very influential study which suggests three proxies for measuring REM which are abnormal levels of discretionary expenses, abnormal level of cashflow from operations, and abnormal production costs. REM estimation methods by Roychowdhury (2006) as mentioned earlier were largely applied by different studies (e.g., Taylor and Xu, 2010; Ge and Kim, 2014; Talbi, 2015; Commerford et al. 2019).

These real activities would result in an increase in the current year earnings and allow the company to meet its financial reporting targets. However, it could lead to firms' cashflow reduction

in the following years (Roychowdhury 2006). De Jong et al., (2014) survey findings revealed that managers prefer to increase earnings by reducing discretionary costs although it may contribute in destroying the value of the firm in the future. Hence, it misleads the stakeholders who are concerned about the current and future firm performance (Roychowdhury, 2006; Cohen and Zarowin, 2010).

Moreover, based on REM definitions provided earlier, REM decisions might not be in the best interest of the firm, hence, the associated costs might increase especially when the competition within the industry is very high (Zang, 2012). Additionally, Ho et al. (2015) and Ferentinou and Anagnostopoulou (2016) concurred that REM negative consequences can be more on shareholders than from ABM. Hence, researchers described REM practices as unethical (Hong and Andersen 2011). Despite the potential severe consequences that REM can cause, firms are switching from ABM to REM (Gunny, 2010; Cai et al., 2020).

After discussing EM practices that influence firms' bottom line (net income) earnings, next, CS is discussed as another form of EM that aims at inflating the core earnings. Although this method differs from the other two EM methods since it does not change firms' net income (McVay, 2006), it is important to include it in the study because recent studies provided evidence that manager tend to use ABM, REM and CS methods as substitutes to mislead investors (Zalata et al, 2019). Besides, prior studies agreed that market participants are focusing more on core earnings rather than bottom line earnings lately as they believe that it is a reliable source for anticipating future firms' performance (Alfonso et al., 2015; Black et al., 2017).

2.1.1.3. Classification shifting (CS)

CS has been an unexplored area in the literature for the past decades, however, a rising number of EM studies paid more attention to it. Malikov et al., (2018) described CS as "the recent form of earnings management". Although CS might not sound as a substantial EM concern since it does not deal with managing the bottom-line earnings, it became an increasingly critical EM issue. Fan et al., (2010) and McVay (2006) argued that misclassifying income statement items could mislead investors especially when firms are constrained from managing other EM methods.

Haw et al., (2011) defined CS as the opportunistic misclassification of income statement items. McVay (2006) and Malikov et al. (2018) defined CS as the misclassification of the income statements' items, however, the bottom-line earnings do not change. Also, Skousen, et al, (2019)

stated that CS is a deliberate reporting of income statement items on different lines. Poonawala and Nagar (2019) provided a broader explanation for CS by stating that it is a purposeful misclassification of income statement revenues or expenses that would lead to inflating firms' gross profit or core earnings whereas net income remains unchanged. Alfonso et al. (2015) described CS as a clever and practical way to manage earnings.

CS can be done using different forms. McVay (2006) claimed that managers could purposely shift operating expenses (cost of goods sold and sales, general and administrative expenses) to special items in order to have higher core earnings. Barua et al., (2010) and Skousen, et al, (2019) documented that manager tend to misclassify the operating expenses to the income-decreasing discontinued operations section in order to increase the core earnings. The researchers claimed that managers are more motivated to use discontinued operations rather than extraordinary items when applying CS.

Lail et al., (2014) provided evidence regarding expense shifting from core segments to other segments. Furthermore, Poonawala and Nagar (2019) focused on CS practices that could inflate the gross margin rather than core earnings claiming that gross margin is more sustainable than core earnings due to its closer proximity to sales. The researchers found that managers tend to misclassify costs of goods sold as operating expenses in order to meet prior period's gross margin.

Due to the principle-based characteristic of IFRS, managers may use their discretion over the classification of income statement items to signal whether these items have temporary or permanent nature to the interested users of financial reports and provide them with information regarding firms' earnings persistence and predictability because it reflects high earnings quality (Orjinta and Okoye, 2018). Moreover, under the IFRS, regulations related to non-recurring items in the income statement are less rigid (Zalata and Roberts, 2016), and it gives managers greater flexibility for discretion over the expenses and revenues classification within the income statement. As stated by Gray et al., (2015), under principle-based standards, managers are supposed to practice their judgment to reach the optimal economic condition of the firm, however, managers may take the advantage of any potential discretion under principle-based standards to manage firms' earnings for their benefit.

Although US GAAP is considered stricter than IFRS with regards to non-recurring items as firms do not have that much flexibility to deal with non-recurring items (Athanasakou et al., 2009), the Securities and Exchange Commission (SEC) since 2000 raised a concern regarding CS by stating that it is important to properly classify the income statement items. In 2013, the former SEC chair also raised concern regarding opportunistic core EM and highlighted the need for closer attention.

Despite the fact that CS differs from the other two EM methods with regard to different aspects, what is in common between these methods is that they have the same purpose which is deceiving the interested parties. Anagnostopoulou et al., (2019) argued that all three methods of EM (i.e., ABM, REM and CS) used by managers could mislead the investors in anticipating firms' future performance. Besides, similar to ABM and REM, managing core earnings opportunistically can have a negative impact on future operating performance and cashflows (Cain et al., 2019). Accordingly, regulators recently are paying more attention to the core earnings reporting because it became a popular performance metrics in the capital markets (Rapoport, 2016; Golden, 2017).

The extant literature classified CS methods into two: CS of expenses and CS of revenues. Based on the agency theory, if managers are acting opportunistically, they may take the advantage of their discretion in reclassifying core earnings items because it involves substantial managerial judgment (Athanasakou et al., 2009; McVay, 2006; Haw et al. 2011). Core expenses could be shifted from core earnings and added to special items, which are believed to be temporary or unrelated. Abernathy et al. (2014) and Zalata and Roberts (2016) explained CS as the shift of operating expenses to non-recurring expenses and exceptional items to increase firms' core earnings rather than the bottom-line net income.

McVay (2006) study provided evidence that firms in the United States are engaged in CS practices in order to manage their core earnings upward. It is done by moving the cost of goods sold and selling, general, and administrative expenses to the special items section within the income statement. A number of studies found evidence that firms engage in CS using McVay (2006) model (e.g., Athanasakou et al., 2009; Haw et al., 2011; Siu and Faff, 2013; Causholli et al., 2014; Zalata and Roberts, 2016; Eilifsen and Knivsflå, 2018).

Another form of CS is misclassifying the revenue items in the income statement. McVay (2006) suggested the use of CS through shifting the non-operating revenue to the operating revenue section in the income statement. Malikov et al. (2018) investigated the misclassification of CS and

developed a model that can categorize operating revenues into expected and unexpected elements in order to measure the CS of revenues. Nevertheless, the majority of the previous studies followed McVay (2006) by testing the misclassification of firms' expense (e.g., Causholli et al., 2014; Eilifsen and Knivsflå, 2018).

2.1.2. Earnings management practices comparison

There are different factors that contribute on managers' EM method preference, such as the timing, risks and costs associated with them (Anagnostopoulou et al., 2019). Previous studies concurred that managing earnings can possibly result in negative outcomes in the long run. For example, researchers agreed that REM could cause greater negative economic consequences since it directly alters firms' cashflows and affects firms' operating performance (Gunny 2005; Cohen and Zarowin 2010, Kothari et al. 2012; Dichev et al., 2013; Evan et al., 2015), resulting in a reduction in earnings quality (Li, 2019). More precisely, Banker et al. (2011) documented that managing R&D expenditure as part of REM could lead to a reduction in firms' future value. In addition, although CS was described in the literature as a soft form of EM (Haw et al. 2011), it could cause negative impact on future operating performance and cashflows (Cain et al., 2019).

Evan et al. (2015) stressed that having solid reporting regulatory environments did not eliminate EM practices, instead, it motivated the managers to seek for alternative methods rather than ABM. For example, Researchers concurred that ABM is more likely to be detected by regulators and auditors while REM is considered less susceptible which resulted in a significant increase of REM practices recently compare to ABM (e.g., Cohen et al., 2008; Kuo et al., 2014; Francis et al., 2016).

Commerford et al. (2016) conducted an interview with auditors and the findings showed that the majority of the interviewees agreed REM is not easy to be identified and it causes discomfort feelings because it shows that managers are trying to meet their opportunistic short-term goals. Researchers documented a number of reasons related to managers' preference to engaging in REM. For instance, researchers argued that REM is ambiguous and does not violate GAAP although it would negatively harm firm value in the long run (Kuo et al., 2014; Kothari et al., 2016; Commerford et al., 2019; El Diri et al., 2020), and there is no certain benchmark to know what is the right operational action to be made under any specific situation (Cai et al., 2020).

Also, firms are more likely to limit ABM and increase REM when high-quality auditors are involved (Chi et al. 2011; Zang 2012) or when firms are increasingly attracting financial analysts' attention (Irani and Oesch 2016). Similarly, Zalata et al., (2019) claimed that compared to other EM techniques, CS is considered a sophisticated method that is difficult to be detected by outsiders, hence, the detection risk associated with CS method is low.

Studies regarding the litigation risks associated with three EM methods showed that ABM and REM are associated with high litigation risks, while CS is associated with low litigation risk. For instance, researchers argued that ABM could violate GAAP causing high level of litigation risks on managers (Evans et al. 2015; Hopkins 2018). Abbott et al. (2012) stated that ABM is associated with higher potential litigation risk and reputation costs due to the extensive public and regulatory attention. Ho et al., (2015) study showed that firms in the post-IFRS period (2007–2011) are less likely to manage ABM. Furthermore, Huang et al., (2020) stressed REM is more probably to be associated with deceiving disclosures and financial reporting misrepresentations because managers try to hide their opportunistic REM practices. Consequently, if opportunistic REM were suspected or uncovered, it could attract high litigation risk and higher litigation risk is associated with higher costs which could discourage managers to manage REM.

Unlike ABM and REM, the extant literature agreed that CS method is associated with low litigation risks because it is associated with high managerial discretion; thus, regulators and auditors have limited ability to verify it (Zalata and Roberts 2017) resulting in low litigation and reputation concerns than other EM practices (Alfonso et al. 2015). Moreover, under the International Financial Reporting Standards (IFRS), regulations regarding the non-recurring items in the income statement are less rigid (Zalata and Roberts, 2016). Researchers argued that no CEOs have been sued due to the engagement in CS to-date which gives an indication that the litigation risks associated with CS are low (Zalata and Roberts, 2017; Zalata et al., 2019).

A number of studies were interested in discussing the costs associated with EM practices. Researchers argued that when ABM costs are relatively high, managers are more likely to substitute it with less costly EM methods (Cohen and Zarowin, 2010; Fan et al., 2010). Li et al., (2019) said that compared to ABM, REM is more costly and more detrimental to firms' operations. Studies suggested that CS is associated with the low costs compared to REM and ABM because it does not involve reversal of accruals, or future returns decline (Athanasakou, et al. 2009; Zalata and Roberts 2016, 2017). Similarly, Doyle et al, (2013) found that managers tend to use CS when

the cost of within-GAAP EM is relatively high and when managers are restricted from using other EM methods.

Another important factor is timing. As stated by Zang (2012) and Abernathy et al. (2014), timing is the most important aspect in deciding which EM method to apply. As a matter of fact, ABM and CS are more likely to be used at the end of the fiscal year, while REM is usually done during the fiscal year (Fan et al., 2010; Albernathy et al., 2014).

Accordingly, a number of researchers were motivated to test the relationship between these practices and see how managers are using them. Zang (2012) showed that managers manage ABM according to the level of REM. Zalata et al, (2018) agreed with Zang (2012) and noted that REM and ABM can be used as substitutes. Managers generally depend on REM more than ABM since it is based on business rather than accounting decisions (Graham, 2005) and it is easier for managers to reduce R&D expenses than aggressive revenue recognition (Chi et al., 2011).

Abernathy et al., (2014) extended Zang (2012) argument by documenting managers have the capacity to apply ABM, REM and CS methods to meet earnings targets. Abernathy et al. (2014) stated that CS practices are used when REM is constrained by different factors such as the presence of institutional investors, poor financial condition, and when the firm has low industry market share. The authors added that CS practices are increased when ABM practices are eliminated when having less flexible accounting system.

Researchers confirmed that CS is used as a substitute for the ABM and REM (Fan et al., 2010; Doyle et al, 2013; Abernathy et al., 2014). Black et al., (2017) revealed that when firms are performing well and they can meet forecasts, managers tend to avoid the engagement in ABM, REM and CS practices.

Based on the studies' findings mentioned earlier, an increasing number of studies have emphasized on the importance of investigating different types of EM rather than one method because managers use multiple EM methods at the same time and focusing on one EM method would provide only one part of the actual situation (Zalata et al, 2019).

2.1.3. Earnings management incentives

The bulk of EM literature were interested in investigating EM incentives. Managers' bonuses are considered as fundamental EM incentive (Watts, 1977; Watts and Zimmerman, 1978; Healy, 1985). Cheng and Warfield (2005) documented that when managers' incentives are based on stock ownership and stock compensation, EM practices are more likely to increase. Likewise, Bergstresser and Philippon (2006) claimed that when CEO's compensation is closely linked to the value of stocks, Chief executive officers (CEOs) tend to use ABM practices in order to manage firms' earnings. A more recent study declared similar findings, CEOs incentive to manage earnings is to increase their compensation (Gong et al., 2019).

EM practices are also used to avoid contracting and regulatory undesirable consequences (Graham et al. 2005) such as the violation of debt covenants (DeFond and Jiambalvo 1994; Jha, 2013). Moreover, research suggested that debt agreements are most likely to be influenced by earnings before non-recurring items (Dyreng et al. 2017). Hence, Fan et al, (2019) study documented that firms are more likely to engage in misclassifying core expenses as special items when they have private loan contracts that contain debt covenants based on earnings before interest, taxes, depreciation, and amortization.

Sometimes managers would engage in EM in order to change the rating agencies' opinion about their firms' credit risk status. Jung et al. (2013) documented EM practices are used by managers to alter the credit ratings since credit rating agencies consider earnings volatility while evaluating firms. Ge and Kim (2014) showed that firms prefer to engage in REM in the year of issuing their new bond to mislead rating agencies and accordingly have a lower bond yield spread. Also, EM motives could also be driven by the capital market condition and prior to equity offerings (Teoh et al., 1998; Dechow and Skinner, 2000) as researchers claimed that managers take the advantage of high information asymmetry at the time of stock offering (Gounopoulos and Pham 2018).

Some studies found that EM practices increased before IPOs period to inflate firms' earnings and mislead investors (e.g., Teoh et al., 1998; Darrough and Rangan, 2005), while other researchers did not find evidence (e.g., Armstrong et al., 2010; Armstrong et al., 2015). Recent studies were more interested in investigating the relationship between CS and IPO (e.g., Anagnostopoulou et al., 2019; Liu and Wu, 2020) and confirmed that firms tend to use CS during the IPO year in order to affect investors' decision. Furthermore, researchers included multiple EM practices in their

studies and found that managers engage in all methods in order to increase firms' earnings before IPO (e.g., Wongsunwai, 2013; Alhadab et al., 2015; Gao et al., 2017; Yeung et al., 2018).

In addition, previous studies documented that firms also tend to engage in ABM, REM, and CS in order to influence the stock price before SEO period (e.g., Cohen and Zarowin 2010; Siu and Faff, 2013; Kothari et al., 2016). Cohen and Zarowin (2010) expanded previous studies by investigating both ABM and REM at the time of the SEO. The study showed that there is a negative association between EM practices and post-SEO. Kothari et al. (2016) provided evidence regarding that firms like to manage REM at the time of SEO because REM is more difficult to be detected than ABM. Siu and Faff (2013) study showed that firms that issue SEO tend to misclassify core expenses as special items in addition to ABM to increase firms' core earnings.

Also, in the capital market, it is crucial to take the consensus analyst earnings forecasts into consideration, missing the analysts' forecasts may result in undesired consequences. There is a general consensus among researchers that managers use ABM (Herbohn et al., 2010; Badertscher et al. 2011), REM (Roychwdhury 2006) and CS (McVay, 2006; Fan et al. 2010; Alfonso et al., 2015) to meet or beat analyst forecasts, whereas a number of studies investigated more than one EM method (Haw et al. 2011; Doyle et al, 2013; Siu and Faff 2013; Abernathy et al., 2014; Pacheco et al., 2017). Athanasakou et al. (2011) tested the three EM methods (ABM, REM and CS) and showed that firms use CS to reach analyst expectations in the UK.

Another reason for managing earnings is when firms are planning for merger and acquisition activities. Botsari and Meeks (2008) and Eilifsen and Knivsflå (2016) concurred that ABM existed around large equity issues and acquisitions. In addition to the aforementioned incentives, one of EM fundamental goals is to deceive shareholders about firms' true performance (Caylor et al., 2015; Li et al., 2019) to meet short term performance (Cheng et al., 2015), to smooth earnings and reflect financial condition stability (Barnea et al., 1976) and signal firms' persistence and future performance (Ha and Thomas, 2020).

Different studies provided evidence regarding that firms apply ABM (e.g., Badertscher et al. 2011), REM (e.g., Cohen et al., 2010; Gunny, 2010), CS (e.g., Barua et al. 2010; Fan et al. 2010) to meet or beat firm previous earnings and avoid losses. A number of researchers provided evidence that managers manage earnings using ABM (e.g., Badertscher et al. 2011), CS (e.g., Barua et al.

2010; Fan et al. 2010) and REM (e.g., Roychowdhury 2006; Cohen et al. 2010; Dierynck et al., 2012) to avoid negative earnings.

On the contrary, managers are not always keen to increase firm earnings, in some cases managers would intentionally reduce firms' earnings, this technique is called "big bath". Jones (2011) stated that this strategy is used by managers to clear out all the bad news at once, managers write off all the possible costs in specific period of time so that firms' future performance looks better. This strategy is widely used for tax purposes, acquisition or takeovers accounting (Scott, 2003) or when a new CEO bring expenses to the current period so that the firms' earnings would look better in the coming future (e.g., Dechow et al., 2012). Based on the prior discussion, it can be seen clearly that the motivations to use CS method are pretty similar to ABM and REM methods. This gives an indication that managers tend to use ABM and REM methods as well as misclassifying income statement items to achieve their desired goal.

2.2. Gender Diversity

Due to the managerial opportunistic EM practices mentioned earlier, policy makers worldwide raised a concern regarding the adoption of an effective corporate governance system to constrain EM and most importantly, avoid future accounting scandals. According to Fama and Jensen (1983) and Bajra and Cadez (2018), corporate boards are key corporate governance mechanism since it monitors closely executive managers' actions and make sure that managers and shareholders' interests are aligned. Anderson, et al., (2011) added that board diversity leads to high heterogeneity, thus, the decision-making process is enhanced.

However, as a result of the previous high-profile scandals, the general public blamed corporate board members for not discovering the hidden extensive EM practices, claiming if board members did practice their monitoring role effectively, then, the financial crisis would not have happened (Ferrero-Ferrero et al., 2015; Wahid, 2019). In addition, for many years, corporate boards were highly homogenous, more specifically, a typical picture of corporate boards was middle-aged white male directors (Derks et al., 2016).

A number of researchers referred to heterogeneity of board attributes as the term board diversity (e.g., Mahadeo et al., 2012). Galia and Zenou (2013) referred to board diversity as observable diversity such as gender and ethnicity and unobservable diversity like experience and educational level and background. Amorelli and García-Sánchez (2020) referred to board diversity as the

differences between board members' characteristics. However, studies showed that homogeneous boards are more likely to result in weak governance (Handajani et al. 2014).

Consequently, board diversity has been the subject of active policy making because it was believed that board diversity would enhance board monitoring effectiveness (Ferrero-Ferrero et al., 2015; Amorelli and García-Sánchez, 2020). In 2019, Creary et al., (2019) interviewed a number of board members to learn if board diversity is beneficial from their point of view. The interviewees agreed that social diversity such as gender, is very essential for board effectiveness.

The presence of female board directors has been repeatedly debated by society, regulators, media, and organizations (Tyrowicz et al., 2019). In the early 1980s, board gender diversity studies started to emerge in academic journals, and in the 1990s, the first research related to the effects of female directors on boards was published (Kirsch, 2018). However, at that time, women representation on corporate boards was limited which suggest that their effect on boards is also expected to be limited. However, recently, the number of female board directors has increased rapidly.

Kumar et al., (2016) mentioned two motives behind the high attention toward increasing the number of female directors on board: business case and social justice motives. The business case refers to the positive impact of female directors on firms' outcomes, while social justice is related to the fact that women represent about half of the society, hence, boards should be gender balanced. Researchers also claimed that other factors might contribute to the presence of female directors such as individual motives (Nekhili and Gatfaoui, 2013), firm and industry environment (De Cabo et al., 2012; Nekhili and Gatfaoui, 2013), and country characteristics (Chizema et al., 2015).

The extant literature documented that the appointment of board directors is not gender neutral (Farrel and Hersch, 2005). Countries' cultural and social environment play an essential role in promoting women to be on decision making positions. According to Schein et al. (1996), the society has a general perspective which see women more suitable for lower-level positions while top management positions are more suitable for men. Also, the nomination of a new director is mostly based on the recommendation of an existing board member or CEO, thus, the chance that women are appointed on corporate boards is much less since they were outside the directors' networks (Burke, 1997). As stated by Adams (2016), the "old-boys" networks are perceived as a

key obstacle to women career advancement. In other words, social capital might control the human capital (Nekhili and Gatfaoui, 2013).

In addition, country's gender equality level is perceived as a strong factor in promoting the presence of female board directors (Adams and Kirchmaier, 2016; Brieger et al., 2019; Tyrowicz et al., 2020). Tyrowicz et al., (2020) added that greater birth rates in countries could indicate that women are being away from the labour market, hence, their chances to reach corporate boards positions is lower. Moreover, researchers claimed that even if women are well qualified, men have better chance to be appointed on corporate boards because they have more business experience than women (Terjesen, et al., 2009). Sila et al., (2016) highlighted female directors are more probably to be appointed if they will replace another female director.

The appointment of female directors on corporate boards has attracted significant scholarly interest and public attention into whether gender diversity affects board effectiveness or not. Kirsch (2018) study revealed that during the period 1981 to 2016, around 47% of gender diversity on boards related articles were in the field of corporate governance.

Since the last decades, enormous mandatory and voluntary initiatives have been made in different countries to foster gender diversity in top management and it became an essential item on policymakers' agenda internationally (Pucheta-Martínez et al., 2018). For example, Norway was the first initiator that enforced quota with sanctions to increase the number of women directors' representation on public companies' corporate boards. Other European countries followed Norway steps by enforcing similar regulations such as France, Italy, Germany and Belgium.

The sanctions can be in different forms such as fines, warnings and directors' benefits suspension (European Commission, 2012a). Countries like Spain, the Netherlands, Iceland, Malaysia and India also introduced quotas, however, without sanctions. Other countries avoided quota and preferred introducing regulations for state-owned firms such Finland, Poland, Austria, Ireland, Denmark, Greece, Slovenia and Kenya. Also, soft-law by encouraging gender diversity in corporate governance codes in some countries were introduced such as the UK and Sweden (Terjesen et al., 2015).

In 2003, female directors represented 9% in the 28 European Union listed firms and reached to 12% in 2010 (Smith, 2018), however, the percentage has doubled during the period 2010 – 2016 (Seierstad, et al. 2017). A recent proposed legislation by the European Commission to increase the representation of women in non-executive board-member positions in publicly listed companies to 40% by 2020, with the exception of small and medium enterprises. However, the Council of Ministers did not reach to an agreement on the proposed legislation and it was paused for the time being (European Commission, 2012b).

Although there has been a resistance to adopt this kind of approach and only a few codes considered gender diversity (Terjesen et al. 2016), different countries across the world followed the steps of the European countries to tackle the issue of underrepresentation of women on top decision-making bodies. This shows that although there is a limited number of female directors on many corporate boards worldwide, the representation of female directors is considered as a global phenomenon (Terjesen et al, 2009).

However, according to recent studies, the low percentage of female leadership position of firms still persist (Kirsch, 2018; Bechtoldt et al., 2019). This persistence as well as the continuous efforts of countries to accelerate the percentage of women on top corporate decision-making positions encouraged researchers to undertake testing the effect of appointing female directors and female executives on corporate boards from different firms' aspects to better understand women role. According to the literature, female board directors could represent two sides of the double-edged sword. The positive and negative impact of gender diversity on boards are discussed in the following section.

2.2.1. The impact of gender diversity on corporate boards effectiveness

There is a general consensus regarding women differ than men in terms of psychological, physiological, behavioural aspects (Adams and Funk, 2012; Zalata et al., 2018). In general, prior researchers relied on the social role theory (Eagly, 1987) by suggesting that the gender differences in behaviour could result in having better board monitoring outcomes. According to this theory, men and women are assumed to have certain characteristics that reflect their gender stereotypes or in other words, their gender role (Eagly, 1987). Researchers claimed that gender roles could have an impact on peoples' behaviour due to a mix of biological (i.e., hormonal fluctuations) and psychological (i.e., individuals' belief of gender roles) factors (Wood and Eagly, 2010).

Accordingly, previous studies agreed that gender roles could be the reason behind men and women different behaviours and managerial styles in the workforce as they act according to their stereotype expectations (Gutek and Morasch, 1982; Franke et al., 1997). For instance, studies documented women are generally perceived to have high level of emotional intelligence (Barrientos Báez et al., 2018), better compliance with the financial policies and greater moral principles (Ben-Amar et al., 2017; Sial et al., 2018). Also, women are more likely to act fairly (Gennari, 2018), and have less overconfidence (Huang and Kisgen, 2013; Levi et al., 2014; Faccio et al., 2015) and are more socially responsible (Boulouta, 2013).

In addition, women are generally perceived conservative, independent, cautious, less aggressive decision-makers, risk averse, and less engaged in fraud (Watson and McNaughton, 2007; Croson and Gneezy, 2009; Thiruvadi and Huang, 2011; Charness and Gneezy, 2012; Francis et al., 2015; Faccio et al., 2016; Sila et al., 2016; Wahid, 2019). Accordingly, researchers assumed that corporate boards can benefit from the presence of female directors because they have different perspectives, knowledge and non-business backgrounds (Singh et al. 2008; Deszo and Ross 2012; Virtanen 2012) which could bring a better understanding of the marketplace (Carter et al., 2003). On the contrary, men are more likely to focus on their achievement and financial condition and power (Adams, 2016).

In fact, the aforementioned attributes would result in an improvement of corporate governance and bring many preferable firms' outcomes (Brinkhuis and Scholtens, 2018; Ginesti et al., 2018). Researchers claimed that appointing women on corporate boards could make their firms more successful and enhance the company's image and reputation (Bear et al. 2010) because they are

effective at advising firms' managers (Hsu and Hu, 2016; García Lara et al., 2017; Zalata et al., 2018), thus, boards' functioning is enhanced (Hillman, 2015).

Besides, they oversee managers more effectively (Zalata et al., 2019) as they are less opportunistic when taking decisions related to firms (Krishnan and Parsons, 2008). Due to women active role on corporate boards in controlling agency costs (Adams and Ferreira, 2009), the information asymmetry is reduced (Gul et al., 2011; Srinidhi et al., 2011), hence, their presence could contribute in avoiding corporate fraud (Ho et al., 2015; Palvia et al., 2015).

Women also have different communication styles than men, their communication is more effective, and they are more likely to be participative. Therefore, it is considered as an advantage for the group effectiveness (Schubert, 2006). In addition, Nekhili and Gatfaoui (2013) argued that female directors face a double glass-ceiling issue, which means that it is not easy for women to reach firms' top positions, thus, they will always try to show their competence to reach top firms' positions (Eagly and Carli, 2003).

It is also perceived women could enhance board meetings effectiveness. Studies showed that compared to men, women are more participative on boards (Virtanen, 2012), more committed to attending board meetings and are more prepared for meetings (Pathan and Faff, 2013). Also, women usually ask more questions than men, sometimes they ask questions that men do not ask and debate critical issues (Konrad et al., 2008; Nielsen and Huse 2010; Bianco et al., 2015). In addition, studies showed that the presence of female members results in a civilized group behaviour and sensitivity to other perspectives (Fondas and Sassalos, 2000).

Studies also adopted the gender difference stereotype assumption by suggesting that compared to men, women are more conservative in their ethical behavior, more responsive to ethical situations and have higher moral standards (O' Fallon and Butterfield 2005; Post et al. 2011; Ho et al., 2015; Gyapong et al., 2016). Ethics represent social norms and values, and ethical managers are those who take actions that are appropriate or in other words, moral (Cai et al., 2020), hence, women characteristics would support female directors in overseeing managers more effectively than men and reduce unethical practices (Zalata et al., 2019). Charness and Gneezy (2012) stressed that there is a major behavioral difference toward risk preference between men and women. A number of experimental and empirical studies agreed that compared to men, women in general are more likely to be conservative and risk-averse when taking financial

and non-financial decisions (e.g., Powell and Ansic, 1997; Jianakoplos and Bernasek, 1998; Byrnes et al., 1999; Barber and Odean, 2001; Watson and McNaughton, 2007; García Lara et al., 2017; Khlif and Achek, 2017).

Post et al., (2011) added that in some cases, women are more likely to behave ethically even when the organizational policies are not clearly described. Accordingly, women are expected to be reliable and against the manipulation of corporate disclosure (Heminway, 2007), hence, improving reporting quality (Ginesti et al., 2018). With respect to financial reporting, female directors are more likely to protect firms' reputation by acquiring high level of audit especially when firms are facing ethical issue (Gilson, 1990). Francis et al. (2015) claimed that female CFOs rely mostly on conservative accounting procedures when preparing financial reports. Daon and Datta (2020) suggested that compared to men, women in top corporate positions are more ethically sensitive.

In addition, the prior discussed risk aversion stereotype has become widespread in the corporate governance literature as well. A number of studies found that the presence of female directors and executives would result in a reduction in the agency conflict (e.g., Francoeur et al., 2008; Jurkus et al., 2011; Daon and Datta 2020), due to their risk averse behavior when taking financial and investment decisions (Palvia et al., 2015; Daon and Datta 2020; Nekhili et al., 2020).

For instance, Palvia et al., (2015) found that banks led by women are more conservative. Nekhili et al., (2020) added that auditors think that firms with gender diverse boards are less likely to make financial misstatements because of their risk averse behavior. However, it was believed that the main obstacle for women to reach top corporate positions is the common perception regarding women are generally risk averse (Johnson and Powell, 1994).

Despite the above-mentioned positive impact of female directors on corporate boards, some studies argued that appointing female directors can result in negative consequences. For instance, Ahern and Dittmar (2012) stated that introducing gender board diversity quota in Norway resulted in appointing younger and less experienced female directors due to the limited supply of female directors. Ferreira (2010) claimed that gender diversity is positively linked with stock market volatility, while Hillman (2015) stressed that investors think appointing female board directors can affect negatively firms' performance.

Ahern and Dittmar (2012) indicated that Norwegian firms' values decreased after mandating the gender diversity quota. Pletzer et al., (2015) claimed that the negative impact on firm performance is due to the conflicts that resulted in damaging the communication between men and women on board. Similarly, Schwab et al., (2016) concurred that boards with female members might face some difficulties to reach a consensus and a great amount of time is spent to reach to an agreement.

Based on Adams and Ferreira (2009) study, women presence on corporate board could result in over monitoring of managerial practices which might lead to slowing down board's decision-making process and lowering firms' performance. Further, there is a common perception that women are not being appointed on corporate boards due to their lack of adequate human capital for decision making positions (Burke, 2000).

A number of studies agreed that the behavioural differences discussed earlier do not apply for top corporate positions (e.g., Adams and Funk, 2012; Adams and Ragunathan, 2015). For example, Deaves et al. (2009) and Sila et al. (2016) failed to find evidence regarding women are more risk averse in the business field claiming that women in this field differ from women in the general population. Adams and Funk (2012) highlighted that female board directors are more risk-loving than men directors. Besides, a number of studies agreed that female board directors do not differ from their male colleagues in terms of monitoring (Sila et al., 2016; Sheedy and Lubojanski, 2018) which may result in unpreferable boards outcomes.

2.3. Board gender diversity and earnings management

Researchers agreed that EM is considered a major ethical and risky dilemma (Sun et al. 2011) and it is as a suitable paradigm to assess ethical issues (Heinz et al., 2013; Du et al. 2015; Zalata et al., 2019). Dechow et al., (2002) stressed that a thin line separates EM from fraud due to the fact that financial fraud is considered as an extreme application of EM. Regardless of the method used to opportunistically manage firms' earnings, a common purpose behind these practices is to deceive the stakeholders by taking inappropriate actions (Hong and Andersen 2011; Abernathy et al. 2014; Zalata et al., 2019; Cai et al., 2020).

Limited but rising number of studies were motivated to test the above-mentioned well-documented gender behaviour differences within the boardroom and EM context (e.g., Kyaw et al., 2015; Gull et al., 2018; Saona et al., 2018). More precisely, what is common between these studies is that using social role theory (Eagly, 1987), the studies mainly focused on one argument when building their hypotheses regarding the association between female directors and EM practices which is the behavioural differences between men and women, more precisely, their ethical attitude and risk preferences (Palvia et al. 2015).

Franke et al., (1997) argued that social role theory has the ability to explain the gender differences in ethical decision-making as this theory suggests that men and women act based on their stereotypes and this could result in having different values which would affect their behaviour in the workforce. More precisely, prior studies assumed that the risk averse and ethical response behaviour of women on boards could be corporate governance mechanism that would enhance board monitoring and embed a sound internal governance practice which contribute in reducing EM as an unethical practice (Palvia et al. 2015; Zalata et al., 2019).

Rresearchers were more motivated in linking gender diversity issue and EM practices within the American context. Some studies found that women directors on the audit committee contribute in eliminating ABM by increasing negative discretionary accruals (Thiruvadi and Huang, 2011), while other studies revealed that the presence of female directors has no effect in eliminating ABM and they justified their results by stating that not all EM practices are unethical (Sun et al., 2011).

More recent studies showed that female directors enhance monitoring effectiveness of boards and reduce the rate of financial reporting errors and fraud (Wahid, 2019). Zalata et al., (2018)

found that gender diversity on US listed audit committees eliminate ABM. More recent study by Fan et al. (2019) showed that EM level decreased when the numbers of female directors on the board reached critical mass level (three female directors or more). Another study by Zalata et al., (2019) found that female board directors are more likely to reduce ABM.

Peni and Vähämaa (2010) examined the association between CEO gender and EM and found that ABM is not associated with CEO gender. Ho et al. (2015) also found that compared to male CEOs, female CEOs in the US firms are more risk averse and ethical which leads to using accounting conservatism techniques. Furthermore, another study by Zalata et al., (2019) which investigated the relationship between female CEOs and CS suggested that female CEOs tend to be more risk-averse, but it does not have to be more ethically sensitive than men.

Bhuiyan et al., (2020) found a positive relationship between firms with female directors and REM. More recent US based evidence about the relationship between non-executive female directors and CS practices was provided by Zalata and Abdelfattah (2021) and showed that female directors are more likely to increase CS practices.

In Asia, studies that linked EM with board gender diversity were really active in investigating ABM as well as REM (e.g., Wang and Campbell, 2012; Susanto and Pradipta, 2016; Liu et al., 2016), however, limited number of studies undertook investigating CS as part of EM mechanisms. In particular, Chinese studies related to gender issues are relatively active compared to other Asian countries.

For example, Ye et al. (2010) study findings showed that there are no differences between firms that have top female executives and firms with only male top executives. The authors commented on the study findings by stating that may be women and men in China have no ethical value differences and women who are executives might face obstacles that restrict their succession. Moreover, Cumming et al. (2015) revealed that female directors on corporate boards eliminate the frequency of securities fraud.

Table (2.1) Summary of previous studies that tested the relationship between EM and gender diversity on corporate boards.

Researchers	**year**	**Study sample**	**EM method**	**EM model used**	**Findings**
Srinidhi et al.	2011	USA	ABM	McNichols (2002)	Firms with audit committee female members have greater level of earnings quality
Kyaw et al.	2015	Europe	ABM	Dechow (1995) Leuz et al. (2003)	Female directors on boards reduces EM level in countries where gender equality is high
Arun et al.	2015	UK	ABM	Dechow et al. (1995)	Firms with a higher number of female and independent female directors are more likely to use conservative EM practices.
Lakhal et al.	2015	France	ABM	Dechow et al. (1995) Kothari et al. (2005) Raman et Shahrur (2008)	The percentage of women on board constrains EM. Besides, the relationship between the presence of at least three women on board and EM is negative.
Panzer and Muller	2015	Germany	ABM	Kothari et al. (2005) Dechow and Dichev (2002)	Negative relationship between female directors and ABM
Chen and Gavious	2016	Israel	ABM	Kothari et al., (2005) Givoly and Hayn's (2000)	The presence of one financially literate female director on the board does have a significant effect on eliminating EM.
Allemand et al.	2017	France	ABM	Dechow et al. (1995)	Interactions between women involved in the financial reporting are associated with lower ABM. Besides, woman CFOs play a key role in this interaction.
Luo et al.	2017	China	REM	Roychowdhury (2006)	Board gender diversity serves as an effective governance mechanism to eliminate managers' REM of Chinese listed companies.

Gull et al.	2018	France	ABM	Dechow et al. (1995)	Negative relationship between female directors and ABM.
Zalata et al.	2017	USA	ABM	McNichols (2002) to measure the absolute value of discretionary accruals	Gender diversity on the audit committee reduces EM. Moreover, the percentage of female financial experts on the AC is significantly associated with less EM.
Strydom et al.	2017	Australia	ABM	Kothari et al., (2005) and Larcker and Richardson, (2004) models to measure the absolute levels of discretionary accruals	Board gender diversity is negatively associated with EM once a critical mass of women on the board is achieved. However, when the proportion of women is less than 20% (skewed board), gender diversity is associated with higher EM.
García Lara et al.,	2017	UK	ABM	Dechow et al (1995)	No significant relationship is found between the presence of executive female directors and EM.
Triki Damak	2018	France	ABM	Raman and Shahrur (2008)	A significant negative effect of board women presence on EM practices level.
Pavlović et al.,	2018	Serbia	ABM	Jones (1991)	Insignificant negative linear relationship between the number of women on boards and EM.
Waweru and Prot	2018	Eastern Africa	ABM	Kothari et al. (2005)	Board gender diversity is positively and significantly related to ABM.
Orjinta	2018	Nigeria, Kenya and South Africa	CS	McVay (2006)	Female directors are negatively but insignificantly related to CS
Orazalin	2019	Kazakhstan	ABM	Dechow et al. (1995)	Firms with greater board gender diversity are more effective in constraining EM.

Saona et al.	2018	Denmark, Finland, France, Germany, Italy, Norway, Portugal, Spain, Sweden United Kingdom	ABM	Jones (1991) Dechow, et al., (1995) Leuz et al. (2003)	Balanced gender boards are more likely to mitigate EM practices.
Fan et al.	2019	USA	ABM	Discretionary loan loss provisions	EM level decreased when the numbers of female directors on the board reached critical mass level (three female directors or more).
Zalata et al.	2019	USA	ABM	Jones (1991)	Female board directors are more likely to reduce ABM.
Zalata et al.	2019	USA	CS	McVay (2006)	Female CEOs tend to use more CS practices.
Harakeh et al.	2019	UK	ABM	Dechow et al. (1995)	Negative relationship between the female board directors and ABM.
Debnath and Roy	2019	India	ABM	Dechow et al (1995) Kothari et al (2005)	Negative relationship between the female board directors and ABM.
Saona et al.	2020	Spain	ABM	Jones (1991) model	Larger proportion of female members reduces EM.
Abdou et al.	2020	UK and Egypt	ABM	Dechow et al. (1995)	Low percentage of female directors is associated with low level of ABM in the UK and Egypt.

Belaounia et al.	2020	24 countries	ABM	Dechow et al (1995) Kothari et al (2005)	Higher female board representation is associated with lower ABM and the association is stronger in countries with greater gender equality.
Arıoğlu	2020	Turkey	ABM	Dechow et al. (1995)	The presence of female directors on boards are not associated with EM. Similar results are obtained for the percentage of female directors with specific attributes, such as busyness, professional expertise, audit committee membership, and higher levels of education.
Dobija et al.	2021	Poland	ABM	Dechow et al (1995)	The percentage of women on boards is negatively related to earnings management
Zalata and Abdelfattah	2021	USA	CS	McVay (2006)	Positive relationship between non-executive female directors and CS practices.

Also, using a Chinese sample, Liu et al., (2016) study used REM and ABM to measure EM practices and found that male CFOs engage in more EM practices while female CFOs are found to be more risk-averse than male CFOs. Luo et al., (2017) provided empirical evidence that female directors in China are effective corporate governance tool to mitigate REM. Moreover, in Malaysia, Abdullah and Ismail (2016) results showed that there is no association between the presence of female directors on corporate boards and audit committee and ABM.

In South Korea, Kim et al. (2017) study found a negative association between women executives and ABM. Similarly, in India, Debnath and Roy (2019) revealed that a negative relationship is found between the presence of female board directors and ABM practices. Moreover, a recent evidence from Bangladesh by Debnath et al., (2019) showed that female directors are linked with greater REM level. Abdou et al., (2020) found that firms in Egypt with low percentage of female directors is associated with low level of ABM.

In Australia, a recent study by Strydom et al., (2017) found that there is a negative association between critical mass level of board gender diversity and ABM, while when female directors represented 20% or less on board, ABM became higher. In Africa, Orjinta and Okoye (2018) which is one of few studies that linked female directors with CS, found that female directors are negatively but insignificantly related to CS, while Waweru and Prot (2018) illustrated that board gender diversity is positively and significantly related to ABM.

In Europe, which is the focal focus of the current study, although the number of studies tested the linkage between gender diversity on corporate board and firms' performance is high in Europe (e.g., Joecks et al., 2013; Reguera-Alvarado, 2017), the number of studies that linked gender diversity on corporate boards and EM practices is limited. A study conducted by Arun et al. (2015) in the UK documented that conservative accounting techniques were used when the number of female board directors and independent female board directors is high. Another UK based study by Guedes et al., (2018) found that there is negative relationship between female board directors and income-increasing ABM. A more recent UK based study showed that when the percentage of women on board is low, EM level becomes also low (Abdou et al., 2020).

The number of French studies were relatively higher than other European countries. For instance, Lakhal et al. (2015) and Allemand et al. (2017) found that the percentage of female board directors and female board chairperson are more likely to constrain ABM. Another French study by Gull et

al. (2018) findings revealed that the female directors and female CEOs eliminate ABM practices. Also, the study showed that in order for female directors to be effective monitors on corporate boards, they should have a membership in the audit committee and business experience.

In the same year, Triki Damak (2018) found a significant negative effect of female board directors on ABM practices level. Belot and Serve (2018) found a negative relationship between CEO gender and ABM. In addition, a German study by Panzer and Muller (2015) found a negative relationship between female directors and ABM. Dobija et al., (2021) conducted similar study using Polish listed companies and found similar results. Kyaw et al. (2015) study included a multiple European countries sample during the period 2002 to 2013 and found that a board with gender diversity can eliminate ABM in countries that have high gender equality. Another study by Saona et al. (2018) used a sample from European countries for the period 2006–2016. The study results confirmed that gender balanced board are more likely to eliminate ABM level. A more recent study that included 24 countries by Belaounia et al., (2020) also found that female directors' presence is associated with less ABM practice.

2.4. Female directors' proportion and earnings management

"The collapse of Lehman Brothers would never have happened if there had been Lehman Sisters there with them" (Neelie Kroes, 2009). This is a famous quote by the EU Commissioner for Competition in the Women for Europe Event which caught an extensive media attention. The quote highlights the crucial women role in avoiding risks in the corporate world.

Nevertheless, many people did not know that Lehman Brothers' board already consisted of one female director. In fact, since 1996 to 2007, Lehman Brothers board included one female director, while in 2004 and 2005 the board consisted of two female directors (Adams and Ragunathan, 2015). Based on this fact, it can be concluded that the low number of female directors (i.e., one or two) might be a crucial factor in not being able to influence board monitoring effectiveness.

The social psychology literature suggested that members who do not represent the majority of a group will not be able to influence the group outcomes (Yang et al., 2019). Asch's (1951, 1955) documented that when the minority group reach to three members then the group has reached to critical mass level. Kanter (1977, 1987) and Nemeth (1986) further developed the importance of critical mass in altering group decision making. Kanter (1977, 1987) and Granovetter (1978)

agreed that a qualitative change happens in the nature of group interactions if the minority group related to sex, race or ethnicity reaches critical mass.

