Do Board Characteristics Impact Environmental, Social and Governance (ESG) Performance of Public Companies in the European Union?

Ali Tahvildar

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Approval of the Institute of Graduate Studies and Research

Prof. Dr. Ali Hakan Ulusoy
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Business Administration.

Prof. Dr. Melek Şule Aker
Chair, Department of Business Administration

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Business Administration.

Prof. Dr. Turhan Çetin Kaymak
Supervisor

Examining Committee

---

1. Prof. Dr. Turhan Çetin Kaymak ____________________

2. Prof. Dr. Ahmet Tarık Timur ____________________

3. Asst. Prof. Dr. Taraneh Foroutan Yazdian ____________________

ABSTRACT

The goal of this research is to look into the relationship between board of directors' characteristics and the Environmental, Social and Governance (ESG) performance of public companies in the European Union (E.U.). Board's characteristics included in this study are the board independency, size of the board, number of board meetings, and gender diversity. The ESG score is increasingly attracting the attention of investors when it comes to assessing sustainability as well as profitability. Control variable of this study is the return on the assets (ROA), and 146 public companies operating in the manufacturing sector in the E.U. for the fiscal year 2020 are used for the hypotheses testing. The analyses reveal that only gender diversity and board size are statistically significant linked to the ESG scores of public companies operating in the manufacturing sector in the E.U.

Keywords: ESG, Board of Directors, European Union

ÖZ

Bu çalışmanın amacı, yönetim kurulu özellikleri ile Avrupa Birliği'ndeki (A.B.) kamu şirketlerinin Çevresel, Sosyal ve Yönetişim (ÇSY) performansı arasındaki ilişkiyi incelemektir. Bu çalışmada incelen yönetim kurulu özellikleri yönetim kurulu bağımsızlığı, yönetim kurulu üye sayısı, yönetim kurulu toplantı sayısı ve cinsiyet çeşitliliğidir. ÇSY seviyesi, kârlılığın yanı sıra sürdürülebilirliği de değerlendirmeye katınca yatırımcıların ilgisini giderek daha fazla çekiyor. Bu çalışmanın kontrol değişkeni, aktif karlılık (AK) ve kullanılan örnek AB'de imalat sektöründe faaliyet gösteren 146 kamu şirketidir. Bu çalışmada hipotezlerin testi için 2020 mali yılını kullanmaktadır. Analizler sonucunda AB'de imalat sektöründe faaliyet gösteren kamu şirketlerinin ÇSY seviyeleriyle bağlantılı olarak yalnızca cinsiyet çeşitliliğinin ve yönetim kurulu üye sayısının istatistiksel olarak anlamlı olduğunu ortaya koymaktadır.

Anahtar Kelimeler: ESG,Yönetim Kurulu, Avrupa Birliği

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Chapter 1

INTRODUCTION

When investors consider financing a company, they carry out a two-pronged analysis. On one hand there is the financial performance of a company which is one important indicator for investors, but on the other hand investors also look at corporate social responsibility (CSR) aspects of a company as a crucial indicator for their ethical investment choices. Ethical investment is an investment in regards to CSR and can be determined by a company's environmental, social and governance performance (ESG) (Sparkes, R., 2001).

1.1 Corporate Social Responsibility and ESG

Corporate social responsibility (CSR) focuses on how different activities of a company impacts its stakeholders, which can be listed as shareholders, employees, suppliers, customers, government, NGOs and many more. Consequently, companies are responsible for the impact of their actions towards all stakeholders. It is important to understand that CSR is not about how a company spends money, but it is actually about how a company makes money (Siwar, C. & Hossain, T., 2009). The overall goal for a company with respect to CSR is to combine economic progress, social justice and environmental preservation. There are different challenges and issues for companies based on their sector of activity with respect to its stakeholders. For instance, companies are responsible for their stakeholders' profitability, employees' rights and needs, quality of the products, supplier's relationship and also their own

reputation. Moreover, companies must also protect natural resources and reduce their negative impact on the environment by practices such as limiting the plastic usage and their carbon footprints, use of green energy. Finally, companies' actions must be morally and ethically acceptable. One example of unethical approaches of some companies is using child labor in countries that have no rules and regulation on this issue, and just try to reduce their production cost.

The importance of CSR for a company and its stakeholders is undeniable, but the problem is that CSR is not easily measurable. One of the quantitative methods for evaluating companies' CSR is to measure their ESG performance by calculating their ESG scores. A company's ESG performance index that is acceptable in its stakeholders' eyes can receive more capital from investors, hence it is going to be more attractive in stock market (Bannier et al., 2019).

1.1.1 Millennials Awareness of ESG Practices

Societal impact and sustainability of an investment is crucial for many numbers of external stakeholders and all shareholders of the company, and ESG strategies are three factors that can help companies to meet their long-term goals and be as efficient as possible in managing and using their resources.