Corporate leadership wise, some researchers argued that the token presence of female directors might unlikely result in a significant effect on board monitoring function (e.g., Torchia et al., 2011; Joecks et al., 2013; Yang et al., 2019). For example, Schindlinger (2020) stressed that the recent gender quota law endorsed in California requires a specific number of women candidates rather than a percentage which caused many firms to add a new board seat and fill it with a female director, hence, the boards are still imbalanced in terms of gender and women impact might be limited.

Despite the increasing initiatives to enhance board gender diversity, the lack of female directors on boards remains a vital issue as boards are still dominated by men which might result in unfavourable bias (Elting, 2017; Amorelli and García-Sánchez, 2020). Mathisen et al., (2013) explained that bias might happen when agreeing on the majority members opinion (male directors) and ignoring the minority members suggestions (female directors). Besides, women could be perceived as symbols. Yang et al., (2019) explained that being a symbol means a person has met the formal criteria, however, is not expected to have specific characteristics for the position. This might lead to a number of tokenism issues such as isolation from the group due to not being able to comfortably sharing their opinion in group discussions dominated by men (Fan et al., 2019), hence, the advantages of board gender diversity might be limited (Abdullah, 2014).

However, the board decision-making dynamics change significantly when more female directors are included in the boardroom (Omarjee, 2016). Torchia et al. (2011) stressed that critical mass theory is one of the most relevant explanations for female directors' potential influence on board outcomes. In particular, Kramer et al. (2006) noted that when two female board directors are appointed in a same corporate board, they feel more comfortable in discussing their thoughts than one female director does alone. Each female director makes sure that the other female directors' opinion is heard even when they do not agree with each other.

Nevertheless, Kramer et al. (2006) clarified that a critical mass of three or more female directors could lead to a huge change in the boardroom dynamics and improve corporate governance system of firms. A number of researchers agreed with Kramer et al., (2006), (e.g., Konrad et al.,

2008; Luckerath-Rovers, 2010; Torchia et al., 2011; Joecks et al., 2013; Schwartz-Ziv, 2017; Fan et al., 2019). Liu et al. (2014) commented on female board directors' critical mass level by stating that “one is a token, two is a presence, and three is a voice”.

Torchia et al. (2011) and Post et al. (2011) concurred that having at least three female directors on corporate board means that critical mass level has been reached and women have greater impact on corporate decision-making process. Rossi et al., (2017) study showed that the influence of female directors on corporate decisions is greater when the number of female directors is reached to a certain critical mass level, the study result confirmed the perception of tokenism could be changed when women representation has reached to critical mass threshold. Similarly, Garanina et al., (2019) findings highlighted that in order to have positive impact of gender diversity, a board should reach to critical mass level (three women or more).

It was perceived that if critical mass level is reached, there will be a higher chance that female directors’ ideas and contributions are heard and supported by the majority members (Konrad et al., 2008), hence, significantly affecting boards’ outcome (Cook and Glass, 2017). Nekhili et al., (2018) highlighted that the presence of at least three female directors have positive impact and could lead to tremendous changes on boards. An Italian study by Rossi et al., (2017) suggested that critical mass of female board members can significantly affect board investing and financing decisions. Schwartz-Ziv (2017) added that the presence of three female directors or more makes the board more active in meetings. SchwartzZiv (2017) declared that the presence of at least three female board directors would help in requesting detailed information and take actions after board meetings.

Moreover, a number of researchers agreed that a critical mass level consists of three or more female board members is crucial to enhance firms’ corporate governance mechanisms (Kramer et al., 2006; Konrad et al., 2008). For instance, Shahab et al., (2020) noted that critical mass of female board directors could result in an influential role in monitoring executives’ activities and limit their opportunistic power. As stated by Jia and Zhang (2013), the increasing number of women representations could change male directors’ opinions regarding female directors are just tokens, instead, they will think that female directors were appointed for their capability. Schwartz-Ziv (2017) claimed that when the number of female directors reach to at least three members, the board becomes more active.

The critical mass of female directors' assumption has been applied widely with regards to firm outcomes contexts in the literature, however, not much attention was given to testing the impact of female directors' critical mass level on EM practices. For instance, researchers investigated critical mass of female directors and corporate social responsibility and found a significant relationship (e.g., Fernandez-Feijoo et al., 2014; Cook and Glass, 2017; Nekhili et al., 2017; Amorelli and García-Sánchez, 2020), while other found insignificant relationship (e.g., Yang et al., 2019). Yarram and Adapa (2021) study findings supported the tokenism issue in boards by finding insignificant relationship between the presence of one female director and corporate social responsibility. Other researchers tested the association between female board directors' critical mass with firms' innovation and found a significant association (Torchia et al., 2011).

An Australian study found a negative association between female board directors critical mass level and cost of debts (Pandey et al., 2019). With regards to firm performance, high number of researchers applied critical mass theory when investigating the relationship between female directors and firms' performance. For example, Joecks et al., (2013) found a significant positive relationship between the presence of at least 3 female board directors and firm performance.

On the other hand, Gyapong et al. (2016) did not provide support for critical mass theory with regards to firm performance in South Africa. In addition, Faccio et al., (2016) study revealed that when there is a higher number of women directors, the firm risk and debt level are more likely to be reduced. A more recent study by Garanina et al., (2019) findings revealed that when firms appoint three female directors or more, their market values become higher and have better profitability.

Based on agency theory, one of the main responsibilities of boards is to constrain executives' opportunistic behaviour with regards financial reporting (Badolato et al., 2014), and this could be done by having an independent board in order to practice their monitoring role effectively. It is commonly perceived female directors would affect positively firms' corporate governance as they think independently than male directors and they are not members of the "old boys' networks" (Adams and Ferreira, 2009; Srinidhi et al., 2011; Arena et al., 2015). Accordingly, researchers were interested in testing the impact of female directors on EM practices.

Despite the recent research focus into the impact of female directors' presence on EM practices, the empirical evidence is still inconclusive. This might be due to focusing on general female

directors' proxies such as the overall percentage of female directors, their number or presence. Some studies found a negative relationship between female directors and EM (e.g., Kyaw et al., 2015; Lakhal et al., 2015; Gull et al., 2018; Saona et al., 2018), other studies found insignificant relationship (Sun et al., 2011; García Lara et al., 2017), while others found positive relationship (e.g., Abdou et al., 2020).

Limited number of studies applied critical mass theory when testing the relationship between gender diversity and EM. For example, Lakhal et al., (2015) conducted a study in France regarding the presence of at least three female directors on board and concluded that there is a negative relationship between the presence of at least three female directors and ABM. Furthermore, a more recent study by Fan et al., (2019) conducted a study regarding the association between the critical mass of female board directors and banks EM measured using discretionary loan loss provisions in the US. The study found that once the number of female board directors reached three, EM practices are reduced, and suggested to hire three or more female board directors in banks.

Although the concept of reaching the critical mass level is applied by prior studies, simply testing the presence of at least three female board directors without considering their proportion compared to the total number of board members might not give a precise conclusion of their role. Kanter (1977) stressed that simply looking at the presence or the number of female directors might not be enough and highlighted the importance of testing their proportion because their influence on the group (board) might differ based on their proportion.

A number of studies tested the proportion of female directors instead of an absolute number (i.e., 3 or more). Schwartz-Ziv (2017) and Fan et al. (2019) concurred that based on critical mass theory, when women reach a particular threshold in a group (i.e., around 30% of women) their role becomes more significant. Lafuente and Vaillant (2019) analysed how board's gender-balanced configuration (a proportion of women in the boardroom ranging between 40 and 60 percent) affects economic and risk-oriented performance in financial firms. The results revealed that a balanced gender configuration yields superior economic performance. Landel (2016) and World Economic Forum (2016) agreed that true performance improvements from board gender diversity come only with a balanced gender distribution.

With regards to EM, few recent studies responded to the importance of measuring the critical mass level as a proportion and not a number as mentioned earlier when examining the relationship between EM and gender diversity on boards. A recent Australian study by Strydom et al. (2017) responded to the importance of measuring gender diversity on board using the group classifications suggested by Kanter (1977) earlier and linked it with earnings quality. The study results revealed that uniform boards (all-male directors) and skewed boards is negatively associated with earnings quality while tilted and balanced boards are positively linked to earnings quality. The earnings quality was measured through ABM level.

Unlike the prior studies, Guedus et al., (2018) provided an opposite argument regarding the effect of critical mass of female directors based on Kanter's classification. The researchers argued that the minority gender members (skewed and tilted) are linked with more favourable board outcomes than (balanced) proportions because "token" women different attitude and thinking are more visible to the board, hence, could more significantly contribute to board effectiveness, which might result in EM reduction. However, when the board is gender balanced, gender difference becomes invisible and women are blended with male-dominated group culture.

A more recent Polish study by Dobija et al., (2021) found when female directors' proportion is lower than 10% and greater than 40%, the ABM practices increase significantly. However, when the proportion is more than 10% and less than 40%, the relationship with ABM practices become significantly negative. The researchers argued that the results are in alignment with critical mass theory as a limited number of female directors would not help them to having an influence on boards' decisions, nevertheless, having an excessive number of female directors could also limit gender diversity benefits. The study findings are consistent with Guedus et al., (2018) and opposite to Strydom et al. (2017) findings with regards to gender balanced boards consequences.

The inconclusive findings of the prior studies show that the application of critical mass proposition need further investigation. A number of researchers argued that although critical mass theory has gained a lot of attention in the literature, its value and validity is still questionable. Studies showed that men members in a gender imbalance group dominated by women did not face a negative experience which indicates that it has nothing to do with their proportion but rather a sort of gender bias against women (Stichman et al., 2010).

Some researchers argued that gender behavioural dissimilarities could disappear in balanced boards because women minority status ends and the expectation toward female directors as independent monitors is changed (Kirsch, 2018). A number of theories supported this argument such as social identity theory (Tajfel and Oakes, 1986), which explain how women behaviour might change when the board becomes gender-balanced as their behaviour blends with their male colleagues and the perception of independent female directors no longer holds.

Kramer et al., (2006) added that women could express various views and are more likely to disagree with each other, hence, critical mass perception might be unapplicable. Broome et al., (2010) documented that the majority of the interviewees did not believe that a critical mass of female directors would result in different board outcomes. In fact, some of the study respondents confirmed that they do not see themselves as tokens and they are comfortable with being the minority group in the board because they were appointed for their high qualification.

Likewise, McKinsey and Company (2016) confirmed that the enhancement of female directors' proportion does not lead to more influence. Nguyen et al., (2015) stressed that the costs of gender diversity may outweigh its benefits when the board is dominated by women. Yarram and Adapa (2021) stated that when there is only one female board director, her action becomes more visible. Zajiji et al., (2020) stressed that reaching a critical mass level of female directors does not have to be the only explanation for the change in behaviour in the boardroom.

The mixed evidence regarding the impact of critical mass of female directors on board outcomes raise a concern with regards to the continuous initiatives to increase the representation of female directors especially the quota enforcement. Norway has taken the first initiative to go beyond tokenism in the boardroom (Torchia et al., 2011) and in year 2016, twenty-three countries introduced quotas to enhance gender diversity on corporate boards (Navitidad, 2015). However, the literature documented that reaching gender balanced boards resulted in appointing less experienced female directors and as a result, firm value and profit became lower (Ahern and Dittmar, 2012; Matsa and Miller, 2013).

Overall, the concept of reaching critical mass is widely applied by different studies to further understand the impact of women number on groups. However, as stated earlier, the vast majority of prior studies simply focused on the number or the percentage of female board directors when

testing the relationship between female directors and EM rather than discussing the influential role of reaching critical mass level.

The limited number of studies that applied the critical mass theory to women representation on corporate board might be because countries generally with exception to Europe, don't have sufficient number of female board directors. Besides, even in Europe, the increasing number of female directors is fairly new development. Researchers argued that female directors who serve as board members are still treated as tokens (Terjesen et al., 2009). Therefore, limited number of studies were able to test this theory board wise.

2.5. Female directors' attributes and earnings management

Board diversity is mainly classified in the prior studies into statutory and demographic (Ben-Amer et al., 2013; Gull et al., 2018). Statutory board diversity is commonly explained by the agency theory (Jensen and Meckling, 1976; Fama and Jensen, 1983) which is based on the recommended best practices by corporate governance codes to have better board monitoring (Masulis and Mobbs, 2014) like avoid combining the role of the chairperson and CEO and increase the percentage of independent directors on boards (John and Senbet, 1998).

It is assumed that statutory diversity of boards is crucial to reduce costs associated with the conflicts between shareholders and managers (Hillman and Dalziel, 2003) and maintain shareholders' interests (Fama and Jensen, 1983). Accordingly, statutory diversity on boards may result in stronger board monitoring effectiveness (Arıoğlu, 2020).

However, a study by Labelle et al. (2010) argued that although demographic characteristics diversity is not required by corporate governance codes, it is considered as another valuable aspect of maintaining stakeholders' interests. Therefore, demographic characteristics of people such as their education, experience, skills and knowledge are perceived as investments which could increase their human capital and as a result, enhance the firms' financial growth (Becker, 1964; Westphal and Zajac, 1995).

Researchers developed proxies to measure human capital since these attributes are mostly unobservable such as training, knowledge, background, experience skills, and others (Unger et al., 2011). Board wise, Hillman et al., (2007) noted that every director could add special human capital resources to corporate boards, such as their reputation and their network with other firms.

Ben Amar et al., (2013) added that in order for statutory diversity to influence board effectiveness, directors' individual characteristics should be considered. Ruigrok et al., (2007) recommended to understand well the demographic attributes of directors in order to manage diversity on corporate boards effectively.

Many researchers recommended to have diverse demographically members in a group so they can generate effective ideas and decisions (McGrath, 1984; Williams and O'Reilly, 1997). Board demographic diversity became an increasing trend in the corporate governance literature (Rao and Tilt, 2015). Demographic diversity such as gender, nationality, age, background, educational, and experience are assumed to have a substantial effect on board decisions by uplifting the corporate boards' competencies (Ben-Amar et al., 2013; Ararat et al., 2015; Post and Byron, 2015).

Demographic diversity has been classified in the literature into various types. Harrison and Klein (2007) stated that demographic diversity is categorised as separation, variety and disparity. The authors further explained that separation refers to diversity of opinion within group members which would result in either agreement and disagreement, while variety is a diversity related to experience, information and knowledge within group members. Disparity refers to the diversity related to valuable social resources such as status and pay within group members.

Other researchers explained demographic diversity, for instance, Galia and Zenou (2013) mentioned that the demographic board diversity can be categorized into visible features such as gender, ethnicity and age, and less observable features like experience and education. Furthermore, Jackson (2002) mentioned that demographic diversity can be categorized into task-related and relations-oriented. Adams et al., (2015) stated that relations-oriented diversity characteristics include the diversity of gender, age, and nationality, while task-related characteristics include the qualification and experience.

2.5.1. Female directors' attributes

Previous studies claimed that there is a great difference between female board directors' characteristics and their male peers (Ahern and Dittmar, 2012; Le Dang et al., 2014). Researchers stressed that this difference could impact board independence significantly (Ferreira, 2015) by boosting independent thinking, thus, enhancing monitoring effectiveness (Carter et al., 2003; Adams and Ferreira, 2009; Arıoğlu 2020).

More specifically, female board directors have better education and are more likely to have business educational degrees (Nekhili and Gatfaoui, 2013). Besides, gender diversity could lead to enhancing boards' international diversity (Singh et al., 2008). Thus, compared to men directors, female directors are assumed to be more effective monitors (García Lara et al., 2017).

The aforementioned characteristics differences among women and men directors would matter in terms of affecting EM practices (Arıoğlu, 2020) since EM is considered as monetary and ethical dilemma (Gull et al., 2018; Zalata et al., 2019). Yet, we cannot deny the fact that each female director has her own characteristics and they do not necessarily behave in the same way with regards to EM practices. Hence, the demographic diversity complements statutory diversity of female directors which might help them in effectively overseeing managerial actions.

Similar to board diversity, researchers classified female directors' characteristics into two categories: statutory and demographic (Ben-Amar et al., 2013; Gull et al., 2018). Statutory diversity as is related to the monitoring role of female directors (e.g., their independence, audit committee membership and leadership position). The demographic diversity reflects the human capital of female directors as discussed earlier and it is classified into experience and education. Figure (2.1) is constructed by the researcher to present the classification of board diversity based on the previous studies (Jackson, 2002; Ben-Amar et al., 2013; Adams et al., 2015; Gull et al., 2018).

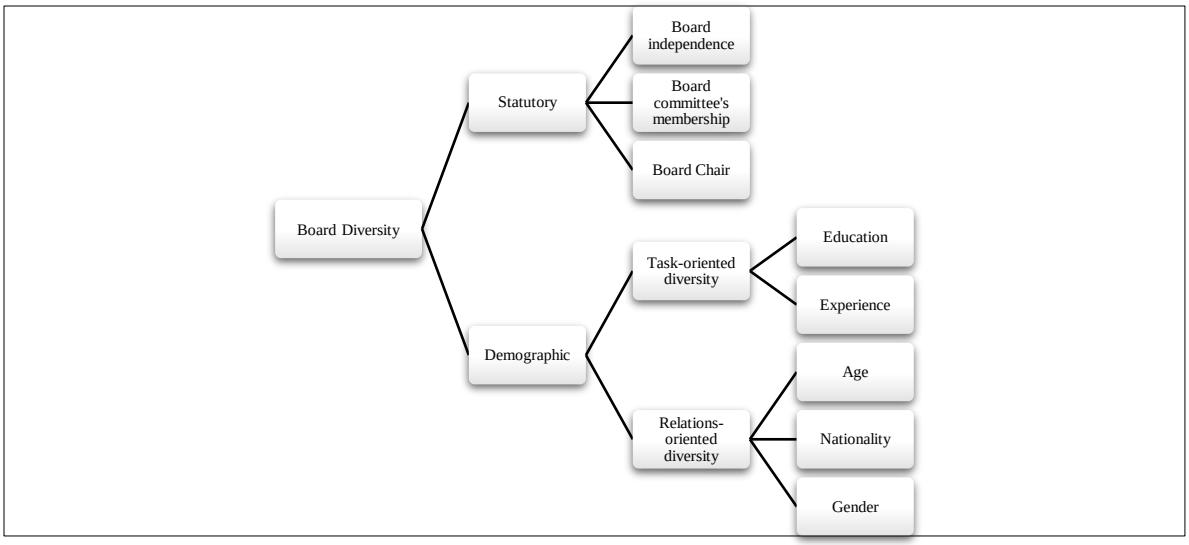


Figure (2.1) Board diversity classifications based on the previous studies (constructed by the reseacher).

The experience includes three aspects which are female directors' tenure, age and nationality, while education includes the educational level of female directors (i.e., holding Master's degree or PhD) and female directors' business educational background. Bennouri et al., (2018) provided similar classification of female directors' attributes related to female directors' human capital and categorized it into two groups. The first group is related to human capital associated with demographic attributes, which includes female board directors' educational background and level, age and nationality. The second group is related to experience which is measured using female directors' tenure. Following the aforementioned researchers, this study included a set of seven different female directors' observable characteristics that are discussed in details in the next sections.

2.5.1.1. Statutory diversity of female directors

Female directors' membership on audit committee (AC)

The board committees' structure is considered as a crucial governance mechanism because corporate boards assign the majority of their responsibilities to committees (Arun et al., 2015; Guo and Masulis, 2015). From agency theory point of view, audit committee is a vital corporate governance mechanism to lower agency costs and support the shareholders (Dellaportas et al., 2012; Salehi et al., 2018; Raimo et al., 2020). Therefore, audit committee plays an important role with respect to detecting EM practices.

The EU paid a lot of attention to improve audit committees. For example, in 2016, the EU applied a legislation related to reforming audit which aims at strengthening the role of audit committees and other statutory audit related issues. Audit committee members regularly meet with managers and auditors of firms to review the internal accounting controls, financial statements, and audit process (Sun et al., 2011; Khlif and Achek, 2017; Al-absy et al., 2018). A study by Kang and Kim (2012) indicated that REM decreases when the audit committee independence increases or when the number of audit committee meetings increases. Besides, Albersmann and Hohenfels (2017) suggested that audit committee is associated with lower ABM, while Kim and Yoon (2016) found that audit committee has no association with EM practices.

The appointment of female members on audit committees has attracted the attention of researchers. Adams and Ferreira (2009) mentioned that women are most probably sit on committees that deal with monitoring, conversely, Abbott et al. (2012) noted that female members are less likely to be on audit committee. Furthermore, Green and Homroy (2018) stated that the presence of female members in decision-making committees such as audit committee could be a source of competitive advantage because female members are assumed to have good monitoring skills.

Prior researchers claimed that the presence of female member on the audit committee could strengthen corporate governance. Thiruvadi (2012) stressed that the presence of one female member or more on audit committee is associated with high number of audit committee meetings. Salehi et al., (2018) added that female members on audit committees are more likely to enhance the monitoring effectives of boards because they tend to avoid risks, hence, the agency costs are reduced. Accordingly, female directors' presence on audit committee could matter in terms of EM.

However, the study findings that linked female directors on audit committee and EM are inconsistent. For example, some studies found that gender diversity on audit committee is significantly related to EM level (Albring et al., 2014; Khlif and Achek, 2017; Gull et al., 2018; Zalata et al., 2018; Sudarman and Hidayat, 2019; Mardessi and Fourati, 2020; Zalata and Abdelfattah, 2021). On the contrary, Sun et al., (2011) and Arıoğlu (2020) provided evidence that there is no relationship between the presence of female member on the audit committee and EM level. The mentioned studies focused mainly on single type of EM and few studies investigated multiple EM although researchers concurred that all three methods of EM (i.e., ABM, REM and

CS) are used as substitutes by managers (Zalata et al, 2019) and could result in misleading the investors in anticipating firms' future performance (Anagnostopoulou et al., 2019).

Therefore, it is essential to take into consideration the role of female audit committee members in monitoring EM practices because unlike the other board sub-committees, this committee in particular has a wide-ranging authority over financial reporting accountability and considered a vital corporate governance mechanism to closely monitor executives' actions (Dellaportas et al., 2012; Salehi et al., 2018; Raimo et al., 2020).

Female directors' leadership position

Women are generally underrepresented in leadership positions (European Commission, 2012a). However, there has been continuous efforts by the governments and firms worldwide to increase the percentage of women who hold senior leadership roles (Klettner et al., 2013). Many successful cases showed that female leaders could be better than male leaders. A recent evidence provided by Economic Policy Research and the World Economic Forum revealed that female-led countries had significantly better Covid-19 outcomes as they decided to lock down earlier than male-led countries. This shows that unlike the stereotype of mescaline leadership, female leaders are more proactive and responsive to serious issues.

With regards to corporate boards, the extant literature agreed that board chairperson is a fundamental person in any board and can significantly impact board tasks (Gabrielsson et al., 2007). The board chairperson is responsible for making boards' members participation more effective and manage board dynamics (Machold et al. 2011) and many firms are moving towards having an independent board chairperson (Lublin, 2012). The chairperson is also responsible for overseeing the executives' practices and making sure that the board members discussion is well managed and director's opinion is heard (Machold et al., 2011).

A number of studies agreed that gender stereotypes affect the perception of leadership, for example, effective leaders are usually described as men and they are perceived to be more suitable to be in charge (Koenig et al., 2011). However, previous studies argued that women have different leadership style than men, women are most likely to use transformational leadership style in order to lead others (Eagly et al. 2003). Transformational leadership style mainly depends on social, ethical and personal social values (Hood, 2003). Therefore, when a corporate board is chaired by a woman, the decision-making process is expected to take a different approach. Also,

board chairs are expected to use their position to influence board decisions (McNulty et al., 2011), hence, having a female chairperson could reduce the opportunistic actions related to firms (Krishnan and Parsons, 2008). Accordingly, since board chair is the highest decision-making position in any firm, women might be more suited to be positioned as chairs (Gull, et al., 2018). A number of studies found that female chairpersons are more likely to improve the board's decision-making quality (e.g., Nekhili et al., 2017).

In addition, women leadership has been always perceived to be ethical (Ho et al. 2015). For example, Palvia et al., (2015) showed that board chairwomen are negatively related to default risk during the financial crisis. Ho et al., (2015) added that ethical behaviour of female leaders could reflect ethical leadership style which might result in high levels of financial reporting transparency; hence, EM practices might be eliminated. Similarly, Dobija et al., (2021) study result revealed that having female chairperson on board could result in an enhancement in earnings quality. Schwartz-Ziv (2017) and Pucheta-Martínez et al. (2018) findings agreed that corporate boards chaired by women can oversee financial information more effectively.

On the contrary, Gull et al., (2018) found a positive relationship between female board chairpersons and ABM. Accordingly, this study aims at understanding the chairperson involvement in uncovering EM practices. More precisely, it can be clearly seen that a little attention was given to the influential role of female board chairperson on EM in the literature.

The prior studies focused on female board chairperson in order to test their leadership capability on influencing board monitoring mechanism. However, limited number of studies considered the influential role of women leadership on board committees in terms of EM. Therefore, this study also includes women leadership role on audit committees since audit committee is considered as a crucial committee that could directly affect the quality of financial reporting. Besides, studies showed that female chairperson on audit committee could result in better outcomes such as low audit fees and high audit committee effectiveness (Ittonen et al., 2010).

2.5.1.2. Female directors' demographic attributes

It is essential to consider the demographic attributes of female directors to know exactly how female directors' attributes would influence their behavior toward EM practices. Furthermore, since previous studies documented that female directors' attributes are different than male directors, their impact on EM practices are expected to be different (e.g., Eagly, 1987; Adams and

Funk, 2012; Zalata et al., 2018). Also, focusing on female directors' demographic attributes is important because individuals' gender could have an impact on human capital (Terjesen et al., 2008), by bringing diverse knowledge, professional backgrounds, opinions and innovative ideas (Ararat et al., 2012; Hoever et al., 2012; Bennouri et al., 2018), which may result in improving board monitoring effectiveness.

Therefore, the next discussed attributes are included in the current study based on the commonly applied demographic attributes proxies in the literature to measure the unobservable human capital of board directors. First, female directors' knowledge is measured through their educational background and level (Unger et al., 2011; Bennouri et al., 2018; Gull et al., 2018). Second, female directors' experience is measured through their tenure, nationality and age. Female directors' nationality is used by previous researchers to measure the international experience of board directors (Gull et al., 2018) while directors' age is a commonly used proxy for directors' experience (Johnson et al., 2013).

Female Directors' Education

Education is a widely used proxy to reflect a person capability or talent (Demerjian et al., 2012). Although diversity of directors' qualifications is perceived as an important aspect which would impact corporate boards effectiveness (Ahern and Dittmar, 2012), a limited number of studies linked director's education with firms' outcomes (Mahadeo et al., 2012; Ali et al., 2013).

Studies showed that directors with high educational degree are more capable of understanding complicated issues as well as suggesting creative solutions (Johnson et al., 2013; Jiang et al., 2016). Also, some researchers claimed that when a person is highly educated, the given information is well analysed and as a result, better decisions will be taken (Papadakis and Barwise, 2002). However, Mahadeo et al. (2012) found that highly educated directors might result in lower firm performance.

Studies also revealed that people with business background tend to have different decision-making styles than those without business background (O'Fallon and Butterfield, 2005). On the contrary, White et al. (2014) stated that the market reaction is not related to appointing business expertise directors but more related to their reputation. Le Dang et al., (2014) mentioned that when directors' profiles are similar, the effect of business background on board monitoring effectiveness becomes low.

Nekhili and Gatfaoui (2013) suggested that business education and expertise are considered as key factors for women to hold key positions in firms. In the past, women did not make a good investment on their education. As mentioned by Shields and Dicicco (2011), in the early 1960s, there were few women who completed their graduate programs requirement. However, things have been changed, due to glass ceiling, more women were motivated to invest more in their education to be recognized as experts (Hillman et al., 2002; Eagly and Carli, 2003). Unfortunately, as demonstrated by Smith and Parrotta (2018), despite the high percentage of female graduates in many universities worldwide, it is still not easy for women to reach top firms' positions.

Prior studies provided mixed evidence regarding female directors' background. Singh et al. (2008) pointed out that most female appointees for FTSE 100 boards hold an MBA degree. In contrast, Hillman et al., (2002) mentioned that female directors on Fortune 500 firms' boards are more likely to have non-business backgrounds and hold advanced degrees. Abbott et al. (2012) showed that female directors are less likely to have a financial background.

It was documented in the literature that women directors' education could affect firms' outcomes. For example, Rossi et al., (2017) findings revealed that when female directors' educational level was considered, female directors' presence has a negative effect on firms' risk and it has a significant impact on R&D investments. Singh et al. (2015) showed that highly educated female directors have higher influence on board decisions. Nguyen et al., (2015) and Dobija et al., (2021) added that a positive relationship is found between female board directors' high educational level and firm performance. Gull et al., (2018) found that female directors with business backgrounds are more likely to constrain ABM. A recent study by Arioglu (2020) found no association between ABM and female directors with high educational level.

Female directors' experience - tenure

A recent study showed that top-ranked firms defined diversity in terms of experience rather than other board attributes (Dhir and Dhir, 2015). Director's tenure is a widely used proxy to measure their experience. Directors' tenure represents the period that a director has been appointed on corporate board (Muneza and Mahua, 2018). It is presumed that directors' tenure in board reflect the knowledge and familiarity of company's functions and resources and could be reflected on shareholder's value (Brown et al., 2017). Bacon and Brown (1973) stated that it takes 3 to 5 years for directors to understand well firms' functions. Moreover, Brown et al. (2017) indicated that

directors' tenure could influence corporate governance effectiveness, and shareholders consider directors' tenure in their decisions.

On the other hand, long directors' tenure could have unfavourable consequences. According to Katz (1982), directors with long tenure could result in inflexibility and resistence to new ideas and lower quality of strategic decisions. Bedies, as suggested by the management friendliness hypothesis, having directors on board for long period could result in low level of monitoring (Vafeas, 2003), hence, affecting board functioning (Johnson et al., 2013). Other researchers supported short tenure of directors and claimed that short tenure could result in having new directors with different percpectives which leads eventually in enhancing corporate boards monitoring ability (Ahmadi et al., 2018).

Prior studies linked board of directors' experience with EM. For instance, Wang et al., (2015) provided an evidence that independent directors with related industry experience can result in enhancing their monitoring skills and as a result, constraining EM. Dichev et al., (2013) found that outsiders cannot uncover earnings manipulations easily, therefore, it is important to well understand the industry and firm to evaluate firms' financial reports. Bedard et al. (2004) mentioned that there is an inverse association between ABM and the average tenure of independent board committee members. Kang and Kim (2012) demonstrated that EM becomes lower when the number of directors who have longer period of experience with the company increases.

Terjesen et al. (2009) claimed that the lack of experience is one of the main reasons behind the limited number of women who hold leadership positions although women tend to have similar qualification to men. Similarly, Singh et al. (2008) argued that female directors appointed on boards are more likely to have less corporate board experience than men, and appointed in small firms' boards. This was expected because it is not easy for women in the past to break the "glass ceiling" by holding boards' positions, and this of course was reflected on having less board experience than men.

However, related industry experience is very important because it increases board members' knowledge and their advisory competencies, thus, contributing more to board functioning (McDonald et al., 2008). Other researchers emphasized on the importance of network relations to board of directors and the experience as a business manager claiming that these two

fundamental aspects are essential for women to be appointed on corporate boards (Dunn, 2012). Besides, female directors' long tenure could contribute in constraining EM practices because directors' tenure is linked to a high level of knowledge regarding managers' actions and financial reporting (García Lara et al., 2017).

Female directors' nationality

Internationalization of corporate boards has become an increasing trend starting in the 2000s (Oxelheim et al., 2013; Estelyi and Nisar, 2016; Miletkov et al., 2017). Previous studies used board of directors' nationality as international experience proxy. Due to globalization, many firms are affected by international competition or might have multiple investments and branches overseas. Therefore, it is important to have a director on corporate boards that represent the stakeholders, hence, a director with international experience would bring more broader insights, knowledge and experience to the boardroom.

However, the prior studies provided mix findings with regards to the impact of foreign directors on board performance. Chiu et al., (2016) and Hooghiemstra et al., (2019) agreed that foreign directors are more independent than local directors, which may result in enhancing board monitoring performance. On the contrary, diversity of nationalities could result in negative consequences. For example, the disagreements might rise among board members and might affect negatively the accuracy of decisions (Ruigrok et al., 2007).

In addition, foreign directors might have lower knowledge about local regulations and governance standards (Masulis et al., 2012) and language misunderstanding might affect negatively boards monitoring functions (Hooghiemstra et al., 2019). Similarly, Anderson et al., (2011) mentioned that the presence of foreign directors could result in a reduction of the communication quality within boards. With regards to EM, Hooghiemstra et al., (2019) revealed that foreign directors have a positive and significant relationship with EM practices, While Gull et al., (2018) found similar result with regards to foreign female directors and ABM.

Female directors' Age

Prior studies suggested that older directors are more likely to have a greater understanding of the firm operations and its industry, which might result in a reduction of EM practices (Cornett et al., 2008). Age diversity is part of relations-oriented diversity (Jackson, 2002), however, it attracted less attention from the previous studies (Ali et al., 2013). Gilpatrick (2000) stated that it is

commonly known that corporate boards consist of middle to retirement aged directors and most of them are previous executive managers of other firms.

However, it is more preferable to have age diversity on corporate boards since it reflects directors' experience, motivation, innovation and risk preference (Serfling, 2014). A recent report by PwC in (2018) highlighted that there are only 348 young directors compared to total of 5,500 directors and 31% of them are women. The report defined young directors as those aged 50 or below. It is essential to take into consideration directors' age because age reflects differences in personality, traits, skills, attitudes, mental health, work values and behaviours (Ferrero-Ferrero, et al., 2015). For example, Bekiroglu et al., (2011) study revealed that younger directors are more reactive to ethical and environmental issues. Moreover, Elmagrhi et al., (2019) found that female directors' age has a positive effect on corporate environmental performance. In addition, previous studies mentioned that age diversity on corporate boards is important because it boosts innovation in firms, fosters a wider knowledge of the marketplace, uplifts group performance, enhance problem solving and improve corporate leadership (Siciliano, 1996; Kilduff et al., 2000).

Consequently, age diversity can result in positive firms' outcomes. For example, researchers argued that age diversity is associated with higher firm value (Darmadi, 2011). Mahadeo et al., (2012) found that boards with high age diversity are more likely to be linked with high firm's return on assets. Ararat et al., (2015) argued that board age diversity is associated with greater passion for work and higher risk preference. A recent study by Alqatan (2019) argued that young directors bring more creative ways to improve board monitoring process.

Besides, Platt and Platt (2012) found a negative relationship between older age directors and the likelihood of bankruptcy. Johnson et al., (2013) added that board age diversity reflects risk aversion and experience. In contrast, some researchers agreed that age diversity is insignificantly related to earnings per share (Jhunjhunwala and Mishra, 2012) and corporate social performance (Hafsi and Turgut, 2013).

The age of women in top corporate positions depends on some factors. Jia and Zhang (2013) argued that male directors are more likely to appoint women directors with similar age range. The researchers added that appointing female directors that are close in age with the male board members make them more in common. However, in this case, the board might ignore age diversity benefits.

Overall, although the aforementioned studies highlighted the importance of directors' demographic attributes and mostly agreed that boards are significantly influenced by the presence of female directors due to their different attributes than their male colleagues (Adams and Ferreira, 2009; Ahern and Dittmar, 2012, Gull et al., 2018), the studies that took into consideration the statutory and demographic attributes of female directors when investigating their statutory role in eliminating EM practices are limited.

The inconsistent results of the relationship between female directors and EM may indicate that there is a need to consider their demographic attributes since these attributes are related to their behaviour, skills and knowledge, thus, influencing their monitoring behaviour toward EM practices. In addition, all EM practices have a common purpose which misleading the interested parties in knowing the actual firms' earnings (Zalata et al., 2019), however, as mentioned earlier, every EM method has its own characteristics and the level of complexity might vary, therefore, it is important to understand female directors' specific skills, knowledge and statutory roles on boards that would probably affect each EM method.

Chapter conclusion:

This chapter reviewed the relevant studies that discussed the issues related to EM methods commonly discussed in the literature, the motivation behind engaging in these practices and a comparison is made between EM methods based on a number of factors such as risk level, costs and timing. Next, the chapter focused on gender diversity and the factors that contributed in enhancing the representation of women on top firms' decision-making positions. The chapter also presented the positive and negative impact of the presence of female directors on boards. The chapter reviewed the studies that linked EM practices with gender diversity on board. Finally, the chapter reviewed the role of female directors' proportion on board and their characteristics in influencing EM practices.

Overall, based on this chapter, prior studies documented that all EM practices are used by managers and the incentives behind using these practices are similar. Besides, regardless of the EM method applied, all EM practices are perceived as unethical and the level of complexity vary between one method to another. Furthermore, the number of studies that are interested in testing the relationship between gender diversity on board and EM is rising, however, the majority of these studies focused on ABM while limited studies took into consideration the other two EM practices and the findings are still inconclusive. Additionally, although studies documented that the proportion as well as the attributes of female directors might have an essential role in influencing board functioning, few studies linked these factors with EM practices.

CHAPTER THREE: RELEVANT THEORIES AND CONCEPTUAL FRAMEWORK

Chapter introduction

This chapter discusses the relevant theories that could possibly explain the relationship between gender diversity on corporate boards and EM. Next, the theoretical and conceptual frameworks were presented and the study hypotheses were developed based on the previous studies.

As stated in the literature review chapter, a key psychological theory that explains the development of women expectation in a society is called social role theory (Eagly, 1987). Women is perceived based on their common societal roles associated with them. Researchers relied on the social role theory by suggesting that the gender differences in behaviour could result in having better board monitoring outcomes (Weck et al., 2021). According to this theory, men and women are assumed to have certain characteristics that reflect their gender stereotypes or in other words, their gender role (Eagly, 1987).

The gender role emerged from peoples' gender stereotypic beliefs regarding men and women. Men are generally perceived to be agentic and task-oriented such as being dominant, competitive, and assertive, whereas women are assumed to be communal or socioemotional which means emotional, unselfish and friendly with others (Parsons and Bales, 1955; Bakan, 1966). Researchers claimed that gender roles could have an impact on peoples' behaviour due to a mix of biological (i.e., hormonal fluctuations) and psychological (i.e., individuals' belief of gender roles) factors (Wood and Eagly, 2010).

Accordingly, previous studies agreed that gender roles could be the reason behind men and women different behaviours and managerial styles in the workforce as they act according to their stereotype expectations (Gutek and Morasch, 1982; Franke et al., 1997). With regards to the monitoring role of female directors and EM practices, the following theories were the commonly used by previous studies that link female directors monitoring role and EM practices. The most common theory applied in the previous studies is the agency theory, however, a number of other theories were also applied to give another explanation to this relationship such as critical mass and human capital theory.

3.1. Agency theory

In EM literature, the dominant theory that has been widely used to study the relationship between board diversity and EM practices is the agency theory developed by Jensen and Meckling (1976). Agency theory assumes that a conflict of interest between the principal and the agent may rise (Jensen and Meckling 1976; Fama and Jensen 1983). With regards to corporate governance, it is most likely that the conflict of interest can be between the shareholders and the managers. Agency theory proposed that managers are usually opportunistic and if they were not strictly monitored, they would target their own interest and ignore shareholders' goal (Adams and Ferreira, 2008; Abernathy et al., 2014). This would motivate the mangers to manage firms' earnings to achieve their desired gaols such as receiving higher bonuses.

The reason behind this agency problem is the information asymmetry since managers are closely related to firms' operations and activities and the lack of information of the principle (Fama & Jensen, 1983). Thus, managers might take this communication gap as an opportunity to manage firms' earnings to serve their own personal benefit instead of maximizing shareholders' wealth (Jensen and Meckling, 1976). Hooghiemstra et al., (2019) highlighted that the information asymmetry between the principle and agent is a vital reason for EM. El Diri et al., (2020) also agreed that high information asymmetry could lead to higher EM practices.

This conflict of interest would lead to high costs. Alchian and Demsetz (1972) assumed that it is costly for firms to oversee individual efforts and specially when the information within the firm is blocked, it might cause organizational inefficiencies. Researchers were motivated by Alchian and Demsetz (1972) to study the related costs of managing the conflicts between the managers and the shareholders (Jesen and Meckling, 1976). As stated by Zalata et al., (2018), in order to lower the agency costs, monitoring expenditures should be spent to monitor agents' actions and this includes the costs of appointing corporate board members.

Hence, it is corporate governance in general and board of directors in particular role in constraining such opportunistic behaviour by managers. Most of the corporate governance literature depended on agency theory (Aguilera et al., 2008). In particular, corporate boards monitoring role on behalf of the shareholders is an essential part of agency theory (Carter et al., 2003), which is also supposed to lead to a reduction in the information asymmetry (Cornett et al. 2008). Researchers showed that it is one of the most effective internal firms' monitoring

mechanisms and it contributes significantly in reducing the costs related to the principal–agent issue (Jensen and Meckling, 1976; Fama and Jensen, 1983).

Researcher generally depended on agency theory in assuming that board diversity would result in improving board's effectiveness in overseeing managers (Carter et al., 2003; Adams, et al. 2015; Ferreira, 2015). However, based on the social identity theory, individuals' attributes such as gender could be a reason to belong to a specific group identity (Tajfel, 1982), and their behaviour is justified according to the social group stereotype (Ashforth and Mael, 1989). For example, female directors are perceived as female stereotype that are more emotional and socially responsible than men (Boulouta, 2013), which might influence board monitoring effectiveness.

Furthermore, as mentioned in the previous chapter, women are generally perceived ethically sensitive, conservative, independent, cautious, less aggressive decision-makers, risk averse, and less engaged in fraud (Watson and McNaughton, 2007; Croson and Gneezy, 2009; Thiruvadi and Huang, 2011; Charness and Gneezy, 2012; Francis et al., 2015; Faccio et al., 2016; Sila et al., 2016; Wahid, 2019). Accordingly, researchers assumed that corporate boards can benefit from the presence of women in top corporate decision-making positions in reducing the agency conflict and eliminating the opportunistic EM practices. Thus, gender diversity on corporate boards could also be part of the mechanisms used in order to align the interests of the agent and the principal.

3.2. Critical mass theory

Critical mass theory suggests that minority gender (female directors) cannot effectively influence a group (corporate boards) unless their number reach to a particular threshold (critical mass) (Kanter, 1977). According to Kanter (1977), the minority members (women directors) within a group (corporate board) are perceived as "symbols", which might lead to a number of tokenism issues such as isolation from the group due to not being able to comfortably sharing their opinion in group discussions dominated by men (Fan et al., 2019).

The critical mass theory was originally applied to nuclear physics studies, it was then applied to social science studies (Granovetter, 1978). Most of the social science studies applied this theory to investigate the effect of appointing more women in political and legislative positions (Childs and Krook, 2008). But then, studies started to link this theory with the presence of female directors on corporate boards since board gender diversity quotas were enforced. It was assumed that the

majority of directors (male directors) are more likely to ignore or devalue the opinions of the minority (female directors) in the boardroom (Westphal and Milton, 2000).

Moreover, previous studies agreed that having three or more women on corporate board could create a critical mass (Karmer et al., 2006; Konrad et al., 2008; Luckerath-Rovers, 2010). As stated by Ford (2011), according to critical mass theory, “one is a token, two is presence, and three is voice”. Asch’s (1951, 1955) documented that when the minority group reach to three members then the group has reached to critical mass level. Torchia et al., (2011) documented that the presence of one woman on board might result in ignoring her opinion by the other board members. Kramer (2006) added that although the presence of two women on board are generally more powerful than one, it takes three or more women to achieve the “critical mass” that can cause a fundamental change in the boardroom and enhance corporate governance.

A number of studies also agreed that the presence of at least three women on boards removes gender from being a concern and would result in a definite board effectiveness shift (Luckerath-Rovers, 2010; Torchia et al., 2011). Jia and Zhang (2013) stressed that when female directors number reach to three or more, the male directors’ perceptions about tokenism tend to change which in turn, female directors will have greater power to influence boards’ outcomes. Considering that female directors are more responsive to ethical corporate practices, few but increasing number of recent studies tested the relationship between EM and the presence of at least three female directors on boards. These studies measured critical mass of female directors as a dummy variable. For instance, Lakhal et al., (2015) and Luo et al., (2017) found a negative relationship between the presence of at least three women on the board and ABM and REM respectively.

Other studies also supported Asch’s (1951, 1955) study findings (e.g., Bond, 2005). Kanter (1977, 1987) and Nemeth (1986) further developed the importance of critical mass in altering group decision making. Kanter (1977, 1987) and Granovetter (1978) agreed that a qualitative change happens in the nature of group interactions if the minority group reaches critical mass. Konrad et al., (2008), Schwartz-Ziv (2017) and Fan et al. (2019) concurred that based on critical mass theory, when women reach a particular threshold in a group (i.e., three or around 30% of women) their role becomes more significant.

Kanter (1977) was the first who introduced the critical mass theory from a gender diversity perspective. Although the theory suggested by Kanter (1977) was introduced more than 43 years

ago, many recent studies are applying it (e.g., Strydom et al., 2017; Guedes et al., 2018; Lafuente and Vaillant, 2019; Dobija et al., 2021). Kramer et al. (2006) noted that when two female board directors are appointed in a same corporate board, they feel more comfortable in discussing their thoughts than one female director does. Each female director makes sure that the other female directors' opinion is heard even when they do not agree with each other.

However, Kramer et al. (2006) clarified that a critical mass of three or more female directors could lead to a huge change in the boardroom dynamics and improve corporate governance system of firms. A number of researchers also agreed with Kramer et al., (2006), (e.g., Torchia et al., 2011; Joecks et al., 2013; Schwartz-Ziv, 2017; Fan et al., 2019). Konrad et al. (2008) and Erkut et al. (2008) also agreed that the critical mass of women on corporate board is reached when three women directors are appointed. Furthermore, Torchia et al. (2011) and Post et al. (2011) also agreed that having at least three female directors on corporate board means that critical mass level has been reached and women have greater impact on corporate decision-making process.

Likewise, A recent study by Rossi et al., (2017) agreed with Kanter (1977) study, Rossi et al., (2017) study showed that the influence of female directors on corporate decisions is greater when the number of the female directors is reached to a certain critical mass level, the study result confirmed the perception of tokenism could be changed when women representation has reached to critical mass threshold.

On the contrary, some researchers argued that testing critical mass as an absolute number (3 or more) might not be applicable for small boards (Dobija et al., 2021), thus, researchers suggested to test the critical mass effect using a percentage of female directors on board. For instance, Kanter (1977) study suggested that the critical mass percentage should be between 20% to 40% so firms can benefit from gender diversity. Similarly, Joecks et al. (2013) study revealed that the effect of female directors is U-shaped which means that the presence of female directors at the beginning is negatively influencing firms' performance, however, when their percentage reached to 30%, firms' performance started to be enhanced.

3.3. Human capital theory

Since one of the research objectives focuses on the role of female director's attributes in influencing EM practices, human capital theory is more suitable to justify the possible link between female directors and EM practices. Moreover, this study covers female directors' statutory roles which is more related to previously discussed agency theory. Human capital theory was originally introduced to measure the relationship between employees' income and their own human capital investment (Becker, 1962).

Becker (1964) mentioned that personal traits such as background, experience, social networks and skills of employees represents human capital aspect and are beneficial for firms. Becker et al., (1998) added that human capital presumed that peoples' demographic attributes could contribute in improving their capabilities which may reflect positively on firms' outcomes that they work in. Since these attributes are mostly unobservable, researchers developed proxies to measure human capital like training, knowledge, background, experience skills, and others (Unger et al., 2011). Hillman et al., (2007) noted that every director could add special human capital resources to corporate boards, such as their reputation and their network with other firms.

Becker (1962) defined human capital as resources embedded within individuals. Garibaldi (2006) provided another definition for human capital, the author stated that it is a persons' attributes that could enhance their economic productivity. Therefore, people attributes such as their education, experience, skills and knowledge are perceived as investments which could increase their human capital and as a result, enhance the economic growth (Becker, 1964; Westphal and Zajac, 1995).

Board wise, human capital theory suggests that board members have considerable human capital resources and expected to contribute to the board by sharing their own human capital (Nguyen et al., 2015), therefore, the appointment of new female directors is expected to be more likely based on what they can offer of human capital and it should be different from the human capital of the existing directors. Moreover, based on human capital theory, having diverse-boards might result in influencing its performance because diverse board members are more likely to provide different human capital resources (Carter, et al. 2010). This theory can explain the limited representation of female directors on boards in the past.

Ben Amar et al. (2013) suggested that the impact of statutory board diversity is influenced by demographic characteristics of individuals. More precisely, individuals' gender could have an

impact on human capital (Terjesen et al., 2008), by bringing diverse knowledge, professional backgrounds, opinions and innovative ideas (Ararat et al., 2012; Hoever et al., 2012; Bennouri et al., 2018), which may result in improving board monitoring effectiveness.

Nekhili and Gatfaoui (2013) suggested that female directors are appointed based on their demographic attributes, whereas Gull et al., (2018) recommended that the appointment of female directors should be based on their demographic as well as statutory attributes. Hence, based on human capital theory, the current study presumes that since female directors' individual characteristics are different than their male peers, their impact on EM practices is expected to be different.

To sum up, each of the above-mentioned theories are useful in explaining the possible factors that could explain the relationship between gender diversity on corporate top positions and EM practices. However, it is important to highlight that the critical mass and human capital theories are intended to complement and not to substitute the agency theory. The study depended on these theories to investigate whether the hypothesized relationships exist as these theories have the ability to clarify the expected relationship.

Accordingly, following prior researchers (e.g., Gull et al., 2018; Zalata et al., 2018), in order to achieve the first study objective which focuses mainly on risks and ethics debate and how female directors and CEOs are influencing EM practices, the agency theory is applied. A number of prior studies agreed that EM is considered as unethical issue related to reliability of financial reporting (Greenfield et al., 2007; Du et al. 2015; Belgasem-Hussain and Hussaien 2020), and according to Culpan and Trussel (2005), agency theory is beneficial in explaining the unethical practices in the accounting field issues. Besides, partial part of objective three related to statutory characteristics is also achieved using agency theory as suggested by Gull et al., (2018).

In addition, the study follows the previous researchers (e.g., Strydom et al. 2017; Guedes et al., 2018; Saona et al. 2018; Dobija et al., 2021), to achieve the second objective which deals with the role of female directors' proportion on influencing EM practices by applying critical mass theory. This would provide a better explanation of whether the proportion of female directors would matter in influencing boards monitoring mechanisms and accordingly, reducing EM practices.

Finally, following recent studies who argued that specific attributes of female directors, and not simply their presence or proportion, might be essential to improve board monitoring effectiveness and reduce EM practices (e.g., Gull et al., 2018; Arioglu, 2020; Dobija et al., 2021), the study responds to the importance of considering human capital theory as this theory better explains the role of female directors' demographic characteristics in influencing EM, especially that each EM method has its own different characteristics and the level of risks and complexity vary from one method to another which might need special skills and characteristics to be uncovered. Therefore, the third objective in the study is achieved through applying this theory.

3.4. Conceptual framework

After reviewing the previous studies and identifying the relevant theories, the EM techniques included in this study and the aspects related to gender diversity were selected based on the previous studies. Figure (3.1) explains the conceptual framework and illustrates the overall study variables discussed in the thesis that would achieve the study objectives. In addition, the below hypotheses were developed based on the study conceptual framework to achieve the study objectives.

3.5. Hypotheses development

After presenting the previous studies and the relevant theories related to board gender diversity and EM above, it can be noted that studies' findings are still inconclusive and there are a number of gaps that need to be addressed. In order to fill these gaps and achieve the main research objectives, the following hypotheses were developed:

3.5.1. Female directors/CEOs attitude towards earnings management.

Despite the increasing number of studies that linked board gender diversity with EM practices across the globe, the aforementioned inconsistent findings leave a question of whether gender diversity at the corporate boards can influence EM practices or not. As a matter of fact, the above studies' findings cannot be generalized as most of the studies concentrated on a specific country with exception to few studies (e.g., Kyaw, 2015; Saona et al., 2018) and the common EM method used in the literature is ABM (e.g., Dechow et al., 1995; McNichols, 2002; Kothari et al., 2005).

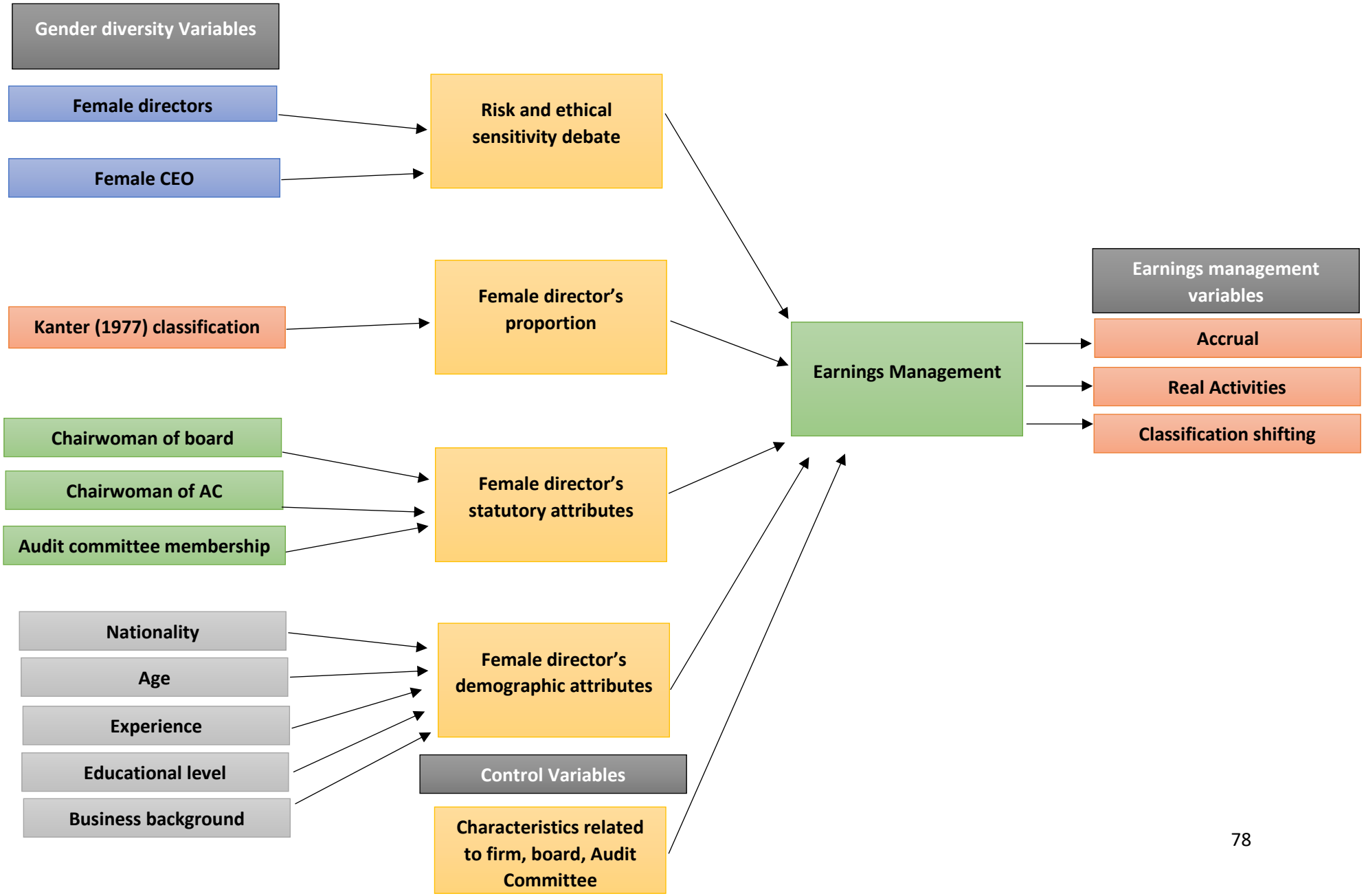
In addition, it can be clearly seen that the previous findings were mixed and this might be due to number of reasons. Most importantly, if the common perception 'women are more risk averse and ethically sensitive than men' adopted in these studies is not true, this would result in having

misleading outcomes. As stressed by Adams and Ragunathan (2015) and Adams et al., (2016), the stereotype that female directors are more risk-averse than men could result in unrealistic expectations. In fact, studies agreed that the behavioural differences between men and women do not apply for top corporate positions (e.g., Adams and Funk, 2012; Adams and Ragunathan, 2015). Nelson (2015) concluded that men and women have the same risk preference.

Similarly, Deaves et al. (2009) and Sila et al. (2016) failed to find evidence regarding women are more risk averse in the business field claiming that women in this field differ from women in the general population. In fact, Adams and Funk (2012) emphasized that female board directors are more risk-loving than men directors. Besides, a number of recent studies agreed that female board directors do not differ from their male colleagues in terms of monitoring (Sila et al., 2016; Sheedy and Lubojanski, 2018). Accordingly, Kirsch (2018) argued that gender behavioural differences studies are well established in the literature, however, when it comes to corporate boards, it is unclear whether the findings of these studies are also applicable for women on corporate boards.

Nelson (2015) highlighted that publication bias could be an important reason for not publishing studies that failed to find significant behavioural differences between men and women. Besides, the perception of risk aversion behaviour of women is mostly documented by previous experimental and survey-based research (e.g., Croson and Gneezy, 2009) and the respondents are mostly the general public or college students and did not target women on top corporate positions (Zalata et al., 2019). Also, women who chose to be board directors are not expected to have the same personality or behaviour as women in general population and might have more in common with men in equivalent positions (Kirsch, 2018). Hence, as stressed by Adams and Funk (2012), it might be misleading to generalize the findings of the general public to top corporate positions. Besides, researchers justified the insignificant difference as women in top leadership positions are influenced by male-controlled environment (Guedes et al., 2018).

Figure (3.1) Conceptual framework, illustration of the overall study variables discussed in the thesis.



The other assumption which is female directors and executives are more ethically sensitive than men (e.g., Simga-Mugan et al. 2005; Ibrahim and Angelidis 2009) is also questionable. Collins (2000) argued that there is no clear theoretical framework that could explain the assumption that women are more ethically sensitive than men. As claimed by Zalata et al., (2019), most of the ethical behavioural studies collected their data using surveys and the response rates were low, which may raise doubts regarding the validity of their findings.

Moreover, Simga-Mugan et al. (2005) argued that respondents are more probably to report their ethical actions inaccurately because people do not like to admit that they do unethical practices. Hence, in order to have better explanation, ethical behaviour studies need to be supported by studies that use archival data (Ho et al. 2015; Palvia et al. 2015). A recent study by Zalata et al., (2019) investigated the impact of female CEOs in the US in eliminating CS and suggested that female CEOs tend to avoid taking risks but it does not have to be more ethically sensitive than men. As stated earlier, the litigation risk levels of EM practices differs from one method to another (Huang et al., 2020), however, all these methods are perceived to be unethical as they mislead the shareholders (Zalata et al., 2019), thus, it is expected that the response of female directors might differ from one EM to another.

The majority of the EM studies concentrated on ABM as a risky method that attracts high regulatory security (e.g., Arun, 2015; Gull et al., 2018; Kyaw et al., 2015; Saona et al., 2018), which might not fully explain female directors and CEOs attitude toward risky and ethical decisions in the top corporate decision-making positions. As stated by Luo et al., (2017), investigating one EM method fails to capture the overall effect of board gender diversity.

Consequently, it is essential to include more than one EM method because a number of studies agreed that managers use different EM practices to influence firms' earnings and studies confirmed that CS and REM are used by managers as alternatives when ABM is strongly regulated (Zhu et al., 2015; Anagnostopoulou and Tsekrekos, 2016). Hence, studying one EM technique would not be enough to show the overall situation of managerial actions toward affecting firms' earnings (Athanasakou et al. 2011; Abernathy et al. 2014; Zhu et al., 2015; Anagnostopoulou and Tsekrekos, 2016).

The current study included three different EM methods and each method has its own characteristics and constrains in order to compare women attitude toward them and accordingly, can conclude if female directors and female CEOs are risk averse and ethically sensitive as suggested by prior studies. Therefore, this study conjecture that if female directors and female CEOs are more risk averse than ethical, they would prefer to focus on mitigating ABM and REM since they are considered more costly, associated with high litigation risk and could result in a loss of reputation and capital market penalties (Huang et al., 2020).

In addition, CS is expected to increase since it is associated with low costs and litigation risks compared to ABM and REM (Zalata and Roberts, 2017). Nevertheless, if all EM practices were mitigated, female directors and CEOs would be considered as risk averse and ethically sensitive because these practices were reduced regardless of their cost and litigation risk (Zalata, et al., 2019). Due to the inconsistent and conflicting findings with regards to women behaviour in top corporate positions toward ethical and risky practices, the research hypotheses are as follows:

Hypothesis related to female board directors/CEOs and EM practices:

H1.1: *There is a significant relationship between female board directors and EM.*

H1.2: *There is a significant relationship between female CEOs and EM.*

3.5.2. Female directors' proportion and earnings management

As discussed in chapter two, critical mass theory suggests that minority gender (female directors) cannot effectively influence a group (corporate boards) unless their number reach to a particular threshold (critical mass) (Kanter, 1977). According to Kanter (1977), the minority members (women directors) within a group (corporate board) are perceived as "symbols", which might lead to a number of tokenism issues such as isolation from the group due to not being able to comfortably sharing their opinion in group discussions dominated by men (Fan et al., 2019).

The majority of the previous studies (e.g., Konrad et al., 2008; Fan et al., 2019; Garanina et al., 2019) measured critical mass level using an absolute number (i.e., 3 or more), however, researchers argued that testing critical mass as an absolute number might be misleading as it might not be applicable for small boards (Dobija et al., 2021), thus, recent studies suggested to test the critical mass effect using a percentage of female directors on board (Joecks et al., 2013; Strydom et al., 2017; Guedes et al., 2018; Harakeh et al., 2019). Kanter (1977) stressed that simply looking at the presence or the number of female directors might not be enough and

highlighted the importance of testing their proportion because their influence on the group (board) might differ based on their proportion. Also, Kanter (1977) study suggested that the critical mass percentage should be between 20% to 40% so firms can benefit from gender diversity.

Prior studies showed conflicting evidence with regards to testing the relationship between EM and female directors' critical mass level using their proportion, for instance, Strydom et al. (2017) study results revealed that uniform boards (all-male directors) and skewed boards is negatively associated with earnings quality while tilted and balanced boards are positively linked to earnings quality. The earnings quality was measured through ABM level.

On the other hand, Guedus et al., (2018) provided an opposite argument regarding the effect of critical mass of female directors based on Kanter's classification. The researchers argued that the minority gender members (skewed and tilted) are linked with more favourable board outcomes than (balanced) proportions because "token" women different attitude and thinking are more visible to the board, hence, could more significantly contribute to board effectiveness, which might result in EM reduction. However, when the board is gender balanced, gender difference becomes invisible and women are blended with male-dominated group culture.

A more recent Polish study by Dobija et al., (2021) found when female directors' proportion is lower than 10% and greater than 40%, the ABM practices increase significantly. However, when the proportion is more than 10% and less than 40%, the relationship with ABM practices become significantly negative. The researchers argued that the results are in alignment with critical mass theory as a limited number of female directors would not help them to having an influence on boards' decisions, nevertheless, having an excessive number of female directors could also limit gender diversity benefits. The study findings are consistent with Guedus et al., (2018) and opposite to Strydom et al. (2017) findings with regards to gender balanced boards consequences.

The inconclusive findings of the prior studies show that the application of critical mass proposition need further investigation. A number of researchers argued that although critical mass theory has gained a lot of attention in the literature, its value and validity is still questionable. Studies showed that men members in a gender imbalance group dominated by women did not face a negative experience which indicates that it has nothing to do with their proportion but rather a sort of gender bias against women (Stichman et al., 2010).

Some researchers argued that gender behavioural dissimilarities could disappear in balanced boards because women minority status ends and the expectation toward female directors as independent monitors is changed (Kirsch, 2018). A number of theories supported this argument such as social identity theory (Tajfel and Oakes, 1986), which explain how women behaviour might change when the board becomes gender-balanced as their behaviour blends with their male colleagues and the perception of independent female directors no longer holds.

Kramer et al., (2006) added that women could express various views and are more likely to disagree with each other, hence, critical mass perception might be unapplicable. Broome et al., (2010) documented that the majority of the interviewees did not believe that a critical mass of female directors would result in different board outcomes. In fact, some of the study respondents confirmed that they do not see themselves as tokens and they are comfortable with being the minority group in the board because they were appointed for their high qualification.

Likewise, McKinsey and Company (2016) confirmed that the enhancement of female directors' proportion does not lead to more influence. Nguyen et al., (2015) stressed that the costs of gender diversity may outweigh its benefits when the board is dominated by women. Yarram and Adapa (2021) stated that when there is only one female board director, her action becomes more visible. Zajiji et al., (2020) stressed that reaching a critical mass level of female directors does not have to be the only explanation for the change in behaviour in the boardroom.

Overall, the concept of reaching critical mass is widely applied by different studies to further understand the impact of women number on groups. However, as stated earlier, the vast majority of prior studies simply focused on the number or the percentage of female board directors when testing the relationship between female directors and EM rather than discussing the influential role of reaching critical mass level. In addition, it can be also noticed from the aforementioned studies that the studies that linked critical mass level of female board directors and EM practices are mostly related to ABM while studies that linked REM and CS with critical mass theory are under researched.

Besides, although the concept of reaching the critical mass level is applied by prior studies, simply testing the presence of at least three female board directors without considering their proportion compared to the total number of board members might not give a precise conclusion of their role.

Kanter (1977) highlighted the importance of testing their proportion because their influence on the group (board) might differ based on their proportion.

Therefore, this study tests whether the different gender diversity percentages and targets set by countries would have different influence as suggested by Kanter (1977) on multiple EM practices. This is an important issue since countries are increasing the targets to assure gender diversity on boards and what if the increasing percentages would result in unpreferable consequences specially when it comes to a critical issue as EM practices.

Similar to the previous argument, focusing on one EM method might provide partial picture of the actual situation in any firm. Hence, including other EM methods is essential to know the overall effect of gender diversity proportion on these practices that are commonly used by managers. For example, it was argued that REM could cause greater negative economic consequences compared to ABM since it directly alters firms' cashflows and affects firms' operating performance (Gunny 2005; Cohen and Zarowin 2010, Kothari et al. 2012; Dichev et al., 2013; Evan et al., 2015), while CS could also cause negative impact on future operating performance and cashflows (Cain et al., 2019). Therefore, this study responds to the increasing call of researchers for testing different types of EM (Zalata et al, 2019) by investigating the relationship between female directors and multiple types of EM through the critical mass theory lens to see which method is mostly influenced by the proportion of female directors.

The studies that tested the impact of female directors' proportion on EM in the EU are scares. Therefore, the current study covers countries from the EU where the proportion of female directors has increased during the last years providing a better study environment for testing the critical mass level. In the EU, board gender diversity topic is considered as top priority of the EU strategy for the next years and there have been some attempts to specify board gender diversity quota which is at least 40% of non-executive directors should be women (Mateos de Cabo et al., 2011). If reaching to gender balanced boards could result in unpreferable consequences, then, it is expected that EM practices would increase causing severe accounting scandals.

Knowing the impact of gender diversity proportion and critical mass effect is crucial as many countries are setting their own board gender diversity proportion criteria. Based on the above discussion, the critical mass level of female directors would influence EM practices. In particular, this study suggests that board monitoring dynamics might be a result of varying degrees of

minority-majority composition based on Kanter (1977) proportion classification. Therefore, this study conjecture when the board is uniform (all male directors), the EM practices are expected to increase as prior studies suggested that male directors are more likely to engage in EM practices (e.g., Strydom et al., 2017).

When the board is skewed, the EM practices might not be eliminated because female directors represent minority "token" group and their influence might be limited. However, the titled and balanced boards might be more effective in influencing EM practices because the proportion of female directors has increased and they are more likely to have an impact on board monitoring effectiveness. Given the previous studies contradictory results, no specific sign (positive or negative) was given to the below hypotheses. Hence, the below hypotheses are formed:

H1.3: *Firms with uniform boards (all male directors) are significantly related to EM.*
H1.4*: Firms with skewed boards (token female directors) are significantly related to EM.*
H1.5: *Firms with tilted boards are significantly related to EM.*
H1.6: *Firms with balanced boards are significantly related to EM.*

3.5.3. Female board directors' characteristics and earnings management

Female directors' statutory attributes

Female directors' membership on audit committee

As discussed earlier, from agency theory point of view, audit committee is a vital corporate governance mechanism to lower agency costs and support the shareholders (Dellaportas et al., 2012; Salehi et al., 2018; Raimo et al., 2020). Therefore, audit committee plays an important role with respect to detecting EM practices.

Prior researchers claimed that the presence of female member on the audit committee could strengthen corporate governance. Thiruvadi (2012) stressed that the presence of one female member or more on audit committee is associated with high number of audit committee meetings. Salehi et al., (2018) added that female members on audit committees are more likely to enhance the monitoring effectives of boards because they tend to avoid risks, hence, the agency costs are reduced. Accordingly, female directors' presence on audit committee could matter in terms of EM.

However, the study findings that linked female directors on audit committee and EM are inconsistent. For example, some studies found that gender diversity on audit committee is

significantly related to EM level (Albring et al., 2014; Khlif and Achek, 2017; Gull et al., 2018; Zalata et al., 2018; Sudarman and Hidayat, 2019; Mardessi and Fourati, 2020; Zalata and Abdelfattah, 2021). On the contrary, Sun et al., (2011) and Arıoğlu (2020) provided evidence that there is no relationship between the presence of female member on the audit committee and EM level.

Green and Homroy (2018) stated that the presence of female members in decision-making committees such as audit committee could be a source of competitive advantage because female members are assumed to have good monitoring skills. Also, the previous studies focused mainly on single type of EM and few studies investigated multiple EM although researchers concurred that all three methods of EM (i.e., ABM, REM and CS) are used as substitutes by managers (Zalata et al, 2019) and could result in misleading the investors in anticipating firms' future performance (Anagnostopoulou et al., 2019), therefore, unlike previous studies, it is important to test different types of EM to have a better picture of women role on audit committees. Based on the above argument and the majority of the previous empirical studies' findings, the hypothesis is as follow:

H1.7: *There is a negative relationship between female directors' membership on audit committees and EM.*

Female chairperson

A number of studies agreed that gender stereotypes affect the perception of leadership, for example, effective leaders are usually described as men and they are perceived to be more suitable to be in charge (Koenig et al., 2011). However, previous studies argued that women have different leadership style than men, women are most likely to use transformational leadership style in order to lead others (Eagly et al. 2003). Transformational leadership style mainly depends on social, ethical and personal social values (Hood, 2003). Therefore, female chairperson characteristics and leadership style are expected to differ from board chairmen as their leadership is perceived to be more ethical (Ho et al. 2015) and studies showed that female chairs are more likely to improve the board's decision-making quality and reduce the opportunistic actions related to firms (Krishnan and Parsons, 2008; Nekhili et al., 2017), and most importantly, enhance financial reporting quality (Dobija et al., 2021).

According to Neubert et al. (2009), ethical leaders show appropriate ethical behaviour to others and this would encourage to have ethical work environment. Ho et al., (2015) added that ethical behaviour of female leaders could reflect ethical leadership style which might result in high levels of financial reporting transparency; hence, EM practices might be eliminated. Similarly, Dobija et al., (2021) study result revealed that having female chairperson on board could result in an enhancement in earnings quality. Schwartz-Ziv (2017) and Pucheta-Martínez et al. (2018) findings agreed that corporate boards chaired by women can oversee financial information more effectively.

On the contrary, Gull et al., (2018) found a positive relationship between female board chairpersons and ABM. In addition, limited number of studies considered the influential role of women leadership on board committees in terms of EM.

Accordingly, this study is one of a few studies that aims at understanding the chairperson involvement in uncovering EM practices. More precisely, it can be clearly seen that a little attention was given to the influential role of female board chairperson on EM in the literature and mostly tested ABM. Thus, this study assumes that based on social role theory (Eagly, 1987), gender differences in leadership behaviour could result in having better board monitoring outcomes, more precisely, female chairpersons on board would have a negative relationship with all EM practices.

Also, similar to female chairperson on board argument, since audit committee is a vital corporate governance mechanism to monitor executives' actions (Dellaportas et al., 2012; Salehi et al., 2018; Raimo et al., 2020) and it plays an important role with respect to detecting EM practices, this study assumes that when the audit committee is chaired by a woman, EM practices are reduced. Hence, the following hypotheses are tested:

H1.8: *There is a negative relationship between female board chairperson and EM.*
H1.9: *There is a negative relationship between female AC chairperson and EM.*

Female directors' demographic attributes

Female Directors' Education

Based on human capital theory, people attributes such as their education, experience, skills and knowledge are perceived as investments which would increase their human capital and as a result, enhance the enhance their capabilities (Becker, 1964; Westphal and Zajac, 1995). Board

wise, human capital theory can be explained as diverse board members have considerable human capital resources and expected to contribute to the board by sharing their own human capital (Nguyen et al., 2015).

As highlighted by previous studies, More precisely, individuals' gender could have an impact on human capital (Terjesen et al., 2008), by bringing diverse knowledge, professional backgrounds, opinions and innovative ideas (Ararat et al., 2012; Hoever et al., 2012; Bennouri et al., 2018), which may result in improving board monitoring effectiveness.

Directors' education is a fundamental demographic aspect and it might influence the nature of the relationships between the presence of women directors and boards outcomes. Studies showed that directors with high educational degree are more capable of understanding complicated issues as well as suggesting creative solutions (Johnson et al., 2013; Jiang et al., 2016). Also, some researchers claimed that when a person is highly educated, the given information is well analysed and as a result, better decisions will be taken (Papadakis and Barwise, 2002). Studies also revealed that people with business background tend to have different decision-making styles than those without business background (O'Fallon and Butterfield, 2005).

With regards to female directors' education, it was documented in the literature that women directors' education could affect firms' outcomes (Singh et al. 2015; Rossi et al., 2017). Rossi et al., (2017) findings showed that when female directors' educational level was considered, female directors' presence has a negative effect on firms' risk and it has a significant impact on R&D investments. Singh et al. (2015) showed that highly educated female directors have higher influence on board decisions. Nguyen et al., (2015) and Dobija et al., (2021) added that a positive relationship is found between female board directors' high educational level and firm performance. Gull et al., (2018) found that female directors with business backgrounds are more likely to constrain ABM.

Previous studies focused on ABM method, however, some EM practices such as REM and CS are complicated and further study is needed to investigate if female directors' educational level and background could be helpful in effectively monitoring these practices. Therefore, female directors' business background and educational level are included in this study to measure the potential role of female directors' qualification in enhancing their monitoring capabilities and mitigating EM practices (Johnson et al., 2013). Based on the mentioned argument and the

findings of the previous studies, this study assumes that female directors with business education and high educational level are more likely to monitor effectively and accordingly, EM practices are reduced. Hence, the hypothesis regarding female directors is as follow:

H1.10: *There is a negative relationship between female directors' business education and EM.*
H1.11: *There is a negative relationship between female directors' educational level and EM.*

Female directors' experience - tenure

Director's tenure is a widely used proxy to measure directors' experience. Directors' tenure represents the period that a director has been appointed on corporate board (Muneza and Mahua, 2018). It is presumed that directors' tenure in board reflect the knowledge and familiarity of company's functions and resources and could be reflected on shareholder's value (Brown et al., 2017). Bacon and Brown (1973) stated that it takes 3 to 5 years for directors to understand well firms' functions. Moreover, Brown et al. (2017) indicated that directors' tenure could influence corporate governance effectiveness, and shareholders consider directors' tenure in their decisions. However, long directors' tenure could have unfavourable consequences.

According to Katz (1982), directors with long tenure could result in inflexibility and resistence to new ideas and lower quality of strategic decisions. Bedies, as suggested by the management friendliness hypothesis, having directors on board for long period could result in low level of monitoring (Vafeas, 2003), hence, affecting board functioning (Johnson et al., 2013). Other researchers supported short tenure of directors and claimed that short tenure could result in having new directors with different percpectives which leads eventually in enhancing corporate boards monitoring ability (Ahmadi et al., 2018).

With regards to EM, Bedard et al. (2004) mentioned that there is an inverse association between ABM and the average tenure of independent board committee members. Kang and Kim (2012) demonstrated that EM becomes lower when the number of directors who have longer period of experience with the company increases. With regards to female directors, studies showed that female directors' long tenure could contribute in constraining EM practices because directors' tenure is linked to a high level of knowledge regarding managers' actions and financial reporting (García Lara et al., 2017).

According to human capital theory (Becker, 1964), since individual experience is part of their human capital, this study assumes that female directors with longer tenure would be more knowledgeable of the firm's reports and activities which could result in reducing all types of EM practices including the complicated types. Few studies took into consideration female directors' tenure (e.g., Gull et al., 2018), hence, there is a need to investigate the role of female directors' tenure in monitoring EM practices. Therefore, following Gull et al., (2018) and Bennouri et al., (2018) studies, female directors' average tenure is included as female director's experience. Based on the aforementioned discussion, this study assumes that the longer the female directors' tenure, the better their monitoring effectiveness and familiarity with firms' operations, hence, eliminating different types of EM practices. The research hypothesis is presented below:

H1.12: *There is a negative relationship between female directors' tenure and EM.*

Female directors' nationality

Prior studies used board of directors' nationality as international experience proxy. Nevertheless, the prior studies provided mix findings with regards to the impact of foreign directors on board outcomes. Chiu et al., (2016) and Hooghiemstra et al., (2019) agreed that foreign directors are more independent than local directors, which may result in enhancing board monitoring performance. On the contrary, diversity of nationalities could result in negative consequences. For example, the disagreements might rise among board members and might affect negatively the accuracy of decisions (Ruigrok et al., 2007).

In addition, foreign directors might have lower knowledge about local regulations and governance standards (Masulis et al., 2012) and language misunderstanding might affect negatively boards monitoring functions (Hooghiemstra et al., 2019). Similarly, Anderson et al., (2011) mentioned that the presence of foreign directors could result in a reduction of the communication quality within boards. With regards to EM, Hooghiemstra et al., (2019) revealed that foreign directors have a positive and significant relationship with EM practices, While Gull et al., (2018) found similar result with regards to foreign female directors and ABM.

Based on the prior discussion and following previous studies, this study uses foreign female directors as international experience proxy (Dobija et al., 2021) to measure female directors' human capital. The study expects that female directors with foreign nationality could use their international experience in influencing board monitoring role. As mentioned in chapter two, since

the previous studies were contradicting with regards to international experience impact on boards functioning, no sign is identified to the below hypothesis:

H1.13: *There is a significant relationship between female directors' nationality and EM.*

Female directors' Age

Previous studies used directors' age as an experience proxy (Johnson et al., 2013), however, it attracted less attention from the previous studies (Ali et al., 2013). Besides, Platt and Platt (2012) found a negative relationship between older age directors and the likelihood of bankruptcy. Johnson et al., (2013) added that board age diversity reflects risk aversion and experience. In contrast, some researchers agreed that age diversity is insignificantly related to earnings per share (Jhunjhunwala and Mishra, 2012) and corporate social performance (Hafsi and Turgut, 2013).

In addition, Bekiroglu et al., (2011) study revealed that younger directors are more reactive to ethical and environmental issues. Moreover, Elmagrhi et al., (2019) found that female directors' age has a positive effect on corporate environmental performance. In addition, previous studies mentioned that age diversity on corporate boards is important because it boosts innovation in firms, fosters a wider knowledge of the marketplace, uplifts group performance, enhance problem solving and improve corporate leadership (Siciliano, 1996; Kilduff et al., 2000).

Researchers argued that age diversity is associated with higher firm value (Darmadi, 2011). Mahadeo et al., (2012) found that boards with high age diversity are more likely to be linked with high firm's return on assets. Ararat et al., (2015) argued that board age diversity is associated with greater passion for work and higher risk preference. A recent study by Alqatan (2019) argued that young directors bring more creative ways to improve board monitoring process.

With regards to EM, limited number of studies tested directors' age with EM practices. However, since studies showed that older directors are more likely to have a greater understanding of the firm operations and its industry (Cornett et al., 2008), it would be interesting to examine if female directors' age would make a difference in terms of monitoring EM practices. Based on human capital theory and following previous studies (Johnson et al., 2013), the study expects that the older the female directors, the greater is their experience resulting in higher human capital level,

accordingly, they are more capable of uncovering EM practices. In other words, there is a negative relationship between female directors' age and the likelihood of EM as.

H1.14: *There is a negative relationship between female directors' age and EM.*

Chapter conclusion

In this chapter, the theories related to gender diversity on boards and EM were discussed. Since this study aims at answering the possible links between gender diversity on board and EM including the influence of female directors' proportion and characteristics, a number of theories were discussed which are agency theory, critical mass theory and human capital theory. All these theories were suggested by the previous studies that would possibly explain the relationship between gender diversity and EM, accordingly, this study depends on them in achieving the study aims. Also, based on the previous studies and discussed theories, the conceptual framework was presented and the study hypotheses were developed.

CHAPTER FOUR: RESEARCH METHODOLOGY

Chapter introduction

Chapter four presents the methodology adopted in this research in details. The study methodology is based on an extensive literature review. This chapter is organized as follows: The first section describes the study sample. The second section discusses the research philosophy and study variables. The third section provides a full description of the models used to estimate EM practices, independent variables and control variables. Finally, the last part of this chapter provides a detailed description of the steps taken to assess the validity and reliability of the study data and model.

4.1. Study Sample

The study sample includes listed firms from eight European Union countries (France, Germany, Sweden, Italy, Belgium, Netherlands, Denmark, and Finland) during the period 2010 – 2017. The EU countries context is of interest for various reasons. For many years, particularly after the global financial crisis, the EU countries paid a lot of attention on enhancing board gender diversity and introduced a number of reforms in order to increase the number of women on corporate decision-making positions. Based on a report about the equality between women and men in the EU which was published in 2017, “the equal participation of both gender in decision-making positions is a matter of justice, respect for fundamental rights, and good governance” (P. 28). Hence, the EU provides an ideal study environment for testing the impact of gender diversity on firms’ most critical issue which is EM.

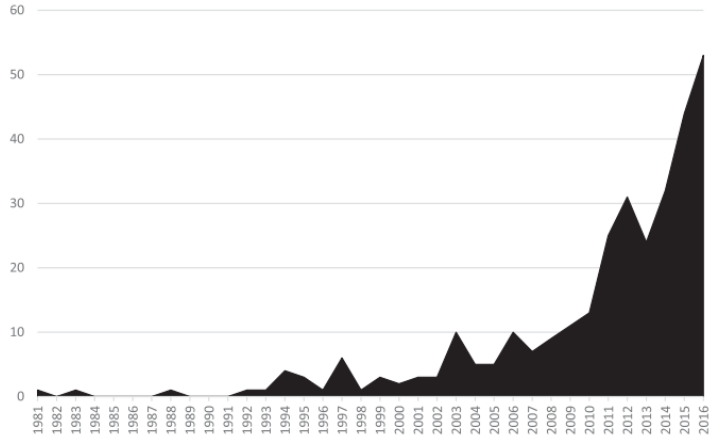
In addition, according to Gray et al., (2015), the EU is considered ideal research setting because it is an integrated economy and all EU members should comply with EU legal regulations which affects directly and indirectly the accounting system. Moreover, the EU corporate governance initiatives resulted in a substantial harmonization in member states’ corporate governance regimes (Ivaschenko and Brooks 2008). Also, the EU countries apply IFRS since 2005 which some believe that it has its own advantages and disadvantages when it comes to EM as discussed in chapter two.

The sample selection criteria are based on the countries who are the early EU members and most established since the 90s which assure that their legal and financial systems are more or less homogenous (Gray et al., 2015). In addition, the EU countries where average share of women on the boards has exceeded the overall average of the overall 28 EU countries (European Commission, 2016) in order to test a sufficient percentage of female directors and be able to test

the critical mass effect. These countries include: France, Germany, Sweden, Italy, Belgium, Netherlands, Denmark, and Finland. The selected countries are considered as a rich source of gender diversity data since the number of female directors on their corporate boards are relatively higher than the rest of the European Union countries (European Commission, 2016). Besides, all these initiatives toward increasing the gender balance among corporate boards show that it is a fundamental concern in the EU region.

The choice of the study firms is based on the completeness of the data required for the analysis. The below table (4.1) illustrates the study sample. Moreover, the study focuses on the period after the global financial crisis (2010 – 2017) because the attention on the effectiveness of corporate governance mechanisms has increased and even the percentage of female directors has increased. As showed in the below figure (4.1), a growing academic interest in board gender diversity after the financial crisis.

Figure (4.1) Number of board gender diversity studies published since 1981.



Source: Kirsch, (2018) The gender composition of corporate boards: A review and research agenda.

Table (4.1) Study sample

Country	Total listed companies	Financial sector (excluded)	Missing data (excluded)	Firms included in the study sample
Belgium	256	90	69	97
Denmark	176	58	28	90
Finland	149	21	39	89
France	845	124	478	243
Germany	864	247	387	230
Italy	341	77	67	197
Netherlands	112	26	31	55
Sweden	815	114	447	254
Total	3558	757	1546	1255

With regards to the data collection, this research employed secondary data for corporate governance, EM, and other firm related variables. The study data were collected for each year cross-sectionally from Bloomberg, as well as Osiris, Thomson One and BoardEx databases. Data were also gathered manually from firms' websites. Although the study period covers 2010 – 2017 period, data before year 2010 was collected in order to be able to estimate EM variables. Table (4.2) presents industry distribution of the study sample based on Bloomberg industrial classification.

The researcher excluded from the study sample the missing data or inconsistent corporate governance or financial data needed for the calculation of variables. Furthermore, the study sample was limited to year 2017 because as mentioned earlier, some corporate governance and gender diversity data were collected manually, hence, it was highly labour-intensive process (Ntim et al., 2013). Also, at the data collection period, the data were available until year 2017.

Furthermore, following the previous studies in the literature, financial firms were removed from the study sample to prevent the specific requirement and characteristics of these firms which may cause biased results (e.g., Matsa and Miller, 2013; Liu et al., 2014; Sila et al., 2016; Gull et al., 2018). In addition, as in the case of prior studies of DeFond and Jiambalvo (1994) and Arun et al., (2015), industries with less than six observations were also excluded from the initial sample.

Table (4.2) Industry distribution of the study sample based on Bloomberg industrial classification

Bloomberg industrial classification	**Percentage**
1 Energy	4.1%
2 Materials	8.6%
3 Industrial	20.2%
4 Consumer discretionary	20.7%
5 Technology	15.4%
6 Health care	11.3%
7 Utilities	2.7%
8 Consumer staples	7.6%
9 Communication	9.4%
Total	100%

4.2. Research philosophy and study variables

It is crucial before conducting any social science research to identify the research philosophy. In general, the literature has categorized the research philosophy into positivistic and interpretative approaches (Patton, 1990; Hussey and Hussey, 1997; Saunders et al. 2003). In fact, the Positivism paradigm is described as objective while interpretivism paradigm as subjective. The Positivism paradigm depends on quantitative approaches to test research hypotheses related to associations between the variables, while interpretivism approach is mostly related to qualitative research (Saunders et al. 2003).

Accordingly, since the current study's objective is to test the relationship between EM and gender diversity on corporate boards and it applies a quantitative research approach, this research adopts the positivism research philosophy method. Moreover, the approach to theory development were categorized into induction, deduction, and abduction (Saunders et al., 2016), the previous studies documented that positivist researchers tend to follow the deductive research approach rather than inductive approach (Ticehurst and Veal 1999). This study is using the deductive approach because it develops hypotheses based on an existed theory proposed by previous researchers. Also, the archival strategy is applied since secondary data were collected from different databases. Furthermore, the Monomethod is applied as a research method since

the quantitative method is only used. Finally, the longitudinal time horizon is more suitable as research time and horizons since this study used panel data for analysis.

Figure (4.2) Methodology Processes according to Saunders et al., (2016).

4.2.1. Study variables

The below sections discuss the measurement of dependent variables which are three EM methods (ABM, REM, CS). In addition, a full description of gender related variables and control variables measurements is provided. The current study classifies the independent variables into different gender related characteristics, namely, the percentage of female directors, the presence of female CEO, female directors' proportion and attributes. The measurement of independent variables, dependent variables and control variables are based on previous studies (Dechow et al., 1995; McVay, 2006; Roychowdhury, 2006; Arun et al., 2015; Kyaw et al., 2015; Guedes et al., 2018; Gull et al., 2018; Dobija et al., 2021). Finally, the study models and a summary of the variables' definitions are explained.