In recent decades' investors are increasingly looking for ESG performance of companies to predict their long-term profitability. The result of a survey done by Morgan Stanley (2017) shows that Millennial investors are twice as likely as other investors to invest in firms that implement ESG practices. The Millennial generation is becoming increasingly important in business, and by 2025, they will account for 75% of the workforce (Adámek, P., 2014). The result of Culiberg and Mihelič (2016) indicates that, after learning that a company was not socially or environmentally

responsible, 56 percent of Millennials were likely to refuse to work for it. Since millennials are significantly more tech-savvy than their previous generations, they will demand personalized products and experiences considering environmental issues when it comes to a product that they intended to purchase, hence all signs point to ESG investing continuing to rise, putting more pressure on corporations to align their practices (Osborne, 2017). The importance of ESG performance in shareholder's eyes is significant, as the Global Reporting Initiative in 2019 stated that more than 90% of the world's largest companies with respect to their revenue are already publishing their ESG performance voluntarily.

1.2 Corporate Governance and Agency Problem

There are numerous internal and external stakeholders with different interests in a company varied from stockholders, managers, suppliers, employees, government and many more. Corporate governance provides different mechanism to help managers not only operate the company but also make sure that all stakeholder's interests are aligned (The Harvard Law School Forum on Corporate Governance, 2016). One of the conflicts that might happen in any company is the agency problem. Agency problem refers to a conflict that are common when it comes to large companies as Principal–Agent conflict (ElKelish, 2018). Principal–Agent conflict means that managers as agents might prioritize their interests over shareholder's interest which are principals of the company. A common example is a manager that make decisions to falsely shows his good performance in the short run to get the bonus as the result, but in fact his or her decisions negatively affect stockholders in the long run. Composition of board of directors can be used as a control tool for this conflict (Naciti, 2019), in addition to that it has impact on the ESG scores of the company which is the topic that we are investigating.

1.2.1 Characteristics of Board of Directors

Board of directors are responsible for both approving and overseeing manager’s decision-making process to make sure that strategic goals of the company are align with shareholder’s interests. There are numerous board characteristics that can affect both disclosure and performance of the board of directors, such as gender diversity with concentration on the impact of using women on the board, size of the board, board independency and number of meetings (Riyadh et al., 2019). In our study, we chose these four characteristics because these are most common characteristics used for investigating the impact of board on ESG performance with respect to availability of their data. The four above mentioned characteristics might have both negative or positive impact on ESG score of companies, and based on the region of investigation these impacts might be varied. In this research, we are investigating the impact of board of director’s characteristics on ESG performance of public companies in European Union. The reason for choosing European Union as our case of sample is that it is the world's largest market and is also actively promoting a lot of ESG issues with its regulations and directives (Spinaci, 2021).

Chapter 2

LITRETURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Agency Problems, Corporate Governance, and Board of Directors

In a public company, shareholders are the owners which are also known as principals, and managers are agents who are hired to protect and promote principals' benefits. This separation of ownership and management makes companies vulnerable to an issue named Agency Problem. The Principal-Agent problem, which is one of the consequences of conflicting interests and goals between principals and their agents (Grossman & Hart, 1983). Different attitudes towards risks between shareholders and managers is the other issue that most likely will rise (Eisenhardt, 1989). The presence of principal-agent problem not only cause financial loss for its owners, but also damages a company's reputation in the market. A company with well-known agency problems is not seen to be trustworthy among possible future investors, and will face difficulties in raising capital in the stock market (Shlefer & Visheny, 1997).

Corporate Governance (CG) is a mechanism for companies to develop a framework in order to manage their beneficiaries (Cadbury, 1992). John and Senbet (1998) described CG as a system developed in order to secure stakeholders' interests with respect to manager. They point that CG will also help stakeholders to evaluate the

effectiveness of corporation's operational strategies. Further, the authors maintain that the board of directors are the primarily tool for controlling top managers for the purpose of protecting shareholders' interests. The board of directors is in charge of assessing top managers of the company and their actions including the CEO, to make sure that their interests and value are aligned with the shareholder's. Separation of ownership and managers with the help of allocating an effective board is the key in dealing with unavoidable agency problem. Bonazzi and Islam (2007) also mentioned board of directors as the best remedy to achieve optimum corporate governance structure in an organization, more specifically in terms of balancing shareholders' rights and interests.