EM- dependent variable

In order to investigate the association between gender diversity on corporate boards and EM practices, the first dependent variable, ABM, is measured using modified Jones model, Dechow et al., (1995), while the second dependent variable, REM, is estimated using Roychowdhury (2006) and finally, CS is measured using McVay (2006) model. The measurement details are discussed below.

Measure of Accrual-based management (ABM)

A substantial number of studies used the modified Jones model suggested by Dechow et al., (1995) to detect ABM. As Dechow et al., (1995) stated, the modified Jones (1991) model is considered as the most powerful model of detecting ABM. Moreover, there is general consensus by the researchers regarding that although there are many models that were developed after the modified Jones model to measure the discretionary accruals, there is no other model that can perform better than the modified Jones model in identifying the abnormal accruals (Peasnell et al., 2000; Botsari and Meeks, 2008). Since then, the model suggested by Dechow et al. (1995) became the most commonly used model by the previous and recent studies (e.g., Arun et al, 2015; Gull et al., 2018; Abdou et al., 2020; Dobija et al., 2021). Therefore, the study applied the modified Jones model suggested by Dechow et al. (1995) to estimate the discretionary accruals. Discretionary accruals were used as ABM proxy and it represents the difference between the total accruals and nondiscretionary accruals.

Following Guedes et al., (2018) and Saona et al., (2018), the discretionary accruals were estimated using the balance sheet approach. Moreover, consistent with prior studies (e.g., Srinidhi et al., 2011; Albersmann and Hohenfels, 2017; Cai et al., 2020), firms can manage earnings upward or downward, however, since the objective of this study is to investigate if there is an EM or not rather than testing the EM direction, the current study focused on the absolute value of residuals related to ABM model where larger absolute value of EM models' residuals indicate higher level of ABM practices (García Lara et al., 2017).

The following regression equation is used for estimating the discretionary accruals:

Equation (1):

$$\frac{TA_{it}}{A_{it-1}} = \beta_0 + \beta_1 \left(\frac{1}{A_{it-1}}\right) + \beta_2 \frac{(\Delta Sales_{it} - \Delta Rec_{it})}{A_{it-1}} + \beta_3 \left(\frac{PPE_{it}}{A_{it-1}}\right) + \varepsilon_{it} \qquad (1)$$

Where:

TA_{it} = Total accruals in year t. Total accruals defined as the change in current assets minus the change in cash and equivalents minus the change in current liabilities plus change in short term debt included in current liabilities minus total depreciation and amortization.

$\Delta Sales_{it}$ = Sales in year t less sales in year $t-1$.

ΔREC_{it} = Net receivables in year t, less net receivables in year $t-1$.

PPE_{it} = Gross property plant and equipment in year t.

A_{t-1} = Total assets in year $t-1$.

The subscripts i and t stand for firm and year. The residual of the equation is discretionary accruals.

Measure of real earnings management (REM)

The study followed Roychowdhury (2006) to measure REM since it is the most frequently applied model by previous studies (e.g., Cohen and Zarowin, 2010; Zang 2012; Ge and Kim, 2014; Sun et al., 2014; Luo et al., 2017; Alhadab, 2018; Wali and Masmoudi, 2020). In order to measure REM, three REM proxies should be estimated: sales manipulation, overproduction and abnormal discretionary expenditures (Wali and Masmoudi, 2020). Furthermore, following Cohen and Zarowin (2010), Ge and Kim (2014) and Luo et al., (2017), an aggregate proxy for REM is used to measure the overall REM level. Below, the residual values of the three REM proxies were generated using Roychowdhury (2006) study models. For each model a cross-sectional regression for every industry and year is applied. Also, similar to previous studies, the absolute value of the aggregate REM proxy is used to reduce the adverse effect between positive and negative REM values as REM can be used for both income-increasing and decreasing purposes (e.g., Chang et al., 2015; Oh and Jeon, 2017; Sarra, 2019; Mellado and Saona, 2020).

According to Roychowdhury (2006), sales manipulation is a technique that aims to increase the volume of sales for the current period, by introducing greater discounts and favourable payment terms. Although this method could boost the sales for a short period of time, in the long run, it could result in lower levels of cashflows from operations (Gunny, 2010). The study used the abnormal cashflow from operations as a proxy for sales manipulation. In order to calculate the abnormal level of cashflow from operations, the difference between the actual cashflow from operations and cashflows from normal operation is calculated using the following regression model. The residuals from the below model are the abnormal level of operating cashflow, with low values indicating greater engagement in REM practices

Equation (2):

$$\frac{CFO_{it}}{TA_{it-1}} = \beta_0 + \beta_1 \frac{1}{TA_{it-1}} + \beta_2 \frac{Sales_{it}}{TA_{it-1}} + \beta_3 \frac{\Delta Sales_{it}}{TA_{it-1}} + \varepsilon_{it} \qquad (2)$$

Where:

CFO_{it}: Operating cashflow as reported in the statement of cashflows.

TA_{t-1}: Total Assets from previous year.
$\Delta Sales_{it}$: Difference between sales of the current year and sales from previous year.
$Sales_{it}$: Net Sales.

The second REM proxy is overproduction. Roychowdhury (2006) claimed that in order for firms to report higher earnings, they produce more units than necessary, hence, fixed costs are spread over a larger number of units, and the total cost per unit are decreased. As a result, cost of goods sold would decrease generating a greater operating margin. This method might lower the costs in the short run; however, it might have an adverse effect because producing more than the needed number of units could increase the expenses in the long run (Wali and Masmoudi, 2020). The estimated residuals from the below model represent the abnormal level of production costs, where greater residuals represent greater engagement in inventory overproduction practices (Sun et al., 2014). Overproduction proxy using abnormal production costs is calculated using the following regression model:

Equation (3):

$$\frac{PROD_{it}}{TA_{it-1}} = \beta_0 + \beta_1 \frac{1}{TA_{it-1}} + \beta_2 \frac{Sales_{it}}{TA_{it-1}} + \beta_3 \frac{\Delta Sales_{it}}{TA_{it-1}} + \beta_4 \frac{\Delta Sales_{it-1}}{TA_{it-1}} + \varepsilon_{it} \quad (3)$$

Where:
PROD: Production costs equal to the cost of goods sold (COGS) and inventory variation (Δ INVT)
TA_{t-1}: Total Assets from previous year.
$\Delta Sales_{it}$: Difference between sales of the current year and sales from previous year.
$Sales_{it}$: Net Sales.

The last REM proxy as suggested by Roychowdhury (2006) is the reduction of discretionary expenditures. If managers did so, the discretionary expenses for the period are expected to be unusually low and accordingly, the cashflow for the period is expected to increase. However, this practice could result in reducing the future cashflow of the companies. The abnormal discretionary expenditure is measured using the residuals from the following regression model, where the lower the value, the greater is the engagement in REM practices:

Equation (4):

$$\frac{DEXP_{it}}{TA_{t-1}} = \beta_0 + \beta_1 \frac{1}{TA_{it-1}} + \beta_2 \frac{Sales_{it-1}}{TA_{it-1}} + \varepsilon_{it} \quad (4)$$

Where:

DEXP: discretionary expenses measured as the total of selling, general and administrative, R&D and advertising expenses.

$Sales_{it-1}$: Net sales from the previous year.

$TA_{i,t-1}$: Total assets from previous year.

After estimating the previous proxies of REM (sales manipulation, overproduction, reduction of discretionary expenditures) as suggested by Roychowdhury (2006), a comprehensive REM variable is calculated to measure the overall REM practices (Cohen and Zarowin, 2010; Zang, 2012). This variable is computed by multiplying sales manipulation and discretionary expenses proxies by negative one so the higher the cashflow and discretionary expenses amounts, the more likely firms are involved in sales manipulations by offering price discounts and reducing discretionary expenses. Overproduction is the only proxy that does not need to be multiplied by negative one because higher production costs suggest an unusually high overproduction cost.

Measure of classification shifting (CS)

To investigate if gender diversity variables could influence CS, this study focused on the misclassification of recurring expense as suggested by McVay (2006) by testing the association between the unexpected core earnings and non-recurring expenses. Following Zalata et al., (2019) this study adopts a modified version of McVay (2006) model as suggested by Fan et al., (2010) to estimate CS practice. As claimed by Fan et al., (2010), adding the current year's accruals can result in a mechanical relationship between nonrecurring and core earnings, hence, the current year's accruals variables were removed from the McVay (2006) model.

McVay (2006) model is commonly used model by previous studies that examined CS within IFRS and US GAAP environments (e.g., Fan et al., 2010; Zalata and Roberts, 2015; Orjinta and Okoye, 2018; Zalata et al., 2019). In order to estimate CS practices, the first step is to estimate a proxy for the normal/expected core earnings as the following model cross-sectionally:

Equation (5):

$$CE_{i,t} = \beta_0 + \beta_1 CE_{i,t-1} + \beta_2 ATO_{i,t} + \beta_3 ACCRUALS_{i,t-1} + \beta_4 \Delta SALES_{i,t} + \beta_5 NEG\_\Delta SALES_{i,t} + \varepsilon_{i,t} \quad (5)$$

Where:

$CE_{i,t}$: Core earnings before non-recurring items and depreciation, calculated as (sales - cost of goods sold - selling, general, and administrative (SGA) expenses)/sales, where cost of goods sold and selling, general, and administrative expenses exclude depreciation and amortization.

$CE_{i,t-1}$: Prior-year core earnings. $CE_{i,t-1}$ is included as an independent variable in the prior regression model to control for earnings persistence over the periods (Schipper, 1989; McVay, 2006). A positive correlation is expected between $CE_{i,t-1}$ and $CE_{i,t}$.

$ATO_{i,t}$: Asset turnover ratio calculated as sales/average net operating assets; net operating assets is the difference between operating assets and operating liabilities. Operating assets are calculated as total assets less cash and cash equivalents. Operating liabilities are calculated as total assets less total debt, less book value of common and preferred equity, less non-controlling interests. Asset turnover ratio (ATO) is added to control for the negative relationship among asset turnover and profit margin since the definition of core earnings is very similar to profit margin (McVay, 2006).

$ACCRUALS_{i,t-1}$: Operating accruals measured as prior-year operating accruals, calculated as net income before extraordinary items – operating cash flow / Sales. $ACCRUALS_{i,t-1}$ is included to measure previous period accruals because future performance is associated with past accruals (Sloan, 1996; McVay, 2006).

$\Delta SALES_{i,t}$: Percentage change in sales, calculated as $(Sales_t - Salest_{t-1})/Sales_{t-1}$. $\Delta SALES_{i,t}$ is added to control the sales growth impact on fixed costs (McVay, 2006; Zalata and Roberts, 2017).

$NEG\_\Delta SALES_{i,t}$: Percentage Change in sales ($\Delta Sales_{i,t}$), equals 0 if a positive change in sales and is equal to the change in sales ($\Delta Sales_{i,t}$) when sales are negative. $NEG\_\Delta SALES_{i,t}$ is included to control sales different slopes when sales increase or decrease (Fan et al., 2010). More precisely, research showed that costs react differently depending on the positive or negative changes in sales, compared to a decrease of sales, when sales increases, the costs rise by a higher rate (Anderson et al., 2003).

After estimating the normal/expected core earnings using the coefficients from equation (5), the unexpected or abnormal core earnings (UCE) is next calculated as the difference between reported core earnings and expected core earnings. If abnormal core earnings are positive, then, it means that firm may shifted recurring expenses to a non-recurring so that the core earnings will be inflated. McVay (2006) tested whether managers shift core expenses to special items since the study conducted in the US.

However, since the study sample follow IFRS which classify income statement items into recurring and non-recurring, the current study followed Athanasakou et al. (2009), Zalata and Roberts (2016) and Orjinta and Okoye (2018) in investigating whether firms included in the sample engaged in misclassifying recurring expense to non-recurring (NREC). Also, studies agreed that non-recurring items provide greater flexibility to engage in CS because they are less likely to depend on the occurrence of specific events (Athanasakou et al., 2009).

Athanasakou et al. (2009) calculated the non-recurring items as the difference between reported core earnings and bottom-line net income. Following Anagnostopoulou et al., (2021) firms are classified as classification shifters if unexpected core earnings were positive and the non-recurring items are income-decreasing, and zero otherwise. Therefore, the CS proxy can be positive or a zero value. Positive values of CS indicate the engagement in this practice, because they capture the amount of recurring expenses that are misclassified as income-decreasing non-recurring expenses (Joo and Chamberlain 2017).

Gender diversity related variables

Measurement of female directors and CEOs presence:

The study focuses on the role of female directors on boards because the board is the main body that is going to be blamed for any shortages in financial reporting monitoring responsibility (Zalata and Roberts, 2016). Therefore, it is important to pay closer look to the role of female directors on corporate boards and how it might impact EM practices. Following the majority of the previous studies (e.g., Arun et al., 2015; Saona et al., 2018; Zalata et al., 2019), gender diversity is measured using the percentage of female directors on board.

The definition of female directors' variable is similar to many previous papers (e.g., Ahern and Dittmar, 2012; Reguera-Alvarado, 2017; Belaounia et al., 2020) in which it does not distinguish between inside and outside women directors and does not categorise female directors' presence based on the board structure (i.e., one-tier or two-tier) because the hypotheses development can be applied to both. Also, some studies used dummy variable to represent presence female directors (1 if female and 0 otherwise). However, this approach was criticised as it reduces the gender diversity complex phenomenon to simple dualistic model (Khlif and Achek, 2017).

In addition, female CEO is added as a dummy variable proxy because prior literature suggested that CEOs' gender could have an impact on their attitude toward EM practices (Faccio et al.,

2016; Zalata et al., 2019). Also, there is a general consensus that CEOs can influence corporate outcomes (Cai et al., 2012). As stated by Huang and Kisgen (2013), it is crucial to investigate the role of female CEO not because it adds more knowledge to corporate governance literature only, but because female executive's representation continues to be relatively low.

In order to achieve the second research objective which is related to the relationship between female director's proportion and EM, the following female director's proportion variables were tested:

Measurement of female directors' proportion:

As highlighted in the previous chapters, the second research aim goes more in depth by testing if female directors' monitoring capability might differ based on a varying degree of their minority-majority proportion as suggested by Kanter (1977). Therefore, in order to see if female directors' proportion plays an essential role in influencing EM practices, this study follows recent studies (e.g., Joecks et al., 2013; Strydom et al., 2017; Guedes et al., 2018; Lafuente and Vaillant, 2019; Dobija et al., 2021) in measuring female directors' proportion using Kanter (1977) classification: a dummy variable to categorize women minority groups to uniform groups (assuming the value "1" if all board members are men; "0" otherwise), skewed groups (assuming the value "1" if a board has at least one woman but less than 20 percent; "0" otherwise), tilted groups (assuming the value"1" if the ratio of women in the boardroom is at least 20 percent, but less than 40 percent; "0" otherwise) and balanced groups (assuming the value "1" if the ratio of women is at least 40 percent). Other critical mass measures are used in the robustness analysis section.

Measurement of female directors' attributes:

In order to achieve the last research aim that attempts to look deeper inside the black box of board gender diversity and EM relationship by explaining the role of specific female directors' attributes on different EM practices, especially that every EM method needs particular skills and competencies to be detected. Hence, following Bennouri et al., (2018) and Gull et al., (2018) approach, the following attributes variables will be added to the model to test their possible influence: the percentage of female directors on audit committee, the presence of female chairperson on board and audit committee, which represents female directors' statutory attributes.

The demographic attributes variables include the average tenure of female directors and the nationality of female directors to capture female directors' international experience. Age of female

directors is also included as an important aspect of women attribute proxy, while high educational level of female directors (Masters or Ph.D.) and female directors' business background are proxies used to capture their qualification. The full description of the abovementioned variables is presented in details in table (4.3).

Control variables:

Based on the previous studies (e.g., Hong and Andersen, 2011; Kim et al., 2012; Arun et al., 2015; Gracia Lara et al., 2017; Abdou et al., 2020), there are different firm-specific characteristics that might be useful to measure EM level such as firm size, operating cashflow, return on assets, financial leverage, market to book ratio, auditor quality and firm loss. Therefore, the current study used the mentioned variables as control variables.

In addition, following Gull et al., (2018), variables related to board characteristics were also controlled such as board size, board independence, CEO duality, percentage of board meeting attendance and number of boards' meetings. Finally, following Zalata et al., (2017), audit committee characteristics were also controlled including audit committee size, activity and independence. These variables are briefly discussed next and a full description is presented in details in table (4.3).

Board size

A number of prior studies agreed that EM is associated with board size. Some studies argued that there is negative relationship between board size and EM (e.g., Kyaw et al., 2015; Triki Damak, 2018; Thinh and Tan, 2019) and claimed that large boards are effective in board monitoring functions. On the contrary, Rahman and Ali (2006) documented a positive relationship between ABM and board size, while Waweru and Prot (2018) showed that board size is not significantly associated with EM.

Board independence

A considerable amount of literature has been published on the impact of board independence on EM. Most of previous studies that tested the relationship between corporate governance and EM found a negative relationship between the board independence and ABM and the occurrence of fraudulent financial statements (e.g., Wu et al., 2016).

Further, studies showed that REM is constrained by independent directors (e.g., Chouaibi et al., 2018; Kang and Kim, 2012). In addition, Frankel et al., (2011) found a significant negative relationship between independence directors and CS, while Orjinta and Okoye (2018) found that independent directors are negatively but insignificantly related to CS. It was also argued that the increasing percentage of independent directors might result in free-riding issue as the motivation for getting more information about the firm decrease (Zalata et al., 2019).

Number of board meetings

Previous studies considered number of board meetings as a proxy for measuring board activity. It is assumed that the board monitoring functions becomes better when the board meets more frequently because they have sufficient time to solve and discuss firms related issues (Jensen, 1993). Accordingly, researchers found that when board members meet more frequently, EM practices are more likely to be constrained (Kang and Kim, 2012; Alsharairi and Iqtait, 2017).

Board meeting attendance

Board meeting attendance is an important indicator for the board effectiveness. Masulis and Mobbs (2014) claimed that board meetings attendance record is a reflection of directors' commitment. Alsharairi and Iqtait (2017) pointed out that board meetings attendance has a fundamental impact on reducing EM. Similarly, Sarkar et al., (2008) study found that the board meeting attendance percentage has an impact on EM activities. Thus, this suggests that the when the percentage of director's attendance on boards is high, EM practices would be eliminated.

CEO duality

There has been much debate regarding CEO duality. Jensen (1993) argued that CEO duality could result in a subjective evaluation of the firms' CEO, hence, board's monitoring and governance function is more likely to be eliminated. Bushee et al. (2014) agreed also that the combination of the CEO and the chairperson positions is considered as ineffective governance because it reduces the probability that the board would objectively monitor managements' behaviour. Researchers presumed that when there is CEO duality, board monitoring effectiveness is reduced, hence, EM practices are increased (Gavious et al., 2012).

Firm size

Firm size is included as a control variable to control any potential impact of firm size on EM practices. Studies indicated that ABM practices might be limited in large firms because they are

always under scrutiny (Marra et al., 2011). Furthermore, Zalata et al., (2019) results showed a significant negative relationship between firm size and CS. Further, Doukakis (2014) and Ho et al. (2015) revealed that small firms are more involved in REM practices. On the contrary, Anagnostopoulou and Tsekrekos (2016) study showed that firm size is positively related to REM.

Operating cashflow

Operating cashflow is also considered as a control variable because the literature documented that operating cashflow could influence managerial EM practices. For example, according to Dechow et al. (1995) and Gul et al. (2009), firms with high operational cashflow implies that they are performing well and accordingly, EM practices might not be needed. Therefore, a negative association is expected between operating cashflow and EM (Chen et al., 2015). Furthermore, Behn et al. (2013) and Zalata et al., (2019) stressed that it is important to control operating cashflow because it could impact the level of CS practices.

Firm financial leverage

Following Arun et al., (2015) and Braam et al, (2015), firm's leverage is included as a control variable. Firm leverage is used to measure the violation of debt covenant (Chen et al. 2015). Franz et al., (2014) suggested that penalties related to debt covenant violations could motivate firms to engage in EM when they are close to violate their debt covenants.

Lemma et al. (2013) and Anagnostopoulou and Tsekrekos (2016) suggested that firms' leverage is positively associated with ABM and REM. Also, Zalata and Roberts (2016) suggested to add leverage as a control variable when testing CS practices. In contrast, Franz et al. (2014) argued that there is a negative relationship between firm leverage and EM because firms' lenders may have more scrutiny over the firms resulting in limiting EM practices.

Market-to-book ratio

Lemma et al., (2013) highlighted that firms with growth opportunity signal an optimistic future image which result in attracting external funding. Furthermore, growing firms are probably to be engaged in EM practices because they are under pressure to meet earning targets (Roychowdhury, 2006). Similarly, Doukakis (2014) and Zhu et al. (2015) study discovered a positive association between firms' growth opportunity and REM and ABM.

On the other hand, some studies showed that firms' growth could be negatively associated with EM (e.g., Ho et al., 2015; Anagnostopoulou and Tsekrekos, 2016). Lemma et al., (2013) clarified that firms with growth opportunities are likely to be under close scrutiny by stakeholders which makes it difficult to manage earnings. Other studies did not find a significant relationship (e.g., Wu and Robin, 2012). Hence, market-to-book ratio is included as a control variable.

Return on asset

Return on asset (ROA) is a widely used proxy to measure firms' financial performance. A number of studies agreed that there is a negative association between firm performance and EM (e.g., Abdullah and Ismail, 2016; García Lara et al., 2017; Orazalin, 2019). In contrast, some studies argued that a positive relationship is found between EM and ROA (e.g., Zamri et al., 2013; Ghazali et al., 2015). Moreover, following Behn et al. (2013) and Zalata and Roberts (2016), ROA is controlled when testing CS practices due to its impact on managers' decision to misclassify income statement items.

Loss

Loss is included in the study as a control variable because it was argued that firms with financial problems engage more in income-decreasing EM (Healy, 1985). Another study by Srinidhi et al. (2011) documented a significant negative relationship between the variable "loss" and current discretionary accruals, which means that managers tend to manage earnings less when firms are less profitable. Arun et al., (2015) and Gull et al., (2018) found a significant negative relationship between firms' financial condition measured using loss variable and EM.

Auditor quality

Big 4 variable represents companies that are audited by one of the big audit firms and it is used to measure the audit quality. DeAngelo (1981) argued that audit firm size is suitable for audit quality proxy because big audit firms care about their reputation. Gavious et al., (2012) stressed that when firm's auditor is one of the big 4 audit firms, earnings quality becomes higher.

On the contrary, since REM is less likely to violate GAAP (Zang 2012; Ge and Kim, 2014), it is less subject to external auditor scrutiny as it is challenging for them to uncover REM because it is not easy to differentiate between REM and normal business decisions (Commerford et al. 2016), and audit firms are responsible for the accounting treatments related to firms' operations rather than overseeing firms' operations (Ge and Kim, 2014). On the contrary, Chi et al. (2011)

and Gull et al., (2018) highlighted that higher-quality auditors are positively associated with the level of EM. Accordingly, following Abernathy et al., (2014), Big4 variable is controlled in all EM models.

In addition to the above-mentioned control variables, a number of control variables were also added to the model when testing the relationship between female directors' attributes and EM in order to control audit committee characteristics which are as follows:

Audit committee size

Following Zalata et al., (2018), audit committee size is included because studies showed that it is related to EM practices. Some studies found that audit committee size is negatively related to EM (e.g., Inaam and Khamoussi, 2016). McDaniel, et al., (2002) explained it as due to the mixed knowledge and specialization of the audit committee members. On the contrary, Ghosh et al., (2010) argued that small audit committees are more capable in eliminating EM.

Audit committee independence

A number of studies tried to test the relationship between audit committee independence and EM. However, the evidence regarding this relationship is still inconclusive. For instance, Klein (2002) stated that there is no relationship between audit committee independence and ABM. Inaam and Khamoussi (2016) reported that EM is significantly and negatively related to the number of independent audit committee members. Hence, audit committee independence is included as a control variable.

Audit committee activity

Audit committee activity variables including number of audit committee meetings and the percentage of audit committee meeting attendance are controlled. Albersmann and Hohenfelsm (2017) found a negative relationship between audit committee number of meetings and ABM. In addition, Rickling (2014) highlighted that audit committee meetings' attendance is an important factor that influence the financial reporting effectiveness. Prior studies documented a negative relationship between audit committee meetings attendance and EM practices (e.g., Qamhan et al., 2018).

The next table (4.3) provides a detailed description of the variables included in the current research.

Table (4.3) Description of the study models' variables

Variables related to gender diversity on corporate boards		
Variable	**Definition**	**Measurement**
%F_B	Ratio of female board directors	Total number of female directors divided by total number of board members.
FCEO	Female CEO	Dummy variable coded 1 if the CEO is woman and 0 otherwise.
%F_AC	The ratio of female members in the audit committee	The number of audit committee female members divided by the total number of audit committee members
FCHAIR_B	Female chairperson on corporate boards	Dummy variable coded 1 if the boards' chair is a woman and 0 otherwise
FCHAIR_AC	Female chairperson on audit committees	Dummy variable coded 1 if the audit committees' chair is a woman and 0 otherwise
F_TEN	Tenure of female directors	The average number of years that female directors have been on a board
%F_BS	Percentage of female directors with business education background	Total number of female directors with business education background divided by total number of female directors
%F_LEV	Percentage of female directors with high educational level	Total number of female directors who hold master's degree or a PhD degree divided by total number of female directors
F_AGE	Female directors' age	Average age of female directors
%F_NAT	Percentage of female directors with foreign nationality	Total number of foreign female directors divided by total number of female directors
UB	Uniform board	Dummy variable coded 1 if all board members are male, or 0 otherwise.
SB	Skewed board	Dummy variable coded 1 if the board consist of at least one female director and up to 20% women, or 0 otherwise.
TB	Tilted board	Dummy variable coded 1 if the board includes between 20% and 40% women, or 0 otherwise.
BB	Balanced board	Dummy variable coded 1 if the board has between 40% and 60% women, or 0 otherwise.
Variables related to earnings Management (EM)		
ABM	Accrual-based management	Absolute value of the discretionary accruals calculated by using the modified Jones model.
REM	Real earnings management	Absolute value of REM proxies aggregate measure (sales manipulation, discretionary expenses and overproduction). Sales manipulation and discretionary expenses proxies were multiplied by negative one.
UCE	Unexpected core earnings	The difference between reported earnings and expected core earnings using the equation (5) scaled by sales.

NREC	Non-recurring expenses	The difference between reported core earnings and bottom-line earnings scaled by sales (positive differences correspond to income-decreasing items, whereas negative differences correspond to income-increasing items and are set to zero).
Control Variables		
ROA	Return on assets	Firm performance measured by net revenue to total assets ratio
LOSS	Firm's negative net income	Dummy variable taking one if the firm i reported negative net income in year t; and zero otherwise.
LEV	Firm leverage	Ratio of total liabilities to total assets.
CASH	Cash flow from operations	Net operating cash flow divided by total assets.
MTB	Market to book value	Market value/book value per share.
FIRM	Firms' size	The natural logarithm of total assets
BIG4	Auditor quality	Dummy variable coded 1 if the firms' auditor is one of the Big4 auditing firms and 0 otherwise
B_SIZE	Board Size	Total number of board members
CEO_DUAL	CEO Duality	Dummy variable coded 1 if the CEO holds the position of the chairman of the board and 0 otherwise
%B_INDEP	The ratio of board independence	Total number of independent board members divided by total number of board members
B_MEET	Board meetings	Total number of board's meeting
%B_MEET	Board meetings' attendance	Percentage of board members meetings' attendance as reported in firms' annual reports
AC_SIZE	Total number of audit committee members	Total number of audit committee members
%AC_INDEP	The ratio of audit committee independence	Total number of independent audit committee members divided by total number of audit committee members
AC_MEET	Audit committee meetings	Total number of audit committee meetings
AC_ATTEND	Percentage of audit committee meetings' attendance	Percentage of audit committee meetings' attendance

4.3. Model Development – Female directors and CEOs and EM

Based on previous studies (Guedes et al., 2018; Zalata et al., 2019; Nekhili et al., 2020; Dobija et al., 2021), the below empirical models were used to estimate the relationship between gender diversity on corporate boards and the three EM methods (ABM, REM, CS) which are as follow:

- ***Model (6)*** *the presence of female directors and CEOs and ABM:*

$$\boldsymbol{ABM_{i,t} = \beta_0 + \beta_1 \%F\_B_{i,t} + \beta_2 FCEO_{i,t} + \sum_{k=1}^{12} \beta_i \, Control_{i,t} + \mu_i + \eta_t + \varepsilon_{i,t}} \quad (6)$$

Where:

%F_B is the percentage of female directors on boards. FCEO is a dummy variable that equals to 1 if the CEO is a woman and 0 otherwise. Control is a set of control variables related to boards and firms' characteristics discussed in the table (4.3). μ_i represents firm fixed effects and η_t represents year fixed effect. ε_{it}represent the error term. i stands for firms, t stands for the period. All variables are defined in table (4.3).

The same above model was used for testing the relationship with REM, however, the ABM was replaced with REM. Unlike the above models, to investigate if gender diversity variables could influence CS, this study focused on the misclassification of recurring expense as suggested by McVay (2006) by testing the association between the unexpected core earnings and non-recurring expenses. Therefore, in order to investigate the relationship between gender diversity variables and CS, the study followed Athanasakou et al. (2009), Zalata and Roberts (2016) and Orjinta and Okoye (2018) by including non-recurring expenses (NREC) as an interaction variable to examine the interactions of non-recurring expenses (NREC) with the gender diversity variables ($\mathrm{NREC} \times \%\mathrm{F\_B}$) and ($NREC \times \mathrm{FCEO}$) and expect the relationship to be significant. NREC is calculated as the difference between actual core earnings and net income scaled by sales. The model that investigates the relationship between gender diversity and CS is as follows:

- ***Model (7)*** *the presence of female directors and CS:*

$$\boldsymbol{UCE = \beta_0 + \beta_1 NREC_{it} + \beta_2 \%F\_B_{it} + \beta_3 FCEO_{it} + \beta_4 NREC_{it} \times \%F\_B_{it} + \beta_5 \, NREC_{it} \times FCEO_{it} + \sum_{k=1}^{12} \beta_i \, Control_{it} + \mu_i + \eta_t + \varepsilon_{it}} \; (7)$$

Where:

UCE is the unexpected core earnings. NREC is non-recurring expenses. %F_B is the percentage of female directors on boards. FCEO is a dummy variable that equals to 1 if the CEO is a woman and 0 otherwise. Control is a set of control variables related to boards and firms' characteristics discussed in table (4.3). μ_i represents firm fixed effects and η_t represents year fixed effect. ε_{it}represent the error term. i stands for firms, t stands for the period.

4.4. Model Development – female directors' proportion and EM

In order to test the critical mass effect and if the proportion of female directors would play a role in influencing their monitoring ability and reducing EM practices, three empirical models were used to estimate the relationship between the proportion of female directors on corporate boards and the three EM methods (ABM, REM, CS) which are as follow:

- ***Model (8)*** *the proportion of female directors and ABM:*

$$\boldsymbol{ABM_{i,t} = \beta_0 + \beta_1 FCM_{i,t} + \sum_{k=1}^{12} \beta_i Control_{i,t} + \mu_i + \eta_t + \varepsilon_{i,t}} \quad (8)$$

Where:

ABM represents accrual earnings management. FCM represent variables related to Kanter (1977) classification categories: skewed, tilted and balanced female directors' groups. A full description of these variables is provided in table (4.3). Control is a set of control variables related to boards and firms' characteristics as discussed above. μ_i represents firm fixed effects and η_t represents year fixed effect. ε_{it}represent the error term. i stands for firms, t stands for the period.

The same above model was used for testing the relationship between female directors' proportion and REM, however, the dependent variable is replaced with REM instead of ABM. Unlike the above models, to investigate if gender diversity variables could influence CS, this study focused on the misclassification of recurring expense as suggested by McVay (2006) by testing the association between the unexpected core earnings and non-recurring expenses. Therefore, in order to investigate the relationship between the proportion of female directors and CS, the study followed Athanasakou et al. (2009), Zalata and Roberts (2016) and Orjinta and Okoye (2018) by including non-recurring expenses (NREC) as an interaction variable to examine the interactions of non-recurring expenses (NREC) with the female directors' proportion variables ($\mathrm{NREC} \times \mathrm{FCM}$) and expect the relationship to be significant. The model that investigates the relationship between gender diversity and CS is as follows:

- ***Model (9)*** *the proportion of female directors and CS:*

  $$\boldsymbol{UCE} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1 NREC_{it}} + \boldsymbol{\beta_2 FCM_{it}} + \boldsymbol{\beta_3 NREC_{it}} \times \boldsymbol{FCM_{it}} + \sum_{k=1}^{12} \boldsymbol{\beta_i\, Control_{it}} + \boldsymbol{\mu_i} + \boldsymbol{\eta_t} + \boldsymbol{\mathcal{E}_{it}} \quad (9)$$

Where:

UCE represents the unexpected core earnings. NREC is non-recurring expenses. FCM represent variables related to Kanter (1977) classification categories: uniform, skewed, tilted and balanced female directors' groups. A full description of these variables is provided in the next table. Control is a set of control variables related to boards and firms' characteristics as discussed above. μ_i represents firm fixed effect and η_t represents year fixed effect. ε_{it}represent the error term. i stands for firms, t stands for the period.

4.5. Model development- female directors' attributes and EM

In order to test the relationship between female directors' attributes and EM, this study follows the majority of the previous studies that linked female directors' attributes and firm's outcomes (Bennouri et al., 2018; Gull et al., 2018) by using the system GMM regression method suggested by Arellano and Bover (1995) and Blundell and Bond (1998). As can be seen in Model 10 and 11, lag values of the EM dependent variables were added in the models as explanatory variable as required by the system GMM approach (Gull et al., 2018; Nekhili et al., 2020) as follows:

- ***Model (10)*** *Female directors' attributes and ABM:*

  $$\boldsymbol{ABM_{i,t}} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1 lagABM} + \boldsymbol{\alpha_2 \%F\_AC_{i,t}} + \boldsymbol{\alpha_3 FCH\_B_{i,t}} + \boldsymbol{\alpha_4 FCH\_AC_{i,t}} + \boldsymbol{\alpha_5 F\_TEN_{i,t}} + \boldsymbol{\alpha_6 F\_BS_{i,t}} + \boldsymbol{\alpha_7 F\_LEV_{i,t}} + \boldsymbol{\alpha_8 F\_AGE_{i,t}} + \boldsymbol{\alpha_9 F\_NAT_{i,t}} + \sum_{k=1}^{15} \boldsymbol{\alpha_i\, Control_{i,t}} + \boldsymbol{\mu_i} + \boldsymbol{\eta_t} + \boldsymbol{\mathcal{E}_{i,t}}$$

  (10)

The same previous model was used for female directors' attributes and REM. However, ABM was replaced by REM as dependent variable and lag ABM variable was replaced by lag REM. Unlike the above models, in order to investigate the relationship between female directors' attributes and CS, the interactions of non-recurring expenses with the gender diversity variables ($NREC$ ×%F_AC), ($NREC$ ×FCH_B), ($NREC$ ×FCH_AC), ($NREC$ ×F_TEN), ($NREC$ ×%F_BS), ($NREC$ ×%F_LEV), ($NREC$ ×F_AGE), ($NREC$ ×%F_NAT) were included and expect the relationship to be significant. The model that investigates the relationship between female directors' attributes and CS is as follows:

- ***Model (11)*** *Female directors' attributes and CS:*

$$\boldsymbol{UCE_{i,t} = \alpha_0 + \alpha_1 LagUCE + \alpha_2 \%F\_AC_{i,t} + \alpha_3 FCH\_B_{i,t} + \alpha_4 FCH\_AC_{i,t} + \alpha_5 F\_TEN_{i,t} + \alpha_6 F\_BS_{i,t} + \alpha_7 F\_LEV_{i,t} + \alpha_8 F\_AGE_{i,t} + \alpha_9 F\_NAT_{i,t} + \alpha_{10}\, NREC \times \%F\_AC_{i,t} + \alpha_{11}\, NREC \times FCH\_B_{i,t} + \alpha_{12}\, NREC \times FCH\_AC_{i,t} + \alpha_{13}\, NREC \times F\_TEN_{i,t} + \alpha_{14}\, NREC \times F\_BS_{i,t} + \alpha_{15}\, NREC \times F\_LEV_{i,t} + \alpha_{16}\, NREC \times F\_AGE_{i,t} + \alpha_{17}\, NREC \times F\_NAT_{i,t} + \sum_{k=1}^{15} \alpha_i\, Control_{i,t} + \mu_i + \eta_t + \varepsilon_{i,t}} \quad (11)$$

4.6. Validity and reliability of data

It is important before moving to the regression analysis to check if the data and study models are suitable for investigating the study hypotheses. As presented below, a number of tests were conducted to check the validity and reliability of study data and chosen the appropriate model for the current study. The first step in determining if the data sample is suitable for regression analysis is applying normal distribution test for the continuous variables. In this study, both skewness and kurtosis were tested to assess the normality. Data is considered normally distributed when the skewness and kurtosis values are within -2 to +2 range (George and Mallery, 2010). The primarily results showed that there are some of the skewness and kurtosis values were beyond the aforementioned range indicating that these values are not normally distributed.

In particular, some variables show high skewness and kurtosis (i.e., ABM, REM, CS, NREC, %F_AC, F_TEN, B_SIZE, AC_MEET, AC_ATTEND), and this was expected because different firm sizes were included in the study sample and some firms might manage earnings too far which result in having outliers. Accordingly, different transformation methods were applied to overcome this issue. As suggested by previous researchers, in order to eliminate the extreme outliers without removing them from the data sample, a winsorization of the top and bottom at 1% of the EM and other continuous variables (CASH, FIRM, ROA, LEV, MTB) were natural logarithm transformed (Cohen et al., 2008; Kyaw et al., 2015) and resulted in better normality results as shown in table (4.6).

After assessing the normality of data, it is important to make sure that the independent variables are not correlated to prevent the multicollinearity issue which can result in biased results. The variance inflation factor (VIF) was used to assess multicollinearity in the current study models. In general, when the VIF value is above 10 implies that there is a high correlation between the independent variables (Lin, 2008). Table (4.5) showed that the variance inflation factor values for all the mentioned variables are less than 10 indicating that there is no multicollinearity problem that might affect the model results. In addition, in order to check the autocorrelation issue between the residuals of the variables, Durbin Watson test was conducted for the study models and as can be seen in table (4.6), the Durbin Watson values vary between the range (1.5 – 2.5) indicating that there is no autocorrelation issue.

Finally, a fundamental assumption to be checked before proceeding to regression analysis is homoscedasticity. Homoscedasticity occurs when the error term has the same variance across

all independent variables. In order to check the presence of heterogeneity issue, Breusch– Pagan test were conducted and the results are shown in table (4.6). The p-values for tests were significant which means that the null hypothesis that the variance of the residuals is constant is rejected, which indicates an issue of heteroscedasticity.

Table (4.4) Normality results

	Skewness statistics		**Kurtosis statistics**	
Variables	**Before**	**After**	**Before**	**After**
ABM	2.401	-.464	16.883	-.229
REM	.903	-.763	19.649	1.704
UCE	3.915	-.878	23.733	1.311
NREC	4.590	-.094	24.306	1.164
%F_B	.476	.476	.422	.422
%F_AC	1.793	-.289	6.479	1.466
F_TEN	1.507	-.676	2.853	1.065
%F_LEV	1.787	1.787	1.192	1.192
%F_BS	1.117	1.117	1.355	1.355
F_AGE	1.003	1.003	1.226	1.226
%F_NAT	.901	.901	1.230	1.230
B_ATTEND	-1.061	-1.061	1.266	1.266
B_SIZE	-2.061	-.162	5.266	-.099
B_MEET	1.557	1.557	1.580	1.580
%INDEP_B	.411	.411	-.618	-.618
%AC_INDEP	1.009	1.009	.646	.646
AC_MEET	1.087	-.449	3.214	.765
AC_SIZE	1.155	1.155	1.919	1.919
AC_ATTEND	-2.108	-.847	4.126	1.341
CASH	21.219	-.111	67.506	-.470
FIRM	8.374	.100	90.786	-.557
ROA	77.525	-1.219	68.043	1.140
LEV	30.144	-.145	75.213	1.894
MTB	42.643	-.257	45.705	.843

Table (4.5) Variance inflation factor (VIF) test results

Variables	VIF	Variables	VIF
NREC	1.078	B_ATTEND	1.037
%F_B	1.066	B_SIZE	1.202
FCEO	1.033	B_MEET	1.156
UB	1.105	%INDEP_B	1.221
SB	1.137	CEO_DUAL	1.042
TB	1.087	%AC_INDEP	1.140
BB	1.104	AC_MEET	1.088
%F_AC	1.024	AC_SIZE	1.022
FCH_B	1.072	AC_ATTEND	1.010
FCH_AC	1.031	BIG4	1.013
F_TEN	1.371	LOSS	1.402
%F_LEV	1.044	CASH	1.043
LEV	1.033	FIRM	1.130
MTB	1.022	ROA	1.366

Table (4.6) Durbin Watson and Breusch– Pagan tests results

Model	Breusch– Pagan		Durbin Watson
	LM Value	Sig.	
ABM	63.129	.000	1.9
REM	52.770	.000	2.1
CS	71.230	.000	2

4.6.1. Selection of study model

Previous studies agreed that panel data might suffer from econometric limitations such as unobservable heterogeneity (Gormley and Matsa, 2014). As stated by Gull et al., (2018), unobservable heterogeneity could be one source of endogeneity which is related to unobservable variables that are correlated with EM and gender diversity variables. A second source of endogeneity is called simultaneity which is the reverse causality between EM and gender diversity variables. Accordingly, OLS regression might provide biased estimates because of these endogeneity issues. Hence, following Kyaw et al., (2015), since the data used in this study is panel, panel data analysis using fixed effects (FE) or random effects models are employed. A vital assumption before choosing between the random and fixed effect is that the unobserved heterogeneity should not be correlated with the independent variables. In order to do so, Hausman (1978) test was conducted to choose between random and fixed effect and the test results preferred the fixed effect estimator over random-effect by rejecting random effects and accepting the presence of time-invariant effects (P-value < 0.05).

Fixed effect is a widely used method in the panel data studies because it helps in controlling the time-invariant and firm specific characteristics endogeneity as well as tackle the unobservable heterogeneity problem while investigating the association between gender diversity and EM (Kyaw et al., 2015; Lo et al., 2017 Green and Homroy, 2018; Dobija et al., 2021).

In addition, Anderson and Van Wincoop (2003) emphasized on the importance of applying fixed effects to control for country-specific attributes. Following Kyaw et al., (2015) and Saona et al., (2018), firm fixed effects is added in the three study models to control for firm-specific characteristics. Firm fixed effects assume that firms' culture does not vary over time (Panzer and Muller, 2015). Time fixed effects is also added to control the unobserved changes over time. An intercept dummies for firm and year were included to capture constant firm and year-specific factors. In addition, in order to overcome the issue of heteroscedasticity, standard errors are clustered by firms. This approach is widely use in the EM literature (e.g., Kyaw et al., 2015; Harakeh et al., 2019; Zalata and Abdelfattah, 2021). As stated by Petersen (2009), in order to address panel data issues, clustered standard errors are effective in providing unbiased estimation.

Alternative methodological approaches were also used in the robustness tests section in order to check if the FE model provided a reliable estimation.

Moreover, in order to achieve the third aim which is to investigate the relationship between female directors' attributes and EM, this study followed Terjesen et al., (2015), Gull et al., (2018), Guedes et al., (2018), Bennouri et al., (2018) and Nekhili et al., (2020) by using propensity score matching suggested by Rosenbaum and Rubin (1983) and system GMM to analyze the matched sample to control endogeneity bias. In fact, most researchers who tested female director's attributes with firms' outcomes applied this approach to make sure that the results are influenced by female directors' attributes and not by any other firms' structural differences.

In particular, researchers claimed that analysing the full sample might not provide an accurate result as firms' structural factors could affect the possible influence of female directors' attributes on EM. Accordingly, following Gull et al., (2018) and Bennouri et al., (2018), in order to control for these differences, propensity score matching is applied (Rosenbaum and Rubin 1983) to match firms with at least one female director with firms that have all male directors which have similar firms' characteristics using the nearest propensity score neighbour method. In order to avoid bad matching, a calliper distance of 1% without replacement (i.e., matching firm that have at least one female director with similar all men directors' firms) is applied to limit the maximum propensity score. A number of recent studies applied this approach to control for endogeneity bias (e.g., Bennouri et al., 2018; Gull et al., 2018; Zalata et al., 2019).