2.2 ESG Performance and the E.U.

For governments and shareholders Environmental, Social and Governance (ESG) is a risk management subject, on the other hand it has become a competitive strategy for companies who voluntarily share their ESG performance with the public (Galbreath, 2013). For more than 35 years, academic literature has focused on ESG data which shows the importance of ESG issues for scholars as well as stakeholders (Eccles & Viviers, 2011). Bassen and Kovacs (2008) state that the purpose of measuring and reporting ESG score is to have an additional dimension for evaluating company's performance that is not accessible through its accounting data. The authors mentioned that corporate financial statements cannot provide information about brand equity, company's strategy, work place culture, firm's reputation and other assets are important and crucial, especially in this global economy that is more knowledge based than ever. Moreover, companies that are demonstrating a strong ESG score show their keen understanding of the market they are competing in and how managers of these company set their long-term goals and values in order to

remain sustainable and profitable for their shareholders (Bassen, 2008). Firms are well aware that their image and reputation with respect to green issues are highly affected by their ESG disclosure. For many years the traditional extraction of data was the annual report through a company's website, but nowadays companies are taking a proactive approach to stay ahead of their competitors to address growing concerns from stakeholders on growing environmental concerns such as waste management, pollution reduction approaches and climate change (Laksmana, 2008). There are a few leading international financial service agencies such as MSCI, Bloomberg and EIKON that are providing ESG data, and we use EIKON for this study.

As such, this study aims to uncover the impact of board's characteristics on corporate social responsibility, more specifically the ESG performance of public companies in the European Union. State owned organizations and large businesses are encouraged by recent EU guiding policies to disclose a transparent assessment of their ESG performance, and consequently many European members have implemented the directive guideline presented by E.U. (2014/95/EU) on their non-financial reporting (Camilleri, 2015).

The previous Accounting Directive of EU (2013/34/EU) has been amendment by European Council on 29th September 2014. The European Parliament mandated the EU Commission to develop a non-binding directive to clarify what non-financial information should be disclosed by "public interest entities" that are actively operating within the EU. The directive focused on social and environmental issues related to anti-corruption, human rights, and bribery practices, which are referred to as "the UN Guiding Principles on Business and Human Rights, Ruggie Principle"

that include some features of the OECD's Guidelines for Multinational Enterprises (ECCJ, 2014). The directive was a huge leap in terms of human and labor rights protection, which is a critical responsibility for large corporations. The disclosures of public interest entities must include a description of their business models, which clarifies their practices on the impact of their operations and shows whether they are preventing human rights violations and/or fighting bribery and corruption. Stated by Camilleri (2018) "*This EU directive has emphasized the materiality and transparency on ESG issues in non-financial reporting*". It also stressed on the importance of diversity with regard to corporate board composition. Although European undertakings are not required to cover all aspects of ESG performance, they must provide a detailed explanation for failing to comply with the EU's (2014) directive. Consequently, a comprehensive report on non-financial matters is not a necessity requirement, but this directive encourages entities' disclosure of information on their policies, risks and outcomes (Camilleri, 2018; ECCJ, 2014). Furthermore, the EU's (2014) directive gives businesses the option to choose among European, International or National frameworks such as The UN Global Compact, ISO 26000 as their framework, hence, many EU corporations already voluntarily follow the EU's (2014) corporate governance principles.

2.3 Board of Directors Characteristics

Eccles et al. (2014, p. 1) point out that a growing number of studies on the impact of board of directors on corporate social responsibility reveal a high correlation between a company's profitability and sustainability performance, meaning that firms with higher sustainabilty score "*significantly outperform their their counterparts both in terms of stock market value and accounting performance*". This means that by implementing ESG practices, a company can achieve a competitive advantage in

comparison to its competitors. Therefore it is crucial for principals to verify that board of directors are well-aware of sustainability issues, and in addition that they are well aware of ESG preferences of their stakeholders (Basel Committee's Revised Principals, 2015).

In order to determine the impact of corporate governance on ESG performance, previous scholars have looked at four board characteristics: board's size, gender diversity, board independency and number of meetings. In the sub-sections below, we will review the literature's findings on each of these board characteristics.

2.3.1 Board Size

Abundant research on the association between size of a board and company's performance demonstrate the importance of board size as one of the major aspects of board composition. Empirical studies on board size show two different results, there are scholars that advocate a smaller board size, but on the contrary others reach to conclusions in favor of a larger board.

The first stream of research with respect to agency perspective considers collective decision-making process and group dynamics shows that smaller board size is more likely to bring success at monitoring and controlling company's governance (Jensen, 1993; De Anedres et al., 2005; Ahmed et al., 2006; Amran et al., 2014) and also more effective at mitigating opportunistic behavior of managers that can negatively affect shareholder's interests and benefits. To be specific, boards with fewer members promote better communication, coordination and cohesion among directors (Ahmed et al., 2006), therefore intensify commitment and accountability between board members (Dey, 2008). On the contrary, from a legitimation point of view, members of smaller boards might face less diversity among themselves with respect

to gender, education, expertise and also stakeholder representation (Laksmana, 2008; Guest, 2009). This lack of diversity entails a higher level of workload as well as responsibilities for members of smaller boards, hence they might not be able to work efficient enough as monitors (John & Senbet, 1998; Beiner et al., 2004). Abundant prior studies indicate a negative correlation between corporate performance with respect to board's size including Yermak (1996), and Sundgren, Eisenberg and Wells (1998).