In addition, following the previous studies that linked female directors' attributes and firm's outcomes (Bennouri et al., 2018; Gull et al., 2018; Arıoğlu, 2020), the system GMM regression method is used for the three EM models related to female directors' characteristics as suggested by Arellano and Bover (1995) and Blundell and Bond (1998) as it mitigates the different endogeneity concerns such as reverse causality. This approach is increasingly applied in the accounting literature for controlling endogeneity issue (e.g., Bennouri et al., 2018; Gull et al., 2018; Zalata et al., 2019). The GMM estimation method allows for controlling the endogeneity of all firm-level variables by including lagged right-hand-side variables as instruments (Saona et al., 2020). Furthermore, the GMM estimation is robust to autocorrelation between present and historical values (Elamer et al., 2019). As shown in model 10 and 11, lagged values of the EM variables were added in the models as an explanatory variable as required by the system GMM approach (Gull et al., 2018; Nekhili et al., 2020).

Chapter conclusion

This chapter presented the research methodology applied in this study. First, the sample selection was discussed in details. Next, the research methodology processes were discussed based on Saunders et al., (2016). In general, the positivism philosophy was adopted in this study since the study depends on quantitative approaches to test research hypotheses related to associations between the variables, while interpretivism approach is mostly related to qualitative research. In addition, this study is using the deductive approach because it develops hypotheses based on an existed theory proposed by previous researchers. Also, the archival strategy is applied since the secondary data were collected from different databases.

Furthermore, the Monomethod is applied as a research method since the quantitative method is only used. The longitudinal time horizons are more suitable as research time and horizons since this study used panel data for analysis. Besides, the study variables used in the current study were developed and chosen based on the existed studies and the measurement of these variables was presented as suggested by prior studies.

Also, the study models were developed to make sure that all the study hypotheses are tested and the study objectives are achieved. Then, the validity and reliability of data were checked to make sure that they are suitable for the chosen regression. Finally, based on the previous argument and previous studies, the study models were selected.

CHAPTER FIVE: FINDINGS AND RESULTS

Chapter introduction

The first part of this chapter presents general descriptive statistics for the study variables. Also, univariate analysis is applied to compare the relationships and the significant difference between the means in different groups. In addition, a descriptive comparison according to each country, year and sector are discussed with regards to female director's variables. The second part of the chapter presents the regression analyses' results and linked with research hypotheses.

The first main hypothesis aims to tests the relationship between female directors and CEOs presence and EM practices to prove if female director's behaviour is similar to the common women stereotype. The second main hypothesis focuses on the role of critical mass concept by testing the relationship between female directors' proportion and EM practices while the last main hypothesis goes more in depth by testing the relationship between female directors' attributes and EM practices. Finally, a number of robustness tests were applied to check if the results of the main analyses are reliable.

5.1. Descriptive analysis

Table (5.1) presents the descriptive statistics for the study variables. It is apparent from the table that ABM mean measured using modified jones is close to zero, .013. On the other hand, the mean of REM is .398, indicating that compared to ABM, firms tend to engage more in REM. Moreover, the mean of the unexpected core earnings is around 0 (.002), as they are the residuals from the expectation model. While non-recurring items as a percentage of sales represents 2.3%.

On average, the percentage of female directors of the full sample is 17.43%. Besides, some boards did not have female directors at all while some boards consisted of more than 50% of female directors. This shows that there is a variation of the percentage of female directors among the European corporate boards. Moreover, female CEOs (FCEO) mean represents very low percentage (3%) of the overall sample. Prior studies also documented that female CEOs represent very low percentage (e.g., Gull et al., 2018; Zalata et al., 2019). It was argued that the lack of gender diversity targets for CEO positions in the EU is the main reason behind the modest progress among female CEOs (European Commission, 2016).

With regards to the female directors' proportions, on average, 26.8% of the boards included in the study sample are uniform, 30.2% of the boards are skewed, while 37.5% are tilted and only 5.2% of the boards are balanced. As mentioned in the gender equality report (European

Commission, 2021; page 36) “Despite progress, the gender imbalance in the corporate leadership of most publicly listed companies registered in the EU remains stark”. In addition, table (5.1) illustrates descriptive statistics that are related to female directors’ attributes variables. On average, the percentage of female members on audit committee is 10.56%. The standard deviation is relatively high which indicates that there is a variation of the percentage of female members on audit committees.

With regards to women leadership, around 5.2%, on average, of the firm sample appointed chairwoman on the boards. This represents a very low percentage which implies that although the number of women who have reached to the board level has increased, there is still a resistance toward women leadership as the highest decision-making position in firms. However, the descriptive statistics revealed that audit committee that are chaired by women represents 4.1%.

Moreover, female directors experience on corporate boards measured using their board average tenure median is around 3 years which is within the suggested directors’ tenure to well understand firms’ functions (Bacon and Brown, 1973). In addition, the median related to the percentage of female directors that hold high education level is 60% which supports the previous studies’ argument that women are more likely to have higher education certificate in order to be able to reach high corporate positions.

In addition, 48.6% of female directors have business education background which shows that firms are keen to appoint female directors with higher educational degree and business background. Female directors’ age varied between 26 to 80, this indicates that there is no specific age range for female directors to be appointed on corporate boards. Moreover, on average, the percentage of foreign female directors represents 10%.

According to table (5.1) there is a variation among the board characteristics because the boards sizes included in the sample also vary, for instance, the board size varies between 3 to 28 members, and the mean is 9 members. This supports Lipton and Lorsch (1992) and Jensen (1993) suggestion about the optimal board size which should be around 7 to 9 members. The descriptive statistics also revealed that some boards are active i.e., meet 30 times a year and other boards did not meet at all. With regards to the board attendance, the mean percentage of board’s attendance is quite high (95%) which shows that the board members in the EU firms are

committed to attending the board meetings, a reason for the high attendance percentage might be the increased number of female directors in the EU boards, since female directors are keen to attend the boards meetings (Gul et al., 2011).

The average percentage of independent directors represents (60.79%), this indicates that boards make sure to appoint relatively high number of independent directors on their boards to assure better monitoring mechanisms. Additionally, few boards have combined the role of CEO and chairperson (26%). This shows that firms are keen to separate the role of the CEO and chairperson.

The statistics show that on average, more than half of the audit committees' members are independent. Further, audit committee average size is around 3 members, some firms did not have audit committee due to their small board size, while the maximum number of audit committee members is 12. Average percentage of audit committee attendance is 96.47% which shows that audit committees are active and committed, while the average audit committee number of meetings is 5. This indicates that although audit committee members meet less frequently compared to board meetings, the members are committed to attending these meetings.

With regards firm's characteristics control variables, table (5.1) revealed that the majority of the firms are audited by big audit firms (BIG4), 96%. 26% of the study sample are facing a loss and the operating cashflow mean is .089. Firm size varies between small and large and the mean is 5.151 indicating that on average firms included in the sample are medium sized. Moreover, the table also revealed that firms' leverage mean is around .442, the ROA mean is .068 and market to book ratio is .373.

Table (5.1) Descriptive statistics

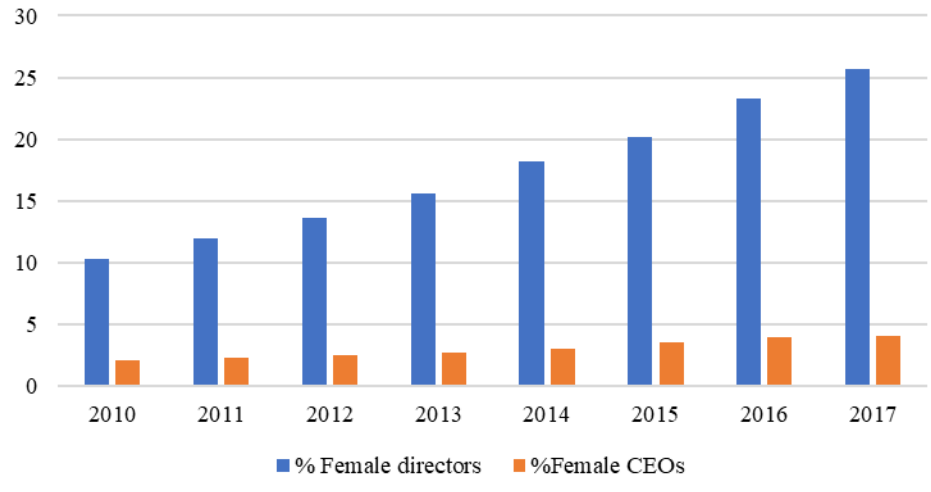
Variables	Min.	Max.	Mean	Median	S.D.
ABM	0	5.083	.013	.025	.719
REM	0	9.397	.398	.530	1.224
UCE	-4.459	4.264	.002	0	.370
NREC	0	.430	.023	0	.284
%F_B	0	63.332	17.433	18.752	.270
FCEO	0	1	.030	0	2.837
UB	0	1	.268	0	.271
SB	0	1	.302	0	.497
TB	0	1	.375	0	.491
BB	0	1	.052	0	.251
FCH_B	0	1	.052	0	.222
F_TEN	0	16.100	3.704	3.091	2.839
%F_LEV	0	100	59.920	60.542	1.919
%F_BS	0	100	48.633	42.251	1.941
F_AGE	26	80	51.577	52	7.546
%F_NAT	0	100	10.252	7.584	1.610
%B_MEET	70	100	95.800	100	3.407
B_SIZE	3	28	9.181	8	3.575
B_MEET	0	30	7.976	7	.371
%B_INDEP	11	100	60.793	56	.790
CEO_DUAL	.0	1	.267	0	.284
%F_AC	0	100	10.562	0	17.502
FCH_AC	0	1	.041	0	.287
%AC_INDEP	0	100	60.988	66.870	10.469
AC_MEET	0	22	5.240	5	2.409
AC_SIZE	0	12	3.484	3	1.202
AC_ATTEND	60	100	96.472	92.587	6.823
BIG4	0	1	.968	1	.433
LOSS	0	1	.260	0	1.310
CASH	-.880	2.434	.089	.054	.300
FIRM	. 0018	9.434	5.151	6.543	.274
ROA	-. 006	3.711	.068	.049	.361
LEV	-. 002	2.943	.442	.435	.295
MTB	-.004	4.012	.373	1.74	.349

5.1.1. Descriptive statistics related to female director's variables

This section illustrates descriptive statistics related to gender diversity variables based on years, sectors and countries. It is apparent from Figure (5.1) below that the mean percentage of female directors on corporate boards has increased throughout the years. In year 2010 the percentage was relatively low 10.33%, and the percentage has slightly increased in the next two years reaching to 13.57%. The percentage of female directors has increased to 25.68% in year 2017. This shows a considerable progress in board gender diversity in the EU countries as stated by Seierstad, et al. (2017), however, a lot of effort is needed in order to reach the proposed 40% of under-represented sex legislation by the European Commission.

Despite the increasing percentage of female director's representation on boards, the representation of female CEOs remains modest. In year 2010, the mean percentage was 2.1% and it has slightly increased over the years reaching to 4.1% in year 2017. Hence, more attention is needed regarding enhancing the representation of female executives. Industry wise, as illustrated in figure (5.2), the mean percentage of female directors was the highest in the communication sector 20.21% while the Technology sector scored the lowest 15.19%. The utilities sector tends to appoint more female CEOs than the other sectors 5%, While materials sector scored the lowest percentage 1.2%. These percentages support researchers' argument regarding female directors are not equally presented across different industries (Kirsch, 2018).

Figure (5.1) Descriptive analysis based on years



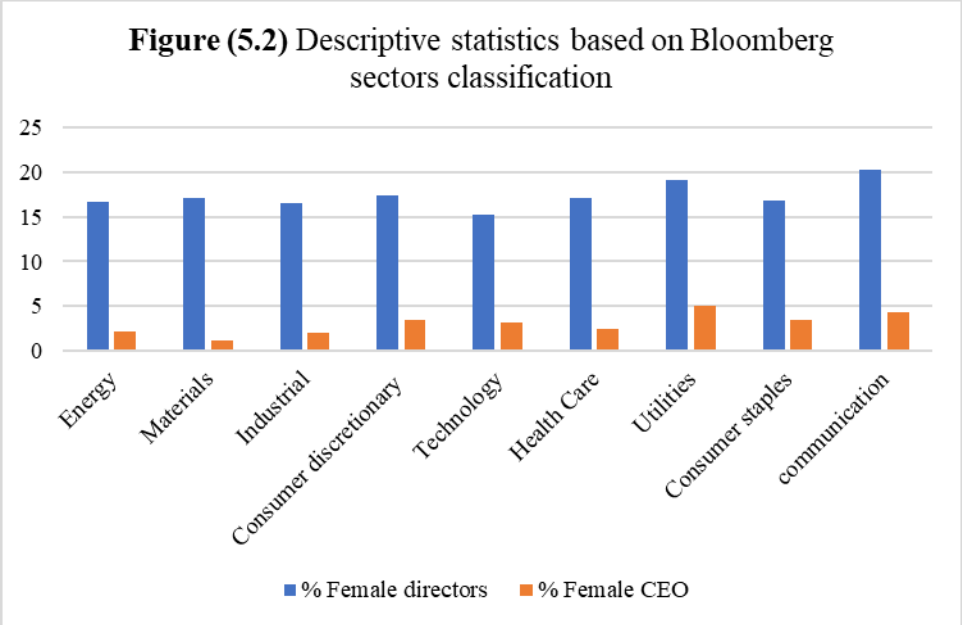


Figure (5.2) Descriptive statistics based on Bloomberg sectors classification

In addition, figure (5.3) below summarizes the descriptive statistics related to the female representation on corporate boards and female CEOs based on the countries included in the study sample. Sweden scored the highest female directors representation mean 24.22% followed by Finland mean 20.33%. The statistics are interesting because the mean of female directors' representation in these countries are high although these countries did not introduce quota with sanction similar to France.

Hence, Sweden and Finland represent good example of countries who are self-regulated and proved efficient in increasing the representation of female board directors. Similarly, Netherlands introduced gender quota in 2013 for large companies, it was described as soft quota because sanctions were not applied to those companies who neglected in achieving the 30% gender quota on their boards, However, Netherlands mean percentage of female directors is relatively higher than other countries included in the sample, 17.54% which also indicates that regardless of applying sanctions or not, the results can be relatively effective.

France scored 18.70% which is the one of the highest mean percentages, this shows that the French legislative policies and the implementation of sanction for non-compliance with the quota to promote women's participation in decision-making positions (corporate boards) has been successful. In addition, for more than ten years, Belgium took big steps toward achieving gender balanced boards. In 2011, Belgium introduced a quota to increase the number of female directors

appointed on corporate boards and sanctions were applied as well. However, more effort is needed to achieve balanced boards. In fact, the below figure (5.3) shows that the mean percentage of female directors is 16.94%.

Although Denmark is well known for gender equality and support to women's rights in different fields (Global Gender Gap Report, 2016), the representation of female directors on corporate boards is still relatively low compared to other countries included in the sample (mean = 14.53%). Furthermore, Denmark did not apply quotas for gender representation on leadership positions in the economic field. Some authors (e.g., Seierstad et al., 2017) argued that the low female representation in the top corporate leadership positions is considered as being at odds with a society enjoying gender equality.

On average, Italy relatively scored low percentage of female directors compared to other countries included in the sample 13.30%. Italy introduced a law called Golfo Mosca in 2012 which aims at implementing gender diversity quota by the year 2015. This law was applied to both executive and supervisory boards of the listed and state-owned companies. Nevertheless, one of the Italian quota drawbacks is that Golfo Mosca law is time-limited (i.e., the law is mandatory until 2022), thus, some researcher argued that the law impact on the increasing the number of female directors might be temporary (Seierstad et al. 2017).

Similarly, Despite Germany action in 2015, adopting a 30% quota which requires supervisory board of companies headquartered in Germany to be consisted of underrepresented gender to enhance board diversity, the descriptive statistics revealed that Germany is behind the other European peers (average = 13.17%). Kirsch (2018) mentioned that the German quota has been widely criticized and there is major resistance among companies to appoint female directors. Moreover, Germany does not apply sanctions for those companies who did not meet the target, this might contribute in achieving low percentage of female directors on supervisory boards compared to the other countries.

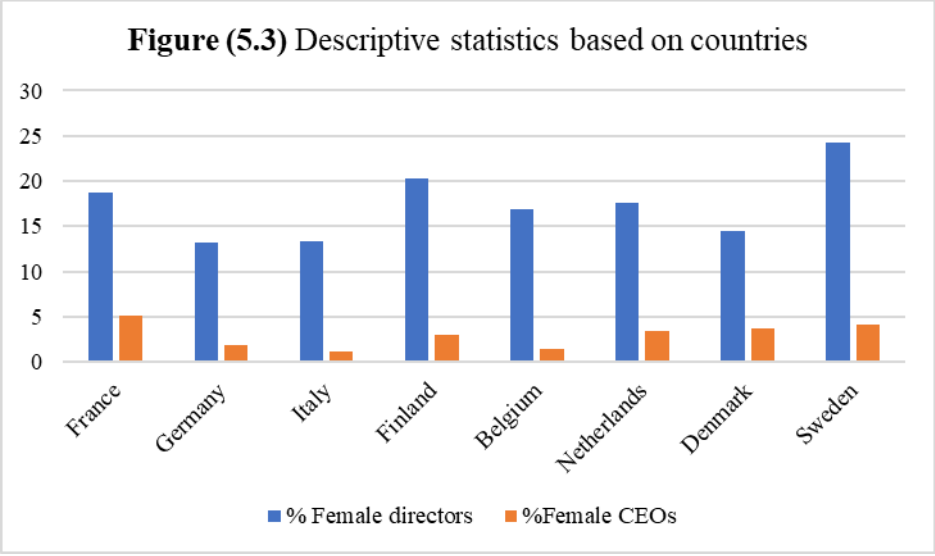
Overall, female director's representation mean show that although many of the European Union countries have taken different actions to enhance female director's representation on boards, the overall mean percentages of female directors is relatively low. The variation of female directors' percentages is justified by Seierstad et al. (2017) who stated that female representation on

corporate board varies due to history and culture and the issuance date of corporate governance code.

The overall means percentages of female CEOs are relatively low. According to the below statistics, France and Sweden scored the highest percentage of female CEOs 5.1%, 4.2% respectively among the other countries included in the sample. This indicates that France and Sweden are keen to appoint women not just as board members but also as executives. Denmark scored 3.7% followed by Netherlands 3.5% and Finland 3%. Whereas Germany, Belgium and Italy scored the lowest percentage of female CEOs, 1.9%,1.5%, and 1.2% respectively.

In general, the descriptive statistics is lower than the statistics provided by the European Commission statistics database and it could be explained as this study includes listed companies while the EU data mainly focused on largest firms every year. Hence, this study may include smaller firms which is not covered in other databases. This justification is supported by Adams (2016) who mentioned that female directors are much underrepresented than what people think and suggested to conduct future studies to explain the reasons why female directors are underrepresented in small firms.

Figure (5.3) Descriptive statistics based on countries

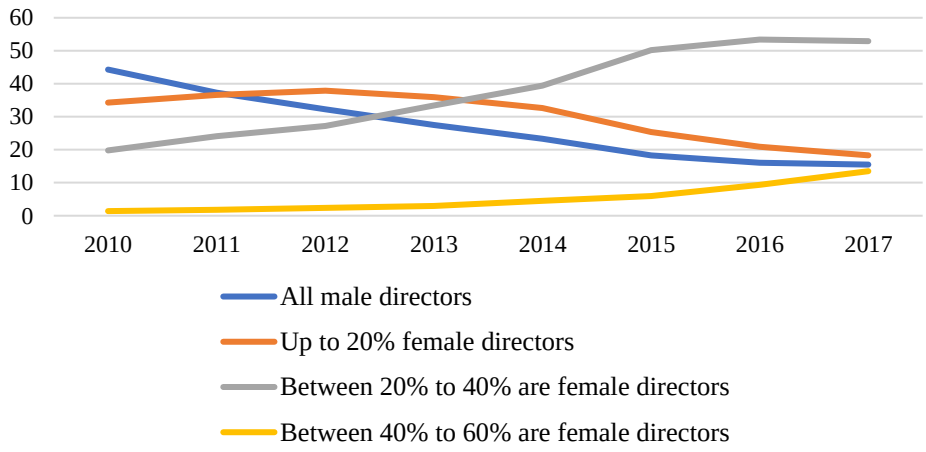


5.1.2. Descriptive statistics related to female director's proportion variables

The below figure (5.4) illustrates descriptive statistics related to the proportion of female directors according to the years included in the study sample. It is apparent from the figure below that the mean percentage of the titled (between 20% to 40%) and balanced female director's (between 40% to 60%) groups on corporate boards has increased throughout the years. While the uniform and skewed groups percentages have been decreasing. This indicates that in recent years, firms tend to increase the number of female directors rather than just appointing at least one female director which argued to be the "tokens". However, there are still boards that consist only of male directors.

In general, figure (5.4) results revealed that there is a variation in the female directors' proportion throughout the years, this could be due to different factors such as countries' culture, economic and political structure as well as the date of introducing board gender diversity policies and targets (Terjesen and Singh, 2008; Seierstad et al., 2017). In addition, this indicates that although the percentage of female directors is relatively high in the European Union countries, the female director's proportion on boards is far from balanced boards. This might be due to the fact that European boards sizes are large in general. However, in 2020, the European Union (EU) started to study plans to indorse mandatory gender diversity quota to enhance the progress of increasing the number of women in leadership positions.

Figure (5.4) Descriptive statistics related to female directors' proportion by year.



5.2. Univariate analysis based on the presence of female directors

Univariate analyses are applied to report descriptive statistics related to the significant mean difference between the variables of the context of gender diverse boards. However, applying univariate analysis alone is not enough because it does not test relationships and does not take into consideration the other related factors. Table (5.2) illustrates descriptive statistics and mean difference between boards that consist of all male members and boards that consist of at least one female director.

Separating the study firms into two groups based on the presence of female directors would provide a better picture of whether the presence of female directors is effective in eliminating EM practices and at the same time provides more information regarding the board and firms characteristics. As stressed by Green and Homroy (2018), the comparison of boards with and without women would provide a better clarification of the board and firms' attributes that could affect women representation on boards.

Table (5.2) illustrates that boards with female directors tend to use less ABM .022, while boards that consist of all male directors tend to use more ABM .058. Likewise, REM proxy mean of all male boards is higher indicating that male directors engage more in REM. UCE mean in both groups is positive but it is more used when the board consist of at least one female director, however, the mean difference is not significant which indicates that regardless if women were members or board or not, UCE are used within the similar level.

Furthermore, table (5.2) show significant differences among all male board members and at least one female director on board with regard to almost all control variables. For example, a significant negative difference is found in number of board meetings, percentage of board independence, CEO duality, Big4, and cashflow. Whereas a significant positive difference is found in board attendance, number of board members, firm loss and firm size.

Table (5.2) Mean difference between boards with at least one female director and all male board directors.

Variables	**≥ 1 female director**	**All male board**	**t-value**
ABM	.022	.058	-3.505***
REM	.196	.268	-4.618***
UCE	.016	.014	.549
NREC	.070	.065	.676
%B_MEET	96.473	95.561	5.636***
B_SIZE	9.931	7.029	6.591***
B_MEET	7.730	8.061	-4.002***
%B_INDEP	41.315	55.63	-4.852***
CEO_DUAL	.125	.181	-6.231***
BIG4	.939	.952	-3.816***
LOSS	.295	.248	4.414***
CASH	.395	.434	-1.839*
FIRM	5.484	2.412	5.149***
ROA	.088	.093	-.935
LEV	.541	.650	-.650
MTB	1.811	1.874	-.120
Observations	7349	2690	

***, **, * represent significance at the 1%, 5% and 10% levels, respectively.

5.2.2. Univariate statistics related female members on audit committees

Table (5.3) presents univariate statistics related to mean difference between audit committees with at least one female member and all male members. The table shows that ABM and REM are the only EM variables that have significant difference between the two groups at 1%. This indicates that when audit committee consists of at least one female member, the ABM and REM levels are eliminated, or in other words, the EM practices that affect the bottom-line earnings are decreased. Moreover, when the committee consisted of at least on female member, the audit committee becomes more active and meet more. In addition, the mean difference showed the bigger the audit committee size and the higher the percentage of audit committee independence, the less likely audit committee include at least one female member. Finally, another significant difference is related to firm size, the mean difference shows that larger firms tend to have female members on their audit committee.

Table (5.3) Mean difference between audit committee with at least one female member and all male members

Variables	≥ 1 female member on AC	All male AC members	t-value
ABM	.013	.030	-3.012***
REM	.265	.272	-2.297***
UCE	1.075	1.084	-.021
NREC	1.789	1.871	-.722
%AC_INDEP	70.644	74.251	-5.639***
AC_MEET	5.570	5.043	8.387***
AC_SIZE	3.403	3.620	-6.898***
AC_ATTEND	96.419	96.563	-.804
BIG4	.948	.956	-.555
LOSS	.260	.259	.140
CASH	.094	.105	-.593
FIRM	4.814	4.369	17.024***
ROA	.094	.075	.131
LEV	.337	.769	-.924
MTB	.874	.802	.567
Observations	1060	8980	

***, ** represent significance at the 1% and 5% levels, respectively.

5.3. Pearson Correlation

Table (5.4) provides an overview of the Pearson correlations between the study variables. Pearson correlation coefficient is a measure of the relationship between two variables strength without taking into consideration the other control variables. Also, Pearson correlation is used to check the multicollinearity issue, as mentioned by Hair et al. (2007), if the correlation is greater than 0.9, a model may suffer from multicollinearity issue. As shown from table (5.4), (5.5) and (5.6), all correlations are below 0.9. Additionally, there is significant positive correlation between REM, ABM and UCE. This gives potential indication that managers are depending on all types of EM at the same time when managing firms' earnings.

ABM is significantly and negatively related to the percentage of female board directors, -.128, while the other EM practices are not significantly related to %F_B. FCEO is negatively related to all EM variables however, not significant. Board size is positively corelated to ABM and REM, .022 and .050 respectively. CEO duality and board independence are negatively and significantly related to ABM and REM. While a significant positive correlation is found between ABM and ROA and Big4 variables. LOSS variable is significantly and positively related to ABM while significantly and negatively related to REM. A significant positive correlation is found between CASH and REM while FIRM variable is negatively related to REM. Finally, ROA is positively related to UCE.

Table (5.4) Pearson correlation related to female directors and CEOs with EM model

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
ABM	1																	
REM	.338**	1																
UCE	.046**	.038**	1															
NREC	.002	.004	.252**	1														
%F_B	-.128**	.005	-.014	-.011	1													
FCEO	-.011	-.009	-.001	.003	.021*	1												
%B_MEET	.019	.008	-.004	-.008	-.020	-.021*	1											
B_SIZE	.022*	.050**	.002	-.003	.137**	-.031**	-.126**	1										
B_MEET	.001	-.084**	-.006	-.003	.065**	.077**	-.096**	-.050**	1									
% INDEP_B	-.057**	-.119**	.000	.016	.104**	.104**	-.030**	-.170**	.317**	1								
CEO_DUAL	-.021*	-.068**	.001	.006	.067**	.008	-.089**	.026*	.038**	.088**	1							
BIG4	.056**	.010	.000	-.004	.103**	.007	-.079**	.065**	.073**	.031**	.004	1						
LOSS	.040**	-.023*	-.001	.003	-.020	.027*	-.010	-.143**	.086**	.010	.076**	.005	1					
CASH	-.010	.087**	-.010	.004	-.005	.006	.008	.082**	-.046**	-.033**	-.045**	-.030**	-.121**	1				
FIRM	.016	-.023*	.001	.003	.116**	.056**	-.062**	.274**	.089**	.093**	.077**	.057**	-.081**	-.009	1			
ROA	.070**	.012	.030**	.002	.023*	-.010	.008	.031**	-.016	-.008	-.020	.000	-.171**	.016	.010	1		
LEV	-.009	-.014	.001	.002	.015	-.010	.009	.024*	.004	-.020	.042**	-.002	.064**	-.009	.028**	-.034**	1	
MTB	.007	-.006	.001	.000	.001	-.008	.005	-.017	-.008	-.027*	-.009	.012	.049**	-.007	-.010	-.030**	.101**	1

**, * correlation is significant at the 1% and 5% respectively.

Table (5.5) Pearson correlation related to female director's proportion and EM model

Variables	UB	SB	TB	BB	ABM	REM	UCE	NREC	%B_ MEETING	B_SIZE	B_MEET
UB	1										
SB	-.265**	1									
TB	-.245**	-.342**	1								
BB	-.080**	-.241**	-.223**	1							
ABM	.104**	-.057**	-.088**	-.052**	1						
REM	.012	.031**	-.034**	-.003	.338**	1					
UCE	.000	.010	-.008	-.004	.014	.038**	1				
NREC	.004	.011	-.014	.002	.002	.004	.252**	1			
%B_ATTEND	.018	-.031**	.019	.004	.019	.008	-.004	-.008	1		
B_SIZE	-.121**	.079**	.012	-.049**	.022*	.050**	.002	-.003	-.126**	1	
B_MEET	.006	-.024*	.011	.020	.001	-.084**	-.006	-.003	-.096**	-.050**	1
%B_INDEP	.020	-.051**	.027*	.027**	-.057**	-.119**	.000	.016	-.030**	-.170**	.317**
CEO_DUAL	-.032**	-.022*	.042**	-.004	-.021*	-.068**	.001	.006	-.089**	.026*	.038**
BIG4	-.103**	.002	.031**	.048**	.056**	.010	.000	-.004	-.079**	.065**	.073**
LOSS	.023*	-.011	.002	-.007	.040**	-.023*	-.001	.003	-0.01	-.143**	.086**
CASH	.001	.003	-.013	.019	-.009	.087**	-.010	.004	0.008	.082**	-.046**
FIRM	-.051**	.001	.019	.014	-.045**	-.073**	-.003	.022*	-.062**	.274**	.089**
ROA	-.006	-.007	-.014	.046**	.070**	.012	.030**	.002	0.008	.031**	-0.016
LEV	.006	.002	-.015	.018	-.009	-.014	.001	.002	0.009	.024*	0.004
MTB	.059**	-.020	-.021	.019	.007	-.006	.001	.000	0.005	-0.017	-0.008

**, * correlation is significant at the 1% and 5% respectively.

Variables	% B_INDEP	CEO_DUAL	BIG4	LOSS	CASH	FIRM	ROA	LEV	MTB
UB									
SB									
TB									
BB									
ABM									
REM									
UCE									
NREC									
%B_ATTEND									
B_SIZE									
B_MEET									
%B_INDEP	1								
CEO_DUAL	.088**	1							
BIG4	.031**	0.004	1						
LOSS	0.01	.076**	.005	1					
CASH	-.033**	-.045**	-.030**	-.121**	1				
FIRM	.093**	.077**	.057**	-.081**	-.009	1			
ROA	-.008	-0.02	0	-.171**	.016	0.01	1		
LEV	-0.02	.042**	-.002	.064**	-.009	.028**	-.034**	1	
MTB	-.027*	-0.009	.012	.049**	-.007	-0.01	-.030**	.101**	1

Table (5.6) Pearson correlation related to female directors' attributes and EM model

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	ABM	1													
2	REM	.338**	1												
3	UCE	.014	.038**	1											
4	NREC	.002	.004	.252**	1										
5	%F_B	-.128**	.005	-.014	-.011	1									
6	FCH_B	-.020	-.052**	.001	.004	.108**	1								
7	F_TEN	-.038*	-.053**	.018	.019	.046**	.088**	1							
8	%F_LEV	.006	-.091**	.003	.012	.336**	.072**	-.010	1						
9	%F_BS	-.066**	.004	.013	.016	.326**	.000	.031*	.365**	1					
10	F_AGE	-.029*	.002	.033**	.004	.095**	.085**	.155**	.013	.030*	1				
11	%F_NAT	.004	-.043**	.002	.006	.180**	.077**	.015	.313**	.114**	.085**	1			
12	%B_MEET	.019	.008	-.004	-.008	-.020	.005	-.023	-.005	-.018	-.015	-.048**	1		
13	BSIZE	.022*	.050**	.002	-.003	.137**	-.046**	.056**	-.059**	.234**	.004	.023	-.126**	1	
14	B_MEET	.001	-.084**	-.006	-.003	.065**	.091**	-.023	.213**	.040**	-.012	.058**	-.096**	-.050**	1
15	%B_INDEP	-.057**	-.119**	.000	.016	.104**	.082**	-.018	.389**	.032**	.053**	.271**	-.030**	-.170**	.317**
16	CEO_DUAL	-.021*	-.068**	.001	.006	.067**	-.039**	.010	.137**	.000	.003	-.026*	-.089**	.026*	.038**
17	%F_AC	-.039**	-.059**	.000	.007	.209**	.070**	.009	.448**	.235**	.053**	.226**	-.015	.033**	.131**
18	FCH_AC	.020	-.033*	-.002	.009	.148**	.054**	.009	.209**	.157**	.041**	.042**	.042**	-.122**	.130**
19	%AC_INDEP	.007	-.049**	.001	.023	.027*	.057**	-.018	.171**	-.018	.046**	.120**	-.020	-.160**	.134**
20	AC_MEET	.003	-.019	-.003	.002	.021	.053**	.037*	.096**	.167**	.034*	.026	-.065**	.178**	.270**
21	AC_SIZE	.020	.033**	.005	-.001	.013	-.072**	.007	.026	.167**	.048**	.059**	-.065**	.455**	-.038**
22	AC_ATTEND	.035**	-.022	-.001	-.003	.021	.008	.009	.039**	-.034*	-.022	-.032*	.460**	-.082**	.010
23	BIG4	.056**	.010	.000	-.004	.103**	.001	-.010	.044**	.043**	.013	.075**	-.079**	.065**	.073**
24	LOSS	.040**	-.023*	-.001	.003	-.020	.016	-.085**	.023	-.021	-.033**	-.058**	-.010	-.143**	.086**
25	CASH	-.010	.087**	-.010	.004	-.005	-.016	.005	-.008	.038**	.007	.009	.008	.082**	-.046**
26	FIRM	.016	-.023*	.001	.003	.116**	.005	.027	.077**	.114**	.036**	.098**	-.062**	.274**	.089**
27	ROA	.070**	.012	.030**	.002	.023*	-.002	.059**	-.003	-.002	.017	.006	.008	.031**	-.016
28	LEV	-.009	-.014	.001	.002	.015	.001	-.002	.001	.031*	-.016	-.025*	.009	.024*	.004
29	MTB	.007	-.006	.001	.000	.001	-.004	-.016	-.004	.043**	-.011	-.013	.005	-.017	-.008

	Variables	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	ABM															
2	REM															
3	UCE															
4	NREC															
5	%F_B															
6	FCH_B															
7	F_TEN															
8	%F_LEV															
9	%F_BS															
10	F_AGE															
11	%F_NAT															
12	%B_MEET															
13	BSIZE															
14	B_MEET															
15	%B_INDEP	1														
16	CEO_DUAL	.088**	1													
17	%F_AC	.259**	.105**	1												
18	FCH_AC	.125**	.022	.377**	1											
19	%AC_INDEP	.462**	.051**	.115**	.082**	1										
20	AC_MEET	.016	-.041**	.086**	.018	.036**	1									
21	AC_SIZE	-.079**	-.094**	-.031*	-.073**	-.201**	.154**	1								
22	AC_ATTEND	.000	.058**	.010	.020	.027*	-.015	-.077**	1							
23	BIG4	.031**	.004	.058**	.062**	.063**	.114**	.032*	-.001	1						
24	LOSS	.010	.076**	.010	.007	.008	-.007	-.127**	.033**	.005	1					
25	CASH	-.033**	-0.045	.004	-.011	-.013	.002	.033**	-.045**	-.030**	-.121**	1				
26	FIRM	.093**	.077**	.015	-.027	.027*	.189**	.145**	-.055**	.057**	-.081**	-.009	1			
27	ROA	-.008	-.020	-.003	.035*	-.004	.021	.061**	-.021	.000	-.171**	.016	.010	1		
28	LEV	-.020	.042**	.011	.009	-.014	.011	.014	.012	-.002	.064**	-.009	.028**	-.034**	1	
29	MTB	-.027*	-.009	-.016	-.003	.009	-.014	-.015	-0.027	.012	.049**	-.007	-.010	-.030**	.101**	1

5.4. Multivariate Analyses

In this section, the data analysis results are presented and linked with the study hypotheses developed in chapter three. However, the interpretation and discussion of the study results as well as comparing the results with the previous studies findings are discussed in chapter six. The results are presented in the following sections starting from the first main hypothesis moving to the second and third hypotheses.

The first main hypothesis was developed to investigate female directors and female CEOs attitude toward risky and unethical EM practices, while the second hypothesis was developed to investigate the relationship between female directors' proportion and EM practices and finally, the last main hypothesis was developed to investigate the relationship between female directors' attributes and EM practices. Furthermore, under each section, three EM models results are presented starting from ABM, REM and CS.

The results of the control variables are discussed under the first three models since the results are broadly similar to the other models. The adjusted R^2 of the estimated models are varying and mostly low, however, the adjusted R^2 levels are common and considered normal in EM regression models (Gavious et al. 2012; Arun et al., 2015; Zalata et al., 2019). As stated by Kliestik et al., (2020), the adjusted R^2 values of EM models are generally not high. However, Locke and Wellalage (2014) argued that a lot of data can be generated as well even R^2 value is low.

5.4.1. Testing Hypotheses: female directors/CEOs attitude toward Earnings management:

The aim of this hypothesis is to investigate the relationship between female directors and female CEOs and EM practices to see if female directors' attitude is similar to women stereotype regarding risky and unethical issues. In order to achieve the aim, this section presents the regression analysis results and link it with the study hypotheses. Table (5.7) illustrates the FE regression results concerning ABM, REM and CS. The t-values are calculated based on clustered standard errors at the firm level.

The regression results of ABM model are shown in table (5.7), column 1. The ABM level is estimated using modified Jones model as suggested by Dechow et al., (1995) which is presented in equation (1), page 98. As shown in table (5.7), there is a significant negative relationship at 1% level between the percentage of female directors on corporate boards (%F_B) and ABM. Similarly, a negative relationship at 5% significance level was also found between female CEOs and ABM. In addition, as shown in table (column 2), %F_B is negatively and significantly related to REM at 5% level (t value = -2.080).

Furthermore, FCEOs are found to be significantly and negatively related to REM at 5% level. With regards to CS, in order to test the relationship between the female directors and female CEOs and CS, the study focuses on the coefficient of NREC and interaction between NREC and gender diversity related variables (i.e., NREC×%F_B and NREC×FCEO). The results illustrated in table (5.7) showed that the coefficient of NREC is positive and significant at 1%, indicating that recurring expenses were misclassified into non-recurring expenses within the income statement, hence, the core earnings might be inflated (Zalata et al., 2019). The variable of interest, NREC×%F_B, is positive and significant at 10% level, indicating that female directors prefer to engage in CS practices. Similarly, the regression results showed that when the CEO is a woman, the magnitude of CS is increased significantly at 1%. The above results are consistent with the research hypotheses, **H1.1** and **H1.2**, therefore, these hypotheses are accepted.

With regards to control variables results, as shown in the table, a negative and significant relationship is found between board size (B_SIZE) and ABM at 1%. Similarly, there is a significant negative relationship between board independence and ABM at 10%. On the other hand, other board characteristics related to board activity such as the percentage of board attendance and

number of board meetings are not significantly related to ABM. On the other hand, a significant positive relationship is found between CEO duality and ABM at 10% (t value =1.831).

As shown from the table, unlike the expectation, a significant positive relationship is found between Big4 auditing firms and ABM at level 5%. In addition, all firm characteristics are significantly related to ABM. Firm's loss is positively and significantly at 1% level, while a negative and significant relationship is also found between firm size and ABM at 1% level. Firm's leverage is found to be negatively and significantly related to ABM at level 10%. In addition, firms' MTB is significantly and positively related to ABM at 5% level and a significant negative relationship is found between firms' cashflow and ABM at 10%. Lastly, a significant positive relationship is found between ROA and ABM at 5% (t value = 2.079).

In terms of REM, the results obtained from table (5.7) revealed that similar to ABM, a significant negative relationship is found between board size and REM at 1% level. Moreover, board independence is positively and significantly related to REM at 10% level. Also, a positive relationship is found between CEO duality and REM at 5% level. On the contrary, board meeting attendance is negatively related to REM (%B_MEET), however, the relationship is insignificant, whereas the number of board meetings is significantly and negatively related to REM at 10% level.

In addition, an insignificant relationship is found between firms who are audited by Big4 audit firms and REM. Besides, as reported in the above table, a significant and negative relationship is found between firms' operating cashflow and REM at 10% level. Furthermore, according to the below table, no significant relationship is found between firm's loss and REM. With regards to firms' size, a significant positive relationship is found between firm size and REM at 1%. The table also reveals a significant negative relationship between ROA and REM at 1%. In addition, firm's leverage is positively related to REM, whereas MTB value is negatively related to REM. However, the results are insignificant.

All board variables result revealed significant relationship with CS with exception to the board attendance. More precisely, board size, board independence and CEO duality variables are positively and significantly related to CS at 10%, 1% and 1% levels respectively. On the contrary, only the number of board meetings is negatively and significantly related to CS at 1% level.

Finally, with regards to firms' characteristics, only CASH and FIRM are significantly related to CS practices. CASH is found to be negatively related at 5% significance level. Moreover, FIRM is positively related to CS at 10% significance level.

Table (5.7) Fixed-effect panel regression results

	(1)		(2)		(3)	
Variables	**ABM model**		**REM model**		**CS model**	
	Coeff.	**t-value**	**Coeff.**	**t-value**	**Coeff.**	**t-value**
NREC					.047***	3.233
NREC×%F_B					.020*	1.797
NREC×FCEO					.031***	2.860
%F_B	-.062***	-2.983	-.024**	-2.080	-.004	-.295
FCEO	-.053**	-2.166	-.023**	-2.235	-.010	-.856
%B_MEET	.010	.524	-.002	-.971	.014	.509
B_SIZE	-.057***	-2.758	-.008***	-2.869	.027*	1.946
B_MEET	.006	.316	-.026*	-1.903	-.042***	-3.562
%B_INDEP	-.042*	-1.773	.023*	1.983	.045***	3.611
CEO_DUAL	.022*	1.831	.021**	2.080	.042***	3.941
BIG4	.037**	2.143	.013	1.363	-.010	-.826
LOSS	.066***	3.224	.009	.850	-.006	-.441
CASH	-.021*	-1.688	-.019*	-1.726	-.024**	-2.368
FIRM	-.114***	-4.113	.081***	4.391	.022*	1.831
ROA	.022**	2.079	-.037***	-3.389	-.016	-1.190
LEV	-.039*	-1.753	.001	.061	-.011	-.863
MTB	.019**	2.439	-.012	-1.248	.010	.871
Constant	.036***	3.114	.022**	1.716	-.019*	-1.653
Firm fixed effect	Included		Included		Included	
Year fixed effect	Included		Included		Included	
Regression F	10.124***		7.303***		8.682***	
Adj. R^2	25.3%		16.1%		15.4%	
No. observation	10018		9986		10040	
Maximum VIF	1.985					

***, **, * represent significance at the 1%, 5% and 10% levels, respectively.

5.4.1.1. Robustness tests

Alternative model specifications to control endogeneity

A number of carefully formulated robustness tests were used to deal with endogeneity issues and check if the fixed effect model results are reliable. Prior studies documented that endogeneity could be a serious econometric limitation related to panel data (Roberts and Whited, 2013). Moreover, it is widely known in the accounting research that the reliability of the regression results might be highly affected by endogeneity issue (Gippel et al., 2015). More precisely, a recent

literature stream raised the issue of endogeneity between board attributes and EM practices (e.g., Kyaw et al., 2015; Gull et al., 2018; Saona et al., 2018; Zalata et al., 2019).

The endogeneity issue occurs when the direction of the causality between independent variables and dependent variable could be reversed, which means that the dependent variable influences the independent variable (Saona et al., 2018). Panzer and Muller (2015) argued that the relationship between EM and gender diversity in the boardroom could be endogenous due to the reverse causality. The authors further explained that it is possible that firms with high ethical standards have conservative EM practices and at the same time are more likely to appoint female directors.

Other reasons might cause the endogeneity problem such as omitted variables that are correlated with the appointment of female directors/CEOs as well as EM (Zalata et al., 2019). Example of omitted variables includes the corporate culture which might influence the relationship between female directors and firms' outcome, or maybe well-performing companies might appoint more female directors on their boards (Kirsch, 2018). On the other hand, Ryan and Haslam (2005) suggested that firms with bad performance tend to appoint more female directors to their boards, i.e., the "glass cliff phenomenon".