The second approach maintains that larger boards lead to a better workload allocation, and also can benefit from a wider range of collective expertise. Based on prior studies, stock price performance and number of directors are positively related. Larmou and Vafeas (2010) find that stock markets show a positive reaction when the number of directors in board increases and vice versa. Moreover, because of different backgrounds among larger boards, Villier et al. (2011) claim that these boards are be able to access greater diversity and also greater volume of information. As a result of this diversity, Kiel and Nicholson (2002), Adam and Mehran (2005) claimed that a diverse board can benefit from not only having a variety of skills, but also a better condition for networking among directors in order to share their innovative ideas which can boost firm's performance to achieve competitive advantage compared to its rivals. In support of larger-boards, Sheikh et al. (2012) and Coles et al. (2008) indicated that a larger board is more effective overall when it comes to companies with high complex structures where consultative practices are crucial. Furthermore, these scholars talked about the board's tendency to decrease or increase the board size based on company's situation. They claim that, when considering industry and overall economic situation, as the company improves its performance, it is more

likely to expect an increase in board size and vice versa. Accordingly, the following hypothesis is proposed for testing:

H1. Board size is positively associated with ESG performance in the E.U.

2.3.2 Gender Diversity

By nature, there are numerous vital differences between men and women, listing from beliefs and values to work-style and perceptions. In general, women show more empathy with respect to stakeholders' interests and values (Eagly et al., 2003). There is a tendency among women to adopt those work-styles that encourage communication and democracy in the decision-making process. This tendency helps to identify stakeholder's needs and expectations (Nielsen & Huse, 2010). Interpretations of the relationship between a company's ESG performance and female representation on the board are related to features of those women themselves (Williams, 2003). A good case in point is women's educational level and professional experiences which can help board's sensitivity toward sustainability issues compared to the same cases for men (Bear & Rahman, 2010).

In recent years, firm performance and female representation on board of directors have become increasingly popular topics of discussion. Carter et al. (2003) were pioneers in this field of research, and Bernardi and Threadgill (2010) showed in their study that having more females on the board positively affect company's financial performance. Moreover, two studies in different countries showed a similar relationship between use of women on the board and firms' financial success. First, Nguyen and Faff (2007) reached this same conclusion among Australian companies that shows there is a link between having more female board members and financial success. Second, Campbell and Minguez (2008) found a similar association in their study of companies in Spain.

There are numerous scholars who uncover a positive result of gender diversity on company's performance. For instance, in the case of Danish companies, Smith et al. (2006) identify the possible competitive advantage that comes with the use of women on the board. Gender diversity, as well as age structure, professional background, and experience, are all attributes that a company can benefit from, according to Hillman et al. (2000). Consequently, a better information processing and engagement rate within the board can promise a higher level of efficiency for monitoring purposes, hence this eventually can cause a higher level of accuracy in sustainability reporting practices (Carter et al., 2010). On the contrary, Lau and Murnighan (1998) argued that since the decision-making process by nature is time consuming, a homogenous board is more effective at decision making, especially in case of a critical situation when time is limited. This argument, supported by Earley and Mosakowski (2000), saw that better communication and collaboration can be achieved as a consequence of a harmonious board of directors.

In the recent years, the relationship between gender diversity and company performance has been studied extensively through empirical research. A meta-analysis was conducted by Post and Byron (2015), which included 140 studies. They found a positive association among companies with a higher rate of female representation in their board and their accounting returns, and that in countries where shareholders' rights are protected, this positive relationship is much stronger. The significance of this study can be related to a long-lasting political debate that seeks to answer whether regulations should be enacted that set a quota for female members on the board or not.

Literature on the impact of having women on the board of directors on a company's performance (Carter *et al.*, 2003; Erhardt *et al.*, 2003; Farell and Hersch, 2005; Campbel & Mínguez, 2008; Adams *et al.*, 2009; Lückerath-Rovers, 2013) show that there appears to be a link between increased financial performance and gender diversity on board of directors, but there are also contradictory results (Jhunjhunwala & Mishra, 2012; Fauzi & Locke, 2012). There are numerous empirical studies in recent years regarding the impact of gender diversity on the board and the quality of earnings. There is a substantial link between having at least one woman on the board of directors and a decreased risk of restatement (Abbott et al., 2012). Francis et al. (2015) report that when a male CFO is replaced by a female CFO, accounting conservatism rises significantly. In accordance with the theoretical foundation and the empirical studies, female members on the board show a positive impact on achieving a sustainable company's performance, as well as lowering the risk of principal-agent conflict, hence the following hypothesis is proposed for testing:

> H2. Female members on board of director will increase company's ESG performance in the E.U.

2.3.3 Board Independency

Directors on the board are divided to two categories, dependents who also called insiders, and independents or are outsiders. Unlike insiders who either worked or currently working for the company, independents members are hired from outside the firm without any prior working experience with the entity.