Two-stage estimation approach

Although fixed effects regression could reduce endogeneity related to omitted variables, it was claimed that the endogeneity issue related to reverse causality remains. However, two-stage model by Heckman (1976) approach is a widely employed approach which tackles the potential reversed causality (Srinidhi et al., 2011; Gracia Lara et al., 2017). Accordingly, following Srinidhi et al., (2011), Lara et al., (2017), Li and Li (2020) and Zalata and Abdelfattah (2021), the study models were re-estimated using two-stage model to make sure that the fixed effect regression results are robust.

First, a probit model was estimated in order to capture the recruitment of female directors on board. The dependent variable of this model is a variable equal to one if firms have at least one female director or equal to zero otherwise. Also, the percentage of female directors in the sectors is included to control the influence of female directors' appointment (Green and Homroy, 2018). The percentage of female directors in the sectors has been commonly used by prior researchers

to overcome the omitted variables issue (e.g., Srinidhi et al., 2011; Liu et al., 2014; Adams, 2016; Zalata et al., 2019).

In addition, firm and board related variables were also controlled in the model. Inverse Mills ratio (IMR) will be estimated from the probit model which will be then included as a control variable to ABM, REM and CS models. After controlling the IMR for endogeneity issues in the three models, the reported results of the second-stage regression in table (5.8) are very similar to the main analysis results indicating that after controlling the reverse causality issue, the results are still robust.

Table (5.8) Two-stage model results

	(1)		**(2)**		**(3)**	
Variables	**ABM model**		**REM model**		**CS model**	
	Coef.	**t-value**	**Coef.**	**t-value**	**Coef.**	**t-value**
NREC					.076**	2.572
NREC×%F_B					.020*	1.714
NREC×FCEO					.019*	1.804
%F_B	-.064***	-2.820	-.026**	-2.356	-.013	-1.028
FCEO	-.027**	-2.241	-.042***	-3.199	.016	1.343
%B_MEET	.014	1.144	.002	.199	.031	1.452
B_SIZE	-.040***	-2.884	-.045***	-3.285	.036***	3.051
B_MEET	-.011	-.903	-.033***	-2.928	-.035***	-3.689
%B_INDEP	-.029**	-2.011	.042***	2.940	.052***	3.620
CEO_DUAL	.026**	1.957	.100***	8.427	.143***	3.355
BIG4	.028**	2.388	.015	1.308	.018	1.574
LOSS	.025*	1.773	-.008	-.707	-.016	-1.297
CASH	-.031**	-2.230	-.037*	-1.790	-.050***	-4.246
FIRM	-.045***	-3.121	.041***	4.184	.017*	1.946
ROA	-.018*	-1.657	-.021*	-1.872	-.007	-.561
LEV	-.021*	-1.903	-.012	-1.015	-.016	-1.152
MTB	.003	.278	-.012	-1.006	-.007	-.580
IMR	.024**	2.172	.033**	2.409	.024**	2.283
Constant	.020**	2.020	.020*	1.780	-.017*	-1.727
FIRM	Included		Included		Included	
YEAR	Included		Included		Included	
Regression F	14.335***		11.435***		13.536***	
Adj. R^2	28.3%		19.7%		16.2%	
No. observation	10018		9986		10040	
Maximum VIF	1.985					

***, **, * represent significance at the 1%, 5% and 10% levels, respectively.

Alternative EM proxies

Previous researchers were always interested in testing EM models that could provide unbiased estimation of ABM (e.g., Dechow et al. 1995; Kothari et al. 2005; Doukakis, 2014), REM (e.g., Roychowdhury, 2006; Cohen and Zarowin 2010; Zang, 2012; Khuong et al., 2019) and CS (e.g., McVay, 2006; Fan et al., 2010) estimation models.

In this study, EM estimation models for the three methods were selected based on the commonly applied by the previous studies. However, focusing on one estimation model to detect EM may not be an adequate approach, therefore, in order to provide robust results with regards to EM models, this section presents alternative proxies used for ABM, REM and CS to check if they were more effective in the detection of EM practices since previous studies argued that there are no perfect models (Keung and Shih, 2014).

Alternative ABM proxy

This study focuses mainly on the modified Jones model since it is the most common ABM model in the literature (Dechow et al. 1995; Kothari et al. 2005; Doukakis, 2014). To test the robustness of the modified Jones model findings, Raman and Shahrur (2008) model is applied. Raman and Shahrur (2008) proposed a more recent model that could estimate the discretionary accruals. Many recent studies have adopted this model to estimate the level of discretionary accruals (e.g., Lakhal et al. 2015; Triki Damak, 2018; Bouaziz et al, 2020). Raman and Shahrur (2008) developed the modified Jones Model by adding ROA to control for firms' performance as suggested by Kothari et al., (2005) and book to market ratio to control for firm's growth as recommended by McNichols (2002).

The discretionary accruals are estimated as the models' residuals. As presented in table (5.9), overall, the alternative ABM model results are consisted with the modified Jones model results indicating that modified Jones model results are robust.

Table (5.9) Alternative EM proxies regression results

Variables	(1) ABM		(2) REM		(3) CS	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
NREC					.075***	3.194
NREC×%F_B					.025***	2.377
NREC×FCEO					.031**	2.284
%F_B	-.033***	-2.903	-.032***	-2.685	.000	.019
FCEO	-.155***	-2.678	-.020*	-1.711	.004	.298
%B_MEET	.012	.615	.010	.902	.000	.020
B_SIZE	-.049***	-2.607	-.016	-1.340	.031***	2.608
B_MEET	-.011	-.573	.025**	2.184	-.022**	-1.987
%B_INDEP	-.048**	-2.069	-.032**	-2.330	.223**	2.154
CEO_DUAL	.037***	3.001	.007	.535	.039***	3.775
BIG4	.038**	2.166	.004	.382	.000	.001
LOSS	.033*	1.711	-.001	-.062	-.005	-.468
CASH	-.047**	-2.270	-.027**	-1.988	-.013	-1.324
FIRM	-.057*	-1.835	.012	.992	.020*	1.843
ROA	.023**	1.959	-.037***	-3.007	-.010	-.913
LEV	-.029***	-3.110	-.020*	-1.799	-.017	-1.343
MTB	-.026***	-2.870	-.012	-1.026	.001	.089
Constant	.033**	2.106	.033**	2.064	-.033*	-1.666
Firm fixed effect	Included		Included		Included	
Year fixed effect	Included		Included		Included	
Regression F	8.097***		5.180***		9.373***	
Adj. R^2	20%		18.5%		14.5%	
No. observations	10018		9986		10040	
Maximum VIF	1.985					

***, **, * represent significance at the 1%, 5% and 10% levels, respectively.

Alternative REM proxy

In this study, a comprehensive REM proxy was used that includes three REM practices as suggested by Roychowdhury (2006). However, some researchers argued that some activities would lead to abnormally high production costs and at the same time would result in abnormal low cashflow from operations, hence, having one aggregate REM proxy would result in double counting (Cohen and Zarowin 2010; Zang, 2012; Khuong et al., 2019).

Accordingly, in order to check if the aggregate REM proxy results used in the main analyses are robust, another aggregate measure is adopted as suggested by Cohen and Zarowin (2010) and Zang (2012) which is the total of abnormal production costs proxy and abnormal reduction of discretionary expenditures only. Huang et al., (2020) argued that the abnormal operating cashflow is not included in this aggregate proxy because the other REM methods could possibly have reverse effects on operating cashflow (Roychowdhury, 2006). As shown in table (5.9), %F_B and FCEO coefficients are negatively related to the suggested aggregate REM measure and significant at 1% and 10% respectively. The results are consistent with main findings which indicates that even after removing the abnormal cashflow from operations, the results are qualitatively the same.

Alternative CS model

The current study used the modified McVay (2006) model as Fan et al., (2010) suggested by removing the current accruals in order to estimate classification shifting practices through misclassification of recurring expenses. However, Athanasakou et al. (2009) suggested another modification on McVay (2006) model to avoid biased results by replacing total accruals with working capital accruals by subtracting depreciation expense and other non-recurring items from total accruals.

Accordingly, as robustness analysis, a re-estimation was done to the unexpected core earnings (UCE) by substituting the total accruals with working capital accruals. Following Zalata et al., (2019), the current working accrual accruals as well as the lagged working capital accruals were used for estimating UCE. The results are illustrated in table (5.9). The results are similar to the main CS regression model used which indicates that the regression results are not biased and provides evidence that the reported findings from the main analysis are robust.

Blau index:

Gender diversity on board is also measured using another common diversity measure which is the Blau index of diversity (Blau, 1977). It is one of the most employed measure for diversity as variety (Joecks et al., 2013; Abad et al., 2017). The Blau index is measured as follows:

Equation (12)

$$H_{i,t} = 1 - \sum_{c=1}^{c} P_{c,i,t}^{2}$$

where the H is the diversity index equals value between 0 and 1. c represents the two gender categories (male and female members), and P squared is the squared proportion of directors in each gender category c of firm i at year t.

The Blau index measure would vary between 0 (no heterogeneity) and 0.5 (complete heterogeneity; Miller and Triana, 2009). In other words, when Blau index is 0 it means that there is no gender diversity at all (i.e., there are only male members or female members on the board), and when Blau index is 0.5, there is an equal proportion of male and female members on the board.

Table (5.10) displays the regression results when the Blau diversity index is used as gender diversity on corporate boards measure. All EM variables are significantly related to Blau index. ABM and REM are negatively related while CS is positively related. This gives another evidence that when the board is highly gender diversified, the more likely ABM and REM are constrained while CS are more likely to be applied to influence firms' earnings. Hence, the results are robust.

Table (5.10) Robustness analysis using Blau diversity index

Variables	(1) ABM model		(2) REM model		(3) CS model	
	Coef.	**t-value**	**Coef.**	**t-value**	**Coef.**	**t-value**
NREC					.079***	3.280
NREC× BLAU					.047**	2.545
BLAU	-.334***	-2.700	-.021*	-1.885	.013	.530
%B_MEET	.012	.615	.013	.676	-.011	-1.003
B_SIZE	-3.783***	-4.970	-.033***	-2.867	-.020*	-1.766
B_MEET	-.011	-.568	-.008	-.433	.024	1.344
%B_INDEP	-.049**	-2.070	-.050**	-2.127	.038***	2.936
CEO_DUAL	.024**	2.053	.053**	1.951	.019*	1.756
BIG4	.038**	2.165	.038**	2.174	-.006	-.609
LOSS	.047**	2.267	.026*	1.685	.010	.997
CASH	-.003	-.279	-.029*	-1.827	-.054***	-4.960
FIRM	-.068***	-5.725	-.020	-1.638	-.019*	-1.711
ROA	.015	1.183	-.002	-.154	-.025	-.934
LEV	.036*	1.783	.039***	2.945	-.024	-.877
MTB	.034***	2.964	.029*	1.914	.016	1.502
Constant	.043**	2.345	.035*	1.861	.030*	1.657
FIRM	Included		Included		Included	
YEAR	Included		Included		Included	
Regression F	9.148***		7.349***		8.624***	
Adj. R^2	20%		16.1%		13.2%	
No. observation	10018		9986		10040	
Maximum VIF	1.985					

***, **, * represent significance at the 1%, 5% and 10% levels, respectively.

5.4.2. Testing Hypothesis: female directors' proportion and EM:

The second aim of this study is to examine the extent to which the critical mass of female directors can influence EM practices. In order to achieve the aim, this section presents the regression analysis results and link it with the study hypotheses.

As illustrated in table (5.11), when the boards are fully dominated by male directors or consisted of skewed proportion of female directors, a significant positive relationship is found with ABM at 5% and 10% level respectively (column 1). On the contrary, when the percentage of female directors increases and reaches between 20% to 40%, the relationship with the ABM becomes significantly negative at 1%. However, when boards become gender balanced, the relationship is still negative but insignificant.

In the second column, the findings will reveal whether the influence of female directors' proportion on REM will be similar to ABM or not. The regression results of REM model are shown in table (5.11), column 2. In general, the regression results related to REM are similar to ABM. Uniform and skewed boards are positively and significantly related to REM at 1% and 5% levels. However, when the proportion of female directors increases to more than 20%, the relationship becomes significantly negative at 1% level, while balanced board is negative but insignificantly related to REM.

The third column in table 5.11 is related to the relationship between female director's proportion and CS practice. It is important to check if the proportion of female directors would have a different response with regards to CS as a low risk and sophisticated EM method compared to the previous two EM methods (Zalata et al., 2019). The CS regression results of CS model are shown in table (5.11, column 3). The CS proxy was estimated using equation (5) in page 101.

In order to investigate the association between female director's proportion and CS, the study focuses on the coefficient of NREC and interaction between NREC and female director's proportion related variables. The results illustrated in table (5.11) showed that the coefficient of NREC is positive and significant at 1%, indicating that recurring expenses were misclassified into non-recurring expenses within the income statement, hence, the core earnings might be inflated (Zalata et al., 2019).

The findings showed that unlike ABM and REM results, uniform board are significantly and negatively associated with CS practices indicating that boards consisting only of male directors tend to reduce the CS practices. Likewise, when the board is skewed, a negative relationship at 10% level is revealed. However, when the proportion of female directors increased and became tilted, the relationship becomes significantly positive with CS practices at 5% level. However, similar to ABM and REM, when the board becomes gender balanced, the relationship becomes insignificant. Based on the abovementioned results and consistent with the critical mass theory, ***H1.3, H1.4, H1.5*** are accepted, while ***H1.6*** is rejected.

Table (5.11) Fixed effect regression results related to the female directors' proportion based on Kanter (1977) classification and EM

Variables	(1) ABM model		(2) REM model		(3) CS model	
	Coefficient	**t-value**	**Coefficient**	**t-value**	**Coefficient**	**t-value**
NREC					.058***	4.243
NREC × UB					-.025*	-1.786
NREC × SB					-.019*	-1.684
NREC × TB					.052**	2.280
NREC × BB					.032	1.321
UB	.029**	2.287	.038***	3.011	.005	.225
SB	.022*	1.841	.026**	2.167	.007	.565
TB	-.046***	-4.836	-.039***	-4.233	-.007	-.620
BB	-.015	-1.219	-.016	-1.214	.003	.246
%B_MEET	-.019	-1.580	-.013	-.987	-.007	-.579
B_SIZE	-.084**	-2.360	-.024**	-2.050	.024*	1.998
B_MEET	.015	1.262	-.047***	-3.888	-.034***	-2.744
%B_INDEP	-.035***	-2.877	.023*	1.658	.021*	1.718
CEO_DUAL	.025**	1.998	.020**	2.097	.029**	2.277
BIG4	.041***	3.160	-.001	-.081	-.008	-.864
LOSS	.050***	4.163	.017	1.384	.007	.571
CASH	-.008	-.906	-.026*	-1.867	-.044***	-3.735
FIRM	-.040**	-1.920	.067***	3.169	.031**	2.393
ROA	.023**	1.948	-.025**	-2.102	.001	.096
LEV	.001	.048	.006	.487	.002	.177
MTB	.004	.335	-.007	-.604	.007	.719
Constant	.052**	2.501	.041***	3.370	-.041**	-2.073
Firm fixed effect	Included		Included		Included	
Year fixed effect	Included		Included		Included	
Adj. R^2	28.9%		15.3%		20.1%	
Regression F	15.415***		13.669***		11.434***	
No. observation	10018		9986		10040	
Maximum VIF	1.366					

***, **, * Statistical significance at 1%, 5% and 10% respectively.

5.4.2.1. Robustness tests

Two-stage estimation

Although fixed effects regression could reduce endogeneity related to omitted variables, it was claimed that the endogeneity issue related to reverse causality remains. However, two-stage model by Heckman (1976) approach is a widely employed approach which tackles the potential reversed causality (Srinidhi et al., 2011; Gracia Lara et al., 2017). Accordingly, following Srinidhi et al., (2011), Lara et al., (2017) and Zalata and Abdelfattah (2021), the study models were re-estimated using two-stage model to make sure that the fixed effect regression results are robust.

First, a probit model was estimated in order to capture the recruitment of female directors on board. The dependent variable of this model is a variable equal to one if firms have at least one female director or equal to zero otherwise. Also, the percentage of female directors in the sectors is included to control the influence of female directors' appointment (Green and Homroy, 2018). The percentage of female directors in the sectors has been commonly used by prior researchers to overcome the omitted variables issue (e.g., Srinidhi et al., 2011; Liu et al., 2014; Adams, 2016; Zalata et al., 2019).

In addition, firm and board related variables were also controlled in the model. Inverse Mills ratio (IMR) will be estimated from the probit model which will be then included as a control variable to ABM, REM and CS models. After controlling the IMR for endogeneity issues in the three models, the reported results of the second-stage regression in table (5.12) are very similar to the main analysis results indicating that after controlling the reverse causality issue, the results are still robust.

In general, the reported results in table (5.12) are qualitatively similar to the main analysis results indicating that after controlling the reverse causality issue, the results are still robust.

Table (5.12) Two-stage model results related to the proportion of female directors.

	(1)		(2)		(3)	
Variables	**ABM model**		**REM model**		**CS model**	
	Coefficient	**t-value**	**Coefficient**	**t-value**	**Coefficient**	**t-value**
NREC					.248***	4.837
NREC × UB					-.312*	-1.885
NREC × SB					-.095*	-1.667
NREC × TB					.631***	3.407
NREC × BB					.035	1.358
UB	.021**	2.349	.435**	2.647	.012	.094
SB	.142**	2.275	.203**	2.280	.005	.569
TB	-.569***	-3.634	-.370***	-4.014	-.021	-.856
BB	-.385	-1.633	-.113	-1.258	.185	.173
%B_MEET	-.570	-1.229	-.089	-.890	-.070	-.567
B_SIZE	-.675**	-2.320	-.152**	-2.350	.303*	1.943
B_MEET	.487	1.360	-.159***	-3.031	-.098***	-2.747
%B_INDEP	-.491*	-2.157	.130*	1.686	.282*	1.779
CEO_DUAL	.076*	1.835	.129***	2.944	.107**	2.541
BIG4	.046	3.966	-.079	-.856	-.006	-.839
LOSS	.051***	4.279	.147	1.454	.010	.546
CASH	-.238	-.990	-.079*	-1.760	-.144***	-3.029
FIRM	-.058*	-1.694	.156***	3.138	.096**	2.557
ROA	.765*	1.923	-.152**	-2.005	.001	.086
LEV	.007	.041	.116	.376	.104	.389
MTB	.106	.395	-.020	-.226	-.010	-.554
IMR	.041**	2.186	.053**	2.423	.154**	2.370
Constant	.074**	2.077	.152***	3.439	-.095**	-2.635
Firm fixed effect	Included		Included		Included	
Year fixed effect	Included		Included		Included	
Adj. R^2	29.5%		15.8%		21.2%	
Regression F	15.343***		12.980***		13.790***	
No. observations	10018		9986		10040	
Maximum VIF	1.366					

***, **, * Statistical significance at 1%, 5% and 10% respectively.

Alternative critical mass proxies

As discussed in chapter two, the bulk of the previous studies depended mostly on measuring critical mass level using a certain threshold which is at least three female board directors or female directors should represent at least 30% of the board members (Torchia et al., 2011; Schwartz-Ziv, 2017; Strydom et al., 2017). Schwartz-Ziv (2017) stated that when the number of female directors reached to at least three members, the board becomes more active. Konrad et al. (2008) and Erkut et al. (2008) also agreed that the critical mass of women on corporate board is reached when three women directors are appointed. Furthermore, Torchia et al. (2011) and Post et al. (2011) also agreed that having at least three female directors on corporate board means that critical mass level has been reached and women have greater impact on corporate decision-making process.

Rossi et al., (2017) study showed that the influence of female directors on corporate decisions is greater when the number of the female directors is reached to a certain critical mass level. Moreover, Strydom et al., (2017) also confirmed that critical mass level is achieved when 30% of the directors are females and could have a significant influence on earnings quality.

Hence at least 30% of female directors (%FCM) and at least three female directors (FCM) are included in the regression analysis (table 5.13) to check if our results are robust. The results revealed that using 30% of female directors as crucial mass proxy (%FCM) is more effective in capturing female directors influence on all EM practices, whereas at least three female directors' proxy (FCM) failed to measure critical mass level. This finding raises the importance of choosing the right proxy of critical mass when measuring the role of female directors because as shown in the below table, not all measures effectively capture the association.

This might be because the boards sizes in the sample vary and boards in specific countries such as Germany have large board sizes, hence, applying at least three female directors as a measure of critical mass might not effective. Besides, the results confirm that 30% of female directors reflect the critical mass of female directors which contribute in influencing the relationship between female directors and all EM practices.

Overall, the results support Kanter (1977) argument regarding that absolute numbers of minorities might provide biased and misleading results and using proportions would provide more precise results. The coefficient signs are similar to the previous result which confirms that the results are robust.

Table (5.13) Robustness analysis using alternative critical mass proxies.

Variables	(1) ABM model		(2) REM model		(3) CS model	
	Coefficient	**t-value**	**Coefficient**	**t-value**	**Coefficient**	**t-value**
NREC					. 114***	4.113
$\mathrm{NREC} \times \%\mathrm{FCM}$					.057***	2.758
$\mathrm{NREC} \times \mathrm{FCM}$					.002	.142
%FCM	-.056***	-4.061	-.023*	-1.660	-.007	-.520
FCM	-.005	-.387	-.008	-.552	.003	.175
%B_MEET	.009	.674	-.021*	-1.852	-.007	-.568
B_SIZE	.029**	2.121	-.010	-.671	-.028**	-2.020
B_MEET	.011	.948	-.023*	-1.879	-.003	-.211
%B_INDEP	-.044***	-3.395	.026	1.420	.031***	2.631
CEO_DUAL	.021*	1.849	.039***	3.388	.009**	2.059
BIG4	.041***	3.566	-.012	-1.060	-.003	-.238
LOSS	.042***	3.099	.032**	2.392	.001	.119
CASH	.001	.100	-.040***	-3.485	-.028*	-1.992
FIRM	-.033**	-2.331	.055*	2.642	.033**	2.391
ROA	.027**	2.380	-.002	-.163	.011	.784
LEV	-.014	-1.238	-.003	-.303	.002	.183
MTB	.003	.220	.003	.237	.001	.100
Constant	.042**	2.061	.034***	2.926	-.033**	-2.288
Firm fixed effect	Included		Included		Included	
Year fixed effect	Included		Included		Included	
Adj. R^2	27.3%		16.3%		18%	
Regression F	15.074***		12.170***		10.645***	
Maximum VIF	2.697					

***, **, * Statistical significance at 1%, 5% and 10% respectively.

Exclusion of small boards

Recall from the descriptive statistics findings in table (5.1), the study sample included small and large boards ranging between 3 to 28 members, however, having very small boards included in the sample may result in biased findings. Accordingly, following Strydom et al., (2017), the regression was re-estimated after excluding small boards from the study sample and including boards with at least five members to make sure that the characteristics of small boards did not affect the main findings. Table (5.14) reports the regression results related to EM practices and gender diversity categories as suggested by Kanter (1977). Overall, the results remain qualitatively the same which indicates that the results are robust.

Table (5.14) Regression results related to the female directors' proportion based on Kanter (1977) classification and EM after excluding small boards

Variables	(1) ABM model		(2) REM model		(3) CS model	
	Coefficient	**t-value**	**Coefficient**	**t-value**	**Coefficient**	**t-value**
NREC					.057***	4.317
NREC × UB					-.021*	-1.732
NREC × SB					-.019*	-1.748
NREC × TB					.054***	2.869
NREC × BB					.027	1.211
UB	.024**	2.006	.039***	3.165	.002	.126
SB	.021*	1.683	.032**	2.414	.001	.109
TB	-.053***	-4.813	-.038***	-3.369	-.003	-.226
BB	-.018	-1.597	-.014	-1.193	.003	.239
%B_MEET	-.017	-1.529	-.011	-.948	-.009	-.657
B_SIZE	-.019*	-1.736	-.026*	-1.931	.019*	1.942
B_MEET	.020	1.502	-.045	-3.395	-.036**	-2.535
%B_INDEP	-.043***	-3.171	.02*	1.656	.019*	1.707
CEO_DUAL	.021*	1.844	.037***	2.966	-.028**	-2.095
BIG4	.035**	2.521	-.001	-.074	-.007	-.575
LOSS	.061***	4.868	.022	1.552	-.006	-.561
CASH	-.009	-.729	-.043**	-2.012	-.049***	-4.362
FIRM	-.025**	-1.997	.084***	2.893	.033**	2.522
ROA	.025**	2.309	-.031***	-2.634	-.001	-.046
LEV	.003	.247	-.009	-.755	.002	.186
MTB	.004	.331	-.004	-.395	.012	.876
Constant	.025**	2.309	.036***	3.005	-.010**	-2.293
Firm fixed effect	Included		Included		Included	
Year fixed effect	Included		Included		Included	
Adj. R^2	28.7%		14.4%		24.6%	
Regression F	23.852***		16.699***		13.520***	
No. observation	7,493		7,493		7,493	
Maximum VIF	1.345					

***, **, * Statistical significance at 1%, 5% and 10% respectively.

5.4.3. Testing Hypotheses: female directors' attributes and earnings management:

This section presents the results related to female directors' attributes and EM different practices. It is essential to investigate the exact attributes that would have an impact on ABM as it is a risky EM method and regulators are paying a lot of attention to it. Also, this section discusses the impact of these attributes on REM as an alternative method of EM that is increasingly used by managers (Francis et al., 2016) and could cause greater negative economic consequences compared to ABM since it directly alters firms' cashflows and affects firms' operating performance (Kothari et al. 2012; Evan et al., 2015).

Furthermore, this section focuses on the influential role of female directors' attributes on less costly EM method which influence firms' core instead of bottom-line earnings (Athanasakou, et al. 2009; Zalata and Roberts 2016, 2017). Testing the impact of female directors' attributes on CS method is essential because investors are paying more attention to core earnings (Black et al., 2017) because it is perceived as a more reliable source for predicting future profitability than bottom line earnings (Alfonso et al., 2015).

Since this study objective focuses on investigating the relationship between female directors' attributes and EM practices, the regression analyses applied in this section is based on the majority of the previous studies who tested female directors' attributes with firms' outcomes (e.g., Bennouri et al., 2018; Gull et al., 2018; Arıoğlu, 2020) which is slightly different than the analysis of the previous hypotheses.

The system GMM and matched sample using propensity score matching is used in order to test female directors' attributes to reduce the firm structural differences. Lagged values of the EM dependent variables were added in the models as required by the system GMM approach (Gull et al., 2018; Nekhili et al., 2020). As can be noticed from Table (5.15), the results showed that the coefficients on the lagged EM variables are positive and statistically significant, confirming the persistent nature of EM practices (Garanina et al., 2019).

Moreover, a number of specification tests were done to check if the system GMM estimation is suitable. As shown in table (5.15), the p-value related to Arellano-Bond (2) test is higher than 10% in all models indicating that the null hypothesis of no second-order serial correlation cannot be rejected. In addition, another specification test should be done to check if the system GMM

estimation is suitable is Hansen test which tests the exogeneity of the instruments (Nekhili et al., 2020).

The p-value of Hansen test is insignificant which means that the hypothesis that the instruments used in the models are valid cannot be rejected as well (Dobija et al., 2021). Furthermore, the Sargan test is done to check if the models are overidentified. As can be seen in the below table, the p-values related to Sargan test in all models are significant indicating that the null hypothesis of overidentified model is rejected (Bennouri et al., 2018).

According to table (5.15, column 1), all statutory attributes of female directors as suggested by Gull et al., (2018) are significantly related to ABM. As appeared in the below table, the percentage of female members on audit committee is negatively and significantly related to ABM at 10% level and a negative relationship is found between female members on audit committee and REM at 10%. Furthermore, the coefficient of (NREC×%F_AC) interaction is significantly and negatively related to CS at 10% level. As a result, **H1.7** is accepted.

Moreover, board chairwomen are found to be negatively and significantly related to ABM at 5% level, while audit committee chairwomen are negatively and significantly related to ABM at 1% level. In addition, board and AC chairwomen are negatively and significantly related to REM at 10% level. Moreover, variables related to female director's leadership on board (i.e., NREC×FCH_B) is positively and significantly related to CS at 1% level. However, NREC×FCH_AC variable is negatively and significantly related to CS at 1%. Therefore, **H1.8** is rejected and **H1.9** is accepted.

Female directors' business background is negatively and significantly related to ABM at level 1%. Moreover, the relationship between female directors' educational level and ABM is also significantly negative. Similarly, female directors' education level and background are significantly and negatively related to REM at 1% level. Also, educational level (NREC×%F_LEV) is appeared to have a significant negative relationship with CS. However, a positive and significant relationship is found between female directors' business background (NREC×%F_BS) and CS. As a result, **H1.10** is rejected while **H1.11** is accepted.

With regards to female directors' experience variables, female directors' tenure is negatively associated with ABM at level 5%. Also, the years of experience gained from being a member of a current board (F_TEN) is negatively and significantly related to REM at 1% level. Besides, female directors' tenure (NREC×F_TEN) appeared to have a significant negative relationship with CS. Accordingly, **H1.12** is accepted.

Additionally, the other experience variable which is female directors' nationality is positively and significantly related to ABM. similar to ABM, a significant positive relationship is found between REM and foreign female directors (%F_NAT). Similar to ABM and REM, female directors' nationality (NREC×%F_NAT) is associated with more CS. Hence, **H1.13** is accepted. Furthermore, a significant positive relationship is found between female directors' age and ABM. Similar result is found with regards to REM. However, a negative relationship is found between female directors' age (NREC×F_AGE) and CS at 1%. Therefore, **H1.14** is rejected.

As shown in table (5.15), the majority of audit committee characteristics are insignificantly related to ABM with except to audit committee independence and percentage of meeting attendance. A negative and significant relationship is found between audit committee independence and ABM at 5% level. Moreover, the percentage of audit committee meeting attendance is negatively and significantly related to ABM at 5%. Number of audit committee meetings and audit committee size are positively related to ABM, however, not significant.

With regards to REM, two audit committee characteristics are significantly related to REM which are audit committees' independence and audit committee size. A significant negative relationship is found between audit committee independence and REM at 1% level. In addition, audit committee size is positively and significantly related to REM at 5% level. Finally, audit committee independence is the only variable that is significantly related to CS at 10% level.

Table (5.15) System GMM regression related to female directors' attributes and EM using matched sample

Variables	(1) ABM		(2) REM		(3) CS	
	Coefficient	**t-value**	**Coefficient**	**t-value**	**Coefficient**	**t-value**
LAG_ABM	.170***	9.172				
LAG_REM			.058***	2.778		
LAG_UCE					.047**	2.004
NREC					.061***	3.204
NREC×%F_AC					-.425*	-1.702
NREC×FCH_B					.052***	2.857
NREC×FCH_AC					-.088***	-4.872
NREC×F_TEN					-2.658***	-3.444
NREC×%F_LEV					-.038**	-2.098
NREC×%F_BS					2.853***	3.639
NREC×F_AGE					-.056***	-3.188
NREC×%F_NAT					.026*	1.903
%F_AC	-.031*	-1.789	-.034*	-1.732	-.026	-1.266
FCH_B	-.044**	-2.506	-.028*	-1.816	-.009	-.514
FCH_AC	-.055***	-2.770	-.034*	-1.826	-.011	-.540
F_TEN	-.037**	-2.137	-.054***	-3.132	.004	.202
%F_LEV	-.033*	-1.783	-.054***	-3.021	.021	.947
%F_BS	-.090***	-2.622	-.150***	-9.573	-.017	-.751
F_AGE	.038**	2.126	.082***	5.106	.020	1.056
%F_NAT	.041***	3.557	.097***	5.149	.003	.155
%B_MEET	.013	.661	.014	.736	.012	.740
BSIZE	-.057***	-2.758	-.069***	-2.928	.040***	3.513
B_MEET	-.004	-.183	-.075***	-3.868	-.080***	-6.785
%B_INDEP	-.046**	-2.054	.008	.320	.044***	3.274
CEO_DUAL	.026	1.458	.066***	3.712	.053***	4.411
%AC_INDEP	-.053**	-2.587	-.056***	-2.711	-.037*	-1.690
AC_MEET	.021	1.115	.018	.910	.000	-.004
AC_SIZE	.014	.693	.051**	2.494	.017	.796
AC_ATTEND	-.037**	-1.984	.022	1.180	.016	.788
BIG4	.041**	2.359	-.015	-.837	.010	.525
LOSS	.047**	2.254	.006	.277	.036	1.487
CASH	-.011	-.625	-.099***	-5.727	-.013	-.688
FIRM	-.112***	-4.979	.091***	3.997	.077***	3.512
ROA	.016	.809	.027	1.343	.011	.508
LEV	-.039*	-1.753	.018	1.020	-.010	-.554
MTB	.004	.245	-.011	-.629	-.020	-1.070
Intercept	.036**	2.010	.026*	1.739	-.029*	-1.827
Firm fixed effect	Included		Included		Included	
Year fixed effect	Included		Included		Included	
AR (1) (p-value)	.000		.000		.001	
AR (2) (p-value)	.331		.226		.329	
Sargan test (p-value)	.000		.000		.003	
Hansen test (p-value)	.211		.171		.156	
No. observation	5281		5281		5281	
Maximum VIF	2.248					

***, **, * represent significance at the 1%, 5% and 10% levels, respectively. Arellano-Bond AR (1) and (2) tests if the data processes are autoregressive. Sargan test examines if study models are overidentified. Hansen test is used to check exogeneity of instruments.

Further analysis

Recall from table (5.7), the results showed that female directors' presence (%F_B) is significantly effective in eliminating ABM and REM practices. Following Bennouri et al., (2018) and Gull et al., (2018), it is important to know if the presence of female directors generally is the only reason behind limiting these practices or is it their attributes that influence their behaviour toward reducing these two practices.

In order to do that, the percentage of female directors' variable (%F_B) will be added to the analysis of female directors' attributes variables and EM. As stated by Bennouri et al., (2018) and Gull et al., (2018), if the addition of female directors' characteristics variables did not change the nature (significance and sign) of the relationship between the %F_B and EM practices, it means that some omitted female directors' characteristics variables might affect EM other than the included attributes variables in the study. However, if the addition of female directors' characteristics changes the nature of this relationship, it means that considering the presence of female directors alone might not be the absolute reason behind their influence on EM practices, but their specific attributes are more likely to be behind their ability to effectively monitor these practices.

Following Gull et al., (2018), the first step includes analysing %F_B and EM practices direct relationship without including female directors' attributes to set it as a benchmark, the regressions results are presented in table (5.16). The analysis results in table (5.16) are based on a matched sample using propensity score matching and GMM system regression. According to the table, the association results between %F_B variable and ABM and REM are qualitatively similar to table (5.7), indicating that the results of the main analysis is robust. In addition, table (5.17) presents the results after adding the percentage of female directors, %F_B, in ABM and REM models related to female directors' attributes.

As shown in table (5.17, column 1,2), after adding %F_B, the coefficient of the variable has changed from significantly negative as shown in table (5.16) to significantly positive in both ABM and REM models in table (5.17), which indicates that female directors' characteristics play an important role in monitoring ABM and REM. Hence, female directors' attributes generally are key elements that help female directors in constraining both methods.

Table (5.16) System GMM regression related to gender diversity and EM using matched sample

Variables	(1) ABM model		(2) REM model	
	Coeff.	**t-value**	**Coeff.**	**t-value**
LAG_ABM	.160***	8.311		
LAG_REM			.107***	2.770
%F_B	-.003***	-5.402	-.049***	-2.881
%B_MEET	.000	0.521	-.000	-0.324
B_SIZE	.005*	1.942	-.013**	-2.216
B_MEET	.002	1.320	-.013***	-3.112
%B_INDEP	-.000**	-2.865	.002***	3.190
CEO_DUAL	.027*	1.901	.124***	3.786
%AC_INDEP	.041**	2.186	-.054***	-2.869
AC_MEET	.033	.688	.014	1.295
AC_SIZE	.023	.865	.085***	2.776
AC_ATTEND	-.028*	-1.816	.018	1.326
BIG4	.043*	1.947	.055	1.083
LOSS	.113***	3.128	.025	0.547
CASH	-.012*	-1.875	-.112**	-2.289
FIRM	-.023**	-2.225	.077***	3.202
ROA	.003*	1.977	-.047**	-2.385
LEV	-.001**	-2.708	.020	1.125
MTB	.003*	1.732	-.021	-1.187
Intercept	.026**	2.123	.021*	1.787
Firm fixed effect	Included		Included	
Year fixed effect	Included		Included	
AR (1) (p-value)	.000		.000	
AR (2) (p-value)	.368		.278	
Sargan test (p-value)	.000		.000	
Hansen test (p-value)	.256		.132	
No. observation	5281		5281	
Maximum VIF	2.248			

***, **, * represent significance at the 1%, 5% and 10% levels, respectively. Arellano-Bond AR (1) and (2) tests if the data processes are autoregressive. Sargan test examines if study models are overidentified. Hansen test is used to check exogeneity of instruments.

Table (5.17) System GMM regression related to gender diversity and EM using matched sample after the addition of female directors' percentage

Variables	(1) ABM		(2) REM	
	Coefficient	**t-value**	**Coefficient**	**t-value**
LAG_ABM	.076***	7.879		
LAG_REM			.037**	2.059
%F_B	.026**	2.404	.056***	3.540
%F_AC	-0.002*	-1.706	-.034*	-1.753
FCH_B	-.043**	-2.481	-.020*	-1.836
FCH_AC	-.033***	-2.910	-.026**	-1.957
F_TEN	-.035**	-1.991	-.054***	-3.149
%F_LEV	-.022*	-1.808	-.026**	-2.150
%F_BS	-.007**	-2.068	-.106***	-9.712
F_AGE	.037**	2.078	.025**	2.327
%F_NAT	.024**	2.350	.060***	5.800
%B_MEET	.009	.474	.013	.701
BSIZE	-.037***	-2.761	-.069***	-2.914
B_MEET	-.000	-.013	-.075***	-3.901
%B_INDEP	-.066**	-2.310	.008	.330
CEO_DUAL	.012	.642	-.031	-1.623
%AC_INDEP	.046**	2.253	-.018*	-1.657
AC_MEET	.014	.707	.005	.266
AC_SIZE	.010	.477	.033***	2.928
AC_ATTEND	-.038**	-2.032	-.018	-.979
BIG4	.043**	2.485	-.015	-.891
LOSS	.049**	2.359	.006	.278
CASH	-.012	-.716	-.099***	-5.723
FIRM	-.104***	-4.547	.091***	3.978
ROA	.014	.697	.027	1.344
LEV	-.002*	-1.706	.018	1.011
MTB	.006	.351	-.011	-.645
Intercept	.026**	2.339	.021*	1.954
Firm fixed effect	Included		Included	
Year fixed effect	Included		Included	
AR (1) (p-value)	.000		.000	
AR (2) (p-value)	.313		.227	
Sargan test (p-value)	.000		.000	
Hansen test (p-value)	.243		.150	
No. observation	4168		4168	
Maximum VIF	2.248			

***, **, * represent significance at the 1%, 5% and 10% levels, respectively. Arellano-Bond AR (1) and (2) tests if the data processes are autoregressive. Sargan test examines if study models are overidentified. Hansen test is used to check exogeneity of instruments.

Chapter conclusion

This chapter presented general descriptive statistics for the study variables, univariate analysis is also applied to compare the relationships and the significant difference between the means in different groups. In addition, a descriptive comparison according to each country, year and sector are discussed with regards to female director's variables. Next, regression analyses results are presented and linked with research hypotheses. The first main hypothesis was tested and results showed that female directors and CEOs are effective in reducing ABM and REM, while CS has increased. The second main hypothesis related to the relationship between female directors' proportion and EM practices was also tested and the results revealed that female directors' proportion played an essential role in influencing the relationship. Finally, the last hypothesis which tests the relationship between female directors' attributes and EM practices was tested and the results showed that female directors' characteristics are essential for influencing EM practices. Also, a number of robustness tests were used to check if the results of the main analyses are reliable.

CHAPTER SIX: DISCUSSION AND INTERPRETATION OF RESULT

Chapter introduction

In chapter five, the statistical results were presented, however, in this chapter, the results are discussed and linked with the prior studies' findings and theories that were mentioned in chapter two and three. This chapter is divided into three parts based on the research objectives, the results of every model were discussed in depth and a general overview and discussion at the end of each objective is provided to further interpret the findings.

6.1. Results discussion related to female directors/CEOs attitude toward EM practices

Limited number of studies included different EM practices to test female directors and CEOs attitude toward them (e.g., Arun et al., 2015; Gull et al., 2018). In this section, the findings of different EM models are discussed and linked with the previous studies findings. As showed in the previous chapter, according to table (5.7, column 1), there is a significant negative relationship at 1% level between the percentage of female directors on corporate boards and ABM. The result provides empirical evidence that the higher the percentage of female directors, the better is their contribution in improving the efficiency of board monitoring which result in reducing the agency conflict and eliminating ABM.

In alignment with the agency theory, the result supports the advantages of board gender diversity from corporate governance and EM points of view and it is consistent with the previous studies findings conducted within the European context (e.g., Gavious et al. 2012; Kyaw et al. 2015, Gull, et al. 2018; Triki Damak, 2018). Furthermore, the results support that gender stereotypes behaviour and values would affect their behaviour in the workforce (Franke et al., 1997) as they tend to reduce ABM which represents unethical practice (Du et al. 2015; Kanagaretnam et al. 2015) and associated with high level of litigation risks (Evans et al. 2015; Hopkins 2018).

Similarly, a negative relationship at 5% significance level was also found between female CEOs and ABM. This finding is consistent with Gavious et al. (2012) and Gull et al. (2018). The result confirms that female chief executive officers are more likely to act as risk averse (Peni and Vahamaa 2010; Palvia et al. 2015) when it comes to ethical financial decisions associated with high litigation risks (Hopkins 2018).

As shown in the previous chapter (table 5.7, column 2), the percentage of female directors is negative and significantly related to REM at 5% level. This indicates that female directors tend to

constrain REM although it is difficult to be uncovered because it is associated with deceiving disclosures and financial reporting misrepresentations which would eventually attract high litigation risk (Huang et al., 2020). The result also shows that although REM is vague and not easy to be detected compared to ABM, female directors are keen and capable of eliminating these practices. The result is consistent with Luo et al. (2017).

Furthermore, female CEOs are found to be significantly and negatively related to REM. This shows that female CEOs are effective in reducing REM activities, this was expected because CEO is the main person who is responsible for taking business decisions in the firm (Lovata et. al 2016). This confirms that women are less likely to engage in opportunistic EM practices (Palvia et al., 2015), especially when their role is directly related to firms' operations and they have more access to the firms' day to day activities information.

On the contrary, the variable of interest, NREC×%F_B, is positive and significant at 10% level, indicating that female directors prefer to engage in CS practices in order to influence the core earnings since it is relatively lower in risk and cost (Abernathy et al. 2014; Alfonso et al. 2015). As stressed by Zalata et al., (2019), it is expected to see a different behaviour of women in top corporate positions when it comes to CS due to its low risk and suggested that they might engage more in CS than their male colleagues or at least the same level. The result is in alignment with Zalata and Abdelfattah (2021) who also found that female directors are less likely to challenge CS practices. The result is in alignment with the debate regarding that CS has attracted low attention of internal or external monitors (Fan et al., 2010).

Similarly, the regression results showed that when the CEO is a woman, the magnitude of CS is increased significantly at 1%. The study findings differ from Zalata et al., (2019) as their findings suggested that after the SOX introduction, female CEOs tend to reduce CS practices. The finding difference is due to the fact that their study is conducted within US GAAP environment which is considered stricter than IFRS with regards to non-recurring items (Zalata and Roberts, 2016).

To sum up, although all EM methods are perceived unethical as documented by previous studies (e.g., Hong and Andersen 2011; Abernathy et al. 2014; Zalata et al., 2019; Cai et al., 2020), the study findings revealed that the monitoring role of female directors and CEOs varies according to the risk level associated with each EM method. In particular, the study results showed that female directors and female CEOs act similar to their expected gender stereotype in terms of risk

aversion by reducing EM practices that attract high regulatory attention and associated with high litigation risks and costs (i.e., ABM and REM) and less likely to challenge CS practice as a low-risk EM alternative (Zalata et al., 2019).
Also, female CEOs tend to engage in CS practices because it is associated with low cost and it does not involve reversal of accruals, or a decline of future returns as a result of ABM and REM activities (Athanasakou, et al. 2009). Also, unlike ABM and REM, CS is associated with high level of managerial assessment and fewer disclosure requirements compared to ABM and REM (McVay, 2006; Huang et al., 2020; Zalata and Abdelfattah, 2021).

Besides, another reason for female CEOs preference in engaging in CS is that no CEOs have been sued due to the engagement in CS to-date which gives an indication that the litigation risks associated with CS are low (Zalata and Roberts, 2017; Zalata et al., 2019). Accordingly, the risk of detection associated with this type of EM is considered the lowest compared to REM and ABM methods (Abernathy et al. 2014; Alfonso et al. 2015).

Furthermore, under the International Financial Reporting Standards (IFRS), regulations regarding the non-recurring items in the income statement are less rigid (Zalata and Roberts, 2016), and it gives greater flexibility for discretion over the expenses and revenues classification within the income statement. Besides, as noted by Zalata and Roberts (2016), external auditor play a minor role in uncovering CS.

Female directors may not be interested in mitigating less risky EM or maybe because it is difficult for them to uncover the misclassification of income statement items (Abernathy et al. 2014; Alfonso et al. 2015). The results also indicated that female directors and CEOs tend to avoid EM practices that would highly lead to a loss of reputation and capital market penalties (Huang et al., 2020), but it does not mean that they do not engage in other unethical practices such as CS which would deceives the stakeholders (Hong and Andersen 2011; Abernathy et al. 2014; Zalata et al., 2019; Cai et al., 2020) if the consequences are not severe and less risky (Zalata, et al., 2019).

Unlike the previous studies findings, the results support the argument that behavioural differences between men and women might not fully apply for top corporate positions (e.g., Adams and Funk, 2012; Adams and Ragunathan, 2015). Besides, the findings are in alignment with Sila et al. (2016) argument related to women who reached to top corporate positions are not just different than their male counterpart, but also from women in the general population. Hence, gender differences as

social role theory proposed may not fully explain the behavioural differences between women and men in top corporate positions. Also, as suggested by the majority of the previous studies, the presence of female directors may not fully reduce the agency conflict when taking into consideration all types of EM practices. The results of the alternative models and robustness tests confirmed the main regression results.

However, the study findings should be carefully interpreted as there might be another possible explanation of the positive relationship between CS method and gender diversity variables. Although the majority of the accounting literature perceived CS as opportunistic EM method (e.g., McVay, 2006; Haw et al., 2011; Walker, 2013; Abernathy et al., 2014; Malikov et al., 2018; Anagnostopoulou et al., 2019; Poonawala and Nagar, 2019; Zalata et al., 2019), some researchers argued that CS should not be seen as EM method as it is applied for signalling firms' persistence rather than deceiving interested parties (Riedl and Srinivasan, 2010; Konvalinka et al., 2020). Hence, the positive relationship might indicate the usage of CS for signalling purposes.

The study findings highlighted the shift of female CEOs preference to less risky EM which is CS. This is an important finding especially that studies focused on investigating the role of female directors and CEOs on REM and ABM and there is a dearth of study on the impact of female directors and CEOs on CS specially within the EU environment. In addition, the study provides recent evidence to the inconclusive studies that tested the relationship between gender diversity on boards and multiple EM methods to improve the understanding of all the possible EM techniques used by managers currently. As a matter of fact, this study is one of few studies (e.g., Zalata et al., 2019; Zalata and Abdelfattah, 2021) that provides a different argument than the majority of previous studies regarding risk preference and ethical attitude of female directors toward EM practices.

With regards to control variables results, as shown in the previous chapter, a negative and significant relationship is found between board size and ABM at 1%. This means that the bigger the board size, the less likely the accruals are managed. This supports the argument that there is a positive relationship between large boards size and board's monitoring capacity (Xie et al., 2003).

The result is in line with Ghosh et al., (2010) who documented a negative association between board size and ABM. Similarly, there is a significant negative relationship between board

independence and ABM, indicating that when the percentage of independent directors on board increase, the more likely the ABM practices are decreased. This supports the role of independent directors on board which is enhancing the board monitoring effectiveness and exercising control in alignment with shareholders' interests (Rajpal, 2012). The result is in alignment with Peasnell et al. (2005) who found that board independence reduces the ABM.

On the other hand, other board characteristics related to board activity such as the percentage of board attendance and number of board meetings are not significantly related to ABM. The findings support Jensen (1993) argument about that board activity is not necessarily beneficial due to the board members limited time. The result is similar to Ebrahim (2007) who also found a positive relationship between board activity and ABM, however, insignificant. On the other hand, a significant positive relationship is found between CEO duality and ABM which implies that as stated by Bushee et al. (2014), the combination of the CEO and the chairperson positions is considered as ineffective corporate governance. The result support ecoDa (2010) suggested principles of good governance related to separating the CEO and board chair roles. The result is consistent with Gavious et al. (2012).

As shown from the table, unlike the expectation, a significant positive relationship is found between Big4 auditing firms and ABM at level 5%. The result is consistent with Gull et al., (2018) who also found that the choice of big auditing firms (BIG4) increases the level of ABM. In addition, all firm characteristics are significantly related to BAM. Firm's loss is positively and significantly at 1% level. This supports the assumption that when firms are facing a loss, they have more incentives to engage in ABM (Healy, 1985). A negative and significant relationship is also found between firm size and ABM at 1% level. The result supports the argument that large firms have less flexibility to manage the accruals because they receive high scrutiny attention from stakeholders (Meek et al 2007; Gray et al., 2015). The finding is in alignment with Shu et al., (2015). Firm's leverage is found to be negatively and significantly related to ABM at level 10%. As documented by Zalata et al., (2019), there is a negative association between firms with high leverage and EM because these firms are more likely to be closely scrutinized, and they are less flexible to mislead the market. This finding is consistent with Gavious et al., (2012).

Firms' MTB is significantly and positively related to ABM at 5% level. This shows that firms with growth opportunity are more probably going to engage in ABM to signal an optimistic future image to attract external funding (Lemma et al., 2013). The result is consistent with Doukakis (2014) and

Zhu et al. (2015). A significant negative relationship is found between firms' cash flow and ABM. The result is in alignment with Dechow et al. (1995) and Gul et al. (2009) argument regarding that firms with high operational cash flow implies that they are performing well and accordingly, EM practices might not be needed. Lastly, a significant positive relationship is found between ROA and ABM, the result is consistent with Zamri et al., (2013) and Ghazali et al., (2015).

With regards to the results related to REM and control variables, the results obtained from table (5.7) revealed that similar to ABM, a significant negative relationship is found between board size and REM at 1% level, which means that the larger the board size, the lower the REM level. This result confirms that the board monitoring capacity increases when the board size increases (Xie et al., 2003), hence, the opportunistic REM are mitigated. Moreover, board independence is positively and significantly related to REM at 10% level. This may suggest that independent directors might have lower knowledge of firms' operations, therefore, their high percentage on board may not be an effective governing mechanism (Chen et al. 2015). Besides, as mentioned earlier, REM is opaque and not easy to be discovered, therefore, it might be more difficult for independent directors to mitigate such practices since their knowledge is limited about firms' activities and might not have sufficient time to expand their knowledge regarding firms' activities in order to eliminate REM (Sun et al., 2014).

A positive relationship is found between CEO duality and REM at 5% level. This was expected since the bulk of the previous studies agreed that the separation of the CEO and chairperson would result in a better board monitoring (Fama and Jensen,1983), thus, reducing opportunistic REM. On the contrary, board meeting attendance is negatively related to REM (%B_MEET), however, the relationship is insignificant, whereas the number of board meetings is significantly and negatively related to REM. This shows that when the board meets more regularly, directors' knowledge and monitoring skills related to firms' operations are enhanced and thus, the REM is constrained.

In addition, an insignificant relationship is found between firms who are audited by Big4 audit firms and REM. REM practices are less subject to external auditor scrutiny because it is challenging for them to uncover REM and it is not easy to differentiate between REM and normal business decisions (Commerford et al. 2016), hence, an insignificant relationship might be expected. As reported in table (5.7), a significant and negative relationship is found between firms' operating cash flow and REM at 10% level. This confirms that if managers engage in real activities, it could

lead to firms' operating cash flow reduction (Roychowdhury 2006; Cheng et al., 2015; Kothari et al., 2016). Gul et al. (2009) also argued that firms with a higher level of operating cashflow are less likely to engage in EM practices. Furthermore, according to the table, no significant relationship is found between firm's loss and REM. This shows that firms tend to avoid using REM when they are facing loss because REM is associated with high costs and unpreferable consequences might occur in the future.

With regards to firms' size, a significant positive relationship is found between firm size and REM at 1%. This indicates that large firms tend to manage their earnings using REM since it is less detectable and because they face pressure to meet or beat the analysts' expectations (Lemma et al., 2013). The result is in alignment with Anagnostopoulou and Tsekrekos (2016) who also found a positive relationship among firm size and REM.

The table also reveals a significant negative relationship between ROA and REM at 1%. This implies that firms with better performance tend to use less REM to manage their earnings because higher profitability is related to stable financial conditions. The finding is in alignment with Doukakis (2014) and Chen et al. (2015) studies who revealed that firms with better performance are less likely motivated to manage REM.

In addition, firm's leverage is positively related to REM. As argued by Doukakis (2014) and Kuo et al. (2014) when leverage is increased, the monitoring and scrutiny of the firm become higher. Therefore, managers prefer to engage in REM. However, the relationship is insignificant. Market to book value is negatively related to REM. Anagnostopoulou and Tsekrekos (2016) study results also showed negative relationship between growth opportunities and REM. However, the result is also insignificant.

All board variables result revealed significant relationship with CS with exception to the board attendance. More precisely, board size, board independence and CEO duality variables are positively and significantly related to CS. This implies that when the board size is larger, the more likely the CS will increase. Furthermore, when the percentage of independent directors increased, the CS practices are more likely to be increased.

This might due to the fact that independent directors are usually busy and might not have the time to go in depth with the firms' operations in order to understand the nature of the firms' expenses,

thus, reducing their ability to uncover CS practices. Additionally, when there is CEO duality, the more likely the CS practices to be increased. One reason might be that as stated by Bushee et al. (2014), the combination of the CEO and the chairperson positions is considered as ineffective governance because it reduces the probability that the board will monitor the managements' behaviour. On the contrary, only the number of board meetings is negatively and significantly related to CS at 1% level, which implies that the more board meets regularly, the more likely the board members are familiar with the nature of firms' expenses; thus, CS practices are eliminated. Finally, with regards to firms' characteristics, only operating cashflow and firm size are significantly related to CS practices.

Cashflow is found to be negatively related at 5% significance level. As stated by Chen et al., (2015), a negative relationship is expected between operating cashflow and EM because firms with high level of operating cash flow reflect good performance, thus, firms tend to avoid using EM practices. Moreover, firm size is positively related to CS at 10% significance level. Large firms are under high security from stakeholders; therefore, they are more likely to engage in complicated EM such as CS to influence their core earnings.

6.2. Results discussion related to female directors' proportion and EM

The role of a varying proportions of female board directors on boards monitoring dynamics in terms of EM practices remained unclear in the literature. This study objective is motivated by the recent studies (e.g., Joecks et al. 2013; Strydom et al., 2017; Guedes et al., 2018; Lafuente and Vaillant, 2019) who relied on Kanter (1977) assumption regarding the failure to test minority group proportions could lead to biased findings because the effect of overall group size interaction is ignored.

After interpreting the results related to the first study objective, this section discusses the results related to the second objective which focuses on the relationship between female directors' critical mass level and EM practices. The results of table (5.11, column 1) suggest that in alignment with critical mass theory, for female directors to influence boards' monitoring effectiveness and reduce ABM practices, a certain proportion (critical mass) of female directors is needed. In particular, when the boards are fully dominated by male directors or consisted of skewed proportion of female directors, a significant positive relationship is found with ABM at 5% and 10% level respectively. The results suggest that when there are no female directors or when female directors are perceived as tokens (i.e., their proportion is less than 20%), the ABM level becomes greater.

The findings support that the low proportion of women on boards might reflect the tokenism perspective as it leads to isolation of female directors (Kanter 1977; Yarram and Adapa, 2021) as the majority group (male directors) might ignore female directors' opinion when they represent the minority group (Westphal and Milton 2000). Therefore, the advantages of board gender diversity might be limited (Abdullah, 2014). The finding is in alignment with Strydom et al., (2017) findings and Dobija et al., (2020).

On the contrary, as shown in table (5.11) and in alignment with critical mass theory, when the percentage of female directors increases and reaches between 20% to 40%, the relationship with the ABM becomes significantly negative at 1%. The finding is in alignment with assumption that the when the minority group (female directors) increase, the minority members become allies (Kanter, 1977) resulting in a change in male directors' opinions regarding female directors are just tokens, instead, they will think that female directors were appointed for their capability (Jia and Zhang, 2013). Therefore, the finding highlights the importance of taking into consideration the proportion of female directors on boards as reaching to critical mass level could result in an influential role in monitoring executives' activities and limit their opportunistic power (Shahab et al., 2020). The results are in alignment with Strydom et al., (2017).

However, when boards become gender balanced, the relationship is still negative but it is insignificant. This confirms that the critical mass level to mitigate ABM is between 20% to 40% as this critical mass proportion could result in tremendous board monitoring changes (Nekhili et al., 2018). However, when the proportion of female directors becomes at least 40%, women influence becomes insignificant. This might be due to as stressed by Kirsch (2018), gender behavioural dissimilarities could disappear in balanced boards because women minority status ends and the expectation toward female directors as independent monitors is changed. In addition, as stated by Guedes et al., (2018) regarding balanced boards, female directors' behaviour is blended with the male-dominated culture, hence, their influence vanishes. Also, as stressed by Dobija et al., (2020), a proportion of female directors that is too high would lead to limiting the benefits expected from board gender diversity.

Overall, the findings support that the costs of gender diversity may outweigh its benefits when the board is dominated by women (Nguyen et al., 2015), hence, the gender balanced boards do not always lead to more influence (McKinsey and Company, 2016). These results show that setting a specific proportion of female directors rather than targeting gender-balanced boards is an

important issue that policy makers should take into consideration as balanced boards could result in unpreferable consequences with regards to ABM. The result is consistent with Guedes et al., (2018) and Dobija et al., (2020) findings.

In the earlier section, the impact of proportion of female directors on the ABM was discussed. In this section, the findings will reveal whether female directors' proportion would matter in uncovering REM practices. The regression results of REM model are shown in table (5.11, column 2).

In general, the regression results related to REM are similar to ABM. Uniform boards are positively and significantly related to REM at 1% level indicating that when boards consist only of male directors, they tend to engage more in REM practices. The result is similar to ABM which gives support to the gender stereotype regarding men directors tend to engage in risky EM practices. On the other hand, skewed board showed a significant positive relationship with REM at 5% level which confirms the tokenism issue that female directors might face when their proportion is low as suggested by Kanter (1977), hence, their monitoring skills might not be fully exercised (Abdullah, 2014).

When the proportion of female directors increases to more than 20%, the relationship becomes significantly negative at 1% level, while balanced board is negative but insignificantly related to REM. Similar to ABM, the findings confirm that critical mass level is reached when the board consist of between 20% to 40% women and reaching to critical mass level would help female directors in monitoring closely the opportunistic practices (Shahab et al., 2020) resulting in reducing another type of EM which is REM. However, gender behavioural dissimilarities might disappear in balanced boards and female directors' attitude toward REM is blended into the boards, hence, leading to insignificant influence on board outcomes (Guedes et al., 2018; Kirsch, 2018).

According to table (5.11, column 3), the findings showed that unlike ABM and REM results, uniform board are significantly and negatively associated with CS practices indicating that boards consisting only of male directors tend to reduce the CS practices. This gives an indication that male directors tend to rely more on ABM and REM practices that target changing the bottom-line earnings although they are associated with higher litigation risks and may use CS as a substitute to the other two methods. The results also confirm that there is a major behavioural difference

toward risky decisions between men and women as men are more likely to take risky decisions (Charness and Gneezy, 2012).

Likewise, when the board is skewed, a negative relationship at 10% level is revealed. This shows that boards with low proportion of female directors can be effective in reducing CS practices and the reason might be that male directors are still dominating the decisions of skewed board and accordingly, they rely more on risky EM practices and avoid using CS as an EM option. The results also confirm Kanter (1977) proposition regarding that uniform and skewed groups (boards) are pretty much similar which implies that the attitude of boards toward CS stayed the same even when low proportion of female directors is included. This was explained by Yarram and Adapa (2021) who stressed that when the representation of female directors is low, their behaviour becomes more visible which force them to agree with the majority male directors' decisions.

However, when the proportion of female directors increased and became tilted, the relationship becomes significantly positive with CS practices at 1%. This indicates that when the proportion of female directors increases, the CS practices are more likely to be used to manage core earnings. This confirms that board with high percentage of female directors tend to apply more low risk EM practices and focus on EM that does not change the bottom-line earnings.

One reason might be that when women are facing the possibility of costly legal action, they are more likely to shift to a more subtle, less risky and difficult-to-detect corporate activity (Abernathy et al. 2014; Alfonso et al. 2015), even if it was equally un-ethical (Zalata and Roberts 2016, 2017). However, similar to ABM and REM, gender balanced boards are insignificantly related to CS which confirms that the critical mass effect occur when female directors proportion reaches between 20% to 40%. However, as stated earlier, having too high proportion of female directors does not bring additional influence on boards.

The results support that a critical mass of female directors is needed in order for them to have an impact on board monitoring dynamics. In alignment with Kanter (1977) suggestion, the critical mass threshold of 20% to 40% is considered the optimal proportion of the minority group (female directors) to influence the board activities. Or in other words, there is a non-linear relationship between female director's proportion and board monitoring as suggested by Strydom et al., (2017), Guedes et al., (2018) and Dobija et al., (2021) because the initial proportion of female directors' impact EM practices differently when the critical mass level is reached.

In particular, the study results showed that tilted group of female directors represent the critical mass threshold where female board directors can effectively influence board monitoring practice. In particular, EM practices that aim at changing the actual bottom-line earnings and associated with high litigation risks and costs are constrained when female directors proportion is between 20% to 40%. However, opposite scenario is applied to CS when it comes to tilted boards. The results showed that tilted boards have a significant role in increasing CS as an EM practice which focuses on changing core earnings rather than bottom-line earnings, this indicates that when female directors' proportion reaches to critical mass level, they are less likely to challenge less risky and complicated CS practices (Zalata and Abdelfattah, 2021).

Interestingly, the results showed that having additional female board directors (more than 40%) might not always be significantly effective in eliminating ABM, REM and CS practices. Hence, gender balanced boards might not always result in favorable EM monitoring. Kirsch (2018) explained that gender behavioural dissimilarities might disappear in balanced boards because women minority status ends.

Also, Guedes et al., (2018) added that in balanced boards, female directors' behaviour is blended with the male-dominated culture, hence, their influence vanishes. Hence, study findings do not support the European Commission proposed legislation to have at least 40% of non-executive female directors. Nevertheless, the study findings regarding gender balanced boards should be carefully interpreted as another possible explanation of the insignificant relationship could be due to the low number of gender balanced boards observations.

Overall, the results show that having too low female directors' proportion would not help them in influencing board monitoring and EM practices as male directors are controlling their EM engagement preference (i.e., engaging more in ABM and REM and less with CS), while having too high female directors' proportion would not add any additional difference to boards monitoring mechanisms. Therefore, the proportion of gender diversity should be decided carefully. This study is one of a few that focuses on Kanter (1977) classification in explaining the relationship between female directors' proportion and EM and most importantly, the study clarifies the role of female directors' critical mass level in influencing multiple EM practices.

The results remain robust to alternative specifications, including two-stage estimation approach and re-estimation after removing small boards from the study sample. Further analysis showed that 30% of female board directors as previous studies suggested is also effective in influencing EM practices. Surprisingly, the most applied measure for critical mass (3 female directors or more) in the previous studies is not effectively in capturing the significant role of female directors on board.

Accordingly, based on the study results, board gender quota or target are not preferable to be targeting gender balanced boards as the costs of gender diversity may outweigh its benefits when the board is dominated by women (Nguyen et al., 2015). However, the study results highlighted that the critical mass effect would be beneficial in reducing ABM and REM practices, but it also could result in increasing CS practices. Hence, although the influence of female directors on boards might increase when their proportion reach to a certain level, it does not mean that it would always result in better monitoring of all EM practices. In fact, when they reach to the critical mass level, they tend to eliminate the risky ABM and REM practices while allowing CS practices as they are perceived as less harmful for their reputation. The results confirm that women tend to less likely to challenge low cost, less risky and more sophisticated EM practice (Zalata et al., 2019) which is CS. The results also confirm to Zalata et al., (2019) argument regarding women might be more risk averse, but this does not necessarily mean that they are more ethically sensitive than their male counterparts are.

In addition, the presence of at least one female director as an approach to enhance gender diversity on boards might not be effective in influencing board decisions. Thus, setting gender diversity target between 20% to 40% assures the tremendous change in board dynamics, however, regulators should pay more attention to CS practices in order to make sure that they are not increased when female directors reach to critical mass level because as stated earlier, CS can mislead the shareholders and interested parties about firms' core earnings.

6.3. Results discussion related to female directors' attributes and EM

As discussed in chapter two and three, in order to have an efficient monitoring of EM practices, a board member needs a mix of skills and competencies. The third objective of this study aims at highlighting the attributes that would help female directors in effectively monitoring EM practices. In order to achieve this objective, this section presents the regression analysis results and link it with the study hypotheses.

As appeared in table (5.15, column 1), the percentage of female members on audit committee is negatively and significantly related to ABM at 10% level, indicating that female directors' membership on audit committees could result in a great influence on monitoring managerial actions (Green and Homroy, 2018). The finding also shows that the presence of female members on audit committees could be a source of competitive advantage since female members have good monitoring skills and the boards' monitoring responsibilities are mostly assigned to audit committees (Arun et al., 2015; Guo and Masulis, 2015; Green and Homroy, 2018). Therefore, having female members on audit committees is essential for eliminating ABM. The result is consistent with prior studies (e.g., Khlif and Achek, 2017; Gull et al., 2018; Zalata et al., 2018; Sudarman and Hidayat, 2019).

Female directors' leadership power seems to be effective in reducing ABM. Board chairwomen are found to be negatively and significantly related to ABM at 5% level, while audit committee chairwomen are negatively and significantly related to ABM at 1% level. This shows that women transformational leadership style is effective in eliminating the degree of ABM as it depends on ethical and social values to influence the group dynamics (Eagly et al. 2003). The finding support Jiang et al., (2019) who mentioned that board chairwomen are more likely to play an effective leadership role and involve in more effective board monitoring. Besides, the result confirms that women generally use their position as a chairperson to reflect their values such as risk aversion within a group (Palvia et al., 2015), thus, reducing ABM practices. The results are in alignment with Li and Li (2020).

Generally, the study findings support human capital theory. For instance, female directors' business background is negatively and significantly related to ABM at level 1%. This shows that having a business background is essential in uncovering ABM practices. As suggested by Nekhili and Gatfaoui (2013), female directors should have business education in order to be more engaged in firms' boards. The result is consistent with Gull et al., (2018) study who found that female directors with business backgrounds are more likely to constrain ABM.

Moreover, the relationship between female directors' educational level and ABM is also significantly negative, indicating that highly educated female directors are more likely to eliminate ABM practices. The result is supported by Singh et al. (2015) who claimed that highly educated female directors have higher influence on board activities. Overall, the results related to female directors' education suggest that when appointing female directors, it is important to consider their

educational background as well as educational level because they are essential elements that could contribute in improving corporate boards monitoring effectiveness (Ahern and Dittmar 2012).

With regards to female directors' experience variables, female directors' tenure is negatively associated with ABM at level 5%. This shows that the longer the tenure period of the female directors, the more likely they will gain adequate understanding of the firm practices, thus, being able to reduce ABM practices. This was expected since directors' tenure represent their firm knowledge (McDonald et al., 2008), hence, the greater their knowledge about the firm, the better their monitoring skills will be. The result is supported by Kim (2014) who showed that there is a negative relationship between ABM and the tenure of directors.

Additionally, the other experience variable which is female directors' nationality is positively and significantly related to ABM, which indicates that diversity of nationalities could have negative consequences with regards to financial reporting, this might be due to the disagreements among board members with foreign directors which might affect negatively the accuracy of decisions (Ruigrok et al., 2007).

Moreover, foreign directors might have lower knowledge about local regulations and governance standards (Masulis et al., 2012) and their presence could result in language misunderstanding which might lead to negatively influencing boards monitoring functions (Hooghiemstra et al., 2019). The result is inconsistent with Dobija et al., (2021) study findings maybe because their study focuses on Poland and their proxy for measuring female directors' international experience is different than the current study.

Furthermore, a significant positive relationship is found between female directors' age and ABM, indicating that older female directors are less likely to constrain ABM. One reason might be that older female directors have more years of experience on board; hence, their attitude and risk preference might become homogenous with their male colleagues (Sila et al., 2016; Sheedy and Lubojanski, 2018). Another reason might be that as stressed by Kirsch (2018), younger female directors are more likely to take their monitoring tasks seriously as they are more concern about their reputation.

After presenting the influential role of female directors' statutory and demographic attributes on ABM practices, this section discusses the specific attributes that could help in monitoring REM as an alternative method of EM that is increasingly used by managers (Francis et al., 2016), associated with high level of ambiguity (Commerford et al., 2019) and could cause greater negative economic consequences compared to ABM since it directly alters firms' cashflows and affects firms' operating performance (Kothari et al. 2012; Evan et al., 2015).

Table (5.15) revealed a significant negative relationship between the percentage of female members on AC and REM at 10%. This indicates that female directors are effective in constraining REM when they are members on AC because this committee is closely monitoring managerial activities. Green and Homroy (2018) stated that the presence of female members in decision-making committees such as audit committee can result in enhancing the monitoring effectiveness. This finding is aligned with Mardessi and Makni (2020) who also revealed that the presence of female members on audit committee could mitigate REM.

With regards to female directors' leadership variables, board and AC chairwomen are negatively and significantly related to REM at 10% level. Since REM are perceived as unethical practice (Hong and Andersen 2011), the findings support researchers' argument that men and women act based on their stereotypes which would affect their behaviour in the workforce (Franke et al., 1997).

More precisely, the study confirms that female leaders can foster ethical leadership resulting in a better ethical decision-making environment that encourages transparency in financial reporting (Ho et al., 2015), the findings also support that the gender of audit committees' chair could make a difference in promoting better monitoring environment and eliminating REM although it is difficult to be detected than ABM. The finding is consistent with Xiong (2016) who also found that female chairperson is associated with lower REM level.

Furthermore, female directors' education level and background are significantly and negatively related to REM at 1% level, indicating that female directors' education is an important factor in constraining REM practices. Since REM is vague and not easy to be discovered, female directors with high educational degree are more capable of understanding complicated issues (Johnson et al., 2013; Jiang et al., 2016), hence, would more likely contribute in constraining REM. Besides,

it is vital for female directors to have business background in order to be able to understand and monitor REM practices effectively.

As shown in table (5.15), female directors' experience within the board is an essential factor that could help female directors in constraining REM. More precisely, the years of experience gained from being a member of a current board (F_TEN) is negatively and significantly related to REM at 1% level, implying that having a long tenure on board could help female directors in being familiar with the firm's operations, hence, the opportunistic REM that are deviated from the optimal managerial decisions are more likely to be mitigated. This supports Brown et al. (2017) argument regarding that directors' tenure is an essential factor to improve corporate governance effectiveness.

Besides, similar to ABM, a significant positive relationship is found between REM and foreign female directors (%F_NAT), this indicates that foreign female directors might not effectively practice their monitoring skills due to their potential language misunderstanding which may affect boards monitoring functions (Hooghiemstra et al., 2019) and might result in a reduction in communication quality within boards (Anderson et al., 2011).

Similar to ABM, the relationship between female directors' age and REM is significantly positive. This argument is supported by Alqatan (2019) argument regarding young directors can bring more creative ways to improve the monitoring process of boards. Besides, as mentioned by Bekiroglu et al., (2011), younger directors are more ethically sensitive. In addition, as stated earlier, younger female directors are more likely to take their monitoring tasks seriously (Kirsch, 2018).

After discussing the results related to EM practices that would change firms' bottom-line earnings (i.e., ABM and REM), this section focuses on the influential role of female directors' attributes on less costly and more sophisticated EM method which influence firms' core instead of bottom-line earnings (Athanasakou, et al. 2009; Zalata and Roberts 2016, 2017). Testing the impact of female directors' attributes on CS method is essential because investors are paying more attention to core earnings (Black et al., 2017) as it is perceived a more reliable source for predicting future profitability than bottom line earnings (Alfonso et al., 2015).

In order to investigate the association between female director's attributes and CS, the study focuses on the coefficient of NREC and interaction between NREC and female director's

attributes related variables. The results illustrated in table (5.15) showed that the coefficient of NREC is positive and significant at 1%, indicating that recurring expenses were misclassified into non-recurring expenses within the income statement, hence firms are engaging in CS practices to inflate their core earnings (Zalata et al., 2019).

Table (5.15) illustrated that the role of female members on audit committee as well as audit committee chairwomen seem to be very effective in constraining CS practices. The percentage of female members on audit committee and audit committee chairwomen are significantly and negatively related to CS. One reason might be that the board delegates most of the monitoring tasks to audit committee and this committee works closely with mangers and more aware of firms' operations and have greater knowledge regarding firms' revenues and expenses classification. Therefore, female members and chairwomen on audit committees are more familiar with the firms' financial reporting which help them in reducing CS. The finding confirms Green and Homroy (2018) argument regarding that the presence of female members on audit committees is essential to improve their monitoring skills. Besides, the result is in alignment with the studies' argument that chairperson on audit committee could result in better monitoring outcomes (Ittonen et al., 2010).

On the other hand, unlike audit committee leadership, the variable related to female director's leadership on board is positively and significantly related to CS at 1% level implying that when boards are chaired by women, CS practices are less likely to be challenged. The findings highlight women can use their leadership skills more effectively when they are chairing monitoring related committee because they can closely monitor managerial opportunistic actions as audit committee regularly meet with managers and auditors of firms to review the internal accounting controls, financial statements, and audit process (Khlif and Achek, 2017; Al-absy et al., 2018).

Also, the majority of the board monitoring responsibilities are assigned to the audit committee (Arun et al., 2015; Guo and Masulis, 2015) and the classification of firms' expenses is more likely to be discussed in audit committees' meetings (Zalata and Abdelfattah, 2021), therefore, chairwomen and audit committee female members might have greater knowledge regarding firms' expenses classification. However, it might not be the case when chairing a board, since CS is complicated and regulations regarding the non-recurring items in the income statement are less rigid and associated with low costs and risks (Zalata and Roberts, 2016), female board chairperson may not be able to practice their leadership skills effectively.

Female directors' tenure and educational level are appeared to have a significant negative relationship with CS. The findings confirm that women experience and education level are essential for uncovering sophisticated EM practices (Zalata et al., 2019). The finding is consistent with Brown et al. (2017) argument regarding that directors' tenure can play a fundamental role in influencing corporate governance effectiveness. Zalata and Roberts (2016) also confirmed that directors' tenure is significantly and negatively related to CS. Additionally, the findings support Singh et al. (2015) argument regarding highly educated female directors have higher influence on board decisions.

However, a positive relationship is found between female directors' business background and CS, this might be due to the fact that female directors with business backgrounds might be more aware that the involvement in CS compared to the other EM methods would be less costly practice because it does not involve reversal of accruals (i.e., ABM), or future returns decline similar to REM (Athanasakou, et al. 2009; Zalata and Roberts 2016, 2017) resulting in allowing more CS practices. Hence, they are more likely to increase CS practices.

On the contrary, similar to ABM and REM, female directors' nationality is associated with more CS, which means that foreign female directors are not effective in constraining CS. This might be because of what was mentioned earlier regarding that foreign director might have lower knowledge about local regulations and governance standards related to classification shifting (Masulis et al., 2012). Besides, female directors represent minority group hence, are not be able to contribute to board decisions due to the strong domestic networks (Westphal and Milton, 2000; Ruigrok, 2007).

A negative relationship is found between female directors' age and CS at 1% indicating that when female directors are young, CS level becomes higher. The result is contradicting with ABM and REM and the reason might be that young female directors might care more about their reputation; hence, they tend to constrain ABM and REM practices which attract high regulatory attention since both methods are associated with deceiving disclosures and financial reporting misrepresentations which would eventually attract high litigation risk (Huang et al., 2020), while CS is associated with high level of managerial assessment and fewer disclosure requirements compared to ABM and REM (McVay, 2006; Huang et al., 2020; Zalata and Abdelfattah, 2021). Thus, age can be an important indicator for female directors' risk preference (Serfling 2014).

Overall, the majority of audit committee characteristics are insignificantly related to ABM with except to audit committee independence and percentage of meeting attendance. A negative and significant relationship is found between audit committee independence and ABM at 5% level. The results confirm previous studies who also found similar results (Inaam and Khamoussi, 2016). Moreover, the percentage of audit committee meeting attendance is negatively and significantly related to ABM at 5%. This finding is consistent with Maraghni and Nekhili (2014) who found that high percentage of attendance in audit committee leads to lower EM.

With regards to audit committee control variables, the majority of audit committee characteristics are insignificantly related to ABM with except to audit committee independence and percentage of meeting attendance. A negative and significant relationship is found between audit committee independence and ABM at 5% level. The results confirm previous studies who also found similar results (Inaam and Khamoussi, 2016). Moreover, the percentage of audit committee meeting attendance is negatively and significantly related to ABM at 5%. This finding is consistent with Maraghni and Nekhili (2014) who found that high percentage of attendance in audit committee leads to lower EM.

In terms of REM, two audit committee characteristics are significantly related to REM which are audit committees' independence and audit committee size. A significant negative relationship is found between audit committee independence and REM at 1% level. This shows that independent audit committee members are effective in mitigating REM practices. This result is consistent with Kang and Kim (2012) and Talbi et al. (2015) who reported that independent audit committee members are effective in reducing REM.

In addition, audit committee size is positively and significantly related to REM at 5% level. This means that when the audit committee size is larger, the more likely the level of REM will increase, this might be because large audit committee size might face the free riding issue which contribute in eliminating the audit committee monitoring effectiveness (Lipton and Lorsch, 1992).

Audit committee independence is the only variable that is significantly related to CS. The table shows a negative relationship at 10% level. This indicates that independent directors are more capable of discovering CS practices when they are audit committee members because this committee is more involved with financial reporting and control. Prior literature documented

independent members on audit committees are effective in monitoring because they tend to ask challenging questions to executives (Klein, 2000), and evaluate objectively the financial reporting quality (Abbott et al. 2004; Davidson et al. 2005).

To sum up, in alignment with human capital theory and agency theory, female directors' attributes related to their experience, education and audit committee membership are effective in monitoring managerial actions, hence, eliminating most of EM practices. Most importantly, the findings confirm the crucial role of female members and chairwomen on audit committee in detecting all EM practices regardless of their risk level and costs as being on audit committee would help them in closely monitoring and understanding the misclassification of expenses as well as the matters related to ABM and REM practices. As stated by Gul et al., (2011) and Li and Li (2020), gender diversified audit committee could result in high level of trust, collaboration and information sharing between the members and this would help the audit committee chairwomen in gaining more information about the firm. Thus, information asymmetry level becomes low between the audit committee chairwomen and executives.

On the other hand, a number of female directors' attributes resulted in an increase in certain EM methods. For example, with regards to female directors' leadership role on board and business background, although they are significantly effective in eliminating EM practices that could change the bottom-line earnings (ABM and REM), they were positively associated with CS practices.

This shows that female directors risk preference may remain the same and can influence boards' decisions even when they are chairpersons and they have the ability to influence the overall board attitude toward different EM practices based on their risk level. Besides, female directors with business backgrounds might be more aware that the involvement in CS compared to the other EM methods would be less costly practice because it does not involve reversal of accruals (i.e., ABM), or future returns decline similar to REM (Athanasakou, et al. 2009; Zalata and Roberts 2016, 2017) resulting in allowing CS practices.

Therefore, monitoring role of female directors and female board chairs vary based on the method of EM used. In particular, the results confirm that CS method is more preferred by female directors and female board chairpersons due to the low risks and costs associated with it since earnings before non-recurring items are lightly regulated under IFRS (Zalata and Roberts, 2016), and is

heavily used to achieve predetermined earnings benchmarks, especially when other EM methods are constrained (McVay, 2006; Barua et al., 2010; Fan et al., 2010).

In addition, the results showed that female directors' age which possibly reflect their experience (Serfling, 2014) are positively related to ABM and REM and negatively related to CS practices. This gives an indication that younger female directors are more likely to constrain risky EM practices (ABM and REM), while engaging more in less risky EM method that affect core earnings only without changing the bottom-line earnings (CS). Older female directors have more experience and as a result, are more likely to be appointed in a number of board seats, therefore, they would probably fail to effectively monitor managerial risky actions and EM practices. Therefore, older female directors might cause adverse consequences for firms that they serve as directors.

Besides, the number of young female directors is relatively high compared to male directors because of the recent initiatives to increase the number of female board directors (Ahern and Dittmar, 2012), thus, young female directors are keen to remove the "tokenism" perception by exaggerating their monitoring behaviour on boards (Guedes et al., 2018), especially when it comes to EM with high litigation risks. The only female directors' characteristic that resulted in an increase in all EM practices is female directors' nationality. The results revealed that foreign female directors might result in reducing the monitoring effectiveness of boards and this might be due to a number of reasons. Foreign directors might have lower knowledge about local regulations and governance standards (Masulis et al., 2012) and their presence might result in language misunderstanding resulting in a poor communication quality within boards (Anderson et al., 2011), thus, may affect boards monitoring functions negatively (Hooghiemstra et al., 2019). Also, it might be due to the strong domestic networks, foreign female directors maybe stuck as a minority group within the board, thus, they are not be able to contribute in board decisions (Westphal and Milton, 2000; Ruigrok, 2007).

Chapter conclusion

Chapter six discusses and interprets the results of chapter five and link them with the prior studies' findings and theories that were mentioned in chapter two and three. The study findings were interpreted in depth for every model used in the study that aims at testing the research hypotheses. A discussion and a summary of the findings are also provided to further discuss the research results.

CHAPTER SEVEN: THESIS CONCLUSION

Chapter introduction

After discussing the thesis findings in chapter six, this chapter discusses the conclusion part of the thesis. First, the chapter starts with an overview of the research motivation, objectives and sample. The chapter next discusses the main thesis findings followed by the research recommendation and how the study findings can be reflected in actual practices to improve the role of female directors. The study limitations were also highlighted and future studies were suggested in order to overcome the limitations of the current study.

7.1. Conclusion

The number of women serving in corporate boards and senior executive roles has been relatively low traditionally (Carter et al. 2003). However, the growing concerns about increasing the number of female directors on board have led to a large number of regulations across the world that aim at enhancing female representation on corporate boards (Green and Homroy, 2018) resulting in doubling the representation of women on corporate boards (Seierstad, et al. 2017), and the percentage of female executives has increased in the recent years as well (Adams, 2016). This study is motivated by the recent changes in regulatory and governance reforms toward increasing the representation of women on corporate boards and executive positions.

A limited but rising number of studies were motivated to test the consequences of the gender diversity on boards in terms of EM, however, the prior research inconsistent findings are still questionable. (e.g., Arun et al., 2015; Kyaw et al., 2015; Lakhal et al., 2015; García Lara et al., 2017; Gull et al., 2018; Saona et al., 2019; Abdou et al., 2020). Accordingly, the aim of this thesis is to further investigate the ambiguous relationship between board gender diversity and EM by testing the possible factors that could justify this relationship by including female CEOs as well as female directors' presence, proportion, attributes and roles on board and audit committee. The thesis is divided into three interrelated objectives that aim at explaining the association between female directors and EM practices.

The first aim focuses on the risk-aversion and ethical stereotype debate when testing the relationship between gender diversity and EM practices. The increasing attention on the gender diversity on corporates' top positions are mostly driven by the major gender behavioural difference perception (Charness and Gneezy, 2012) as it was believed that the presence of women members would lead to more board independence as they do not belong to the "old boys club"

(Adams and Ferreira, 2009; Terjesen et al., 2015; Terjesen et al., 2016; Valls Martínez et al., 2020) resulting in a reduction in agency conflict (Daon and Datta 2020).

Prior studies were motivated to test if the common stereotype 'women are more risk averse and ethical than men' as suggested by prior researchers (e.g., Ho et al., 2015; Palvia et al., 2015) is actually true by linking gender diversity with EM (e.g., Arun et al., 2015; Gull et al., 2018; Saona et al., 2018). The common assumption in these studies is that women stereotype characteristics would support female directors as well as female CEOs in embedding a sound internal governance practice, hence, eliminating EM more effectively than men as it is perceived a major ethical and risky dilemma (Sun et al., 2011; Zalata et al., 2019) and a suitable paradigm to assess corporate ethical issues (Du et al., 2015).

Nevertheless, the majority of prior EM studies focused on ABM which is a risky method that attracts high regulatory scrutiny (e.g., Arun et al., 2015; Gull et al., 2018; Kyaw et al., 2015; Saona et al., 2018), which could partially explain female directors and CEOs attitude toward risky and ethical decisions in the top corporate positions. However, As stated by Luo et al., (2017), investigating one EM method fails to capture the overall effect of board gender diversity.

Therefore, this study responds to Zalata et al., (2019) call by focusing on whether female directors and female CEOs tend to act more ethically sensitive or risk-averse compared to male directors with regards to different types of EM. Also, the study responds to Kirsch (2018) recent call regarding the importance of examining corporate directors' gender differences concerning corporate ethical values. Including multiple EM practices is important because prior studies highlighted that all these methods of EM are used by managers and can mislead the investors in anticipating firms' future performance (Anagnostopoulou et al., 2019). However, we cannot ignore the fact that EM is an ethical issue regardless of the method used to influence firms' earnings and the risk level varies from one EM method to another (Zalata et al., 2019), thus, it is expected that the response of female directors and CEOs might differ from one EM to another.

The study findings suggest that the monitoring role of female directors vary according to the EM method used as they are less likely to question the engagement of CS practices and more likely to constrain ABM and REM. This indicates that the common women stereotype assumption might not be fully applicable when women are board directors as the results showed that they are risk

averse (i.e., effectively monitoring and eliminating EM practices associated with higher risks), however, not necessarily ethically sensitive as they are less likely to monitor and challenge CS practices although it is also perceived as unethical practice. Female directors may pay less attention to reducing CS as it is considered a sophisticated EM method and it is not easy to be detected (Zalata et al., 2017, 2019) and put more effort in reducing ABM and REM practices.

Similar results were found when women occupy CEO position which indicate that female CEOs allow CS as a soft form of EM because compared to ABM and REM, CS does not deal with reversal of accruals in the coming period or result in future revenue reduction due to missed opportunities (McVay, 2006; Athanasakou et al., 2009). Also, researchers stated that CS deals with misclassifying income statement items and does not change the bottom-line earnings and most importantly, it is not associated with managing core expenses recognition (Zalata and Abdelfattah, 2021), Hence, auditors and regulators do not pay attention to it since it does not change the bottom-line earnings (Nelson et al., 2002).

Female directors, CEOs and female board chairpersons prefer the usage of CS practices due to a number of reasons: first, although the majority of the accounting literature perceived CS as EM method (e.g., McVay, 2006; Haw et al., 2011; Walker, 2013; Abernathy et al., 2014; Malikov et al., 2018; Anagnostopoulou et al., 2019; Poonawala and Nagar, 2019; Zalata et al., 2019), some researchers argued that CS should not be seen as EM method as it is applied for signalling firms' persistence rather than deceiving interested parties (Riedl and Srinivasan, 2010; Penno and Stecher, 2020). Second, CS is subject to high level of managerial judgement and the disclosure requirements are very limited (McVay, 2006), accordingly, female CEOs would engage more in this method and at the same time female directors may not be fully aware of firms' recurring and non-recurring expenses which may justify their limited role in mitigating CS.

The second aim goes beyond the presence of female board directors by testing the role of their proportion in influencing EM practices and responds to the growing area of research that highlighted the importance of considering the critical mass theory suggested by Kanter (1977) which was applied by limited number of researchers when examining the board gender diversity and EM and the results are still inconclusive. This aim focuses on whether the proportion of female directors would play an essential role in shaping board interaction and influencing monitoring effectiveness by affecting EM practices. Therefore, unlike the previous studies, this study adds

to the literature by providing additional evidence regarding if a critical mass logic better explains women influential monitoring role on board and multiple EM methods relationship than conventional approaches.