According to agency theory, since independent directors' actions are not swayed by financial interests, they are better equipped to make objective assessments of management performance and thus can avoid any possible conflict between agents

and principals (Hill & Jones, 1992). This occurs mainly because independent managers are not a part of a company's operational system, hence they are less likely to be subject to any control exerted by the CEO (Jizi, 2017). Likewise, according to Cheng (2006) and Ahmed et al. (2006), because the remuneration of independent board members is unrelated to the company's short-term financial success. Moreover, in terms of monitoring, higher independent boards are expected to perform better, and also lean toward increased those practices that are related to social responsibility (Jizi et al., 2014; Ibrahim et al., 2003). By aligning interests among managers and stakeholders in a company, independent directors can improve the board's ability to find a balance between long-term and short-term goals as well as financial and environmental objectives (Liao et al., 2015).

In addition to the implementation of sustainable initiatives of companies, also the degree of voluntary disclosure that encourages a transparent reporting system can be strongly associated with the presence of an independent board. (Ho & Wong, 2001; Barros et al., 2013). Numerous scholars including Harjoto and Jo (2011) and Jizi et al. (2014) found that "independent boards are strongly engaged in CSR reporting to promote stakeholders' interests". Independent directors on boards have been related to improved CSR performance and enhanced transparency (Chen et al., 2014).

Rao and Tilt (2016) confirm the positive association between board independency with CSR, however, Frias et al. (2013) said that these findings are inconclusive when explaining the relationship between the presence of independent directors and disclosure. For instance, some scholars including Lim et al. (2007) and lorenzo and Sanchez (2010) found a negative link; but on the contrary, other researchers such as Chen and Jaggi (2000) and Post et al. (2011) found it to be positive, or not significant

at all (Sanchez et al., 2014; Rao and Tilt, 2016). Moreover, transparency level of corporations analyzed by Kaymak and Bektas (2017) study issues which are related to the legal environment, the society and generation of revenue for the world's largest multi-national corporations. Their findings show a positive strong association with many CSR practice regarding the board's independency and size of the board.

Inconsistency can be also seen among the results reported in prior studies about ESG performance as well. Despite the fact that several studies have demonstrated a positive association between ESG performance and the board's independence, (e.g., Villiers et al., 2011; Lieo et al., 2015; Haqeue, 2017), other researchers found a non-significant association (Michleon & Parbonetti, 2012). Pucheta and Gallego (2018) reported a negative relationship with respect to social disclosure.

Given the foregoing, the following hypothesis is proposed for testing:

H3. Board independence is positively related to ESG score in the E.U.

2.3.4 Number of Meetings

The number of board meetings per year usually indicates the level of board activity and diligence, similar to board independency, there is no consensus about impact of number of meetings on non-financial performance (Vafeas 1999, Laksmana, 2008).

According to Vafeas (1999), having frequent meetings will cause inefficiency for directors, which eventually brings lower performance and a higher cost of coordination for the company. Further, Dienes and Velte (2016) say that having frequent board's meetings might increase board member's tendency for choosing to have more meetings on the agenda without expanding sustainability practices.

On the contrary, scholars such as Lipton and Lorsch (1992) and Conger et al. (1998) pointing at the number of meetings as an important resource to improve the board's efficiency, since it allows board members to have a better oversight of the company's operation which is beneficial with respect to shareholders' interests. Additionally, in a dynamic business environment, with having frequent meetings, directors can share their perspectives and information which will improve the company's decision-making process. This also helps to secure the legitimacy of stakeholders' expectations (Laksmana, 2008). Frequent meetings are necessity for the board in order to coordinate suitable actions to face the negative impacts emerged from events that effect on sustainability of the firm (Dienes & Velte, 2016).

Public companies in the European Union work in a dynamic business environment, and because of that, having frequent meetings is essential in order to achieve legitimacy, and "*legitimacy theory provides the basis for proposing a positive relationship between board meeting frequency and ESG performance*" (Birindelli, Dell'Atti, Iannuzzi & Savioli, 2018, p. 6). Based on similar studies that also found a positive association between sustainability and number of board meetings (Jones Sustainability World Index leaders, 2005; Adawi & Rwegasira 2011, Jizi et al., 2014; Jizi, 2017; Hussain, 2018) the following hypothesis suggested for testing:

> H4. The number of board meetings has a positive relationship with ESG performance in the E.U.

Chapter 3

METHODOLOGY, ANALYSIS AND RESULTS

3.1 Methodology, Research Sample & Measures

As the performance indicator for this study, we chose the ESG (Environmental, Social and Governance) score as our study's dependent variable which will be investigated to see if the four independent factors listed above have an impact on it. Stated by Refinitiv "*ESG scores are designed to transparently and objectively measure a company's relative ESG performance, commitment and effectiveness across 10 main themes (emissions, environmental product innovation, human rights, shareholders, etc.) based on publicly-reported data.*" ESG score range varied from 0 to 100. Table1 provided by Refinitiv will clarify each of the four quartiles for ESG score.

Considering board size (BS), board gender diversity (BGD), number of board's meetings (NBM), board independency (BI) and return on assets (ROA) the model on which the hypotheses are tested is as follows:

$$ESG = a + BS + BGD + NBM + BI + ROA + e$$

Table 1. ESG score range and description

ESG Score Range	Explanation	
0-25	First Quartile	"Insufficient degree of transparency in reporting ESG data publicly." Poor ESG performance
> 25 to 50	Second Quartile	"Moderate degree of transparency in reporting ESG data publicly." Satisfactory ESG performance
> 50 to 75	Third Quartile	"Above average degree of transparency in reporting ESG data publicly." Good ESG performance
> 75 to 100	Fourth Quartile	"High degree of transparency in reporting ESG data publicly." Excellent ESG performance

The European Union, with its rules and regulations on public companies, provide for a reliable source of data to study the impact of board characteristics such as gender diversity, board size, number of meetings and board independency on ESG performance of companies. To investigate this impact, we gathered a sample using Refinitiv's EIKON database of Data-Stream. All banks are excluded since they deal with different regulatory and financial mechanism compared to other sectors. Eventually, a total of 146 public companies operating in their previous fiscal year (2020) within the European Union has been selected to study.

Our four independent variables as mentioned earlier are the board size, number of meetings, gender diversity, and board independency. The EIKON data base indicates board size by reporting the total number of people on the board of directors.

The second independent variable is board gender diversity. The EIKON database reported the percentage of women on the board to demonstrate gender diversity by dividing the number of female members over the board size and report it as a percentage-base value.

The third independent variable is board independency. On the EIKON website under board of directors' general information, it is stated whether a member is a dependent director or an independent outsider. This reported as a ratio of independency which was calculate through dividing the number of independent board members by total number of directors on the board.

The last independent variable of this study is the number of board's meetings which is reported as the total number of meetings in the previous fiscal year.

The assets used to help companies in conducting their activities can be measured with the help of ROA (return on asset). Moreover, ROA is a reliable indicator to examine these firms to determine whether or not they can generate a sufficient return on their assets. To examine the relative power of independent variables we chose ROA to remain constant as the control variable. Using ROA as the control variable is a common safe approach of evaluating performance and profitability of companies. Since the control variable remains unchanged in this analysis, it can prevent any unwanted influence on other independent variables.

A statistical analysis of all the recorded data transferred from Excel spread sheet into the SPSS 26th version software was calculated. Regression and correlation analyses applied to study the relationship between the above mentioned four board characteristics and the ESG scores of the companies.

3.2 Descriptive Statistics

In this study, 146 public companies in the European Union operating in the manufacturing sector in their previous fiscal year of 2020 have been investigated by looking at the effects of board independency, size of the board, gender diversity and number of board's meetings on ESG scores.

Descriptive statistics are presented in Table 2. As shown in the Table, for the public companies of the E.U. a minimum of 4 and maximum of 16 with the average of 8 directors are included on their board. The average ratio of independent board members is 62%, with 100% as the maximum and 0% as the minimum. The average percentage of women on the board reported as 16% with a minimum of 0% and maximum of 50%. Firm's board members had 7 meetings on average per year with minimum of 3 and maximum of 17 meetings. ESG score as the dependent variable of this study had a minimum of 7 and maximum of 85 with the mean value of 39. The mean of ROA as the control variable of firms is -0.5% with a range between -102% and 39%.

Table 2. Descriptive Statistic (n=146)

Descriptive Statistics				
Variables	Mean	Std. Deviation	Min	Max
Board Gender Diversity	16.07%	12.12%	0.00%	50.00%
Board Size	8.66	2.57	4	16
Number of Board Meetings	7.36	3.19	3	17
Independent Board Members	62.87%	23.26%	0.00%	100.00%
ESG Score	39.98	19.25	7.20	85.92
Return on Assets	-0.57%	20.95%	-102.80%	39.00%

3.3 Proposed Hypotheses' Test Results

The relationship between the dependent variable and the independent variables ESG score was investigated using the results of a Pearson correlation analysis, as presented in Table 3. The correlation results revealed that board size and ESG score have a positive and substantial association ($r= .345$, $p< .05$). Moreover, a non-significant positive relationship between the ESG score and the number of meetings ($r= .177$, $p< .05$) was obtained. The independent board members and ESG score correlation value is found to be positive but non-significant ($r= .023$, $p<.05$). The correlation between board gender diversity and ESG score is found to be positive and

significant (r= .339, p<.05). Finally, the correlation result of the control variable ROA with respect to ESG score shows a significant positive relationship (r= .355, p<.05).