The study results showed that when female directors represent token representation (i.e., skewed group), they tend to follow male directors (uniform boards) by allowing more risky EM methods (ABM and REM) associated with managing the bottom-line earnings, while reducing CS practices which is a less risky substitute that changes only core earnings. This indicates that women influence is limited when they represent the minority group in the board and men are still dominating the monitoring activities.

However, in alignment with critical mass concept, when female directors' proportion reaches to tilted group (i.e., 20% to 40%), they are more likely to influence board monitoring practices. In particular, similar to the above-mentioned results, risky ABM and REM practices are eliminated while CS is less likely to be eliminated. This finding highlight that the concept of critical mass does not only support the enhancement of female directors monitoring on board as most of the previous studies assumed because the current study findings showed that when female directors reach to critical mass level, their influence will be greater on board to less likely challenge CS, however, it does not mean that their monitoring will be greater on all EM practices. The results also showed that having additional female board directors (more than 40%) on board would not always be significantly effective in influencing ABM, REM and CS. Hence, gender balanced boards might not always result in having greater influence on boards as female directors influence vanishes. Also, as stated by Dobija et al., (2020), a proportion of female directors that is too high would lead to insignificant influence on board as gender diversity benefits becomes limited.

Overall, the above study results raise serious concern regarding the increasing usage of CS practice as a low-risk and less costly alternative EM method despite the negative consequences associated with it. Also, although CS does not deal with managing bottom-line earnings, the extant literature agreed that investors are considering core earnings when trading (e.g., Bhattacharya et al., 2007), and it became a popular performance metrics in the capital markets (Rapoport, 2016; Golden, 2017). Thus, the engagement in CS would increase the risk of misleading investors (Zalata and Roberts, 2016; Anagnostopoulou et al., 2019).

Also, it was highlighted by previous researchers that a major limitation in the accounting and gender diversity studies is focusing on female directors' presence only and ignored the other important characteristics that may strongly influence their behaviour aside from gender issue only (Khlif and Achek, 2017). The vast majority of the previous studies assumed that female directors' presence alone would affect boards monitoring function and have largely neglected exploring the role of female directors' roles and attributes in constraining EM practices (e.g., Arun et al., 2015; Kyaw et al., 2005; Guedes et al., 2018; Zalata et al., 2019) and limited number of studies responded to considering female directors attributes when testing their impact on ABM (e.g., Gull et al., 2018; Arıoğlu, 2020; Dobija et al., 2021).

In addition, unlike ABM, CS and REM are complicated and not easy to be detected (Zalata et al., 2019; Cai et al., 2020), therefore, they require specific capabilities other than just the gender of directors, hence, there is a need to go beyond simply the presence of female directors and focus on the characteristics that would play an influential role in enhancing their monitoring skills and reducing multiple EM practices that are increasingly used by firms. Therefore, the last research aim of this thesis looks at female directors as a "bundle of attributes" which would help in understanding more clearly how women directors would influence board monitoring activities. In general, the results revealed that the monitoring effectiveness of women in top corporate positions depends on the role that they are holding. In particular, the role of women become more effective in eliminating all EM practices when they are audit committee chairwomen or members. Women can practice their leadership skills effectively when they are chairing audit committees.

The result confirms the essential role of audit committee in ensuring the integrity of financial reporting process (Zalata and Roberts, 2016). Besides, the findings highlight women need to be members or chairpersons of audit committees in order to closely monitor managerial opportunistic actions as audit committee regularly meet with managers and auditors of firms to review the internal accounting controls, financial statements, and audit process (Sun et al., 2011; Khlif and Achek, 2017; Al-absy et al., 2018).

Also, the majority of the board monitoring responsibilities are assigned to the audit committee (Arun et al., 2015; Guo and Masulis, 2015) and the classification of firms' expenses is more likely to be discussed in audit committees' meetings (Zalata and Abdelfattah, 2021), therefore, audit committee chairwomen and female members might have greater knowledge regarding firms'

expenses classification. However, similar to female directors' results discussed earlier, women leadership role on board (i.e., chairwomen) are also significantly effective in eliminating EM practices ABM and REM and positively associated with CS. This implies that board chairwomen are less likely to use their leadership skills to encourage monitoring effectively less risky EM methods (Zalata and Roberts, 2016).

With regards to female directors' education, the findings revealed that female directors with higher educational level are more likely to eliminate all EM practices which confirm that educational level is essential because it would help in understanding complicated issues related to all EM practices (Johnson et al., 2013; Jiang et al., 2016). However, female directors with business background tend to reduce ABM and REM while increasing CS and this could be to because they are more aware that the involvement in CS compared to the other EM methods would be less costly practice while other practices would result in severe consequences (Athanasakou, et al., 2009).

In terms of female directors' experience, board tenure seems to help female directors in being aware of firms' operations and nature of expenses which would result in effectively reducing all EM practices. This confirms that directors' tenure can play a fundamental role in influencing corporate governance effectiveness (Brown et al., 2017). However, when it comes to international experience, all EM are more likely to be increased. This might be because foreign female directors might have lower knowledge about governance standards (Masulis et al., 2012) or might not be able to exercise their full potential skills due to the strong domestic networks (Westphal and Milton, 2000; Ruigrok, 2007).

Finally, the results showed that younger female directors are more likely to constrain risky EM practices while engaging more in less risky CS method. The results confirm that risk preference of female directors varies according to their age as young female directors are more likely to be suggest creative methods for improving board monitoring process (Alqatan, 2019).

7.2. Thesis contribution

Unlike the previous studies e.g., Arun et al., 2015; Kyaw et al., 2015; Lakhal et al., 2015; García Lara et al., 2017; Gull et al., 2018; Saona et al., 2019; Abdou et al., 2020), this thesis sees the relationship between gender diversity on boards and EM through different theoretical lenses which are agency theory, critical mass theory and human capital theory. This would provide a broader explanation about female directors' impact on board monitoring effectiveness. Also, the study provides further evidence to the limited and inconclusive findings of the previous studies by understanding what female directors bring to corporate boards and how their proportion on board, specific attributes and monitoring related positions could influence EM.

In addition, the study responds to Kirsch (2018) recent call regarding the importance of examining corporate directors' gender differences concerning ethical values and also sheds light on women attitude toward risky decisions on top corporate positions. As a matter of fact, this study is one of few studies that provides a different argument than the majority of previous studies regarding risk preference and ethical attitude of female directors toward EM practices. The study also provides an answer to the debate regarding if female directors attitude and values are different than male directors as well as women from the general public or not.

Most importantly, unlike the majority of the prior studies that focused mainly on ABM method, this study responds to the recent researchers call to the need of including multiple EM methods to improve the understanding of all the possible EM techniques used by managers. Besides, EM methods were mostly investigated separately which may not provide an exact picture of EM techniques applied, however, the current study uses the same sample for specific period of time and includes a number of EM techniques while taking into consideration a number of factors such as costs and risks associated with these techniques in order to provide a consistent comparison.

Also, the majority of the previous studies covered not very recent period which is before and slightly after the financial crisis that occurred in 2008 and IFRS adoption in the EU which is after year 2005. However, it is crucial to investigate the relationship between gender diversity and EM for a long period of years and especially after the financial crisis and IFRS adoption because different regulatory and corporate governance reforms were done in response to this crisis to make the monitoring mechanisms more effective and to avoid future crisis.

Accordingly, the study contributes to the literature by focusing on the period after the financial crisis since it provides an important setting for identifying the different EM practices used by managers. Also, this period is important because the number of board gender diversity policies such as quotas, disclosure requirement, and corporate governance amendments has increased tremendously worldwide since the year 2010 (Adams, 2016).

In addition, this study is one of few studies that includes a multi-country sample of European firms. Studying the relationship between gender diversity on boards and EM practices within the European context is crucial because European countries act as gender diversity role models for other countries worldwide and many countries are interested in knowing whether Europe initiatives towards gender diversity issue has an impact on one of the most important ethical issue in the corporate world which is EM. In addition, the current study attempts to look deeper inside the black box of corporate boards to further explain the complicated effect of female directors' proportion on board governance capabilities. Also, the study provides additional evidence regarding if a critical mass logic better explains women role on board and EM relationship than conventional approaches. Furthermore, despite critical mass theory popularity, a limited number of studies applied it in empirical studies (Joecks et al., 2013), and rarely used when testing the relationship between female directors and EM and the existed studies' findings are still inconsistent, hence, the study provides further evidence to the inconclusive literature.

The current study also adds to the literature by answering an important question related to the optimal proportion of female directors on boards that would result in preferable board monitoring mechanism. If boards dominated by male directors are perceived to negatively affect board monitoring effectiveness resulting in an increase in EM practices, then how the situation will be if boards were dominated by female directors?

Most importantly, understanding the effects of the critical mass of female board directors on EM is important given the European Commission proposal to increase the presence of female non-executive directors to at least 40% (European Commission, 2012b). Although it is not applied yet, the Commission still committed to this proposal (European Commission, 2021). This percentage represents balanced proportion as suggested by Kanter (1977) and the previous studies provided mixed results with regards to the gender balanced boards and EM. As stated by Kirsch (2018) the literature still does not answer the important question of what are the expected economic

consequences of a gender balanced board. Hence, the study finding would reveal the consequences of suggested EU proposal of having gender balanced board on EM.

Internationally, the average percentage of women directors in sixty-seven countries is 10.3% (Terjesen et al, 2015), indicating that tokenism could be a real issue on boards and the board gender diversity consequences might be still vague. Hence, the study findings are beneficial for firms, regulators and policy makers who are interested in knowing the optimal proportion of female directors when setting their gender diversity voluntary target or quota. Also, the current study is crucial for countries worldwide especially those who introduced a target of at least one woman on corporate boards which may only a token appointment.

Additionally, the study contributes to the existing literature by further understanding what female board directors bring to corporate boards and how their specific attributes influence EM practices. Hence, this study extends previous studies by going beyond just simply measuring the impact of female directors' presence by including broader dimensions of gender diversity when testing the relationship between female directors and EM practices.

This study responds to recent call for considering human capital elements when testing the impact of female directors on board outcomes (Kirsch, 2018). The previous studies investigated the association between board statutory and demographic attributes and EM (e.g., Bzeouich et al., 2019; Orazalin et al., 2019; Bouaziz et al., 2020) but a very limited number of studies tested female directors' attributes and EM practices. Therefore, the study goes more in depth as it provides exact details about the relationship between gender diversity and EM practices rather than testing only the presence or the number of female directors.

Additionally, interested parties about the consequence of gender diversity on boards and more specifically female directors' competence are keen to know exactly how female directors' specific attributes could contribute in eliminating EM as it requires advanced specific skills. Also, the findings of the study would reveal the role of women directors as a board member, chairperson, and member of sub-board committees. This gives more details about the influential role of female directors when wearing multiple hats within the same board because each position might need different characteristics and most importantly, the study findings highlight the role of audit

committee membership in eliminating different types of EM practices as it attracted less attention by the extant literature compared to ABM.

More importantly, in order to uncover complex EM practices, female directors are expected to have specific observable and unobservable competences that would contribute in enhancing board monitoring and demanding high-quality financial reporting (Lai et al. 2017), therefore, this study uncovers these characteristics of women in order to have better understanding specially that it is commonly claimed that there is a great difference between female board directors' characteristics and their male peers (Ahern and Dittmar, 2012; Le Dang et al., 2014).

Sila et al. (2016) highlighted that the economic consequences of the presence of female board directors is still vague and not well understood. Regulators, investors, creditors and other stakeholders are keen to assess the influential role of gender diverse boards on board monitoring function, thus, this study would provide clear evidence regarding this critical issue. In fact, understanding the effect of more diverse boards on EM would provide regulators worldwide with deeper knowledge to determine whether appointing more women on the board would be beneficial for improving board monitoring effectiveness or not. Also, board gender diversity quota generally does not mention specifically any preferable female directors' characteristics (Gull et al., 2020), hence, the finding of this study is essential for policymakers as it highlights that the appointment of female directors should not be based only on their gender but it is important to promote women directors' characteristics and skills when setting gender diversity quota or targets.

The study results are timely considering the different initiatives for increasing the representation of women on European corporate boards. The findings are beneficial for countries who are interested in gender diversity on corporate boards as well as financial reporting integrity. Also, interested parties about the consequence of gender diversity on boards and more specifically female directors' competence are keen to know exactly how female directors' specific attributes could contribute in eliminating EM as it requires advanced specific skills.

Also, the findings of the study revealed the role of women directors as a board member, chairperson, and member of sub-board committees. This gives more details about the influential role of female directors when wearing multiple hats within the same board because each position might need different characteristics and most importantly, the study findings highlighted the role

of audit committee membership in eliminating different types of EM practices as it attracted less attention by the extant literature compared to ABM. Also, the study provides broader explanation to the regulators and shareholders regarding different EM practices applied in firms.

The study results are important for regulators who are interested in the optimal proportion of female directors that could result in greater influence on boards. Also, the study results provide information to the interested parties in the consequences of gender balanced boards. Hence, the study finding would reveal the consequences of suggested EU proposal of having gender balanced board on EM.

Overall, auditors, stakeholders, regulators and policy-makers would benefit from the study findings.

7.3. Thesis recommendation

Although CS might not sound a serious EM issue as regulations related to the non-recurring items in the income statement are less rigid and a minor role possibly played by auditors in overseeing CS practices (Zalata and Roberts, 2016), the majority of the literature documented that it aims at misleading stakeholders and may result in unpreferable consequences, hence, more attention is needed regarding the elimination of CS practices such as reducing the classification flexibility of income statement items under IFRS and regulators should introduce new policies that could control the misclassification of income statement items and serious legal actions are needed when uncovering CS in order to eliminate this type of EM since it is heavily used and it could mislead interested parties.

In addition, the study proposes a number of female directors' appointment strategies that firms could benefit from in limiting the chances of opportunistic EM. For example, recent study showed that women are less likely to be part of board monitoring related committees (Rebérioux and Roudaut, 2016), however, according to the current study findings, it is vital to engage female directors on audit committees so they can practice their monitoring capabilities more effectively, this is an important action that should be taken specially that the initiatives are focusing on women participation on boards and not boards' committees in particular.

More precisely, based on the study findings, the audit committee would definitely help female directors on closely monitor the managerial actions and effectively constrain all types of EM practices. Hence, more emphasis on the importance of women membership on audit committee is needed by countries to make sure that they practice their monitoring skills appropriately. However, countries are paying high attention to increase the participation of female directors on boards, but according to the study results, more attention is needed on increasing the participation of women on audit committees because they can closely monitor managerial actions and contribute in reducing all EM methods as unethical practices regardless of the risks, costs and complexity associated with them.

Moreover, foreign female directors with previous experience in other local boards are more preferred to be appointed to make sure that they are familiar with the countries' laws and regulations. Also, the study findings highlighted the importance of considering female directors' attributes and the assumption that the presence of female directors alone could influence EM practices might result in misleading findings. Hence, financial statement users are encouraged to take into consideration female directors' attributes as well as their proportion when evaluating firms' profitability or taking investment decisions. Besides, corporate governance codes should focus on female directors' attributes when recommending gender diversity on boards in order to make sure that they have effective monitoring skills. The same thing is applied to gender diversity quotas and targets.

As the study findings suggested, gender quotas and targets are preferred to be within the range of tilted group in order for female directors to have a great impact on board monitoring function and the findings do not encourage countries to set quotas more than 40% or aim at gender balanced boards because it might result in unpreferable board monitoring outcomes. However, it is important to have high regulatory attention and serious legal actions toward CS practices so that female directors would consider these practices risky and then their critical mass proportion would result in reducing all EM practices.

7.4. Limitation of the thesis and future research

Although the current study provided robust results and covered a number of the possible factors that could explain the relationship between female directors and EM, the study has a number of limitations that need to be clearly acknowledged. First, researchers raised concern regarding REM proxies and claimed that REM is vague and it cannot accurately differentiate between the opportunistic from the actual fluctuations in the business dynamics (Kothari et al. 2016). Hence, REM proxy might not provide an accurate picture of opportunistic REM behaviour.

In addition, due to data limitations, a number of variables were not included in the study although prior research claimed that they are important factors such as the percentage of independent female directors, female CFOs and female directors' multiple directorships. Hence, future studies might include these variables to further investigate female directors' attributes.

The findings of this study provide insights for different future research such as estimating the ABM, REM and CS using alternative more recent models. Additionally, although a number of tests were done to check the robustness of the study results, future studies might use other econometric methods or use instrumental variables to overcome the issues related to data such as endogeneity and heterogeneity to improve the current analysis.

In addition, it would be interesting to discover the role of regulatory initiatives (i.e., gender diversity quota) in influencing the relationship between gender diversity and EM practices. Moreover, researchers argued that female directors with multiple directorships might not be able to effectively monitor managerial actions, thus, it would be interesting to link it with EM practices. Further, although the current study tried to control a number of corporate governance variables, there are other variables as institutional ownership could be added to the analysis in future studies.

Future studies might study gender diversity in top management behaviour toward income decreasing EM practices or classify EM as beneficial or opportunistic practices and link it with the presence of female directors. Also, this study did not focus on the EM directions (i.e., income increasing or decreasing), therefore, future studies may investigate EM purposes and directions. Moreover, Malikov et al., (2018) suggested that managers are more likely to misclassify revenues rather than expenses. Thus, future studies could test the association between female directors

and the misclassification of revenues. Another interesting future research topic is linking gender diversity with misclassification of balance sheet items.

Examining to what extent the study results hold for one and two-tier boards remains an open question especially European countries that allow both types of boards, thus, future researchers might take this point into consideration. Also, future studies could use different study sample to extend the current study findings such as in the Middle East or Far East or maybe include a larger sample of EU countries. Besides, a more recent study period (i.e., after 2017) should be tested. Finally, number of studies that applied qualitative research method are rare when it comes to exploring female directors' opinion with regards to EM practices, therefore, applying mixed methods or qualitative studies essential to go more in depth regarding their perception about multiple EM practices and the consequences associated with them.

Chapter conclusion

The chapter provides an overview of the research motivation and objectives. The chapter next presents the main thesis findings followed by the recommendations based on the overall research findings and how to improve the role of female directors on boards in the actual practices. Finally, in this chapter, the research limitations were highlighted and future studies were suggested.

Appendix 1

List of firms included in the study sample

PISCINES DESJOYA	BMW AG	ECOSUNTEK SPA	ATLAS COPCO-A
GASCOGNE	HELIOCENTRIS	PHARMANUTRA SPA	HEMBLA AB
SMALTO-REGR	AUDI AG	CASTA DIVA GROUP	NORDIC WATERP AB
CS GROUP SA	DEUTSCHE WOHNEN	CDR ADVANCE CAPI	BONAVA AB
WELL	STROEER SE & CO	ITALIA INDEPENDE	DOMETIC GROUP AB
VERNEY-CARRON-R	RWE AG	TRAWELL CO SPA	SCANDIC HOTELS
GAUMONT SA	MCKESSON EUROPE	AGATOS SPA	PANDOX AB
PCAS	SFC ENERGY AG-BR	FILA SPA	EVOLUTION AB
FRANCE TOURISME	CARL ZEISS ME-BR	LEONE FILM GROUP	THULE GROUP AB/T
REWORLD	MTU AERO ENGINES	INNOVATEC SPA	GRANGES AB
VALNEVA SE	DEUTZ AG	WM CAPITAL SPA	KLOVERN AB-B SHS
BLOKCHAIN GROUP	ENBW ENERGIE BAD	GRUPPO GREEN POW	TELE2 AB-B SHS
MNR GROUP	VOSSLOH AG	TRIBOO SPA	HEMFOSA FASTI
TOUTABO	CTS EVENTIM AG &	ENERGY LAB SPA	RECIPHARM-B
ADOCIA SAS	PUMA SE	PLT ENERGIA SRL	ATTENDO AB
GROUPE LDLC	SAF-HOLLAND SE	NOTORIOUS PICTUR	AMBEA AB
MADVERTISE	MAN SE	CSP INTERNATIONA	AHLSELL AB
BODY ONE	HORNBACH HOLDING	RATTI SPA	NOBIA AB
IMMOB HOTELIERE	NORDEX SE	SERI INDUSTRIAL	FASTIGHETS-B SHS
AUREA	SOLARWORLD AG	DIGITAL BROS SPA	HEXPOL AB
PGO AUTOMOBILES	DEUTSCHE EUROSHO	CAIRO COMMUNICAT	ROTTNEROS AB
ALPHA MOS	ALSTRIA OFFICE	MONDO TV SPA	SSAB-A
ROBERTET SA	DUERR AG	BIESSE SPA	MODERN TIMES-B
NOVATECH INDUSTR	HAMBURGER HAFEN	TREVI FINANZIARI	MEKONOMEN AB
GLOBAL BIOENERGI	SURTECO GROUP SE	SAFWOOD	ELECTROLUX AB-B
LAFUMA SAS	FIELMANN AG	PIQUADRO SPA	NIBE INDUSTRIE-B
FONCIERE ATLAND	SALZGITTER AG	POLIGRAFICI PRIN	PEAB AB-CLASS B
HOPSCOTCH GROUPE	WACKER NEUSON SE	COMPAGNIA IMMOB	SKISTAR AB
BOIRON SA	BAUMOT GROUP AG	GRUPPO WASTE ITA	LATOUR INV-B
DEKUPLE	WENG FINE ART AG	INIZIATIVE BRESC	SAGAX AB-A
ALAN ALLMAN ASSO	MBB SE	PLC SPA	HENNES & MAURI-B
FIDUCIAL OFFICE	FRANCOTYP-POSTAL	FINCANTIERI SPA	OREXO AB
BOURRELIER GROUP	VILLEROY & BOC-P	OPENJOBMETIS SPA	CASTELLUM AB
AKWEL	AFKEM AG	GEL SPA	FAGERHULT AB
PSB INDS	BRILLIANT AG	SITI B&T GROUP S	BILLERUDKORSNAS
SPIR COMM	PULSION MED SY-R	CLABO SPA	ASSA ABLOY AB-B
DOCKS PETR AMBES	AHT SYNGAS TECH	ENAV SPA	SAAB AB-B
CATERING INTL SV	INTERSTAHL HANDE	BIODUE SPA	GETINGE AB-B SHS
SELECTIRENTE	WASHTEC AG	AEROPORTO GUGLIE	ALFA LAVAL AB

STRADIM ESPACE	PFERDEWETTEN.DE	LU VE SPA	SVENSKA CELL-B
ALTHEORA SA	DEUTSCHE ROHSTOF	MONNALISA SPA	DUNI AB A
HOLOSFIND	GREIFFENBERGER	PIOVAN SPA	LINDAB INTERNATI
HERIGE	CARPEVIGO HOLDIN	COVER 50 SPA	BJORN BORG AB
ARTEFACT SA	YOUR FAMILY ENTE	SOMEC SPA	VOLVO AB-B
TOUAX	WEBAC HOLDING AG	FINLOGIC SPA	HUSQVARNA-B SHS
MR BRICOLAGE	SYZYGY AG	CFT SPA	BOLIDEN AB
COREP LIGHTING	BIO-GATE AG	GIMA TT SPA	HALDEX AB
TRIGANO SA	UMS UNITED MED S	ALFIO BARDOLLA T	LUNDIN ENERGY AB
GROUPE PLUS-VALU	BERCHT BERGBAHN	SICIT GROUP SPA	SECURITAS AB-B
LES HOTELS DE PA	TAG COLONIA-IMMO	ICF GROUP SPA	SANDVIK AB
ENCRES DUBUIT	SKW STAHL-METALL	SIT SPA	SKF AB- B SHARES
O2I	PONGS & ZAHN AG	NEODECORTECH SPA	NOLATO AB-B
TAYNINH	HUMANOPTICS AG	LOTTOMATICA SPA/	SKANSKA AB-B
ROCTOOL	INTICA SYSTEMS	PORTALE SARDEGNA	VITROLIFE AB
ROUGIER SA	WCM BETEILIGUNG	ALKEMY SPA	SWEDISH ORPHAN B
EAUX DE ROYAN	ZEAL NETWORK SE	GUALA CLOSURES S	TELIA CO AB
AUGROS COSMETIC	CURASAN AG	KOLINPHARMA SPA	HUFVUDSTADEN -A
AST GROUPE	GWB IMMOBILIEN	FERVI SPA	TRELLEBORG-B
GROUPE SFPI	AGENNIX AG	AQUAFIL SPA	HOLMEN AB-B SHS
LA FONCIERE VERT	COMMON SHARES	ASKOLL EVA SPA	INDUTRADE AB
NEXTEDIA	OHB SE	PORTOBELLO SPA	JM AB
VELCAN HOLDINGS	VITA 34 AG	INTRED SPA	CALLIDITAS THERA
SAMSE SA	GERATHERM MEDICA	ESAUTOMOTION SPA	SWEMET AB
GROUPE GUILLIN	MUELLER - DIE LI	FRANCHI UMBERTO	DESIGN YOUR HOME
GAUSSIN	KABEL DEUTSCHLAN	SOSTRAVEL.COM SP	HAMLET PHARMA-B
MASTRAD	INTERTAINMENT AG	SG CO SPA	NANOLOGICA AB
CELLNOVO GROUP S	ALBA SE	SCIUKER FRAMES S	CAPACENT HOLDING
ABEO SA	WILD BUNCH AG	RENERGETICA SPA	PEXA AB
CERINNOV GROUP S	TISCON AG	MYBEST GROUP SPA	BRAVIDA HOLDING
FRANCAISE ENERGI	BUERGER RAVENSB	GAROFALO HEALTH	ALZINOVA AB
KERLINK SACA	MUENCHENER TIERP	EDILIZIACROBATIC	LINK PROP INVEST
MAISONS DU MONDE	NYMPHENBURG IMM	AEDES SIIQ SPA	KLARIA PHARMA HO
MEDIAWAN SA	STO SE & CO.-PFD	BLUE FINANCIAL	ZENERGY AB-B
O SORBET D'AMOUR	PLETTAC AG	GAMBERO ROSSO SP	TOLERANZIA AB
DBT	ADLER REAL EST	GROWENS SPA	QUICKCOOL AB
MAISON CLIO BLUE	LEWAG HLDG AG	GO INTERNET SPA	MINESTO AB
MILIBOO SA	EDDING AG-PFD	BIO ON SPA	RANDVIKEN FASTIG
SMCP SA	SPORT1 MEDIEN AG	AXELERO SPA	PREBONA AB
SHOWROOMPRIVE	PITTLER MASCHINE	COSTAMP GROUP SP	CORLINE BIOMEDIC
ASHLER ET MANSON	FAIR VALUE REIT	SEMPLICEMENTE SP	REDSENSE MEDICAL
DATBIM	GAG IMMOBILIEN A	EPRICE SPA	NORDIC WATERP

VALONEO	GELSENWASSER AG	OVS SPA	SALTX TECHNOL-B
ENERTIME SA	EPIGENOMICS AG	CALEIDO GROUP SP	SPIFFBET AB
BIOPHYTIS	R STAHL AG	MONDO TV SUISSE	SCIBASE HOLDING
AMOEBA SAS	BAUER AG	ELETTRA INVESTIM	HYBRICON BUS SYS
BIOCORP	AAP IMPLANTATE	AVIO SPA	NANEXA AB
ABIVAX SA	STERN IMMOBILIEN	GIGLIO GROUP SPA	SPECTRACURE AB
AMPLITUDE SURGIC	ERNST RUSS AG	LUCISANO MEDIA G	BONASUDDEN
UNITI SA	RIM AG	H-FARM SPA	GAMING CORPS AB
DRONE VOLT SACA	BORUSSIA DORTMUN	ENERGICA MOTOR C	COOR SERVICE
NHOA	ECOTEL COMMUNICA	ABITARE IN SPA	ALIMAK GROUP
SENSORION SA	NESCHEN AG	COIMA RES SPA	STUDENTBOSTADER
GROUPE PARTOUCHE	ERLUS AG	TECHNOGYM SPA	DOUBLE BOND PH-B
ABIONYX PHARMA S	GXP GERMAN PROPE	SOLAREDGE AUTOMA	HOVDING SVERIGE
OSE IMMUNO	SCHALTBAU HOLD	VETRYA SPA	PEGROCO INV-PREF
ECOSLOPS	KOENIG & BAUER	FINE FOODS & PHA	SOLTECH ENERGY S
SAFE ORTHOPAEDIC	AS CREATION TAPE	HEALTH ITALIA SP	REDWOOD PHARMA A
FOCUS HOME INTER	UESTRA HANN VERK	FOPE SPA	SYDSVENSKA HEM A
ADVICENNE	ELEXXION AG	TELESIA SPA	REAL FASTIGHETER
TERREIS	RENK AG	UNIEURO SPA	CYXONE AB
PREDILIFE SA	SEDLMAYR GRUND	TECHNICAL PUBLIC	CERENO SCIENTIFI
BAIKOWSKI SAS	PNE AG	ISAGRO SPA	ENORAMA PHARMA A
BLUE SHARK POWER	GESCO AG	AEFFE SPA	CLEAN MOTION AB
NEOEN SA	TECHNOTRANS SE	EMAK SPA	ABSOLICON SOLAR
MEDINCELL SA	UNYLON AG	VIANINI SPA	FRONT VENTURES A
NATURE ET LOGIS	DEUTSCHE GRUNDST	STEFANEL SPA	PIEZOMOTOR UPPSA
BIO-UV GROUP SAS	ADCAPITAL AG	IT WAY SPA	XINTELA AB
NAVYA SAS	VERSANDHANDELABW	LAZIO SPA	SHORTCUT MEDIA A
ROCHE BOBOIS SAS	JUNGHEINRICH-PFD	DAMIANI SPA	MEDIACLE GROUP A
ELSALYS BIOTECH	UNITED POWER TEC	NETWEEK SPA	BOSJO FASTIGHETE
DONT NOD ENTERTA	STEICO SE	TOSCANA AEROPORT	SYNACT PHARMA AB
TAG IMMOBILIEN	ELUMEO SE	BEGHELLI SPA	SWEDENCARE AB
EVOTEC SE	NOVETUM AG	ACSM - AGAM SPA	BRANDBEE HOLDING
RATIONAL AG	BRAIN AG	BRIOSCHI	RECYCTEC HOLDI-B
DEUTSCHE LUFT-RG	EKOTECHNIKA AG	MOLMED SPA	INVENT MEDIC
FREENET AG	DEUTSCHE KONSUM	EL.EN. SPA	CAMURUS AB
GERRESHEIMER AG	ERLEBNIS AKADEMI	CIR SPA-COMPAGNI	STILLFRONT GROUP
HUGO BOSS -ORD	NOXXON PHARMA NV	PRIMA INDUSTRIE	TC TECH SWEDEN
EVONIK INDUSTRIE	CURETIS AG	CALTAGIRONE EDIT	IMMUNOVIA AB
THYSSENKRUPP AG	STEILMANN SE	TISCALI SPA	ADCITYMEDIA AB
CEWE STIFTUNG &	M1 KLINIKEN AG	NICE SPA	VICORE PHARMA HO
LEONI AG	H&K AG	COSE BELLE D'ITA	IMPLEMENTA SOL A
KRONES AG	DECHENG TECHNOLO	AS ROMA SPA	NUEVOLUTION AB

GSW IMMOBILIEN A	WINDELN.DE SE	ZIGNAGO VETRO SP	SLEEPO AB
1&1 AG	PUBLITY AG	ALERION	XBRANE BIOPHARMA
MORPHOSYS AG	DG-GRUPPE AG	GABETTI PROPERTY	RHOVAC AB
LANXESS AG	PANTAFLIX AG	ROSETTI MARINO	PLEJD AB
PFEIFFER VACUUM	CLEAN LOGISTICS	INTEK GROUP SPA	INFANT BACTERIAL
PORSCHE AUTO-PRF	FENGHUA SOLETECH	IRCE SPA	ADDLIFE AB-B
AXEL SPRINGER SE	VIVORYON THERAPE	RETELIT SPA	POLYGIENE AB
FRESENIUS SE & C	SOLVESTA AG	KONINKLIJKE PHIL	LEOVEGAS AB
GLOBAL PVQ SE	VALENS HOLDING A	POSTNL NV	HUMANA AB
SOLON SE	JJ AUTO AG	IMCD NV	TOURN INTERNATIO
WACKER CHEMIE AG	IGP ADVANTAG AG	AALBERTS NV	BIMOBJECT AB
BAYER AG-REG	STARDSL AG	BAM GROEP	ORTOMA AB
CENTROTEC SE	PHILION SE	MEDIASET NV	BRAINCOOL AB
STADA ARZNEIMITT	MATERNUS-KLINIKE	EUROCOMMERCIAL P	ALTECO MEDICAL A
MERCK KGAA	PIAGGIO & C. SPA	SLIGRO FOOD GROU	AMBIA TRADING GR
ADIDAS AG	ATLANTIA SPA	OCI NV	MOTION DISPLAY S
RHEINMETALL AG	SABAF SPA	ARGENX SE	KALLEBACK PROPER
CONTINENTAL AG	GEDI GRUPPO EDIT	GRANDVISION	DELARKA HOLDING
KNORR-BREMSE AG	DANIELI & CO	ALTICE EUROPE NV	SCANDIDOS AB
K+S AG-REG	AUTOGRILL SPA	SIGNIFY NV	AGES INDUSTRI AB
SIEMENS HEALTHIN	ANSALDO STS SPA	JUST EAT TAKEAWA	AB IGRENE
DELIVERY HERO SE	PRYSMIAN SPA	ARCADIS NV	OPTICEPT TECHNOL
INNOGY SE	CIR SPA	BOSKALIS WESTMIN	DEXTECH MEDICAL
SENVION SA	ENEL SPA	VASTNED RETAIL N	EVENDO INVEST AB
HAPAG-LLOYD AG	WEBUILD SPA	VOPAK	MYFC HOLDING AB
SCHAEFFLER-PREF	SOGEFI	HEIJMANS NV-CVA	PEPTONIC MEDICAL
SCOUT24 AG	A2A SPA	KENDRION NV	EMOTRA AB
COVESTRO AG	RECORDATI SPA	FUGRO NV	SPAGO NANOMEDICA
UNIPER SE	ITALIAONLINE	SBM OFFSHORE NV	CELL IMPACT AB
ROCKET INTERNET	DIASORIN SPA	RANDSTAD NV	ARCAROMA AB
VONOVIA SE	AMPLIFON SPA	BETER BED HLDG	GUARD THERAPEUTI
OSRAM LICHT AG	SARAS SPA	AKZO NOBEL	DIAMYD MEDICAL A
LEG IMMOBILIEN S	SAFILO GROUP SPA	AMG ADVANCED MET	NEXAM CHEMICAL H
TELEFONICA DEUTS	ASCOPIAVE SPA	KPN (KONIN) NV	MR. GREEN & CO
AIR BERLIN PLC	TERNA-RETE ELETT	DSM (KONIN)	HEDERA GROUP AB
ZALANDO SE	BENI STABILI SPA	WERELDHAVE NV	BESQAB AB
HELLA GMBH & CO	ASTM SPA	SIF HOLDING	SERSTECH AB
TLG IMMOBILIEN A	MONCLER SPA	ESPERITE	TIKSPAC AB
KION GROUP AG	INFRASTRUTTURE W	KONINKLIJKE- CVA	IRISITY AB
PATRIZIA AG	ITALGAS SPA	NSI NV	SYNTHETICMR AB
CROPENERGIES AG	PIRELLI E C SPA	HOLLAND COLO-NV	EQL PHARMA AB
ELRINGKLINGER AG	CEMENTIR HOLDING	DPA GROUP NV	ECOCLIME GROUP B

HEIDELBERGCEMENT	SAIPEM SPA	STERN GROEP NV	PHASE HOLOGRAPHI
HAMBORNER REIT	LEONARDO SPA	TKH GROUP NV	PLATZ FAS H-B
VOLKSWAGEN AG	FERRAGAMO SPA	CNOVA NV	ORGANOCLICK AB
KLOECKNER & CO S	BUZZI UNICEM SPA	KIADIS PHARM	NP3 FASTIGHE AB
CECONOMY AG	INTERPUMP SPA	BASIC-FIT NV	W & IT SOLUTIONS
NORMA GROUP SE	JUVENTUS FOOTBAL	AVANTIUM	POWERCELL SWEDEN
HEIDELBERG DRUCK	ACEA SPA	VOLKERWESSELS	ACRINOVA AB-A
BASF SE	SIAS SPA	CBRE H2O RIVAS	NEWTON NORDIC AB
TUI AG-DI	TOD'S SPA	KMS HOLDING NV	SALTANGEN PROPER
ARCANDOR AG	IMMOBILIARE GRAN	ALFEN BEHEER B.V	CLINE SCIENTIFIC
BRENNTAG SE	MAIRE TECNIMONT	PARX MATERIALS N	TORSLANDA PROPER
KUKA AG	FALCK RENEWABLES	ENVIPCO HLDG	KARESSA PHARMA
SARTORIUS AG	MONDADORI (ARN)	ACCELL GROUP	TROAX GROUP AB
SYMRISE AG	BREMBO SPA	ALMUNDA PROFESSI	VIBROSENSE DYNAM
FRAPORT AG	IREN SPA	AJAX	EUROBATTERY MINE
PROSIEBENSAT.1 M	INDUSTRIA MACCHI	PORCELEYNE FLES	CANTARGIA AB
TAKKT AG	ENI SPA	HUNTER DOUGLAS	SDIPTECH AB
VERBIO VEREINI	ASTALDI SPA	HYDRATEC INDUSTR	TOBIN PROPERTIES
DRAEGERWERK-PREF	BRUNELLO CUCINEL	BRUNEL INTL	IVISYS AB
SIEMENS AG-REG	POSTE ITALIANE	PHARMING GRP NV	BACTIGUARD HLDG
SGL CARBON SE	ERG SPA	WIHLBORGS FASTIG	SCANDINAVIAN ENV
DEUTSCHE TELEKOM	SNAM SPA	KAPPAHL AB	AXKID AB
AURUBIS AG	HERA SPA	CELLAVISION AB	LIDDS AB
SMA SOLAR TECHNO	RCS MEDIAGROUP	FABEGE AB	INWIDO AB
E.ON SE	TELECOM ITALIA S	TETHYS OIL AB	SEALWACS AB
UNITED INTERN-RE	LUXOTTICA GROUP	HANSA BIOPHARMA	OBOYA HORTICULTU
FRESENIUS MEDICA	DE'LONGHI SPA	LOOMIS AB	APTAHEM AB
MVV ENERGIE AG	FRENDY ENERGY SR	BIOGAIA AB-B SHS	BONZUN AB
DEUTSCHE POST-RG	ENERTRONICA SANT	VIKING SUPPLY SH	FOLLICUM AB
DAIMLER AG	DIGITOUCH SPA	SAS AB	SCANDINAVIAN REA
RHOEN-KLINIKUM	BOMI ITALIA SPA	KUNGSLEDEN AB	ZENICOR MEDICAL
DMG MORI AG	ILLA SPA	BURE EQUITY AB	ABSOLENT AIR CAR
LINDE AG/PRE MER	INDEL B SPA	HEXAGON AB-B	GABATHER AB
KSB SE & CO KGAA	GPI SPA	BETSSON AB-B	SPRINT BIOSCIENC
GEA GROUP AG	GRIFAL SPA	ELEKTA AB-B	HUMBLE GROUP AB
KWS SAAT SE & CO	VIMI FASTENERS S	AFRY AB	IRRAS AB
BILFINGER SE	CAREL INDUSTRIES	ATRIUM LJUN-B SH	FERRONORDIC AB
HOCHTIEF AG	RAI WAY SPA	WALLENSTAM-B SHS	2CUREX AB
EROTIK-ABWICKLUN	PRISMI SPA	NCC AB-B	BIO-WORKS TECHNO

LOGISTRI FASTIGH	BEFIMMO	IMMAGRIFOR
COLABITOIL SWEDE	ETEX NV	DIEGEM KENNEDY
OBSTECARE AB	BPOST SA	VGP
ENAD GLOBAL 7 AB	OXURION NV	VASTNED BELGIUM
TRE KRONOR PR	GALAPAGOS NV	MESSER BELGIUM
ARJO AB - B	CFE	HAMON SA
BIOARCTIC AB	SOLVAY SA-A	REIBEL SA
MAG INTERACTIVE	ELIA GROUP SA/NV	ROTON
TEMPEST SECURITY	BEKAERT NV	CHARBONNAGES-AUC
COEGIN PHARMA AB	EURONAV NV	WERELDHAVE BELGM
ATVEXA AB-B	SABCA	BORSBEEK - AUC
LYKO GROUP AB-A	PICANOL	FAGRON
FLEXQUBE AB	AEDIFICA	ASPHALTCO - AUC
SMOLTEK NANOTECH	RADISSON HOSPITA	BOUWONDERNEMING
VETERANPOOLEN AB	UMICORE	HAINAUT SAMBRE S
XSPRAY PHARMA AB	ACKERMANS & VAN	RECTICEL
NET TRAD GR NTG	ECONOCOM GROUP	GOSSON KESSALES
PANION ANIMAL HE	TELENET GRP HLDG	KONINKLIJKE RENV
OXE MARINE AB	WAREHOUSES DE PA	GREEN ENERGY 4
PROMORE PHARMA A	COFINIMMO	PHARCO S.A.
BONESUPPORT HOLD	NYRSTAR NV	WOLUWE EXTENSION
QUARTIERS PROPER	PROXIMUS	MOTEURS ET FRANC
SENSEC HOLDING A	FLUXYS BELGIUM	ZEALAND PHARMA A
URB-IT AB	UCB SA	BAVARIAN NORDIC
BLUELAKE MINERAL	ORANGE BELGIUM	COLOPLAST-B
VASTSVENSK LOGIS	D'IETEREN GROUP	H LUNDBECK A/S
INHALATION SCIEN	BIOCARTIS GROUP	GABRIEL HLDG
TOPRIGHT NORDIC	ELECTRIC SA	ISS A/S
SENZAGEN AB	BONE THERAPEUTIC	VESTAS WIND SYST
QIIWI GAMES AB	UTEXBEL	DSV A/S
CLIMEON AB	FIMMOBEL	NKT A/S
ARKOPHARMA BELUX	ANTWERP STADION	AMBU A/S-B
GHB NV	IMMO CENTER	MT HOJGAARD HOLD

INFRABEL SA	FLSMIDTH	MONBERG & THO-B
DE BISSCHOP SA	NOVO NORDISK-B	H+H INTL A/S-B
ACVLHO	D/S NORDEN	GLUNZ & JENSEN H
XIOR STUDENT HOU	DEMANT A/S	KJ EJENDOMSINVES
IMMO MECHEL-CERT	BRODRENE HARTMAN	REFSHALEOENS
ASIT BIOTECH SA	ATHENA INVESTMEN	BEWA INVEST
INVIBES ADVERTIS	CEMAT A/S	STILDE PLANTAGE
BALTA GROUP NV	AP MOLLER-B	INTERFACE BIOTEC
ADVALVAS	ALK-ABELLO A/S	NORTH MEDIA AS
FINANCIER LIEGEO	GENMAB A/S	PHOTOCAT A/S
CENTRE BUSINESS	KOBENHAVNS LUFTH	SCAPE TECHNOLOGI
UNDA SA	CHR HANSEN HOLDI	SCANDION ONCOLOG
WEYVELD NOSSEGEM	NOVOZYMES-B SHS	ODICO A/S
MBZ Gen	ERRIA A/S	VIROGATES A/S
MENM BV	FE BORDING-B	FREETRAILER GROU
SAGIMMO NV	MATAS A/S	TCM GROUP A/S
IMM BLD AUTOMOBI	VIBORG FF PROF-B	ORPHAZYME A/S
ST LEONARD M&O	ARKIL HOLDING-B	NILFISK HOLDING
DIONYSIUS NV	LANDTRUST EUROPE	CONFERIZE A/S
RIVALI	BOLIGA GRUPPEN A	GREENMOBILITY A/
PROMO SITE	AGAT EJENDOMME A	ACARIX AB
SOLAR A/S-B SHS	BREENDONK CONTAI	VEGENT
ESOFT SYSTEMS	DVW NV	IMMO H NV
NORDIC SHIPHOLDI	VITANZA HQ	PAVICHI
DFDS A/S	PRO SAILING NV	TM PROJECT SCS
PRIME OFFICE A/S	BHA	AALBORG BOLDSPIL
SOCIETE BELGE PO	PARKEN SPORT & E	SILEKBORG IF INV
CHARBONNAGES D'	VIOHALCO SA	ROCKWOOL INTL-B
KERLINGA	CELYAD ONCOLOGY	NTG NORDIC TRANS
CRESCENT	IPM PRINTING-AUC	ORSTED A/S
BEM INVEST	MITHRA PHARM	PANDORA A/S
	BOSCHMANS & CO B	VELOXIS PHARMACE

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