The dependent variables have a positive relationship with all of the independent variables. The result also does not indicate any significant relationship among our independent variables.

Table 3. Correlation Matrix Analysis

Correlations						
Variables	ESG Score	Board Size	Number of Board Meetings	Return on Assets	Independent Board Members	Board Gender Diversity
ESG Score	1.000					
Board Size	.345*	1.000				
Number of Board Meetings	.177	-.095	1.000			
Return on Assets	.355*	.174	-.005	1.000		
Independent Board Members	.023	-.159	.039	-.230	1.000	
Board Gender Diversity	.339*	.152	.117	-.048	.244	1.000

Note: Correlations marked with * are significant at 0.05 with a 1-tailed test

To test our four hypotheses, we ran a regression model on our variables by having ESG score as our dependent variable and Board Size, Independent Board Members, Number of Board Meetings, and Board Gender Diversity as our predictors. ROA was included as a control variable. SPSS V26 was used to conduct the correlation and regression analysis. The result of the performed regression analysis is reported in the Table 4.

Table 4. Coefficients of Determination

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	4.349	7.224		.602	.548
Board Size	2.032	.541	.271	3.756	.000
Number of Board Meetings	1.024	.421	.121	1.625	.106
Return on Assets - Actual	.310	.066	.337	4.730	.000
Independent Board Members	.057	.061	.069	.940	.349
Board Gender Diversity, Percent	.441	.116	.277	3.803	.000

According to the regression analysis, the independent variables Board Size and Board Gender Diversity have a significant positive relationship with the dependent

variable, ESG score, hence hypothesis 1 and hypothesis 2 are both supported. However, the result did not show that there is a substantial relationship between the independent variables Number of Board Meeting and Independent Board Members with the dependent variable ESG score, therefore, we did not find support for hypothesis 3 and 4, also, the control variable ROA was statistically significant. A summary of hypotheses tests is presented in Table 5. Our regression model also explains 33.9% of the variance in the ESG score.

Table 5. Summary of hypotheses tests

Hypothesis	**Support Status**
H1: Board size is positively associated with ESG performance in the E.U.	Supported
H2: Female members on board of director will increase company's ESG performance in the E.U.	Supported
H3: Board independence is positively related to ESG score in the E.U.	Not supported
H4: The number of board meetings has a positive relationship with ESG performance in the E.U.	Not supported

Chapter 4

DISCUSSION

Similar to previous research, our study also supported the positive association between ESG performance and size of the board in an E.U. setting. One of the main reasons behind this association is the possibility of accessing a wider range of collective expertise, which comes as a consequence of having a more diverse board (Villiers et al., 2011). The other reason as mentioned by Larmou and Vafeas (2010) in their study is that the stock market's tendency to trust firms with larger boards will lead to a positive reaction of the market regarding these firms. Our sample included public companies in the manufacturing sectors within the E.U. which are companies with high complex board of directors in terms of board's characteristics. Our finding about firms with complex structures also supported Coles et al. (2008) and Sheikh et al. (2012) studies regarding the positive link between a larger board and its effectiveness when it comes to consultative practices.

According to the findings, there is a significant positive relationship between female board members and ESG score, as proposed in the second hypothesis. This supports Post and Byron (2015) findings. They associated female representation in the board with higher profitability in countries which shareholder rights strongly protected, and the European Union with its rules and regulations in this regard also displays a strong relationship in this study.

The analysis of female representation on the board and companies' performance has been a growing topic of interest for studies in recent years. Firstly, Carter et al. (2003) and after that Bernardi and Threadgill (2010) in their studies point out this positive association. One of the reasons for this positive association is the tendency among female members to promote democratic practices as well as encouraging communication in the process. Nielsen and Huse (2010) mentioned this tendency as the key for identifying stakeholder's needs. Williams' (2003) study about women on the board and ESG performance mentioned the characteristics of the women themselves as the main factor that affect ESG score of a firm. Bear and Rahman (2010) study mentioned women's educational levels and professional experience as two critical factors that boost board's sensitivity toward sustainability issues. In light of the above, the strong association found by our study is also supported by Sadasivam et al.'s (2018) study that reported that females in the E.U. enjoy the highest rates of education and literacy levels in the world.

The third hypothesis of this study uncovered an insignificant association between board's independency and firm's ESG score. An independent board can help the firm's performance by aligning managers and stakeholders needs and values. Liao et al. (2015) in their study found that independent directors can also help a company to reach a balance between its short-term and long-term goals that boost both financial and environmental aspects of a firm's objectives.

Although there are numerous studies that support a high positive correlation among an independent board and firm's ESG score (Liao et al., 2015; de Villiers et al., 2011; Haque, 2017), our findings, alternatively, are similar to Michlon and Parboneti

(2012) who uncovered a non-significant association among board independency and firms' ESG score.

Prior studies also found this positive relationship to exist among the board's number of meetings and sustainability (Jones Sustainability World Index leaders, 2005; Adawi & Rwegasira 2011, Jizi et al., 2014; Jizi, 2017; Hussain, 2018). On the contrary, Vafeas (1999) states that frequent meetings will lead to higher coordination costs, which results in inefficiency and lower performance among directors. Dienes and Velte (2016) named frequency of the board meetings a reason for splitting the agenda into many meetings and thus this brings no improvement on the performance for both the board and the company.

In general, because of the dynamic business environment of the European Union, for a firm to achieve legitimacy frequent meetings for the board is required (Birindelli, Dell'Atti, Iannuzzi & Savioli, 2018). The number of board meetings and the ESG score have a positive relationship, but it is not significant, according to our correlation analysis. In this study, only 146 public companies of the E.U. have been analyzed. However, because sample size is a major factor in determining a study's statistical power, the final results' conclusiveness may be a better indicator if a larger sample size is available. For instance, the number of board's meetings and its influence on ESG score might turn out as statistically significant if 500 listed firms consider as the sample size instead of 146.

Moreover, this study examined the relationship between dependent variables and independent variable for the year 2020, while in most of the academic research, a minimum three to five years will consider as reliable source for data analysis.

In light of the above, what we have concluded in this study cannot be considered widespread for two reasons. First, the result of a study on the public companies in the E.U. may not applicable in other regions since the European Union with its rules and regulations has a unique structure and mechanism. Therefore, researchers must be very cautious about generalizing our particular findings.

Chapter 5

CONCLUSIONS

While Environmental, Social and Governance (ESG) score reporting is voluntary in most countries, for the purpose of attracting potential investors, proactive companies already have shown their understanding of the importance of the issues by providing ESG scores in their annual reports. Additionally, investor awareness has increased in recent years regarding the use of ESG scores, and this realization helps them in managing their investment risks. Moreover, increasing global regulations on ESG data reporting will compel many companies to include ESG scores in their annual reporting. One of the regions that is a pioneer in this regard is the European Union, as it provides both reliable and comprehensive data on these matters due to its rules and regulatory framework.

In this study of public companies in the E.U., we chose gender diversity, board independence, number of board meetings and board size as the four board of directors' characteristics of this study to see how they impact the ESG score. To do so, with the help of the EIKON database, we investigate 146 public companies with data from the year 2020.

The findings indicate that there is a strong and favorable link between board's size and the ESG scores. Additionally, our study affirms prior findings in regards to female representation on the board and its positive impact on the ESG scores.

However, number of board of directors' meetings shows no significant association with the ESG scores, which can be the result of an inefficient number of meetings during the time period of this study. This means that the association between the ESG score and number of boards meetings can turn out significant by expanding the study's time period. Lastly, board independence shows no significant association with the ESG scores, which was opposite to what we assume in our hypothesis developments.

5.1 Managerial Implications

The findings of this study can assist managers in large European public companies in encouraging the market to invest in their shares by improving their ESG scores by incorporating these issues into the board's decision-making process. The evidence showed that board independence and the number of meetings has no significant association with ESG score, but managers need to be cautious about the findings since this study only includes one year of data.

The E.U. with its rules and regulations to protect women rights has helped women representation on board of directors among companies in this marketplace. In terms of gender diversity, having women on the board has a positive and considerable impact on the ESG score of the E.U. companies. The findings reveal that a sufficient number of women on the boards can potentially influence the decision making process that helps the company to improve its environmental, social and governance activities, hence the ESG score improves. As such, managers can boost their ESG scores through gender diversity on the board by empowering women, but managers also must be cautious about having female members just to meet a preset quota. Government intervention in some countries like Norway forced companies with

setting quota for female members on the board. Women made up 10 percent of the boards of directors of public limited companies (PLCs) at the end of 2002. During the next two years, the Norwegian Parliament established legislation mandating women to make up around 40 percent of the board of directors of all PLCs by 2008, otherwise the companies would be disbanded. (Dale-Olsen et al., 2013). The impact of quotas on European board structure and director expertise has been studied by Wang and Kelan (2012). They said that, although mandatory quotas are able to bring gender diversity in business organizations, but it can backfire the company due to a persistent lack of qualified female managers in the job markets.

Finally, our findings show that size of the board can positively affect the ESG score. More number of directors on the board means a varied range of different perspectives and skills that can help a company to improve its environmental, social and governance activities, but managers must be aware that involving more people on the board can also negatively affect the speed of the decision making. In light of the above, managers need to find the company’s acceptable range for the board size by researching the sector and the country which they are operating in, since some countries have their own rules and regulation with respect to size of the board.

5.2 Areas for Future Research

The generalizability of this study is affected by studying only one year of data, which may make the findings unique to this year. Focusing on a three to five years of data can improve the analyses’ reliability validity, and thus may fill the statistical gap cause by an insufficient sample size.

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